National Park Service
U.S. Department of the Interior



CAMPS ON LAKE McDONALD
GLACIER NATIONAL PARK
Historic Structures Report
Moberly Main House and Guest Cabin
March 4, 2020



Cover Illustration: Moberly Main House (Anderson Hallas Architects, 2019)

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Executive Summary and Administrative Data

Historic Structures Report Summary

This Historic Structures Report (HSR) presents a planning document for the Moberly Main House and Guest Cabin at Glacier National Park. This report identifies characteristics and features that convey the historic significance and character of the buildings and immediate site. It provides a plan for long term preservation and stewardship of both buildings.

Glacier National Park was established on May 11, 1910 to protect the unique landforms in the area. In the late 1800s, the Great Northern Railroad was looking for a path to the west coast. While scouting that path, they discovered the rugged mountains and saw potential for tourism in the area that today is Glacier National Park. Great Northern Railroad constructed its track through the area and also constructed a series of lodges and chalets to attract visitors. The train drew tourists to the area which in turn led companies and individuals to establish camps and other attractions to accommodate them. All this interest in the area caught the attention of influential leaders, like George Bird Grinnell, who worked towards the establishment of a national park in Montana. Those efforts were rewarded when President Taft established Glacier National Park, making it the tenth in the country.

The Moberly Main House and Guest Cabin are located in the Apgar area of the park, along the shore of Lake McDonald. This HSR documents the physical evolution of the Moberly buildings, current conditions, and recommends appropriate treatments. Documentation of historic significance and the evaluation of integrity provides the framework upon which treatment recommendations are based. All treatment recommendations follow National Register of Historic Places (NRHP or national register) guidelines, and Secretary of the Interior Standards for the Treatment of Historic Properties.

The condition assessment for each element/feature is documented in Part 1 and treatment options for each element/feature are documented in Part 2.

Project Purpose and Need

Glacier National Park manages properties within the park which were transferred to NPS ownership. This project addresses two houses which were owned by the Moberly family and are now NPS property. The purpose of this project is to document building development, evaluate current conditions and provide treatment options based on current anticipated use. The report provides treatment recommendations for rehabilitation for resuming residential use and will serve as a planning tool for future park decisions related to the buildings. The most significant work required for this use would be roofing, structural, utility and code updates and modifications to comply with ABAAS.

Methodology

History Methodology

Archival research was conducted in the Park at the Glacier National Park Archives and the George C. Ruhle Library on June 27, 2019. In the Archives, transcripts of an oral interview with a neighbor to the Moberly property and various land and improvements-related documents in the park's real estate files were particularly informative about the history of the parcel. No historic photos were located. A few photographs taken within the past 40

years were found. Published documents were also helpful and are listed in the bibliography in the Appendix.

On site investigations clarified the placement and type of structures and the overall layout of the property. Penciled script on the Guest Cabin from 1920 and carved names in the Guest Cabin walls from 1961 were also observed.

Historic Structures Report Methodology
The HSR presents documentary, graphic, and physical information for the Moberly Main House and Guest Cabin. Primary historic documents (oral history, photographs, and other historic documentation), material testing, and site investigations were analyzed to compile the record of each structure's development, historic alterations, and current condition. The assessment process utilized a multidisciplinary approach to more fully understand each building and its alterations. Disciplines included architectural, structural, electrical, mechanical, and civil experts.

Significant dates and periods of construction were established to document features and to determine the relative significance of each building feature.

Existing Condition
A brief physical description of each building precedes a description of the individual building features and includes information such as massing, form, orientation, materiality, and general plan layout. Field observations contributed to descriptions of each extant feature and attendant condition rating. Features observed by discipline included the following as applicable by building:

Architecture: roofing, chimneys, exterior walls, exterior trim, windows, doors, wall finishes, ceiling finishes, interior trim, flooring, stairs, code/life safety, and accessibility.

Structure: foundation, floor framing, roof framing, ceiling framing, wall framing, lateral system, and load requirements.

Mechanical Systems: plumbing systems, HVAC, and fire protection systems.

Electrical Systems: infrastructure, branch circuits, general power outlets and equipment, lighting systems, telecommunications, fire alarm and security systems, and lightning protection.

Civil: site drainage and utilities.

Condition Assessment
Each feature was evaluated and assigned a condition rating. A general building condition assessment is presented first, followed by the condition assessment and ratings of each feature or component.

Character Defining Features
A list of the contributing features - those characteristics that embody the structure's special and notable qualities - follow the description of physical features. Mass and form, exterior materials, openings, and interior materials are included in this list.

Treatment Alternatives
In Part 2, the treatment alternatives and associated impacts are discussed for the buildings and systems. Treatment recommendations are provided for each feature. Treatments assume that the buildings will be seasonal use only so no winterization work is needed. Park direction maintains that the buildings will continue to be residential

use with long stay occupants versus transient residents. If public use is to be considered in the future, see the memo dated 8/14/2019 in the Appendix for additional information on considerations related to impacts of this change.

Summary of Recommendations

Rehabilitation is the recommended treatment for the Moberly Main House and Guest Cabin. This treatment allows for altering a building to adapt to continuing or changing uses. Treatment recommendations generally retain existing materials in good condition and repair damaged finishes where needed.

Additional Recommended Research

As this project moves forward into design, additional research and investigation should be conducted on the following topics:

- Is there an existing foundation drain at the Main House?
- Water damage is evident on the lower portions of the walls in the basement of the Main House. Was there a plumbing issue which caused backups in the basement of the Main House and was that the reason for the water damage?
- A site survey should be conducted to help study the drive realignment, ABAAS paths and parking spots, and potential locations for water storage tanks.
- Study of the ABAAS unit ratio within the park to determine if a compliant unit must be provided. (Note - treatments assume that the Guest House must be ABAAS compliant.)
- Requirements for the water system - does this need to meet public water system standards?
- Is there additional history documentation on the Guest Cabin that can confirm this was the Russells' cabin?
- Material testing on the mortar of the Main House chimney and chinking at the Guest Cabin.
- Wood testing at the Guest Cabin to determine the log species.
- Hazardous materials testing at a more detailed level related to proposed work.

Description of the Study Area

Both buildings addressed in this report are located within Glacier National Park. The park contains about a million acres of land and has services for visitors on the east and west sides of the park. The buildings addressed in this report are located in West Glacier, and the primary visitor contact in this area is Lake McDonald Lodge and the Apgar area. The Moberly buildings are located west of McDonald Lodge and north of Apgar. They are accessed via a steep driveway off Grist Road. The buildings face south across the lake toward Lake McDonald Lodge. Currently, neither building is in use, nor is the site open for access by the public.

Project Team

Glacier National Park Staff

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Cultural Resource Planning, Historian

Historian	Jill Seyfarth

Architectural Cost Consultants, LLC, Cost Estimator

Estimator	Jim Flemming

Location Data

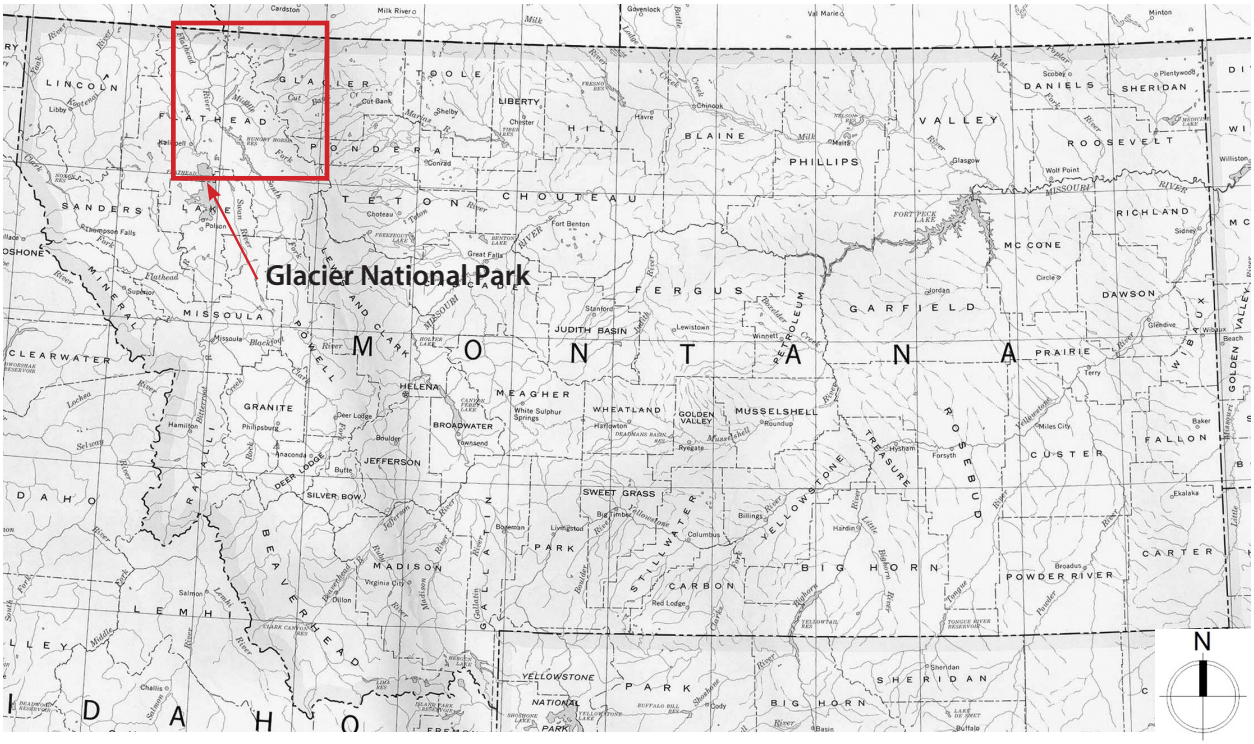


Figure 1-1. Montana Map

(Source: The University of Texas at Austin Library, 7/31/2018)

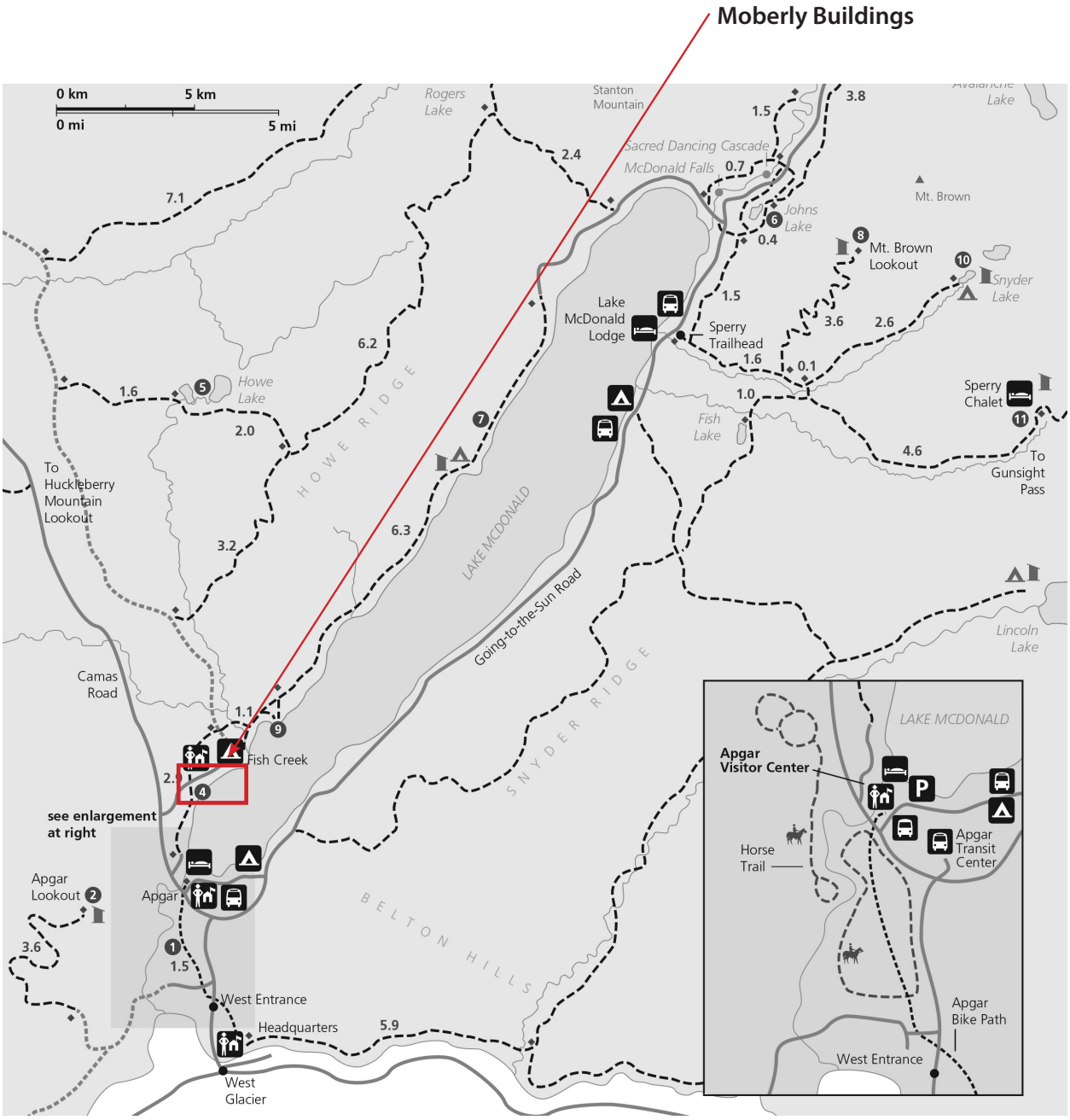


Figure 1-2. Location of the project area within Glacier National Park Montana.
(Source: Glacier National Park McDonald Valley Hiking Map, 7/31/2018)

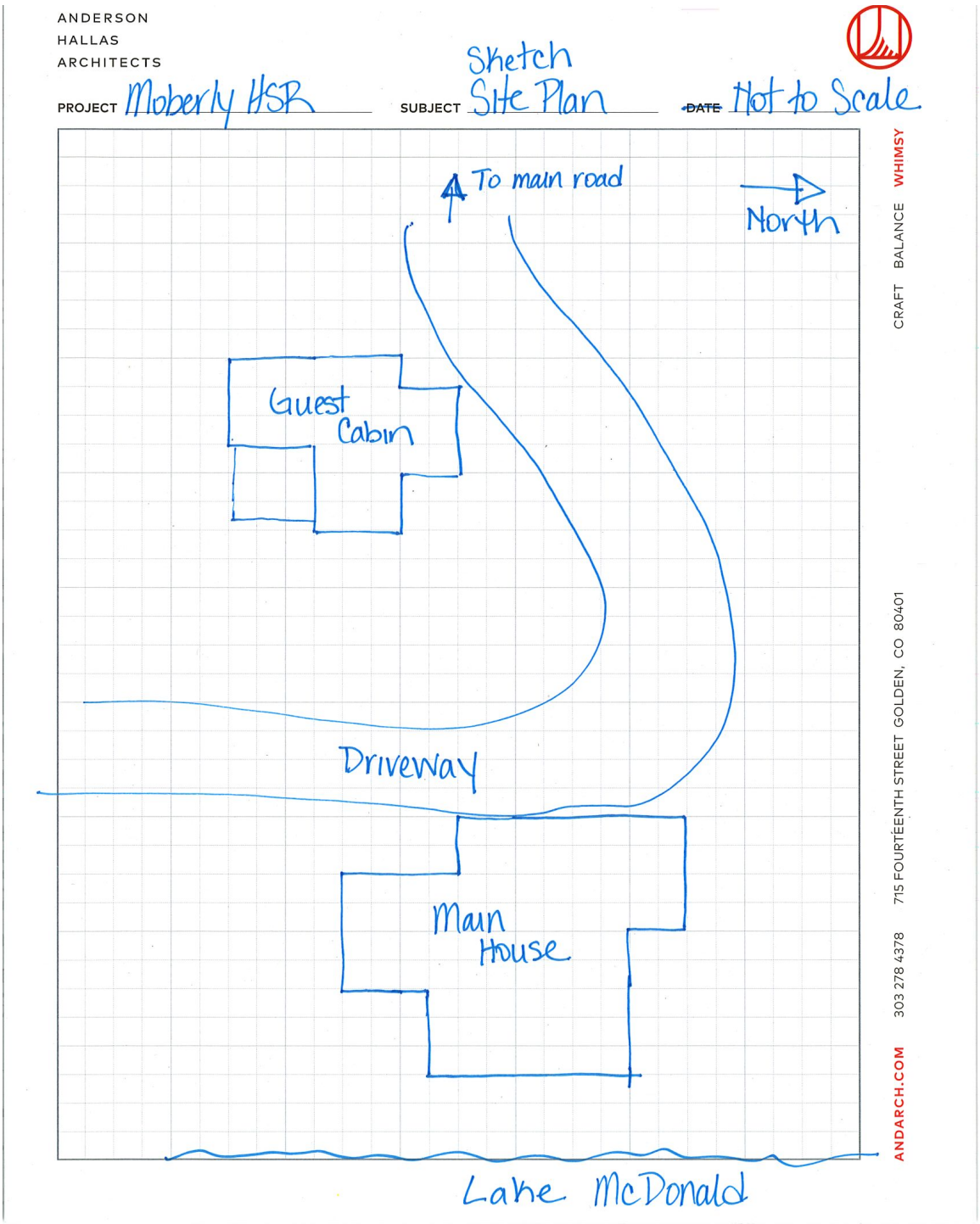


Figure 1-3. Site sketch plan for general reference - not to scale
(Source: AH, 6/31/2019)

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Part 1: Developmental History

Administrative Background

Summary

The Moberly Main House and Guest Cabin were constructed along the shore of Lake McDonald in Glacier National Park. The Guest Cabin was constructed on the property first, and was later modified by the Moberlys. The Main House, likely designed by Brinkman and Lenon, was constructed by the Moberlys in the 1960s. Both houses were used by the Moberly family for seasonal use until 1995 when it was transferred to NPS through a life estate.

Previous Reports

Determinations of Eligibility & National Register Nominations

A Determination of Eligibility was prepared by Bruce Fladmark in 1996. At that time, the Moberly Main House was determined ineligible for the National Register, primarily because of its age and because of the perceived incompatibility of the modern design with the predominantly rustic architectural character of the area. The Guest Cabin was determined ineligible as a stand alone resource because it lacked significance and historic integrity due to significant interior modifications.

The resources were reconsidered for eligibility in 2007. The Moberly Main House and the Guest Cabin were determined to be contributing resources within the proposed Apgar's Glacier Park Cottage Sites Historic District, which has been determined eligible for the National Register of Historic Places per a letter from the Montana State Historic Preservation Office dated March 27, 2007. The District is considered eligible because it meets Criteria A and C at the local level as a representative example of recreational camp development on Lake McDonald. In 2007, the Moberly Main House was also considered eligible under Criterion G as a property less than 50 years old with unusual significance. (However, not that the house is now more than 50 years old.) The Moberly Main House is contributing as a representation of the collection of Mid-Century Modern vacation cabins. The Guest Cabin is contributing as a representation of the rustic log cabin architecture that is commonly used in the recreational camps on Lake McDonald.

In 2018, the Montana State Historic Preservation Office determined that the Moberly Main House and the Guest Cabin were individually eligible for listing on the National Register (per a letter dated December 5, 2018).

Historic Architectural Surveys/Assessments

The cabins were included in a Historic Resources Study and Historic Structures Survey, conducted and written up by Alan S. Newell, Project Director with David Walter, Principal Investigator for History and James R. McDonald, Principal Investigator for Architecture in August of 1980. The cabins were assigned Site Numbers GNP #5 (Main House) and GNP #6 (Guest Cabin) in this survey.

A Historic Resource Study for all of Glacier National Park was completed by James W. Sheire in September of 1970, but does not specifically address this property likely because it was still in private ownership by the Moberlys.

Statement of Significance

The Moberly Main House and Guest Cabin are located within the proposed Apgar's Glacier Park Cottage Sites Historic District. The District has been determined eligible for listing on the National Register of Historic

Places per a letter from the Montana State Historic Preservation Office dated March 27, 2007. The individual Main House and Guest Cabin have also been determined eligible for listing on the National Register per a letter dated December 5, 2018.[1.1]

The proposed District meets National Register Criteria A and C at the local level as a representative example of recreational camp development on Lake McDonald. The period of significance for the historic district begins with construction of the first building in the district in 1908, and ends in 1970 with the completion of any improvements exhibiting Mid-Century Modern design.

The Guest Cabin is significant as a representation of the rustic log cabin architecture that is commonly used in the recreational camps on Lake McDonald.

The Main House is significant as a good representation of the Mid-Century Modern vacation cabins located at Lake McDonald. The nomination form itemizes five cabins of this style, and notes that this is the only grouping of Mid-century Modern designs located on Lake McDonald. The design illustrates the shift in public tastes away from rustic cabins to more contemporary forms and materials. Further, this location on the shore of the lake provided an opportunity to celebrate the external and outward focus from the house to the lake as one enters and descends to the living area - similar to a ship's bow.

The National Register nomination notes that the entire district retains integrity, and that only one cabin (Rice, constructed in 1975, outside of the period of significance) and three small out-buildings are non-contributing.

Much of the information in this history comes from the National Register District Nomination Form for Apgar Glacier Park Cottage Sites Historic District, prepared by Jesse Ravage in 2006. Other sources are cited when they are used.

Building History

Historic Context

Described in the Apgar's Glacier Park Cottage Sites Historic District nomination as "… the most clearly articulated expression of the desirable modern wilderness vacation home of the period on Lake McDonald", the Moberly Main House provides a contrast in tastes and technologies to the nearby Moberly Guest Cottage, which represents a much earlier interpretation of the rustic rural vacation home.[1.2] The two resources illustrate the establishment and growth of historic recreation retreats at Lake McDonald initiated by the Apgar family in the late 1800s, and continuing to the 1960s.

The Development of Glacier National Park and of the Apgar Subdivision

Milo B. and Diane Jeanette Apgar were among the first to claim homesteads along Lake McDonald. They filed for 140.3 acres of lakefront property in 1891. The Apgars had raised three children in Minnesota before striking out for Montana, and were quick to realize the opportunities available by providing lodging to tourists on their new property. By 1894, they were hosting visitors in newly constructed cabins at the foot of the

1.1 Letters are on file at the Cultural Resources Office of Glacier National Park.

1.2 Jesse Ravage, "Apgar's Glacier Park Cottage Sites Historic District" Nomination. (Washington, D.C. Department of the Interior, 2006). Section 8, Page 8.

lake. The youngest Apgar child, Harvey Dimon (H.D.), joined his parents in 1895, a year before Milo died. H.D. and his sister and their respective spouses obtained the patent on Milo's homestead claim on June 22, 1908; and H.D. subsequently bought out his sister. Great Falls, Montana, resident and renowned artist, Charles Marion Russell, was among the early visitors to Lake McDonald. He worked out a deal with H.D. to build a studio on part of the homestead land in 1908. He and his wife, Nancy, added a residence in the 1910s and affectionately called the complex the Bullhead Lodge.[1.3]

The Apgars were among the locals who benefited from the establishment and promotion of Glacier National Park, and from the marketing efforts of the Great Northern Railway (GNR). The GNR constructed the Belton Station in 1891 at a location about three miles from the foot of Lake McDonald along the Railway's westward pioneering route from Minneapolis to Seattle. The GNR's active promotional efforts, buoyed by articles in the national publication, Forest and Stream, raised awareness and attracted numerous outdoorsman, conservationists and scientists, who marveled at the largely unblemished country. With support from both the scientific community and the Railway, Congress set the area aside in 1897 as one of the nation's first forest reserves.

George Bird Grinnell, the editor of Forest and Stream, lobbied for the creation of a national park, and local residents supported his efforts. Led by Montana Senator T. H. Carter, who introduced the legislation in the Senate, Congress established Glacier National Park in May 1910. The enabling legislation recognized and validated existing homestead claims located within the new park boundaries, including the Apgars' claim.

Prompted by the creation of Glacier National Park, the Federal Government enacted a series of improvements to draw more visitors to the area. The Park's first superintendent, William L. Logan, took office in 1911 amidst a massive wildfire, but still managed to turn the primitive three-mile-trail from Belton to Apgar into a surfaced road. The Federal efforts were bolstered by the formation of the National Park Service (NPS) in 1916 and the resulting nation-wide efforts to promote tourism in the parks.

While the NPS focused on infrastructure for visitors, the homesteaders and subsequent "in-holders" around Lake McDonald occasionally carved small lots out of the homesteads and sold them to various buyers. Historian Jesse Ravage noted, "By the early 1920s, over half of the lake frontage encompassed by patented homesteads had been sold in small parcels to individual owners building family camps. Enclaves of families coming from the same locale developed at different places around the lake."[1.4]

H.D. Apgar took a different approach by filing the first subdivision in Flathead County. The 1914 plat, entitled "Apgar's Glacier Park Cottage Site Subdivision" created 52 lots located along about a half mile of shoreline, including Lots A and B for Charlie Russell's retreat.

1.3 Jesse Ravage, "Apgar's Glacier Park Cottage Sites Historic District" Nomination. (Washington, D.C. Department of the Interior, 2006). Section 7, Page 2

1.4 Jesse Ravage. "Recreational Camps on Lake McDonald" National Register Multiple Property Listing Documentation. (Washington, D.C.: Department of the Interior, 2006). Section E Page 2.

The Russells

Charlie and Nancy Russell also purchased two lots to the north and two lots to the south of their Bullhead Lodge between 1917 and 1920. On September 17, 1920, they purchased the two lots to the north, Numbers 27 and 28 from Ida Jewell. (These two lots would eventually become the Moberly Property.) The Russells spent their summers at Bullhead Lodge, where Charlie sketched and painted and prepared studies for work he would do in Great Falls in the winter months. Russell created approximately 4,000 works of art during his lifetime. As described by the C.M. Russell Museum, "His art is first and foremost that of a storyteller, and it was informed by his remarkable ability to capture in paint, bronze, ink, and wax the personalities and events of his time and place. He was the first "Western" artist to live the majority of his life in the West. For this reason, Charlie knew his subject matter intimately, setting the standard for many Western artists to follow."[1.5]

The Russells reveled in their summer home and entertained frequently. They hosted numerous overnight visitors in their guest quarters, but it is not totally clear if the extant cabin on the Moberly property was used by the Russells as a guest house, or if the Russells had a different guest cabin.[1.6]

Charlie returned every summer until a few years before his death on October 24, 1926. The property remained in the family until Charlie's wife, Nancy, died. In 1945, Olga and Leonard Storm purchased the property from the Russell estate. The Storms built a new cabin on the south side of Bullhead Lodge. They sold the two lots to the north (Lots 27 and 28) to Everett and Margaret Lundgren on June 1, 1960. Three weeks later, on June 22, the Lundgrens sold the property to Waldo and Isabel Moberly.

The Moberlys

Montana natives, Waldo and Isabel founded W.Y. Moberly, Inc., a U.S. Customhouse brokerage firm. They ran the business from 1926 until 1968.[1.7] Their primary residence was Sweetgrass, Montana. Soon after they purchased the property at Lake McDonald, Waldo was elected to the Montana State Senate, where he served from 1962 until 1966. He was a founding director of the First National Bank of Cut Bank, and served on the Board from 1960 to 1980. Isabel was prominent and active in the Republican Party. Robert S. Lundgren, whose family bought the Bullhead Lodge, remembered the Moberlys as "…the finest people you would ever want to meet. They were selfless and friendly…"[1.8]

Lundgren also recalled some of the details of the construction of the Moberly's new home in 1961. He said Bob Erickson was the builder, and he thought the house was probably designed by the Kalispell based architectural firm, Brinkman and Lenon. (Unfortunately further confirmation of the architect could not be located. A descendent of Brinkman was contacted and said that his grandfather's firm's plans had not been saved.) Lundgren remembered the beams being floated across the lake on a raft or pontoon boat, and a long stream of concrete trucks making their way down to the job site via the widened road.

1.5 https://cmrussell.org/charles-m-russell/ accessed July 27, 2019.

1.6 The origin of the Moberly Guest Cabin is discussed below in the section outlining the Moberlys' development of the property.

1.7 A customs broker is a specific term used to identify the intermediary between the importer and the government's customs department in the country of import.

1.8 Transcription of Jesse Ravage Interview with Robert S. Lundgren on July 31, 2006. Glacier Archives.

Once the work was done, Lundgren recalled, "…it was nice to have neighbors. They had a little boat and a little railroad….and they had a little set of railroad tracks that went out for his boat because he would pull the boat up underneath that deck and it had an electric winch…"[1.9]

The Moberlys retired to Kalispell in 1980 and divided their time between Kalispell and their lake house. Their modern vacation home was one of a small group of post-World War II homes constructed on the larger lakefront lots by newcomers to the lake. Rather than adapting the rustic log-cabin-like designs of the surrounding buildings, these home designs incorporated influences from the International Style, and employed new forms and new materials. The "Recreational Camps on Lake McDonald Multiple Property Documentation Form" describes these more "avant-garde" cabins as having "…strong horizontal design emphasized by open decks, ribbons of windows and flat or low-pitched roofs. They combine post-war building materials like textured plywood or board-and-batten siding; large plate glass sash and casement windows; laminated wood trusses; and poured concrete foundations."[1.10]

The Main Cabin features a stunning view of the lake, and offers an experience while inside the house of being on the water by incorporating large windows and open guardrails that do not obscure the views. This experience begins at the initial entry through the front door with views out through clerestory windows and continues as one walks down the stairs into the living room which has large windows providing views to



Figure 1-4. Horizontal design, ribbon windows, open deck and flat roof on the Main House (KC, 6/24/2019)



Figure 1-5. Lake views from the Living Room in the Main House (KC, 6/24/2019)

1.9 Ibid.

1.10 Jesse Ravage, "Recreational Camps on Lake McDonald". Multiple Property Listing Documentation. (Washington, D.C.: Department of the Interior, 2006). Section E, Page 23.

the water on all three walls with lake views.

The Guest Cabin, however, remained rustic in appearance on the exterior, even though the Moberlys completed a radical remodel on the interior. Penciled scripts on the exterior of the cabin wall suggest the building was probably constructed before the Moberlys owned the property. The script says something unintelligible and "Kalispell", and "Mont. June 20, 1919". The Moberlys updated the Cabin in 1961, as is evident in the initials carved into the concrete chinking, " WYM" (for Waldo Y Moberly) ; "DEB 6/4/61"; and near the corner of the building; " 6/4/61 ICM" and "MEB". Former neighbor, Bob Lundgren, seems to be saying in his oral history interview that the Moberlys brought the cabin in and put it on a foundation.[1.11] He also said the Moberlys lived in the little cabin while building their new vacation home. It's possible that the extant cabin is an older cabin moved onto the site and is not the guest house originally used by the Russells. Further investigation may shed additional light onto this question.



Figure 1-6. Rustic style exterior of the Guest Cabin (KC, 6/24/2019)



Figure 1-7. Mid-century modern finishes on the interior of the Guest Cabin (KC, 6/24/2019)

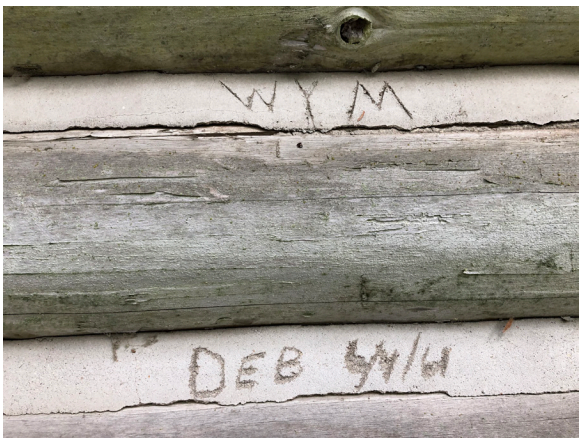


Figure 1-8. Initials in the chinking of the Guest Cabin (KC, 6/24/2019)

Moberly Life Estate

In 1970, the Moberlys sold their property to the Federal Government, and retained a life estate to allow them to use the property until their deaths.[1.12] Isabel died on January 15, 1993. In the 1990s, Walter rented the cabin out to James Duncan, and the property reverted to the Federal Government when Walter died on May 13, 1995. The Main House

1.11 Oral history interview with Jesse Ravage, July 31, 2006. Glacier Archives. Page 3.

1.12 A life estate is a form of joint ownership that allows one owner to remain on the property until his or her death, when it passes to the other owner. The persons holding the life estate possess the property during their lives. The other owner cannot take possession until the death of the life estate holder. The life tenant has full control of the property during his or her lifetime.

was used for the Glacier National Park "Artist in Residence" program in the late 1990s.

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Part 1: Physical Description

Overview

This historic structures report addresses conditions for the Moberly Main House and Guest Cabin. This section includes a brief overview of the buildings followed by a detailed evaluation and analysis of each element at each building. Figures throughout this report are related to text on that page spread, except where specifically called out.

Main House

The Main House is a three level building with a split level flat roof and the primary facade facing east toward the lake. A deck runs along the east side of the house and wraps back along the north and south sides. Foundations are concrete with exposed battered piers on the lake side. Exterior elevations are painted vertical lapped wood siding. The House is accessed via a drive that runs adjacent to the west facade.

Guest Cabin

The Guest Cabin is a cross gabled, one story building with the primary elevation facing the lake. Exterior elevations are composed of peeled, notched logs with daubing and a log pier foundation. Gables have vertical board and batten cladding and the roofing is wood shingles. A small deck is located on the southeast side of the building. The drive runs along the north side of the building and dirt paths lead to the deck and front entry.



Figure 1-9. Looking southwest from lake at the Main House (KAC, 6/27/2019)



Figure 1-10. View from the driveway towards the Main House (KAC, 6/27/2019)



Figure 1-11. View from the drive towards the Guest Cabin (KAC, 6/27/2019)

Building Existing Conditions & Condition Assessments

Existing Conditions

The Existing Conditions section describes the current conditions, by discipline and by component, as observed during the June 2019 site visit.

Condition Assessment

Immediately following the Existing Condition, each feature/system is evaluated and assigned an attendant condition rating. The condition rating system is as follows. (Note: An overall building rating is given by evaluating the combined condition of all features/systems.)

Good - The feature is intact, structurally sound and performing its intended purpose. The feature needs no repair or rehabilitation, but only routine or preventative maintenance.

Fair - The feature is in fair condition if either of the following conditions is present:

- There are early signs of wear, failure, or deterioration though the feature is generally structurally sound and performing its intended purpose - or -
- There is failure of a portion of the feature.

Poor - The feature is in poor condition if any of the following conditions is present:

- The feature is no longer performing its intended purpose - or -
- Significant elements of the feature are missing - or -
- Deterioration or damage affects more than 25% of the feature - or -
- The feature shows signs of imminent failure or breakdown.

Unknown - Not enough information is available to make an evaluation.

NA - The feature is not present within the building.

Main House

Character Defining Features

The Moberly Main House is in keeping with other park development including Logan Pass, Saint Mary Visitor Center and Apgar Lodge with a design that intentionally departs from the rustic log vernacular of the area.

Mass/Form

A key feature of the design is the overall rectilinear shape of the building and the tri-story design. These elements, combined with the design working with the slope of the site, allowed the house to be built into the hillside so it appears smaller and more modest to visitors approaching from the west and is more open and grand on the lake side. Flat roofs are characteristic of mid-century design and contribute to the building character, with the overhang designed to correlate with the deck on the lakeside. The roofs also suggest horizontality which continues throughout the design of the building with the use of bolder horizontal lines and thinner vertical elements. Battered elements are also used throughout the house in both subtle and obvious ways - from the concrete piers and guardrail on the exterior to the fireplace on the interior.

Exterior Materials

The majority of the building features are original or have been replaced in kind to maintain the historic appearance. They all contribute to the historic character of the building and include:

- Concrete foundation
- Battered concrete piers
- Painted wood siding, vertically lapped
- Stone at the fireplace extending up through the roof to the chimney
- Wood deck and guardrail with battered supports designed to provide limited impediment of the lake view



Figure 1-12. Modest view of the house when approached from the west (KC, 6/24/2019)



Figure 1-13. Grander, lake-facing side of building (KC, 6/24/2019)



Figure 1-14. Contributing exterior materials (KC, 6/24/2019)

Openings

The rhythm, size, and scale of the window and door openings are important contributors to the character of the building. Windows on elevations not facing the lake are smaller and high on the walls, while windows on the lake side are larger and located to take advantage of the view. The series of rectangular windows on the north side of the main stair is a significant design feature. Window locations frame the view of lake, with the clerestory and Living Room windows designed to focus on the lake views, providing a "ships prow" feel to the interior of the house.

Doors also tend to follow the pattern of being more transparent when facing the lake and more opaque on the hill side. Sliding glass doors are located in rooms with good views toward the east, over the lake, while the entry door to the west and doors with less key views are wood with generally small lites.

Interior Materials

Many of the materials have been retained, though some modifications have occurred. The room layout appears to have generally remained the same and therefore is a contributing feature. Wood wall paneling found in many of the rooms contributes to the building character, as do interior doors. Storage cubbies throughout the house, many with doors that blend with the wall finishes, contribute to the character of the house. Elements integrated into the building are of the modern time period. These include state of the art features for that time, such as a sound system, built in appliances, and innovative materials including the wood paneling and glue-lam structural members.



Figure 1-15. Large windows facing toward the lake (KC, 6/24/2019)



Figure 1-16. Typical wood wall paneling and smaller windows on the hill side (KC, 6/24/2019)



Figure 1-17. Typical wall paneling, interior doors and large windows on the lake side (KC, 6/24/2019)

Existing Conditions & Condition Assessment - General

General Building Description

Very much a building that speaks to the time and site for which it was designed, the Main House has characteristics of mid-century design throughout. When approaching the building by land, visitors see a discrete one level building with clean lines and details capped by a flat roof. On the lake side, all three levels are evident with a unifying wood deck that wraps around the building and has a carefully detailed railing. Exterior cladding is lapped wood siding set vertically. Windows reflect the views they offer - with large windows facing the lake and smaller windows on other elevations.

The Main House is a split-level, tee-shaped structure measuring approximately 52'-0" x 40'-0" overall in plan, with the top of tee at the west side and the stem of tee extending east toward the lakefront. The west side consists of two levels, with the Basement Level set into the hillside. The Main Level at the east side is a half story lower than the west side and consists of one level over an open full story "crawlspace". The main entry door opens to the Upper Level. This entry offers views from the clerestory out to the lake, as well as the opportunity to look down into the lower Main Level. Bedrooms, closets, and a bathroom are located on the Upper Level. An open stair leads down to the Main Level which consists of the Living Room and Kitchen and offers access to the exterior deck looking out over the lake. An enclosed stair off the Kitchen leads down to the walkout Basement which contains a Bathroom, Laundry, Storage, Sitting Room, and Mechanical Rooms.



Figure 1-18. View of building on approach via driveway (KC, 6/24/2019)



Figure 1-19. Lake-facing side of building with deck (KC, 6/24/2019)

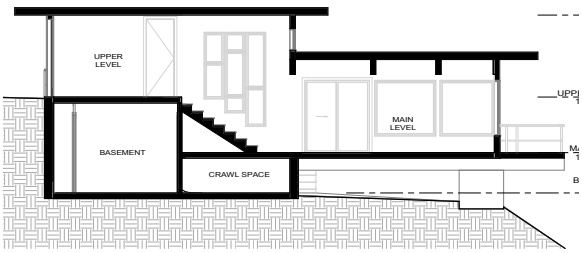


Figure 1-20. Informational section showing levels within the Main House - see drawings in Appendix for larger scale image

Condition: **Fair**
In general, the finishes on the exterior and interior of the building are in good condition with several areas which were affected by water in fair to poor condition. Select structural systems are deficient and in poor condition. Mechanical systems are generally in fair condition with some deficiencies which need to be addressed. Electrical systems have significant deficiencies and are in poor condition.

Existing Conditions & Condition Assessment - Architecture

Architecture - Roofing System

The building has two flat roof planes, with the west side higher than the east. Roofing is a membrane with gravel ballast that is concealed by significant biological growth. Gravel is contained at the roof perimeter by a metal gravel drip edge on a wood fascia assembly.

The two-stepped wood fascia assembly is painted pale green. Metal gutters are attached to the fascia on the east and north sides of the upper roof and the east side of the lower roof. On the south side of the lower roof, the gutter extends past the edge of the roof out over the deck. A downspout adjacent to the chimney drains water from the upper roof to the lower. The lower roof does not have a downspout and water drains directly to grade from the south end.

The soffit of the upper (west) roof is finished with painted plywood with a continuous narrow screened vent located at the outer edge. On the lower roof, the soffit is finished with stained 6” wide wood tongue and groove boards.



Figure 1-21. North facade showing two roof levels (KC, 6/24/2019)



Figure 1-22. Eave assembly on upper roof (KC, 6/24/2019)



Figure 1-23. Biological growth on the upper roof and flashing at the chimney (KC, 6/24/2019)

Where the lower roof meets the exterior wall, metal flashing extends from under the wood siding out over the gravel. This flashing is painted red to match the siding. At both levels of the roof, the top of the painted galvanized metal flashing around the chimney is tucked into a mortar joint and the flashing stops above the gravel ballast.

A small curve is cut into the north edge of the lower roof to accommodate a tree growing near the building.

Condition: Poor
The roof is in poor condition with significant biological growth on the gravel. Several areas are missing fascia flashing. The wood fascia is in fair to poor condition with peeling paint and areas of water damage.

The soffit on the upper roof is generally in fair condition. The tongue and groove wood soffit on the lower roof is in poor condition. These boards show significant signs of mold and water damage. Fascia boards on the east side of the lower roof (closest to the lake) are significantly deteriorated.

The gutter on the lower roof is in fair condition with peeling paint and rust spots. Gutters on the upper roof are rusted through and in poor condition and the downspout is in fair condition. On the east side of the upper roof, the gutter is detached and lying on the lower roof. All gutters are filled with vegetation and plant debris.

Architecture - Chimney
The chimney is constructed of a light golden-brown cut stone arranged in a mortared, ashlar pattern. Located on the southwest corner of the Living Room, the chimney extends outside to the southeast with the same stone used on the interior and exterior.



Figure 1-24. Soffit with signs of weather damage (KC, 6/24/2019)



Figure 1-25. Detached gutter, vegetation growing in gutter and on roof (KC, 6/24/2019)



Figure 1-26. Top of chimney, as seen from upper roof (KC, 6/24/2019)

Here it abuts the decking and extends through both the lower and upper roofs. The chimney is topped with a thin-cut stone chimney cap. Hardware mesh has been fitted over the two exhaust openings at the top.

Condition: Fair
The chimney is in fair condition. Some biological growth was observed at the cap, along with slight discoloration. One of the cap stones has fallen off the chimney and was lying on the lower roof at the time of the site visit.

Architecture - Exterior Walls
The building is clad in lapped vertical wood siding with an 8" exposure. Each corner is finished with a vertical strip of 2" x 1/2" wood trim. Where the cladding meets the soffit, the 1/2" thick closure trim is scribed to the lapped siding. In places, electrical wiring runs along the closure trim, attached with staples. Siding and trim pieces are painted red.

At the north and east elevations, the concrete foundation is visible below the wood siding. At the south end of the house, under the master bedroom, the building is clad in board and batten below the red siding. A horizontal trim board separates these two siding types. Battens measure 1-1/4" x 3-3/4" with 5-1/4" of board exposed between them. All wood elements at the Basement Level are painted grey.

Below the board and batten, on the east elevation of the south wing, there are low stone walls with varying heights. Stones are large and of varying shapes and colors arranged in a rubble pattern, completely unlike the stone chimney. They are set in a light grey cementitious mortar with a concrete parging cap on top.



Figure 1-27. Closure trim at exterior cladding and soffit connection (KC, 6/24/2019)



Figure 1-28. Board and batten siding on south side of building at Basement level (KC, 6/24/2019)



Figure 1-29. Stone wall on south side of building (KC, 6/24/2019)

Window trim consists of a simple sill which projects out slightly beyond the trim on the other three sides of the openings. Trim at the sides and top of the openings is slightly wider than the sill, but all have a simple rectangular profile with straight edges. Trim and sills are painted green in contrast with the red siding. Door trim matches the side and header trim on the windows in size, profile, and color.

Condition: Fair
The exterior walls are in generally fair condition. Several lapped siding boards are splitting and/or have biological growth.

The board and batten siding is in good condition with some deterioration of the wood where it meets grade. It is speculated that the siding may continue slightly below grade where more deterioration is to be expected.

The stone wall and mortar is in good condition, however the concrete cap is chipped and cracking in several areas.

Door and window trim is in fair condition with wood deterioration in places.

Architecture - Deck & Stairs
A wood deck wraps around the north, east, and part of the south side of the building. The 2" x 6" decking is spaced slightly apart and appears to have had a stained finish. The outer joist (fascia) is painted pale green. The deck is elevated above grade and split into levels which align with the adjacent interior floor levels. Multiple sets of stairs with wood treads and open risers connect the levels. Stair treads are painted pale green.

The 30" wood railing around the exterior deck edge and at stairs is a flat 2x6 that is 2'-5-1/2" above the finish floor of the deck.



Figure 1-30. Window sill and trim (KC, 6/24/2019)



Figure 1-31. Stairs connecting deck levels on north side of building (KC, 6/24/2019)



Figure 1-32. Deck and railing at northeast corner showing weather damage (KC, 6/24/2019)

There is an intermediate 2x4 board halfway between the deck and railing which allows a clear open area approximately 13" tall along the deck's edge. Support posts are battered out away from the deck, in keeping with the battered detailing found throughout the house. The railing is painted the same pale green as the outer joist/fascia.

On the exterior, the deck can be accessed from the drive on the north side of the building or via stairs to grade at the northeast side of the house. From the interior, doors from the Kitchen and Master Bedroom open to the deck.

Condition: Fair to Poor
All wood on the stairs, deck, and railing is in fair to poor condition, depending on its exposure. Most wood close to the house, protected by overhanging soffits, is less deteriorated than the more exposed wood. In many places the paint is peeling or worn off, especially on the stair treads and railing. Biological growth is present on the wood as well.

Architecture - Windows
Typical All Window Types
The existing sealant type is unknown, however it appears to have been clear and is assumed to be exterior grade.

Type A
Type A windows are original, fixed pane insulated glass of various sizes. In the Living Room there are nine Type A windows along the north, east, and south walls. This band of windows has a consistent sill and header with varying widths - five are 5'-3-1/2" wide and two are 4'-7-1/2" wide.

On the north wall of the Kitchen, adjacent to the stair, is a set of seven type A windows



Figure 1-33. Type A windows on east wall of the Living Room (KC, 6/24/2019)

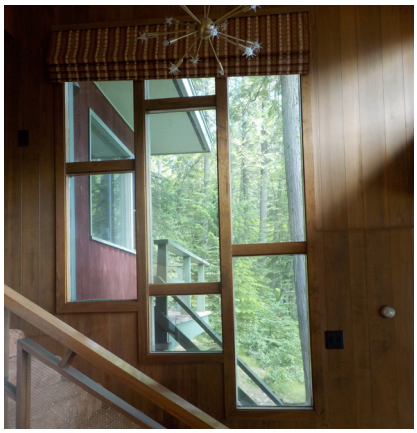


Figure 1-34. Grouped Type A windows in the Living Room above stair (KC, 6/24/2019)



Figure 1-35. Type B windows on west wall of Master Bedroom (KC, 6/24/2019)

grouped together. The windows are organized in three columns, aligned at the top and staggered at the bottom (Figure 1-34).

In the Guest Bedroom, there is a type A window that is 5'-11" wide on the north wall.

Type B
Type B windows are wood, operable out-swing awning Pella windows with an arm actuator. Screens are located on the interior. Windows are painted on the exterior and have a stained finished on the interior. Type B windows are horizontally rectangular and 3'-2" wide. Two type B windows are located on the west wall of the Master Bedroom. Another two are located on the west wall of the Guest Bedroom and one on the west wall of the Bathroom. A row of four Type B clerestory windows are located on the east side of the Kitchen between the two roof levels.

Type C
On the east wall of the Guest Bedroom is a Type C window. This window type only occurs once in the building and consists of two panes: one fixed square pane and one in-swing casement. The casement pane has a screen on the exterior and is operated by an arm actuator. Type C is also a Pella window.

Type D
The Type D window is located on the east wall of the Master Bedroom. It is an out-swing casement Pella window with an arm actuator. A screen is located on the interior.

Type E
Window type E is similar to type B, but is 2'-6" wide. This window type only occurs once in the building, on the south wall of the Bathroom. Type E is an operable out-swing awning Pella window with an arm actuator.



Figure 1-36. Type C window on the east wall of the Guest Bedroom (KC, 6/24/2019)



Figure 1-37. Exterior sill of Type A window on north wall of Living Room (KC, 6/24/2019)



Figure 1-38. Type B Kitchen clerestory windows as seen from the lower roof (KC, 6/24/2019)

Condition: Good

Type A

Type A windows are in good condition, however the sealant at the exterior is in poor condition. Peeling paint is evident at the exterior.

Type B

Type B windows are generally in good condition. The two Type B windows in the Master Bedroom are difficult to operate.

The clerestory windows on the east side of the Kitchen are in fair condition with wood trim deterioration and are missing screens.

Type C, D & E

Type C, D and E windows are all in good condition with smooth operation. Peeling paint is evident on the exterior.

Architecture - Exterior Doors

Type A

Door Type A is the original 2'-11" wide solid-core wood veneer in-swing door with a stained finish. This door type only occurs once in the building, at the main entry on the west elevation. The door has two rectangular lites, which are staggered. Hardware consists of a door knob which has a key lock on the exterior and three hinges visible on the interior. There is no deadbolt or weatherstripping.

There is a fixed sidelight on the south side of the door. Door trim continues around the sidelight on both the interior and exterior.

Type B

Door Type B is the original milled aluminum sliding glass door with a milled aluminum track. This door type leads out to the deck from the north side of the Living Room and on the east wall of the Master Bedroom. Both



Figure 1-39. Type A door at main entry, exterior side (KC, 6/24/2019)



Figure 1-40. Type B door seen from north deck, looking south (KC, 6/24/2019)



Figure 1-41. Type C door at basement entry, exterior side (KC, 6/24/2019)

the operable and fixed leaf consist of one insulated glass pane. The operable panel sits within a track and has felt weatherstripping. Rubber-bumpered aluminum stops are set within the track. A lucite handle and latch is mounted to the operable leaf. There is no screen.

Type C

Door Type C is the original 2'-8" wide exterior solid core wood in-swing door. This door type only occurs once in the building, on the east side of the Sitting Room leading out to grade level below the deck. The door has a half lite, which has been covered on the exterior side by a wood board attached with through bolts. Door hardware consists of three hinges and a knob which locks with a key from the exterior and a button on the interior. On the exterior side of the door is an aluminum screen/storm door with a sliding screen panel. The doors are have a metal threshold and rubber gasket weatherstrip.

Type D

Door Type D is original and constructed of wood board and batten siding planks. It is located at the south end of the south Storage Room. A metal latch and wood handle are visible on the exterior. On the interior, there are three metal hinges and a metal handle. There is no latch or lock on the interior. The exterior of the door, including hardware, is painted the same grey as the surrounding siding. The interior, however, is unpainted. On the interior side, a top and bottom rail and a diagonal wood brace hold the board and battens together. Door type D has no weatherstripping.

Condition: Good to Fair

Type A

Door type A is in good condition. Note that



Figure 1-42. Type D door, exterior side (KC, 6/24/2019)



Figure 1-43. Door Type A at main entry, interior side (KC, 6/24/2019)



Figure 1-44. Screen on Type C door, exterior side (KC, 6/24/2019)

the hardware does not meet accessibility. Refer to Accessibility section.

Type B
Door Type B is generally in good condition. The sliding doors open smoothly, but the weatherstripping is in poor condition. There is a broken escutcheon on the interior side of the Living Room door.

Type C
The wood door and screen door are in fair condition. The lite on the wood door is covered by an exterior-mounted board.

Type D
The door is in fair condition, however it does not easily open and close.

Architecture - Interior Doors
All interior doors appear to be original and retain the original hardware.

Type A
Door Type A is a hollow-core wood veneer door with a stained finish. The hardware has a bronze finish and consists of two hinges and round door knobs. Trim is wood, with a stained finish that matches the door. Doors at the Linen Closet, Master Bedroom, Closet 2, Guest Bedroom, and the door to the Basement from the Kitchen are Type A doors with the typical finish and hardware. The remaining Type A doors have variations to the standard configuration as listed below.

A pair of Type A doors opens to Closet 1. Both doors have standard hinges but the knobs are cabinet pulls with a brass finish on the Hall side and there are no knobs on the Closet side of the door.

The Type A door to the Bathroom has the typical finish and hardware on the Hall side.



Figure 1-45. Interior Type A door in Master Bedroom (KC, 6/24/2019)

On the Bathroom side, the door and trim surrounding it are painted. The door knob on this side is chrome, as are two visible door hinges. There is also a brass coat hook which is assumed to not be original, as the hook is longer than the door-stopper.

A Type A door leads to the Half Bath in the Basement. Both sides of the door are painted. On the Bath side, the hinges and door knob are chrome and on the Laundry side, the door knob is copper.

Between the Laundry and Sitting Room in the basement is a Type A door. This door has the typical hardware, but is painted on both sides. The door to the Water Entry closet is also painted and has typical hardware.

Type B
Door Type B is a pair of hollow-core bypass doors with a stained wood veneer finish located at the Coat Closet and Guest Bedroom Closet. The doors are suspended by an overhead track, concealed in the wall above. Doors have recessed copper pulls and no latch.



Figure 1-46. Type B door in Guest Bedroom (KC, 6/24/2019)

Type C
Type C is a pair of wooden bi-fold doors located at the Master Bedroom Closet. Two panels of horizontal wood slats sit within each door. The doors are suspended by an overhead track, concealed in the wall above, and are not secured at the bottom. Each door has a round brass door pull.



Figure 1-47. Type C doors in Master Bedroom (KC, 6/24/2019)

Type D
Door Type D is located at the cubby off the upper floor hall. This door is made of vertical wood paneling with boards of varying widths and blends into the adjacent wall finish. The three knife hinges are partially concealed. A

round brass door pull is attached high on the door. There is no trim around door type D.

Condition: Good to Poor

Type A

All type A doors on the upper and main floors are in good condition. The three doors in the basement are in poor condition with water damage and mold on the lower half of each door.

Type B

Both sets of type B doors are in good condition.

Type C

Both sets of Type C doors are in good condition.

Type D

Door is in good condition.

Architecture - Interior Finishes

Vestibule and Hall

The Hall ceiling is finished with white 12" x 12" acoustical tiles, which continue into the Vestibule. Walls are finished with original 1960s wood paneling with the appearance of vertical boards of varying widths. The paneling has a dark wood stain finish. A wood crown trim with a mitered profile is stained the same color as the walls. In the Hall, flooring is a golden-brown cut pile carpet. The carpet ends at the Vestibule, where the floor finish is stone tiles of varying shapes and sizes. Thick grout joints separate the tiles. One large stone tile spans the width of the entry door near the threshold.

A half wall with a wide, flat cap forms the east side of the Hall with the top and sides finished in the same wood paneling as the other walls. At the ceiling, a soffit runs above the half wall,

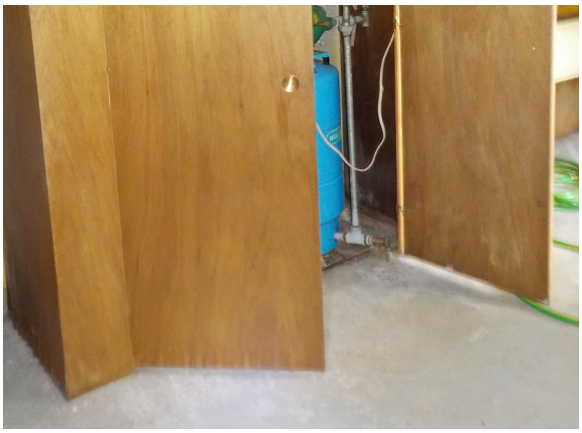


Figure 1-48. Water damage at base of Type A doors in Sitting Room (KC, 6/24/2019)



Figure 1-49. Hall as seen from Master Bedroom doorway (KC, 6/24/2019)



Figure 1-50. Half wall at top of stairs, Hall on right side of image and Kitchen on left (KC, 6/24/2019)

also finished on all sides with dark-stained wood paneling.

Coat Closet at Entry
The Coat Closet has a painted gypsum board ceiling finish. The wall finish is vertical wood paneling with a lighter stain color than elsewhere in the building. A wood shelf spans the width of the closet with a metal clothes rod below it. Flooring is the same golden-brown cut pile carpet.

Closet 2
Similar to the Coat Closet, the walls and ceiling of Closet 2 have a painted gypsum board finish and the carpet flooring continues from the Hall into the Closet. A metal clothing rod spans the width of the Closet. On the west (back) wall, is a wood access hatch for the bathtub plumbing. An electrical panel is mounted on the north side of the back wall (see Electrical section for more information).

Bathroom
The Bathroom ceiling and walls are finished with painted gypsum board, with the lower portion of the walls having a ceramic tile wainscot up to 3'-9". The body of the wainscot is 4"x4" square yellow field tile, laid in a running bond pattern with white grout joints. A row of dark tan 2"x6" tile borders the top and edges. On the three walls surrounding the bathtub, the tile extends to 6'-8" above the finish floor.

A 3" rubber wall base runs throughout the room, except in front of the bathtub. The floor is finished with yellow sheet vinyl.

On the east wall is a wood vanity cabinet, which contains the sink. The cabinet has the same light stained wood finish and door style as the Kitchen cabinetry. The chrome drawer pulls are also the same style as the Kitchen



Figure 1-51. Wall-mounted vanity in Bathroom (KC, 6/24/2019)



Figure 1-52. Shower/tub and surrounding tiles in Bathroom (KC, 6/24/2019)



Figure 1-53. Sink vanity in Bathroom (KC, 6/24/2019)

cabinet drawer pulls. A teal-blue sink is recessed in the plastic laminate countertop. A thin strip of chrome trim runs along the edge of the sink. On the west wall, a curved plastic laminate countertop is mounted to the wall on a wood support. A chrome-edged mirror is mounted to the walls above both the vanity and curved countertop. The mirrors have a chrome cabinet at the bottom, with sliding textured glass doors.

The wall-mounted toilet paper holder and towel racks all have a chrome finish.

Linen Closet

The closet has a gypsum board ceiling and vertical cedar boards on the walls. The ceiling and walls are both unpainted.

Six wood shelves span the width of the closet. Five of the shelves span the full depth and one, the top shelf, is only half as deep. Wood 2" supports are mounted to the wall on three sides beneath each shelf.

The cut pile carpet flooring from the Hall continues into the Linen Closet.

Master Bedroom

The ceiling in the Master Bedroom is finished with 12"x12" white acoustical tiles. Walls are finished with the typical vertical wood paneling, with "boards" of varying widths and has a light stained finish. Along the top of the walls, wood crown trim with a mitered profile is stained the same color as the walls. There is no wall base.

The windows, door, and closet are surrounded with wood trim, stained the same color as the walls. A curtain rod is mounted to the wall above the windows.

The bedroom floor is finished with white cut

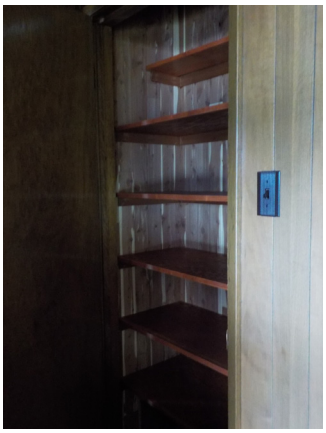


Figure 1-54. Wood shelves inside Linen Closet (KC, 6/24/2019)



Figure 1-55. Sliding Doors on East wall of Master Bedroom (KC, 6/24/2019)



Figure 1-56. Two windows on the west wall of the Master Bedroom (KC, 6/24/2019)

pile carpeting, which extends into the closet.

The master bedroom closet walls have a vertical cedar board finish, all of equal width and no paint or stain. The ceiling is finished with painted gypsum board.

A wood shelf runs the width of the closet, with a metal rod spanning beneath it. Metal coat hooks are mounted to the wood shelf supports.

On the north (back) wall of the closet there is an opening to a storage cubby above the basement stair, about 3 feet above the finish floor. The cubby has a hinged door with the same door pull as the closet doors. The cubby is finished with unpainted plywood walls and an unpainted gypsum board ceiling.



Figure 1-57. Wood shelf, metal rod, and cubby inside Master Bedroom Closet (KC, 6/24/2019)

<u>Closet 2</u>
The closet has a gypsum board ceiling and vertical cedar boards on the walls. The ceiling and walls are both unpainted.

A wood shelf with angled 2”x supports spans the width of the closet. A metal rod spans beneath the shelf.



Figure 1-58. Shelves inside Closet 2 (KC, 6/24/2019)

Another wood shelf is located near the bottom of the closet. The space beneath the shelf is boxed in with the same cedar boards as the closet walls.

<u>Cubby 1</u>
All surfaces in the Cubby 1, located above the basement stair, are unfinished. The ceiling is finished with unpainted gypsum board and the floor surface is wood boards. Walls are exposed wood framing and the backside of surrounding wall finishes.

<u>Guest Bedroom</u>
The ceiling is finished with 12”x12” white

acoustic ceiling tiles. A metal plant hook is mounted to the ceiling near the center of the room.

Walls are finished with typical vertical wood paneling with "boards" of varying widths. The paneling is a light wood color, similar to the inside of the entryway closet. Along the top of the walls, a wood cap piece with a mitered profile is stained the same color as the walls. There is no trim at the base of the walls.

Flooring is a cut pile golden-brown carpeting, which is continuous from the Hall.

The closet in the Guest Bedroom is finished with painted gypsum board on the ceiling and vertical cedar boards on the walls. The cut pile golden-brown carpet continues into the closet. A wood shelf and metal rod span the width of the closet.

Main Stair

Seven treads connect the Upper and Main Levels. The cut pile carpeting of the Hall continues down the stairs, wrapping over the treads and risers. The north wall adjacent to the stairs is finished with vertical wood paneling with "boards" of varying widths. A partially open railing on the south side is wrapped in vertical wood paneling. The railing frames a copper mesh screen layered between plexi-glass. The wood railing and surrounding walls have a stained wood finish.

Living Room

The Living Room is bordered to the north, east, and south by large picture windows and the exterior deck. To the west, the Living Room is partially separated from the Kitchen by a stone fireplace and wall.

The north, east, and south walls are finished with vertical wood paneling with "boards"



Figure 1-59. Window and curtains on north wall of Guest Bedroom (KC, 6/24/2019)



Figure 1-60. Facing north at foot of stairs (KC, 6/24/2019)



Figure 1-61. Decorative stair railing with copper mesh panels (KC, 6/24/2019)

of varying widths. The paneling is finished with a dark wood stain. Along the north and east walls, the windows are divided by large structural wood beams. All of the windows in the Living Room have wood trim and sills, stained to match the walls.

The fireplace and connecting stone wall are finished with a light brown cut stone in an ashlar pattern which also contains an extension through the roof. Between the stone, mortar joints are light grey. Vents above and next to the fireplace opening have fixed stone louvers. Above the fireplace, two stone shelves extend out. On the wall west of the fireplace, another two stone shelves extend out. The spark screen and fireplace surround are brass.

A floating hearth below the fireplace opening and the heart on the floor below are tiled with large stones in a range of shapes and sizes. This finish is similar to the entry vestibule flooring. The stone tiles are darker than the other fireplace stones and arranged in a rubble pattern.

Three dropped beams run north-south across the Living Room ceiling and are finished in the same wood paneling as the walls. Above each beam, 6" wide tongue and groove wood boards run east-west. These boards have a light or clear finish, which allows the wood grain to show.

Along the top of the walls, a wood cap piece with a mitered profile is stained the same color as the walls. The cap piece also runs along the top of each dropped beam where it meets the ceiling. There is no trim at the base of the walls.

With the exception of a small tiled area at the



Figure 1-62. Southeast corner of Living Room (KC, 6/24/2019)



Figure 1-63. Fireplace in southwest corner of Living Room (KC, 6/24/2019)



Figure 1-64. Looking northwest from Kitchen to Entry Vestibule above (KC, 6/24/2019)

fireplace, the cut pile golden-brown carpet flooring runs throughout the room.

Kitchen

The Upper Level ceiling height extends over the Kitchen before it drops down above the Living Room. In the Kitchen, the ceiling is finished with heavily-textured painted gypsum board. Upper walls above the cabinets are finished with the same vertical wood paneling as found elsewhere.

To the east, the Kitchen is partially separated from the Living Room by a stone wall. This wall is connected to and constructed of the same materials as the chimney and fireplace. The light brown cut stone is arranged in an ashlar pattern with light grey mortared joints. On the Kitchen side, the stone wall extends to 6'-2" above the finish floor. An oven is built into the stone wall. Just south of the oven, there is a niche in the wall with high-temperature brick wall finish and a laminated countertop. Below this niche is a small built-in cabinet with two flat-faced wood doors with round copper pulls.

Upper and lower cabinets with laminate countertops line the south and west walls of the Kitchen. All cabinets have a light stained wood finish and copper hardware. Cabinet and drawer faces are flush, with no frame visible and partially-visible knife hinges. Cabinets and drawers are painted pink on the inside. Door pulls are round and drawer pulls are rectangular. A strip of rubber base trim runs below the Kitchen cabinets.

Countertops are finished with a speckled white laminate. A backsplash of 4"x4" copper tiles with no grout runs from the countertop to the bottom of the upper cabinets.

At the center of the west wall, a stainless



Figure 1-65. East wall of Kitchen with built-in oven (KC, 6/24/2019)



Figure 1-66. North and west walls of Kitchen (KC, 6/24/2019)



Figure 1-67. Copper backsplash and laminate counter-tops surrounding stove (KC, 6/24/2019)

steel sink is recessed into the countertop. Directly north of the sink is an under-counter dishwasher with chrome trim and a faux-wood veneer face. At the north end of the west wall, next to the stairs, is a refrigerator with the upper cabinets wrapping over. The refrigerator appears to be a more recent appliance.

At the center of the south wall, a metal-faced stovetop is mounted flush into the countertop. A chrome box with push-button controls between the stovetop and the backsplash operates the stove. Above the stove, a copper Nutone exhaust hood is mounted to the wall, between upper cabinets.

At the far south end of the Kitchen is a built-in music console and door to the basement stair. The wall around the music console is finished in dark-stained vertical "wood" paneling. The basement door and surrounding trim are stained the same color. Above the music console, a corded rotary telephone is mounted to the wall.

The music console contains an AM radio and 8-track player mounted flush into the wall. Next to the 8-track player is a small cupboard with a wood door for storing tapes. The player and radio are surrounded by chrome and wood trim. Below, a two door cupboard holds a record player. The interior of the cupboard is painted red. Both doors have copper door pulls.

The Kitchen floor is finished with white speckled sheet vinyl. A metal transition strip between the vinyl flooring and the Living Room carpet runs in a serpentine line from the bottom of the stairs to the northwest corner of the stone wall.



Figure 1-68. Cabinetry around Kitchen sink (KC, 6/24/2019)



Figure 1-69. Built-in music console at south end of Kitchen (KC, 6/24/2019)



Figure 1-70. Door opening to Basement Stair in Kitchen (KC, 6/24/2019)

Stair to Basement
The stair between the Basement and Main Level has painted gypsum board on the walls and ceiling. A chrome towel bar is mounted to the south wall.

The treads and risers of the stairs are finished with white sheet vinyl flooring, with a different pattern than in the Kitchen. Each tread has a metal nosing strip.

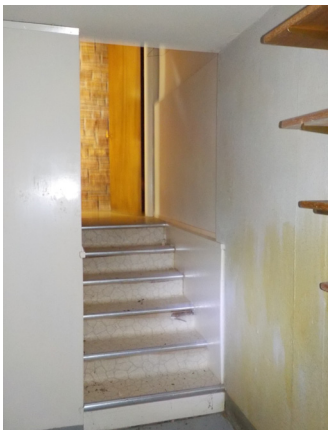


Figure 1-71. Facing east at foot of Basement Stair (KC, 6/24/2019)

Laundry
The Laundry ceiling is finished with painted gypsum board. Exterior walls are concrete with a painted finish. Hooks ups for the washer and dryer are located on the west wall. The walls enclosing the Half Bath, in the northwest corner of this space, have a painted gypsum board finish with. 2" wood wall base.

The east wall is finished with painted "wood" paneling applied over the concrete wall. A small piece of crown trim runs where the wood paneling meets the ceiling. At the base of the wall, concrete is visible. Wood shelves are mounted on the south wall with metal hardware.

The concrete floor is painted.



Figure 1-72. Northeast corner of Laundry (KC, 6/24/2019)

Half Bath
The walls and ceiling are finished with painted gypsum board. Along the west wall, a soffit drops down from the ceiling. Wood shelves are mounted on metal tracks on the north side of the room, above the toilet. A white sink is mounted to the north wall. Above the sink, the chrome medicine cabinet has mirrored sliding doors. The concrete floor is painted.

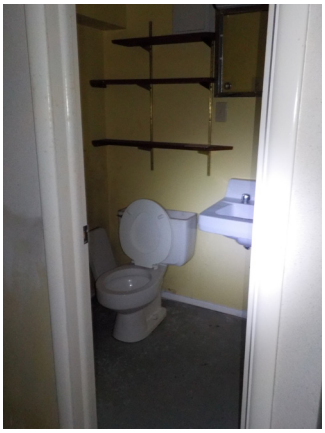


Figure 1-73. Looking into Half Bath from Laundry (KC, 6/24/2019)

Sitting Room
The ceiling is finished with painted gypsum board and the concrete walls are painted. Along the north and west walls, "wood"

paneling with angled wood soffits covers the concrete wall.

In some places, a strip of 2" wood trim runs along the base of the wall. On the west wall, wood shelves are mounted to the wood-paneled wall. In the northwest corner, a built in wood table and upholstered seatbacks remain where built in seating is assumed to have been. The seatbacks fold up on hinges to reveal hidden cabinetry behind them.

Along the south wall are doors to the Laundry, a shower stall, and the water entry closet - listed east to west. The wall is finished with painted gypsum board.

The shower is enclosed with a chrome and glass door. The stall is tiled from floor to ceiling in the same tiles used in the Upper Level Bathroom. On all three walls of the shower, a 4"x4" square yellow field tile is laid in a running bond pattern with white grout joints. Two rows of dark tan 2"x6" tile run along the doorway. Below the glass door, the step into the shower is also finished with tile. The shower pan has a terrazzo finish. The painted gypsum board ceiling of the Sitting Room extends into the stall above the shower.

On the east wall, a wood door leads outside. Further down the wall, near the door to the Laundry, are two cabinet doors leading to unfinished storage spaces. The doors are flush with the wall finish and painted white. Each door has a round copper pull.

The north storage space is located beneath the stairs which connect the Upper and Main Levels. Inside the storage space, the underside of the stair framing is unfinished. Plywood has been laid on the floor and wood shelves run along the north and south walls.



Figure 1-74. West and north walls of Sitting Room with built in furniture (KC, 6/24/2019)



Figure 1-75. Southwest corner of Sitting Room (KC, 6/24/2019)



Figure 1-76. Drain in center of Sitting Room floor (KC, 6/24/2019)

The south storage space is located beneath the Kitchen. The walls and floor are unpainted concrete. Exposed floor framing, plumbing and electrical wiring is visible above.

The Sitting Room has an unpainted concrete floor with a drain in the center of the space.

Mechanical Closet
Walls finished with vertical wood paneling with "boards" of varying widths enclose the mechanical closet and two full height, cabinet doors provide access to it. The hinges and copper door pulls are similar to those seen in the Kitchen. Flooring is unpainted concrete.

Water Entry Closet
The Water Entry Closet is an unfinished space, with wood framing and the backside of gypsum board finish exposed. Wood shelving with wood supports runs along the west wall behind the vertical plumbing pipes. Flooring is concrete.

Storage Room
On the south end of the Basement Level is a large storage room, which can only be accessed from the exterior.

The north wall of the room has an unpainted concrete finish with plywood panels covering several areas. The west, south, and east wall finish is the interior side of the exterior board and batten siding. The board and batten is not painted on the interior side. The ceiling is finished with unpainted plywood.

The floor is split into multiple levels. Horizontal logs with chinking act as risers between each level. Wood stumps have been placed in the room to act as steps between each level. Flooring consists of unpainted wood planks set on dirt.



Figure 1-77. Underside of stair framing, as seen in north storage space (KC, 6/24/2019)



Figure 1-78. Pipes and shelving in Water Entry Closet (KC, 6/24/2019)



Figure 1-79. Multiple floor levels inside the Storage Room (KC, 6/24/2019)

Exposed wiring runs along the walls and ceiling. Along the north wall, a shelf made from a log runs half the length of the wall.

Condition: Fair
Interior finishes are generally in fair condition with some wear and damage due to use and time. A few areas have water damage - Closet 1 on the Upper Level which appears to related to a previous or current roof leak and the lower portion of the walls in the Basement which appear to be related to a water event at some point. The source of water in the Basement is unknown and additional research should be done to determine if this is related to water coming through the exterior walls or if it was a plumbing issue.

Vestibule / Hall
The Vestibule and Hall are generally in good condition. Ceiling and wall finishes are in good condition. The carpet appears to be in fair condition, but it likely contains years of accumulated dirt and debris. Stone tile is in good condition.

Coat Closet at Entry
The Coat Closet is in generally good condition. The carpeted floor appears to be in fair condition, but it likely contains years of accumulated dirt and debris.

Closet 1 (Poor)
The walls and ceiling of Closet 1 are in poor condition. Significant black mold indicates a possible past or current roof leak. The carpeted floor appears to be in fair condition, but it likely contains years of accumulated dirt and debris and likely mold.

Bathroom
The ceiling and wall finishes are in good condition, with the exception of some tile



Figure 1-80. Interior side of Storage Room door (KC, 6/24/2019)



Figure 1-81. Water damage and mold on walls of Closet 1 (KC, 6/24/2019)



Figure 1-82. Sink vanity with missing laminate edging (KC, 6/24/2019)

on the east wall above the bathtub. In this area, some tiles are separating from the wall. This probably indicates water damage of the substrate behind the tile, likely caused by the same issue affecting Closet 1.

The rubber base trim has separated from the wall in places and is in fair condition.

Plastic laminate edging around the sink vanity countertop is missing, but is still intact on the make-up vanity.

Linen Closet
The ceiling and wall finishes are in good condition. The wood shelves and supports are also in good condition. The carpeted floor appears to be in fair condition, but it likely contains years of accumulated dirt and debris.

Master Bedroom
The Master Bedroom is generally in good condition. The carpeted floor appears to be in fair condition, but it likely contains years of accumulated dirt and debris.

The closet finishes are in good condition.

Closet 2
Closet finishes are in good condition.

Cubby 1
The ceiling is spotted with mold and small areas of water damage and is in fair to poor condition. Other finishes are in good condition.

Guest Bedroom
The Guest Bedroom and adjoining closet are in generally good condition. The carpet flooring appears to be in fair condition, but it likely contains years of accumulated dirt and debris.



Figure 1-83. Carpet flooring in Master Bedroom (KC, 6/24/2019)



Figure 1-84. Wear and tarnish at fireplace (KC, 6/24/2019)



Figure 1-85. Interior of an upper Kitchen cupboard (KC, 6/24/2019)

Main Stair
The carpet flooring appears to be in fair condition, but it likely contains years of accumulated dirt and debris. The rest of the finishes are in good condition.

Living Room
The finishes are generally in good condition. The brass spark screen at the fireplace has minor spots of tarnish. Carpeting appears to be in fair condition, but it likely contains years of accumulated dirt and debris.

Kitchen
The Kitchen is in good condition overall. Cabinet doors are in fair condition with some drawers that stick. The laminate countertop is also in fair condition and has some stained spots behind the stovetop.

Stair to Basement
Finishes at the stair to the basement are in generally good condition, with the exception of the flooring. Laminate on the stairs is in fair to poor condition as it is peeling away in places.

Laminate
The ceiling is in good condition. Exterior concrete walls are heavily stained and discolored, likely from water damage coming through the walls. These walls are in fair condition. On the east wall, the wood paneling is in fair condition.

Half Bath
Wall finish is in fair to poor condition, with mold growing mostly on the west wall. The flooring has several chips in the paint and is in fair condition.

Sitting Room
The gypsum board ceiling is in fair to poor



Figure 1-86. West wall of Laundry with appliance hook-ups (KC, 6/24/2019)



Figure 1-87. Water damaged walls in Laundry (KC, 6/24/2019)



Figure 1-88. Ceiling damage above shower in Sitting Room (KC, 6/24/2019)

condition. At the south end, the ceiling is beginning to collapse. At the north end, there are holes and staining in the finish.

Walls are in poor condition with staining and water damage along the lower half. Mold is growing on the wall in some places and on the wood base trim.

In the shower, the tile wall finish and terrazzo flooring are in good condition. The ceiling above, however, is in poor condition with visible mold.

The painted concrete floor is in fair condition with cracks in the concrete and chips in the paint. Paint has chipped off the floor drain at the center of the room and it is now heavily rusted.

The cabinet doors on the east wall, leading to the storage spaces, are in good to fair condition. The paint on these doors is chipped and worn. Finishes within the storage spaces appear to be in good condition.



Figure 1-89. Water damaged built-in furniture in Sitting Room (KC, 6/24/2019)



Figure 1-90. Floor of Water Entry Closet (KC, 6/24/2019)

Mechanical Closet
Finishes are in poor condition with water damaged on the lower portions of the wood paneling and wood doors.

Water Entry Closet
Finishes are in poor condition. Mold is visible along the base of the walls and the door has water damage.

Storage Room
The finishes are generally in good condition. Chinking between the logs is in fair condition and is missing at the lowest level and covered by wood strips at the upper levels.

Architecture - Code/Life Safety Issues
As a National Park Service building, any

proposed rehabilitation is governed by the 2018 International Building Code (IBC) and its related family of codes. Currently the building is not in use, however park direction currently indicates it be returned to the original residential use after rehabilitation work is completed. Residents would potentially be artists in residence or other longer term stays, versus transient use.

Area
Basement Level - 820 sf
Main Level - 550 sf
Upper Level - 620 sf

Use and Occupancy Classification
Residential Group R-3 - which includes buildings where residents are not transitory and the building does not contain two or more dwelling units.

Construction Type
Buildings and structures are classified as one of the five construction types in the IBC. The construction type defines the fire resistance rating of the building structure, exterior walls and interior walls.

The existing type of construction is VB non-sprinklered. Per section 602.5 "Type V construction is that type of construction in which the structural elements, exterior walls and interior walls are any material permitted by this code."

Existing Building Code
The International Existing Building Code (IEBC), applies to the repair, alteration, change of occupancy, addition to and relocation of existing buildings. Within this code, work is categorized into Alteration Levels 1, 2 and 3 depending on the amount of work within the building. Additional categories include Change of Occupancy, Additions, Historic Buildings and Relocated Buildings. Requirements of the code are limited to work areas of the project. This means Alteration projects are not required to upgrade the entire building to current code, just elements that are within the project work area. Change of Use projects trigger more thorough upgrades and the building must be brought up to current code requirements for new use. Alteration Levels 1- 3 allow for portions of the building not within the construction work area to be retained in their existing condition, with the exception of life safety issues.

Means of Egress
IBC section 1004 establishes design occupant load based on the number of occupants determined by the function(s) of the space. Per Table 1004.1.2, Residential buildings have an occupant load factor of 200 gross. Based on the square footage, the Basement has an occupant load of 3 people, the Main Level has an occupant load of 2 people and the Upper Level has an occupant load of 3 people.

Bedrooms are required to have a door to the exterior or an operable window with a net clear opening of 5.7 square feet with the sill no higher than 44 inches above the floor and a minimum opening width of 20 inches and height of 24 inches.

Per IBC section 1011, stairs risers are required to be solid and shall be 7" maximum and 4" minimum. Rectangular treads shall be a minimum of 11". Per 1011.5.2 exception 2, in Group R-3 occupancies the maximum riser height is 7.75" and the minimum tread depth is 10". Section 1011.6 requires a floor or landing at the top and bottom of each stairway. The stair from the basement to the main level has 7.15" risers and 10" treads and the stair from the main to the upper level

has 7.5" risers and 11.75" treads which are compliant.

Per IBC section 1014, handrails shall not be less than 34" or more than 38" above the stair nosing and shall have an outside diameter of not less than 1.25" or greater than 2". Within residences, a compliant handrail is only required on one side of the stair. Group R-3 occupancies allow for some exceptions to shape and size of the handrail, within established parameters to provide equivalent graspability. Handrails are required to return to the wall, guard or walking surface. Section 1014.6 Handrail Extensions exception 1 allows handrails within a dwelling unit which is not accessible to only extend from the top to the bottom riser. None of the stairs, interior or exterior, have compliant handrails.

Per IBC section 1015, guards are required at open sided walking spaces which are located more than 30" above the floor or grade below and in R-3 occupancies shall not be less than 36" high. This applies to screened and open decks. Guards shall not have an opening that allows the passage of a 4" diameter sphere within the required guard height. Guards at the edge of the exterior deck are only 30" high and have about 13" openings between elements which are not in compliance with these requirements.

Change of Use
The building originally functioned as a residence. A change of use is not currently anticipated, however if the use is changed in the future, the entire building will need to be brought up to any code requirements triggered by that change.

Condition: Fair
This building qualifies for IEBC exceptions for historic structures since it has been determined eligible for the National Register within Apgar's Glacier Park Cottage Sites Historic District in Glacier National Park. IEBC "Chapter 12 Historic Buildings" exceptions should be utilized where possible to retain historically significant design elements and fabric. Based on currently anticipated work on the Main House it will likely qualify for review under "Chapter 7 Alterations - Level 1". Level 1 Alterations include "replacement or covering of existing materials, elements, equipment or fixtures using new materials for the same purpose. This chapter, similar to other chapters of this code, covers all building-related subjects, such as structural, mechanical, plumbing, electrical and accessibility as well as the fire and life safety issues when the alterations are classified as Level 1. The purpose of this chapter is to provide detailed requirements and provisions to identify the required improvements in the existing building elements, building spaces and building structural system." If more significant work on the building is undertaken, it may require code analysis under Alterations - Level 2 which applied to projects which impact up to 50% of the building.

Typically, occupied NPS buildings are required to have a fire suppression system. Additionally, NPS Director's Order 58 section 9.1.8 requires consideration for fire suppression of structures to "prevent loss of human life and minimize damage to historic property resources." See Mechanical section for additional information on fire suppression.

The Master Bedroom has a door to the exterior so it is in compliance with code. The Guest Bedroom does not have a door to the exterior or an operable windows that meets the code requirements and this is a life safety

issue if the room is to serve as a bedroom.

With allowed exceptions for Group R-3, the interior stairs have risers and treads that are code compliant. Neither stair has a compliant handrail. The handrail/guardrail at the main stair is a significant contributor to the building character so any modifications at this location will need to be done sensitively. Consideration should be given to installing a handrail one the opposite wall instead of modifying the guardrail.

Guardrails and handrails at the exterior deck are not code compliant, the guardrail is too low and the openings between members composing the guard are significantly larger than 4" apart. However, the battered vertical elements and minimal horizontal rail designed to not obstruct the view contribute to the building character. Work is required on the guardrail to replace deteriorated wood elements. IEBC Section 704 allows for alterations to be done in a manner that maintains the level of protection provided for the means of egress, so the current configuration can be retained. However, the top rail and post connections should be redesigned to resist a 200 pound point load in any direction regardless of architectural dimensions or configuration since this can be done without impacting the appearance of the railing.

Architecture - Accessibility
As a building governed by the Architectural Barriers Act (ABA), ANSI A117.1 2009 is the guiding document for accessibility. Section 4.1.7 of the ABA requires that a historic building provide one universal access point to the building entrance, universal access routes from the entrance to the public spaces on the level of the main entry and a universal access restroom. However, if this is one of many residential units that can be rented, not all units must comply with accessibility standards. If accessibility requirements are met in other park provided residential units to the proper ratio, then this building would not need to be upgraded.

Condition: Poor
The current configuration does not meet accessibility standards due to the lack of a universal access entry, various narrow door widths that do not provide the 32" clear space, multiple floor levels, floor level transitions which exceed 1/2" and the inaccessible restroom which does not provide proper turn around space or accessible clearances at fixtures. Additionally, neither interior door hardware nor plumbing fixtures in the bathroom or Kitchen meet universal access requirements. However, it is currently anticipated that the Guest Cabin would be modified to provide accessible housing which would allow the Main House to remain as is.

Existing Conditions & Condition Assessment - Structural

Structural - General System Description

The Moberly Main House is a modern 1960's split-level tee-shaped structure measuring approximately 52'-0" by 40'-0" overall in plan. The split-level roofs are flat with uniform width eaves. The split-level floors are flanked by cantilevered open-decks, predominantly located at the east lake side. The walls and floors/roofs are framed with modern 2x stick-framing or glued-laminated timber and supported on modern concrete foundations. The NPS has approved proceeding with the residential use only option for the Moberly treatment recommendations.

Structural - Foundation

Since the grade of the site slopes down from west to east, there are several foundation conditions across the Main House. At the west side at the primary basement, the floor structure is supported on 8" concrete basement walls, with the westernmost wall being fully buried. At the west side of the south basement area, the post and beam construction is supported on partial height concrete stem walls. At the east side at the open full story "crawlspace", the three glued-laminated timber floor girders each bear on full height, 4'-0" tall battered concrete wall piers, tapered from 10" thick at the top, down to 16" thick at grade.

Condition: Good

Although it is unknown if footings bear below frost depth, footings are likely not unacceptably shallow since there are no signs of structural distress such as excessive differential movement or cracking. Additionally, it is unknown if the concrete foundations are reinforced to modern standards, though reinforcing is likely



Figure 1-91. Northeast corner of the Main House (JSS, 06/27/2019)



Figure 1-92. Sloping grade seen on the south elevation of the Main House (JSS, 06/27/2019)



Figure 1-93. Concrete stem wall foundation as seen from the crawlspace (JSS, 06/27/2019)

acceptable since there are no signs of distress.

The floors have small differential settlement which is to be expected for a structure built on a hillside and is not of structural concern. At the west side at the south floor, the differential settlement is up to one inch at the southeast corner. At the east side floor, the differential settlement is up to one half inch at the east exterior wall. No treatments are required.

Structural - Floor & Deck Framing
The upper and lower floors of the Main House are framed with 2x10 joists spaced at 16" on center with a maximum span of 12'-0" in the east-west direction at the upper floor and in the north-south direction at the lower floor. The joists are ripped down to 8-½" depth at the cantilevered decks. Floor sheathing consists of 1x10 diagonal sheathing at the interior. Deck flooring/sheathing consists of 2x6 straight open decking at the exterior. The lower floor joists span to 7" x 18" glued laminated timbers spaced at 11'-0" on center with a maximum span of 15'-0" in the east-west direction and cantilevered 5'-6" for the deck on the east side.

The floor at the south end of the west side differs from the remaining floors, consisting of typical 2x10 joists that frame over dropped 6x girders that rely on post and beam construction, which implies that this basement area may not have originally been enclosed. Further indication of this possibility is that the basement room at this area is not connected to the remaining basement.

Condition: Good to Poor
The interior floor joists and girders are adequately sized for residential live loads and are in good condition with no signs



Figure 1-94. Battered concrete pier foundations along the front elevation of the Main House (JSS, 06/27/2019)



Figure 1-95. Deck joists and decking (JSS, 06/27/2019)



Figure 1-96. Deck joists bearing on glued laminated beam supported on battered concrete pier. Note: end of glued laminated beam is not deflecting downward, rather it is only an optical illusion in this image (JSS, 06/27/2019)

of structural distress such as excessive deflections.

Although the exterior cantilevered deck joists are adequately sized for residential deck live loads, the lumber is untreated and is in fair to poor condition with variable degrees of decay. Many decking boards are also in poor condition due to variable degrees of decay. All deck guardrails are in poor condition with advanced decay and the original design is inadequate for code loads.

Although the glued laminated timbers are in good condition at the interior floor area, the exposed timber ends are protected only by paint, which has failed and peeled. The ends of these members exhibit advanced decay through the end grain for the exterior-most few inches. The timber tops likely have decay below the joist and blocking bearing at the decks.

Structural - Roof Framing

The flat high roof of the Main House is framed with 2x10 rafters spaced at 16" on center that are taper-cut down to 7-½" at the 3'-0" wide eaves. The rafters span in the east-west direction with a maximum span of 15'-0". Although not readily accessible, it is assumed that the sheathing consists of either diagonal 1x similar to the floors, or plywood. There is no separate ceiling framing system with the ceiling finish applied directly to the bottom of rafters.

The flat low roof of the Main House is framed with 5-1/4" x 14-5/8" glued laminated timbers spaced at approximately 6'-0" on center. The maximum span of the timbers is 22'-0" in the north-south direction and they are cantilevered at the 4'-0" wide eaves. Although not readily accessible, based upon approximate assembly depth of 5-½", the



Figure 1-97. Deteriorating deck joists and decking from underside (JSS, 06/27/2019)



Figure 1-98. Deteriorating deck joists and decking from underside. Note the moss growth, an indication of high moisture levels (JSS, 06/27/2019)



Figure 1-99. Deteriorating wood elements of the deck guard rail. Note the peeling paint (JSS, 06/27/2019)



Figure 1-100. Separation of guardrail members (JSS, 06/27/2019)



Figure 1-101. Deteriorating exterior end of a glued laminated timber beam (JSS, 06/27/2019)



Figure 1-102. End of exterior glued laminated timber beam is so deteriorated that an awl can be pushed into the member (JSS, 06/27/2019)

roof and sheathing assembly is assumed to consist of roofing directly applied to 4x6 tongue and groove straight decking, without plywood or diagonal 1x. The decking is visible from below, with no separate ceiling framing system.

Condition: Good to Poor
Although there are no signs of structural distress such as excessive deflections and the roof framing is adequately sized for the snow loads associated with the site at both roofs, decay is likely an issue even where not readily visible. The roofing at the high roof is in poor condition and the structural sheathing below likely has areas of decay, and damage may extend into the framing. Eave fascia decay is widespread and advanced.

The roofing at the low roof is in poor condition and the tongue and groove decking has visible decay at the underside within two feet of the east edge of eave. The decking likely has areas of decay at the top side where it appears intact from below. Eave fascia decay is widespread and advanced.

Structural - Wall Framing
The exterior walls of the Main House are composed of 1x10 vertical shiplap siding over plywood sheathing on 2x4 or 2x6 studs. Sheathing was confirmed to be plywood in only one location at the east deck, and may consist of diagonal 1x at other locations similar to the floor, as was typical for this era of construction. Stud sizes are assumed from measuring wall assembly depths and are variable.

The interior bearing wall consists of a pony wall with 2x6 studs spaced at 16" on center.

At the split level step in roof, the central chimney appears to be constructed of



Figure 1-103. Glued laminated timber beams on the interior of the low-roof space (JSS, 06/27/2019)



Figure 1-104. Exterior end of glued laminated timber beam on the exterior of the low-roof space (JSS, 06/27/2019)



Figure 1-105. Deteriorating decking on the underside of an exterior eave (JSS, 06/27/2019)

concrete below the stone cladding and is part of the vertical load system.

Condition: Good
The walls of the Main House are generally in good condition with no visible signs of structural distress.

The stone clad concrete chimney is in good condition with no visible signs of structural distress within the building envelope where used as a structural element. The chimney is in fair condition above the roof level, refer to the Architectural section.



Figure 1-106. Stone-clad concrete chimney (JSS, 06/27/2019)

Structural - Lateral System
The lateral force resisting system of the Main House consists of the horizontal roof and floor diaphragms provided by the sheathing, and the vertical shear walls consisting of the exterior wood stud walls sheathed with plywood.

Condition: Good to Fair
The lateral force resisting system generally appears to be appropriately proportioned and constructed with no visible indications of load connection or load path issues. The low roof relies upon open front diaphragm rotation for stability since the east elevation consists completely of window wall. Diaphragms that consist entirely of straight tongue and groove decking without plywood reinforcement are weak for lateral loading and are particularly flexible for torsional rotation. Although there are no visible signs of lateral movement, the low roof diaphragm is inadequate for lateral loads. Also, there were no evidence of positive connections tying the roof diaphragm to the shear walls.

Structural - Applicable Codes & Load Requirements

The code references for this assessment include the 2018 International Building Code (IBC), the 2018 International Existing Building Code (IEBC), and ASCE 7-16 Minimum Design Loads for Buildings and Other Structures.

The load requirements for the Moberly Main House are based on the type of occupancy and geographical location of the building. The required floor live load capacity per ASCE 7-16 for residential use is 40 pounds per square foot (psf). Code requires that all decks have enough capacity to meet the demand of the snow load associated with the site or one and a half times the residential use live load. The building use classifies the structure as Risk Category II for standard occupancy.

The ground snow load required for the site per the Montana Ground Snow Load Finder is 100 psf. The Montana Ground Snow Load Finder is maintained by the Civil Engineering Department at Montana State University and was developed using snow data gathered from specific stations around the state. This ground snow load translates to a flat roof snow load on the structure of 84 psf per ASCE 7-16 when wind exposure and thermal conditions are considered.

The basic design wind speed of the site per ASCE 7-16 Figure 26.5-1B is 106 miles per hour (mph).

The site falls within Seismic Design Category D. The Seismic Design Category is a classification given to a structure that is based on the Risk Category of the building and the severity of the design earthquake ground motion at the site. The earthquake ground motion properties of the site are catalogued by the United States Geological Survey (USGS). The two mapped acceleration parameters for the site per the USGS are short period (Ss = 0.537 g) and 1 second period (S1 = 0.168 g). Without site specific soil testing, site soil conditions are assumed to comply with Site Class D resulting in a Seismic Design Category for the Main House of D. Since the flat roof snow load is greater than 30 psf, 20% of the snow load must be added into the seismic weight of the structure.

Douglas Fir-Larch design values were used to evaluate the load capacity of the structural members.

Condition: Good

All framing is adequately sized for the approved residential use only option. Although there does not appear to be a designed lateral system, the proportions and layout of the building's geometry and the construction methods are appropriate for the site location. All treatment recommendations primarily target decay repair rather than code deficiency issues.

Existing Conditions & Condition Assessment - Mechanical

Mechanical - General System Description

The building was used previously as a residence, and the mechanical systems are residential-type systems. The heating system consists of electric baseboard heaters throughout the building. In the basement, there is a Sitting Room with three electric baseboard sections along the east wall. There is a 48" long section along the wall, and then the wall offsets back, and a 9" section exists that houses the thermostat followed by two 24" sections of baseboard heat. The Half Bath has a 24" section of baseboard, and the Laundry area has a 72" section of baseboard heat.

There is a wall-mounted exhaust fan in the Half Bath that is ducted through the Water Entry Room and to the outside via a flexible 4" round duct. The exhaust duct discharges to a rain hood on the outside.

There is a ducted opening at the ceiling level in the Laundry that is for a clothes dryer. There is no clothes dryer installed today, and ducting that would be routed down to the height of the clothes dryer was lying on the floor. The duct for the clothes dryer routes up then out through the exterior of the building to an opening protected by a rain hood on the south side just above grade.

On the Main Level is a large Living Room with a fireplace in the southwest corner. There is a vent low on the fireplace wall that is 17" x 9" and another vent 36" x 7-1/2" above the fireplace. These vents promote the movement of cooler air from the bottom over the firebox and out the top vent.

The electric baseboard heaters wrap the



Figure 1-107. Half Bath electric baseboard. (DMD, 6/27/2019)



Figure 1-108. Flexible white exhaust duct from bathroom fan. (DMD, 6/27/2019)



Figure 1-109. Dryer venting on floor. (DMD, 6/27/2019)

entire south, east, and north walls and are integrated with electrical outlets within the baseboard housing. Along the south wall there are two 36" long sections and one 24" long section of baseboard and two electrical outlet sections. Along the east wall, there are eight sections of 24" long baseboard with three electrical outlet sections. Along the north wall, there are two 36" long sections and one 24" long section of baseboard heat and one electrical outlet section. On the north wall is a thermostat that controls all the baseboard within the Living Room.

The Kitchen is on the Main Level and has an electric range with a ducted range hood. The range hood is ducted via a 10" x 3-1/2" metal duct out the roof and terminates with a gooseneck fitting. There is also a glazed brick inset with a manual damper that may have functioned as a hibachi or other cooktop appliance to allow smoke and heat out of the building.

The Upper Level is the main entry point to the building and contains a 36" electric baseboard section with a thermostat section built-in at the floor level on the north wall of the Vestibule.

The Bathroom on this level is heated via a 36" section of electric baseboard heat with a built-in thermostat section along the west wall. There is an integrated wall exhaust fan on the south wall of the Bathroom. The exhaust fan discharges out to the exterior and is protected by a weather hood.

The Guest Bedroom has two 36" long sections and two electrical outlet sections on the north wall and two 36" long sections, one 24" long section and one electrical outlet section on the east wall. There is a thermostat on the wall to control all the baseboards in the room.



Figure 1-110. Dryer vent just above grade and exhaust fan weather hood for upper level bathroom. (DMD, 6/27/2019)



Figure 1-111. Fireplace and baseboard heaters in Living Room. (DMD, 6/27/2019)



Figure 1-112. Range hood. (DMD, 6/27/2019)

The Master Bedroom has four 36” long sections, one 24” long section, and two electrical outlet sections along the south wall. The thermostat that controls the baseboard heat is located on the north wall within the bedroom. In the bedroom closet, the range hood exhaust duct is routed from the hood up to the roof.

In the Storage area under the building and with exterior access only, there is a 96” long electric baseboard section with a thermostat located on the column to control the heat.

There is no mechanical cooling in the building, and outside air is introduced to the building via operable doors and windows.

Condition: Good
During the site visit, there was no power to the building limiting the ability to test the operation of the mechanical systems. The baseboard heaters were in good condition with touch-up repairs and straightening of baseboard cabinet sections needed except for the baseboard in the basement Half Bath.

The exhaust ductwork in the basement Half Bath is not an appropriate ducting material. There is no exhaust for the shower in the basement and no exhaust in the Laundry for the clothes washing/drying area.

The range hood exhaust fan should be tested and operation verified before use. The sheet metal exhaust ductwork should also be inspected for grease build-up. The sheet metal ductwork is routed through areas where there is a possibility of coming into contact with a hot surface.

The exhaust fan for the Bathroom on the Upper Level should be tested for proper operation.



Figure 1-113. Range head gooseneck on roof. (DMD, 6/27/2019)



Figure 1-114. Inset glazed brick oven. (DMD, 6/27/2019)



Figure 1-115. Vestibule baseboard with integral thermostat. (DMD, 6/27/2019)

Closet 1 has significant mold growth on the west wall that abuts the upper-level bathroom shower/tub combination fixture.

Existing Conditions & Condition Assessment - Plumbing

Plumbing- General System Description

The water source for the building is from a well. See the civil section for details on the existing well system. The main water line enters the basement on the west wall as a 1" galvanized line into an accessible cabinet. The line tees within the cabinet, and there is a gate isolation valve that allows separation from the building water lines and the water line from the well. On either side of the isolation valve is a drain down valve with a hose connection that allows the water to be drained out of the system for winter preparation. The water line then changes from galvanized to copper and is routed up into the ceiling area and to the south where it is then routed down to a well booster pump and pressurization tank in the Mechanical closet. Also within the closet, there is a 52-gallon electric water heater with a 4,500-watt heating capacity element. From here, cold and hot water lines are routed to the fixtures within the building, including in the Basement to a tank-type water closet, lavatory, and shower. On the Main Level, lines are routed to the Kitchen sink and dishwasher. And on the upper level, they are routed to a tank-type water closet, lavatory, and shower/tub combination fixture. In addition to these plumbing fixtures, there is a hose bibb on the west exterior, and on the north exterior by the basement door. The majority of the piping is copper piping with short sections of galvanized piping.

The waste line for the building exits to the west, where it is routed to a septic system.



Figure 1-116. Exhaust fan in upper level bathroom on wall. (DMD, 6/27/2019)



Figure 1-117. Exhaust duct through closet. (DMD, 6/27/2019)



Figure 1-118. Electric baseboard and thermostat in storage area. (DMD, 6/27/2019)

See the civil section for details on the existing septic system. The waste line is a 4" cast iron hub-and-spigot line with a cleanout. The Main Level and Upper Level plumbing fixtures are routed to this line via gravity. The Basement plumbing fixtures are routed to a sewage ejector pump located in the Basement. The sewage ejector pump has a heavy-duty lid, and the waste line is piped up and ties into the gravity line that starts as a 4" cast iron line and then reduces to a 3" copper line for a few feet before tying into the cast iron gravity line. The sewage ejector pump has a 4" cast iron vent line that is downsized to 1-1/2" line 42" above the floor and then ties into the existing plumbing fixture vent lines.

The basement has a large floor drain in the middle of the Sitting Room. This drain has been used as the location for draining down the water system in the wintertime. There is also a clothes washer standpipe exposed on the west wall of the Laundry Room with cold and hot water lines for connection to the clothes washer.

Condition: Fair

The main water line into the building is a 1" galvanized line, and there are other small sections of galvanized piping within the plumbing system. Although galvanized piping is considered an acceptable water distribution piping material, they are very prone to heavy interior corrosion.

The well water booster pump and tank are in fair condition and estimated to have been installed in the 1990s along with the water heater. The well pump, booster tank, and water heater are past their anticipated service life. The water heater is also not piped up with an expansion tank, which would be recommended for a water heater of this size.



Figure 1-119. Main water shut-off and drain down valves. (DMD, 6/27/2019)



Figure 1-120. Well booster pump and pressurization tank. (DMD, 6/27/2019)



Figure 1-121. Water Heater. (DMD, 6/27/2019)

The sewage ejector pump was not tested; however, it is anticipated that this pump has reached it's anticipated service life and should be replaced.

The plumbing fixtures in the Basement are in poor condition.

The clothes washer water connections are exposed lines routed down on the west wall with gate shut-off valves and did not have water hammer arrestors for quick shut-off valves that are within clothes washers causing the pipes to "shake" when the clothes washer valve opens and closes.

The Kitchen sink and garbage disposal are in fair condition; however, having the garbage disposal sitting for an extended period of time without operation leads to odor issues upon start-up.

The plumbing fixture faucets were not tested for leaking because the water to the building was not on. All the valves should be tested for proper operation.



Figure 1-122. Basement half bath fixtures. (DMD, 6/27/2019)



Figure 1-123. Kitchen sink and garbage disposal. (DMD, 6/27/2019)



Figure 1-124. Upper level fixtures. (DMD, 6/27/2019)

Existing Conditions & Condition Assessment - Fire Protection

Fire Protection - General System Description

There is no fire protection system within the building.

Condition: N/A



Figure 1-125. Upper level shower/tub. (DMD, 6/27/2019)



Figure 1-126. Backside of upper level tub. (DMD, 6/27/2019)



Figure 1-127. Main sanitary line exiting building and sewage ejector pump. (DMD, 6/27/2019)

Existing Conditions & Condition Assessment - Electrical

Electrical - Infrastructure

The existing utility infrastructure is an underground service from a 15kVA 240/120V Pad Mounted Transformer located at the top of the drive lane. The utility transformer appears to be serviced by Flathead Electric Cooperative. The transformer also appears to serve the Guest Cabin as well as adjacent private property structures. An existing 200A utility meter pedestal was observed, however currently no meter is installed. The meter appears to serve both the Guest Cabin and the Main House.

The service enters the building from a weatherhead on the roof above Closet 1 from another weatherhead on the north facing wall adjacent to window 220.

'Underground' routing of the secondary lines prior to routing up the side of the building were visible above grade, rather than buried at the required depth per NEC requirements. Grounding was not observed at the service entrance to the building.

The existing 200A load center panelboard is located within Closet 1 and shows evidence of water intrusion as mold and rust are very heavily present.

Condition: Poor

The existing system is mostly in fair condition; however, the wiring is not properly buried, and no grounding appears to be present. The serviceability of the load center is limited, and its present condition suggests poor condition of the components due to the presence of moisture (and possibly water) within the closet it is housed in.



Figure 1-128. Utility transformer. (MS 06/27/2019)



Figure 1-129. Utility meter housing. No meter. (MS 06/27/2019)

Electrical - Branch Circuits
The existing branch circuits appear to be mainly power and lighting loads, and small mechanical loads, fed via wiring routed within the walls. General wiring appears to be via residential style wiring (Romex or similar, or cloth casing) based on where wiring was visible. In the majority of the Main House it is routed within the walls. Refer to General Power Outlets and Equipment for additional information.

Condition: Poor
The existing wiring is believed to be of the building's vintage, aluminum wiring. While the wiring could not be observed, the devices suggest that no grounding is present.

Electrical - General Power Outlets and Equipment
Duplex devices were typically observed throughout, many were integral with the baseboard heaters mounted along each of the main spaces. The bedrooms were generally observed with two devices per wall and the Master Bedroom has a switched device. The Living Room had two devices on the north wall, three on the east wall, and two on the south wall.

The Kitchen was observed with devices for a refrigerator, dishwasher, microwave, garbage disposal, range and hood, as well as three above counter receptacles. The upstairs Bathroom was observed with two above counter devices, neither of which are GFI protected.

All devices and faceplates that were not integral with baseboards were observed to be almond or dark brown in color. Devices integral with baseboards or located within the storage spaces were observed to be black in color, and where faceplates were present,



Figure 1-130. Weather head above closet 1. (MS 06/27/2019)



Figure 1-131. Weather head outside window 220. (MS 06/27/2019)

stainless steel. While devices appeared to be ground-series devices, it is not anticipated that the devices are grounded.

Power was also connected below the Guest House to an existing pump.

Condition: Poor
The existing devices appear to be ungrounded, and while are in fair condition, do not appear to generally meet the requirements of the NEC for spacing or protection. Colors are inconsistent. Devices are primarily integral with baseboard heaters in most of the spaces.

Electrical - Lighting Systems
Seven fixtures were observed at the exterior of the Main House. Adjacent to the front entry, a single lamp, wall-mounted lantern-style sconce with copper finish was observed. No lamp was observed in the fixture; however, it is anticipated that one of the switches inside the entry controls this fixture. Without power to the building, operation could not be confirmed. The other fixtures observed on the exterior of the house were primarily aimable 3-head area lights and aimable accent light wall sconces. Fixtures were observed to be a medium screw-base lamps. Par-style lamps were utilized for the area lights.

At the storage and basement areas, porcelain screw-base fixtures were observed throughout, most without existing lamping, and controlled via local switches. These were also located in crawlspace areas and below the Living Room at the exterior. Fixtures were observed to be a medium screw-base lamps. The basement Half Bath has two existing fixtures, a surface mounted fixture with satin nickel finish, and a wall mounted scoop-style vanity fixture with chrome finish that appears to be somewhat integrated into the



Figure 1-133. Mold from moisture in closet with panelboard. (MS 06/27/2019)



Figure 1-132. Rust in dated panelboard. (MS 06/27/2019)

medicine cabinet. Fixtures were observed to be medium screw-base lamps.

The Living Room had no integrated lighting, however two floor lamps were observed in the space, plugged into the baseboard integrated duplex receptacles. Fixtures were observed to be a single lamping, medium screw-base lamps.

In the Kitchen, two dual-head wall-mounted area lights were observed, both with a brass finish. These fixtures were observed to be a Par-style medium screw-base lamps.

Above the stair from the Vestibule to the Living Room/Kitchen area was a 15-lamp chandelier-type pendant with a "orbital" style aesthetic, and a dark-brass finish and decorative blown glass lamp shrouds around the lamps. The lamps were candelabra-base, C7 bulb-shape lamps.

In the Vestibule, a dual-head wall-mount fixture was observed, similar to those in the Kitchen.

In the Guest Bedroom, a single surface-mounted fixture with brass finish was observed. Fixture lamping was not observed but is assumed to be similar lamping to the other fixtures - single lamping, medium screw-base.

In the Hall, two recessed, square with drop-glass downlights were observed with a brass trim. Fixture lamping was not observed but is assumed to be similar lamping to the other fixtures - single lamping, medium screw-base.

In the main Bathroom, two surface mounted fixtures and two vanity fixtures were observed. The two surface mounted fixtures were both assumed to be single



Figure 1-135. Visible wiring in crawlspace. (MS 06/27/2019)

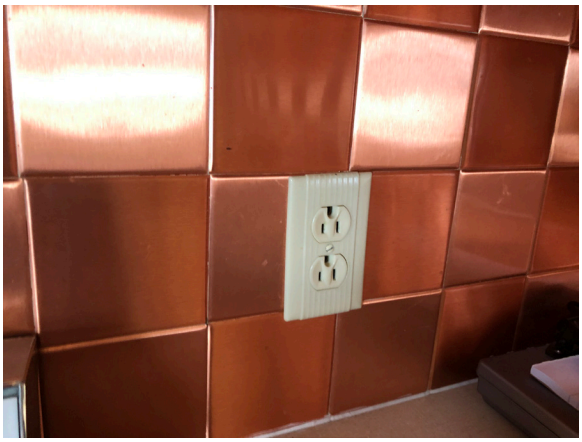


Figure 1-136. Non-GFI protected above counter device in Kitchen. (MS 06/27/2019)



Figure 1-134. Front entry sconce. (MS 06/27/2019)

lamp medium-base screw in lamping. Both of a similar aesthetic with chrome finish and a white globe, one was of a larger circumference, while the smaller circumference had a slightly taller profile. The vanity fixtures both had the same etched-glass aesthetic, however, the main vanity sconce was slightly larger.

The Master Bedroom was not observed to have any lighting fixtures, but switching appears to control a single duplex device in the southwest corner intended for lighting. All controls within the Main House were observed to utilized standard line-voltage switching.

Condition: Fair
While operation could not be verified without power, the overall condition of the fixtures appear to be in fair condition with cleaning and relamping needed.

Electrical - Speaker System
The existing head end equipment for the RCA player and stereo system is located in the closet adjacent to the basement stairs. It is connected to two speakers that are mounted to the soffit above the Kitchen.

Condition: Good
The observed physical condition would suggest it is well preserved and may be operational, however testing will be required to confirm.

Electrical - Telecommunications
A Centurylink pedestal was observed west of the property, along the main road. An existing underground phone line was observed on the south end of the building, outside of the Master Bedroom. The underground line appears to be of a recent vintage however, the connection at the building appears to be of an



Figure 1-137. Aimable wall-mounted area light at deck areas. (MS 06/27/2019)



Figure 1-138. Lighting in Storage area. (MS 06/27/2019)



Figure 1-139. Speakers above Kitchen (MS 06/27/2019)

older vintage. A small connection box and a phone appear to have been connected within the Master Bedroom.

Condition: Poor
While there appears to be an entrance into the Main House, it is not wired for telecommunications, and the service appears to need to be reestablished. Additional connections will be required to accommodate the anticipate options for use.

Electrical - Fire Alarm
No fire alarm system or residential detection/ notification devices were observed installed within the Main House. A single residential-style battery powered smoke alarm was observed loose on the floor of the Guest Bedroom.

Condition: NA
No alarm system was observed.

Electrical - Security
There is no existing system.

Condition: NA
There is no existing system.

Electrical - Lightning Protection
No lightning protection system was observed.

Condition: NA
There is no existing system.



Figure 1-140. Light in storage area. (MS 06/27/2019)



Figure 1-141. Light fixture in Basement Sitting Room. (MS 06/27/2019)



Figure 1-142. Kitchen lighting. (MS 06/27/2019)



Figure 1-143. Lighting in basement Half Bath. (MS 06/27/2019)

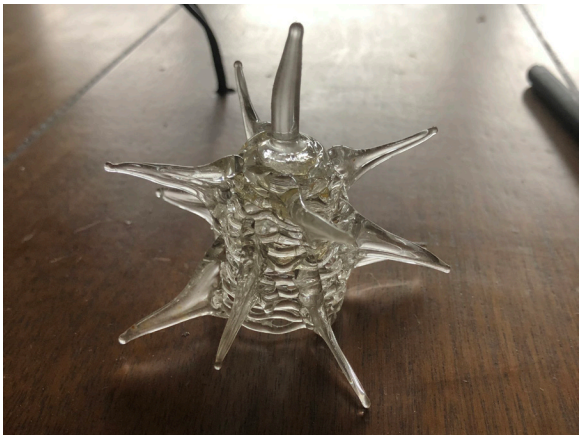


Figure 1-144. Decorative lamp shrouds for bulbs in decorative fixture. (MS 06/27/2019).



Figure 1-145. Fixture in Vestibule. (MS 06/27/2019)



Figure 1-146. Figure in Guest Bedroom. (MS 06/27/2019)



Figure 1-147. Figure in Hall. (MS 06/27/2019)



Figure 1-148. Main vanity sconce in Bathroom. (MS 06/27/2019)



Figure 1-149. Aimable multi-head area lights at exterior. (MS 06/27/2019)

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Guest Cabin

Character Defining Features

Determination of character defining features is based on the 1908-1970 period of significance for the proposed Apgar's Glacier Park Cottage Sites Historic District within which this building is located.

Mass/Form

The overall shape of the cabin, with the cross gable roof, is a character defining feature. The deck located on the southeast side providing views out toward the lake was an intentional part of the design.

Exterior Materials

The majority of the building features are original or have been replaced in kind to maintain the historic appearance from the time of the Moberly family. These materials contribute to the historic character of the building and include:

- Wood roofing shingles
- Peeled logs
- Board and batten siding
- Log and tree limb deck guardrail

Openings

The rhythm, size, and scale of the window and door openings are important contributors to the character of the building. Windows are located to provide more light into the public spaces and less light and privacy into private rooms. Windows are punched openings, in keeping with the structural integrity of the log cabin design.

Interior Materials

Interior materials, fixtures, and appliances all date to the Moberly work on the Cabin in the 1960s and appear to have been mostly unchanged since. This includes the doors, shag carpet, sheet vinyl flooring, and 1960s wood wall paneling.



Figure 1-153. Cross gable roof and contributing exterior materials (KC, 6/24/2019)



Figure 1-151. Contributing exterior materials on the west and south facades (KC, 6/24/2019)



Figure 1-152. Interior finishes in the Living Room and Kitchen (KC, 6/24/2019)

Existing Conditions & Condition Assessment - General

General Building Description

The Guest Cabin was originally constructed in 1920 and is a L-shaped cabin plus a wing with a cross gable roof. The east side of the building faces the lake. Exterior walls consist of peeled logs with board and batten infill above and below. A deck is located at the southeast corner of the building.

The interior was remodeled in the 1960s and provides a striking contrast from the exterior character. This work was likely completed during the same time period as the construction of the Main House. Inside the building feels like a mid-century modern house with finishes and fixtures dating to that era. The Guest Cabin is one story and contains a Living Room, Kitchen, Bathroom, and Bedroom.

Condition: **Fair to Poor**

Exterior materials directly exposed to the elements - especially the deck, roofing, and wood elements at grade - are significantly deteriorated. Wood elements in more protected and dry locations are in fair condition. Structural systems require work to address deficiencies. On the interior of the building, finishes are generally in good condition. Systems are in fair to poor condition and in need of upgrades.

Existing Conditions & Condition Assessment - Architecture

Architecture - Roofing System

Roofing is wood shingles with a metal gutter, that drains to a southeast downspout, wrapping around the two sides of the deck. This is the only gutter. There is no fascia board so rafter ends are exposed.



Figure 1-154. Looking down on the Guest Cabin roof from the northwest (KC, 6/24/2019)



Figure 1-155. Finishes in the living room and kitchen (KC, 6/24/2019)



Figure 1-156. Moss growth and deterioration at eave condition (KC, 6/24/2019)

Condition: Poor
Wood shingles are deteriorated and heavily covered with moss. The plywood sheathing is in poor condition and deteriorated. The gutter is rusted and full of vegetation.

Architecture - Exterior Walls
Debarked stacked logs, ranging from 8" to 11" in diameter, compose the majority of the facade. Chinking is concrete, with initials and dates next to the entry door that date this material to the 1960s. Log intersections with the vertical post in the corner vary at each corner, so there is not a consistent corner detail. Near the southwest corner of the deck, the second-lowest log has been notched out to allow for the railing's log baluster. 2x trim surrounds the window openings.

Concrete which was poured against the wood foundation, likely in the 1960s, is clearly visible along the west and portions of the east walls. The east half of the building, where grade is lowest, is wrapped in unpainted board and batten infill below the log wall assembly. Boards have 8" exposure between 2-1/2"x1" battens. On the east facade, a panel three and a half boards wide is removable for access.

Above the log wall assembly, there is another section of board and batten infill with members of the same size. Unlike the lower section, this is present on all exterior walls.

At each of the outer corners, a vertical log partially wrapped in concrete sits within the main wall assembly. This concrete was added in the 1960s. The log column the southwest corner of the deck has a vertical strip of metal edging along the concrete.

Condition: Fair to Poor
The horizontal logs and chinking are in fair



Figure 1-157. South side of Guest Cabin (KC, 6/24/2019)



Figure 1-158. East side of Guest Cabin with removable panel askew (KC, 6/24/2019)



Figure 1-159. Wall to foundation connection at a corner (KC, 6/24/2019)

condition. Some organic growth and splitting is present. Occasionally, splits in the logs are infilled with mortar. On the west elevation, just north of the Kitchen window, there is a visible gap between the horizontal logs and the concrete chinking along the vertical log.

Vertical logs and the concrete around them are in fair condition. Some splitting in the logs indicate water is likely trapped behind the concrete.

The board and batten infill below the logs has significant water staining and deterioration where it meets grade and is in contact with vegetation. Organic growth is present on the north side. There is significant wood deterioration on the boards and battens around the deck.

The board and batten panels located between the main wall assembly and roof overhang show less deterioration. This area is in generally fair condition with some organic growth.

Architecture - Deck

A wooden stair with six steps connects to grade at the deck's northeast corner. A log guardrail is located on the south and east sides of the deck. It is constructed of log balusters with log top and bottom rails, in a decorative pattern. The top of the log posts is 36" above the deck, with the horizontal members between them located below the top of the posts. Spacing between the vertical elements ranges from 1-1/2" to 1'-8" within the pattern. A curving branch forms the handrail at the south side of the stair. A straight branch, mounted with metal brackets to the exterior wall, forms the north handrail.

The board and batten infill below the logs continues around the deck, where it



Figure 1-160. Stacked logs and concrete chinking near a doorway (KC, 6/24/2019)



Figure 1-161. Deteriorating infill below deck, collapsing railing above (KC, 6/24/2019)



Figure 1-162. Vegetation and debris on deck, some boards are collapsed (KC, 6/24/2019)

terminates behind the framing members.

Condition: Poor
The deck is unsafe for use and should not be walked upon in the current condition.

The board and batten infill is in poor condition and has collapsed on the south side. Where the board and batten meets grade and is in contact with vegetation, it is deteriorated and has organic growth.

See Structural section for notes on the framing members. The boards which act as decking are collapsed and significantly deteriorated. These are completely covered in a layer of vegetation and plant debris.

The stairs are covered in vegetation and organic growth on the south end of each step. The entire stair is collapsing and is not a safe for use.

Architecture - Windows
Note - The windows were boarded over on the exterior. All windows appear to have been modified in the 1960s renovation work.

Type A
Fixed glass picture window with unpainted wood trim located on the east side of the Living Room.

Type B
Fixed triangular-shaped clerestory window divided by three vertical wood mullions. It occurs twice in the space - at the east end of the Living Room above window type A and at the west end of the Kitchen above the cabinets.

Type C
Located above the Kitchen sink, this is a double-casement out-swing Pella wood



Figure 1-163. Facing west at foot of stairs (KC, 6/24/2019)



Figure 1-164. Type A and B windows on East wall of Living Room (KC, 6/24/2019)



Figure 1-165. Type C window above kitchen sink (KC, 6/24/2019)

window similar to the Main House windows. It has a wood screen assembly and chrome hardware. The wood frame is stained a light warm color, similar to the Kitchen cabinets.

Type D
Window type D occurs three times throughout the cabin: at the north wall of the Living Room, at the south wall of the Bedroom, and at the west wall of the Bedroom. This is a wood framed infill replacement window with a fixed upper sash and an operable bottom sash. The wood frame has a stained finish and the hardware is chrome.

Type E & F
Window types E and F are operable single-paned awning windows in the Bathroom, similar to the Main House window types. E is located on the west wall and F is on the east wall. Both have painted wood frames with chrome hardware, but vary in overall dimensions.

Condition: Fair to Poor
All windows are boarded over on the exterior, making operation and seals difficult to asses.

Type A
Window type A appears to be in fair condition. Condition of seals is unknown due to boards covering the window.

Type B
Window type B appears to be in fair condition. Condition of seals is unknown due to boards covering the window.

Type C
Window type C is in good condition. However, boards covering the window prevent it from being opened. Operability was not able to be assessed.



Figure 1-166. Type E window in Bathroom (KC, 6/24/2019)



Figure 1-167. Windows boarded over on exterior side (KC, 6/24/2019)



Figure 1-168. Board visible on the interior side of a Type D window (KC, 6/24/2019)

Type D
Window type D is in good condition. Exterior boards do not prevent opening.

Type E & F
Windows appear to be in good condition. Condition of seals is unknown due to boards covering the windows.

Architecture - Exterior Doors
Type 1
The exterior door on the east wall of the Bedroom has a single fixed lite. This door is boarded over on the exterior side. The interior finish is a wood veneer. On the inside, there is a brass door knob and two door hinges. No lock is visible on the interior. This door appears to be a 1960s era modification.

Type 2
The exterior door on the south side of the Living Room has a flush wood veneer finish on both sides. A silver-colored door knob with a key lock is visible on both sides. This door appears to be a 1960s era modification.

Condition: Fair
Type 1
Since the exterior is covered, the condition on that side is unknown but likely has some deterioration due to exposure to elements over the years.

Type 2
On the exterior of the door, there is some wood deterioration, especially on the lower third of the door.

Architecture - Interior Doors
Type A
The two interior doors are both hollow core wood veneer with two hinges and brass door knobs. Both doors have a stained wood finish. One door is located between the Living



Figure 1-169. Exterior side of Exterior Door Type 2 (KC, 6/24/2019)



Figure 1-170. Interior side of Exterior Door Type 1 (KC, 6/24/2019)

Room and Bathroom. This door has a chrome knob on the Bathroom side. The other door is located between the Living Room and Bedroom. Both doors appear to be part of the 1960s era modification.

Condition: Good
Type A
The interior doors are in good condition.

Architecture - Interior Finishes
Living Room
The Living Room ceiling finish is fiberboard that follows the roof slope. The fiberboard is not finished and the seams are visible. A wrapped beam spans the center of the room from north to south. Vertical wood paneling and wood trim, similar to that on the walls, wrap the soffit.

Walls are finished with original 1960s wood paneling with the appearance of vertical boards of varying widths and a warm stained wood finish. A narrow strip of wood trim runs along the base of each wall and is the same color as the walls. A darker strip of wood trim with an angled profile runs along the top of the wall.

On the east wall of the Living Room, the finish extends up to the bottom of the clerestory window. This is slightly higher than the finish height on the north and south walls.

Flooring is a yellow and orange shag carpet.

Kitchen
The ceiling and wall finishes in the Living Room continue into the Kitchen - fiberboard ceiling finish and wood wall paneling.

Kitchen flooring is a white speckled sheet vinyl. There is a wooden transition strip, painted gold, where the sheet vinyl meets the



Figure 1-171. Northeast corner of Living Room (KC, 6/24/2019)



Figure 1-172. Looking west into Kitchen across Living Room (KC, 6/24/2019)



Figure 1-173. Light wood cabinetry above the kitchen sink (KC, 6/24/2019)

Living Room carpet.

The wood Kitchen cabinets have a warm light wood stain. Upper cabinet doors are flush inset mounted, with the frame visible between doors. Lower cabinet doors are flush overlap mounted, with no frame visible between doors. The round copper knobs and drawer-pulls are the same as those in the Main House. Knife hinges are partially concealed on each cabinet door. On the east side of the Kitchen, the countertop extends into the Living Room, forming a built-in eating area.

The laminate countertops are white with a light faux-marble pattern. The laminate extends 4-1/2" up the wall, forming a backsplash which has gold trim at the top and edges. The white ceramic sink is installed flush with the countertop, with chrome trim around the edges.

The upper cabinets frame a window above the sink. The gold curtain rod is attached to the underside of these cabinets.

Behind the oven/stove unit, the laminate backsplash continues up the wall to the bottom of the copper Nutone hood. This hood is the same as the hood in the Main House Kitchen.

<u>Bedroom</u>
The ceiling finish is 12"x12" acoustical ceiling tiles.

Wall finish is the same Living Room, vertical wood paneling with "boards" of varying widths. The wood base and ceiling trim is also the same. On the south end of the east wall, several small hooks are mounted to a wood 1"x2" board. Another set of hooks is mounted in a vertical column on the north side of the



Figure 1-174. White laminate counter-tops and back-splash surround the stove (KC, 6/24/2019)



Figure 1-175. Long drapes and wood paneling cover the Bedroom walls (KC, 6/24/2019)



Figure 1-176. Facing east in the Bedroom, door to Living Room is open (KC, 6/24/2019)

east wall. An additional gold hook is mounted on the north wall, near the door to the Living Room.

Flooring is the same yellow and orange shag carpet used in the Living Room.

Pull-down roller shades are wall mounted above both of the windows. Above these, a curtain rod is wall mounted with drapes that hang to the floor.

Bathroom

The ceiling has a plywood finish which has been painted but the wood grain is still visible.

Walls in the Bathroom are finished with a combination of plywood and the vertical wood paneling found throughout the Cabin. Walls are painted a pale pink. Wall base is quarter-round wood trim, also painted pink. Ceiling trim, with the same angled profile used throughout the building, is painted to match the walls. Wood trim surrounding the windows is stained a dark wood color.

Walls surrounding the bathtub/shower are tiled to a height of five feet above the finish floor. 4”x4” cream-colored field tiles are set in a running bond course with a border of 2”x4” brown tiles in a single row. Above the tiles, a chrome shower curtain rod is mounted to the wall. A soffit, with the same finish as the wall, runs along the top of the south wall and wraps the top of the Bathroom door.

Similar to the Kitchen, the Bathroom floors have a white speckled vinyl sheet flooring finish.

The vanity cabinet has a white laminate countertop, similar to that in the Kitchen, which continues up the wall to form a short



Figure 1-177. Tiled walls surround bathtub (KC, 6/24/2019)



Figure 1-178. Toilet with shelf above (KC, 6/24/2019)



Figure 1-179. Sink vanity in Bathroom (KC, 6/24/2019)

backsplash. The backsplash is finished with a thin chrome trim. The white ceramic sink is installed flush with the countertop, with a small raised chrome trim around the edges.

The wooden vanity cabinet has the same style and finish as the Kitchen cabinetry. Cabinet doors are flush with partially concealed knife hinges. Although the drawer pulls are the same round style as those in the Kitchen, these have a chrome finish.

Above the vanity, a medicine cabinet with a chrome-trimmed mirror door is mounted to the wall. Below this is a wall mounted plastic paper towel holder. Nearby, a chrome towel bar is also mounted to the wall.

A chrome towel rack is mounted to the wall above the toilet. Above each window is a pull-down roller curtain.

To the west of the bathtub, a closet with hollow core doors houses the hot water heater. These doors have copper cabinet pulls. Inside, the closet has the same wall, floor, and ceiling finishes as the rest of the Bathroom. The hot water heater sits on the east side of the closet, with a wooden shelf and metal closet rod spanning the full closet width above it. The wood trim around the closet doors has a stained wood finish.

Condition: Fair
Interior finishes throughout the Cabin are generally in fair condition with damage in select locations.

Living Room
The fiberboard on the Living Room ceiling is in fair condition. Water damage has caused some staining in the fiberboard. This is mostly located at seams.



Figure 1-180. Water damaged ceiling of Living Room and Kitchen (KC, 6/24/2019)



Figure 1-181. Wear and stains in Living Room carpet near front entry (KC, 6/24/2019)



Figure 1-182. Seams and bumps in bathroom floor (KC, 6/24/2019)

Wall finish and trim are in good condition with minor wear and discoloration.

The carpet flooring appears to be in fair condition, but it likely contains years of accumulated dirt and debris.

Kitchen
The fiberboard on the ceiling is in fair condition. Water damage has caused some staining in the fiberboard, mostly at seams. Flooring is in fair condition. The Kitchen cabinetry is in generally good condition. To provide accessible clearances, some cabinets will need to be moved to provide clear space, see Accessibility section.

Bedroom
The Bedroom ceiling finish is in fair condition. Stains near the northeast corner indicate water damage. Wall finish in the Bedroom is also in fair condition, with some signs of wear from use. The metal hooks mounted to the wall are slightly corroded. The carpet flooring appears to be in fair condition, but it likely contains years of accumulated dirt and debris.

Bathroom
The Bathroom flooring is in poor condition with bumps where the material has stretched. In the closet, several seams and gaps are visible in the vinyl flooring.

Architecture - Code/Life Safety Issues
As a National Park Service building, any proposed rehabilitation is governed by the 2018 International Building Code (IBC) and its related family of codes. Presently the building is not in use, but the current plan is to return it to the original residential use after rehabilitation work is completed. Residents would potentially be artists in residence or other longer term stays, versus transient use.

Area
First Floor - 600 sf

Use and Occupancy Classification
Residential Group R-3 - which includes buildings where residents are not transitory and the building does not contain two or more dwelling units.

Construction Type
Buildings and structures are classified as one of the five construction types in the IBC. The construction type defines the fire resistance rating of the building structure, exterior walls and interior walls.

The existing type of construction is VB non-sprinklered. Per section 602.5 “Type V construction is that type of construction in which the structural elements, exterior walls and interior walls are any material permitted by this code.”

Existing Building Code
The International Existing Building Code (IEBC), applies to the repair, alteration, change of occupancy, addition to and relocation of existing buildings. Within this code, work is categorized into Alteration Levels 1, 2, and 3 depending on the amount of work within the building. Additional categories include Change of Occupancy, Additions, Historic Buildings, and Relocated Buildings. Requirements of the code are limited to work areas of the project. This means Alteration projects are not required to upgrade the entire building to current code, just elements that are within the project work area. Change of Use projects trigger more thorough upgrades and the building must be brought up to current code requirements for new use. Alteration Levels 1- 3 allow for portions of the building not within the construction work area to be retained in their

existing condition, with the exception of life safety issues.

Means of Egress
IBC section 1004 establishes design occupant load based on the number of occupants determined by the function(s) of the space. Per Table 1004.1.2, Residential buildings have an occupant load factor of 200 gross. Based on the square footage, the cabin has an occupancy of 3 people.

Bedrooms are required to have a door to the exterior or an operable window with a net clear opening of 5.7 square feet with the sill no higher than 44 inches above the floor and a minimum opening width of 20 inches and height of 24 inches. The bedroom has an exterior door to the deck.

Per IBC section 1011, stairs risers are required to be solid and shall be 7" maximum and 4" minimum. Rectangular treads shall be a minimum of 11". Per 1011.5.2 exception 2, in Group R-3 occupancies the maximum riser height is 7.75" and the minimum tread depth is 10". Section 1011.6 requires a floor or landing at the top and bottom of each stairway. Exterior stairs to the front door are collapsed.

Per IBC section 1014, handrails shall not be less than 34" or more than 38" above the stair nosing and shall have an outside diameter of not less than 1.25" or greater than 2". Group R-3 occupancies allows for some exceptions to shape and size, within established parameters to provide equivalent graspability. As a residential use building, if it is not accessible, handrails are only required to extend from the top riser to the bottom riser per 1014.6 exception 1. If the building is to be accessible, handrails "shall extend horizontally not less than 12" beyond the top riser and continue to slope for the depth of one tread beyond the bottom riser."

Per IBC section 1015, guards are required at open sided walking spaces which are located more than 30" above the floor or grade below and shall not be less than 42" high. This applies to screened and open decks. Guards shall not have an opening that allows the passage of a 4" diameter sphere within the required guard height. Given the anticipated modifications required to provide accessible access to the deck, it is unlikely that IEBC exceptions will apply and allow the railing configuration to be retained.

Change of Use
The building originally functioned as a residence. A change of use is not currently anticipated, however if the use is changed in the future, the building will need to be brought up to any code requirements triggered by that change.

Condition: Poor
This building qualifies for IEBC exceptions for historic structures since it has been determined eligible for the National Register within a district in Glacier National Park. IEBC "Chapter 12 Historic Buildings" exceptions should be utilized where possible to retain historically significant design elements and fabric. Based on currently anticipated work on the Guest Cabin, including work required to meet ABAAS requirements, it will likely qualify for review under "Chapter 8 Alterations - Level 2". Level 2 Alterations "provide detailed requirements and provisions to identify the required improvements in the existing building elements, building spaces and building structural system when a building is being altered. This chapter is distinguished from Chapters 7 and 9 by involving space

reconfiguration that could be up to and including 50 percent of the area of the building. In contrast, Level 1 alterations (Chapter 7) do not involve space reconfiguration and Level 3 alterations (Chapter 9) involve extensive space reconfiguration that exceeds 50 percent of the building area. Depending on the nature of alteration work, its location within the building and whether it encompasses one or more tenants, improvements and upgrades could be required for the open floor penetrations, sprinkler system or the installation of additional means of egress such as stairs or fire escapes."

Typically, occupied NPS buildings are required to have a fire suppression system. Additionally, NPS Director's Order 58 section 9.1.8 requires consideration for fire suppression of structures to "prevent loss of human life and minimize damage to historic property resources." See Mechanical section for additional information on fire suppression.

The Bedroom has a door to the exterior so it is in compliance with code.

Due to the collapsed condition of the deck and guardrail, these elements were not able to be fully documented but did not appear to meet hight or opening size requirements. However, the carefully designed and constructed elements of the guardrail contribute to the exterior character of the building.

Architecture - Accessibility
As a building governed by the Architectural Barriers Act (ABA), ANSI A117.1 2009 is the guiding document for accessibility. Section 4.1.7 of the ABA requires that a historic building provide one universal access point to the building entrance, universal access routes from the entrance to the public spaces on the level of the main entry and a universal access restroom. However, if this is one of many residential units that can be rented, not all units must comply with accessibility standards. If accessibility requirements are met in other park provided residential units to the proper ratio, then this building would not need to be upgraded.

Condition: Poor
It is currently anticipated that the Guest Cabin would be modified to provide accessible accommodations for residents. The current configuration does not meet accessibility standards due to the lack of a universal access entry, various narrow door widths that do not provide the 32" clear space and the inaccessible restroom and Kitchen which do not provide proper turn around space or accessible clearances at fixtures. Additionally, neither interior door hardware nor plumbing fixtures in the Bathroom or Kitchen meet universal access requirements. However, if residential units located elsewhere in the park provide the required ratio of ABA units, then modifications may not be required to provide this at the Guest Cabin.

Existing Conditions & Condition Assessment - Structural

Structural - General System Description

The Moberly Guest Cabin is a one-story, L-shape with a wing, log cabin structure. It measures approximately 34'-0" by 24'-0" overall in plan with the top of tee at the west side and the stem of tee extending east toward the lakefront. The roof and uphill foundations appear to have been rebuilt in the 1960s based upon a date carved into the wall. The walls are framed with stacked logs and the floor is framed with decking over log joists and girders. The roof is framed with modern plywood over 2x stick-framing. The southwest corner has an entry deck infilled at the crook of the tee. The NPS has approved proceeding with the residential use only option for the Moberly treatment recommendations.

Structural - Foundation

The floor structure is supported on 7" to 9" diameter log piers around the perimeter that vary in height from 12" to 30" since the site slopes down from west to east. A log pier is located at each exterior wall corner and at each intersection of interior floor girder with the exterior wall and each bears on a concrete pad or stone placed on grade. At four of the building corners, the original log piers were replaced with 12" square concrete piers. At the uphill west side, a concrete wall was poured around the girder log at the base of wall in an attempt to create a retaining wall where grade is roughly at floor level. Foundation support of the interior floor girders is makeshift, including a 4x4 post bearing on grade and supported on a tree stump using a bearing block.

Condition: Poor

Generally, the foundations of the Guest Cabin



Figure 1-183. Southeast corner of the Moberly Guest Cabin (JSS, 06/27/2019)



Figure 1-184. Log pier foundation at the perimeter of the Guest Cabin (JSS, 06/27/2019)



Figure 1-185. Concrete replacement pier at corner of structure as seen from the exterior (JSS, 06/27/2019)

are in poor condition. Most of the bases of the log piers are buried in soil which traps excess moisture against the wood. The uphill exterior wall girder that is buried in retrofit concrete also traps excess moisture against the wood. Prolonged exposure to moisture allows decay fungi to flourish and deteriorate the wood, which translates to a loss of structural integrity.

The piers are founded on shallow footings that are undersized or nonexistent and do not extend to frost depth. This combination tends to cause differential settlement, which in this case is noticeable in the floor with up to 4" of relative differential movement from the northwest corner to the southeast corner.

There are no elements in place to brace the log piers that are extending above grade, which leads to racking of the crawlspace. This displacement is exacerbated by the differential settlement, with the concrete piers exhibiting noticeable leaning up to 3" in a 30" height.

Structural - Floor & Deck Framing

The floor of the Guest Cabin is framed with 5" to 6" diameter unpeeled logs spaced at 18" to 24" on center with a maximum span of 13'-0" in the east-west direction. The joists are notched to bear on 10" diameter exterior wall girders which span between the log or concrete pier foundations described above. The exterior wall girder at the intersection of the tee extends through the stem to break up the main floor area into two equal spans. A makeshift 5" diameter girder was added at mid-span of the south end of the Bedroom, likely to help limit deflections. The floor is sheathed with 1x6 straight boards. Crawlspace height varies from 24" tall at the east side down to an unknown small dimension at the west side where access is



Figure 1-186. Sill logs embedded in concrete stem wall (JSS, 06/27/2019)



Figure 1-187. Tree stump and bearing block foundation support in the crawlspace (JSS, 06/27/2019)



Figure 1-188. Concrete pier leaning to the east (JSS, 06/27/2019)

limited by the lack of clearance.

The entry deck is framed with a combination of 2x8 joists and 5" diameter logs spaced at 18" with a maximum span of 13'-0" in the east-west direction. The deck is sheathed with 2x6 straight boards.

Condition: Good to Poor
The floor log joists are in good condition where visible at the taller crawlspace areas. But these joists are assumed to have decay where in contact with soil at the northwest corner where the crawlspace height tapers down to zero. The log girders are in good condition with the likely exception of the west exterior girder that is embedded in concrete, which likely has advanced decay due to contact with the concrete and the soil. Although a majority of floor logs are intact with regard to decay, all members are overstressed as discussed below in the Applicable Loads and Codes section.

The deck structure is in poor condition with severe decay, including partial collapse or failure of individual joists, and collapse or failure of sections of decking. It is unsafe to walk on any portion of the deck.

Structural - Roof Framing
The gabled roof of the Guest Cabin is framed with 2x6 rafters spaced at 24" on center at a 5 on 12 slope. The north and south ends of the tee have flat ceilings without any visible access points, but are assumed to be framed with 2x4 joists that are assumed to be connected the rafter pairs as collar ties. The Living Room and Kitchen portion of the structure, which forms the stem of the tee in the east-west direction, has a vaulted ceiling without separate ceiling framing. There is no visible ridge beam, but there is likely a ridge board, and only a single collar tie which



Figure 1-189. Log floor framing of the Guest Cabin (JSS, 06/27/2019)



Figure 1-190. Log floor joists bearing on log girder in the crawlspace of the Guest Cabin (JSS, 06/27/2019)



Figure 1-191. Deteriorating portions of the deck framing as seen from the underside (JSS, 06/27/2019)

equally divides the rooms into two 13'-0" spaces. The collar tie is an 8x10 boxed out element that flies through the ceiling space. The roof is sheathed with ¾" thick plywood.

Condition: Good to Fair
Although there are no signs of structural distress such as excessive deflections and the roof framing is adequately sized for the snow loads associated with the site, decay is likely an issue even where not readily visible. Additionally, the central room single collar tie is likely insufficient for the thrust due to the snow load associated with the site.

The roofing is in poor condition and the plywood sheathing below likely has widespread areas of decay and damage which may extend into the framing. Decay at the rafter tail ends and at the eave plywood is widespread and advanced.

Structural - Wall Framing
The exterior walls of the Guest Cabin are composed of stacked logs. The 8" to 11" diameter logs span between the corners of the structure where they connect to vertical corner logs. On the interior face, the logs are assumed to have been hewn flat and are concealed by wall finishes. The entire roof structure appears to have been raised above the original wall top log elevation since a section of vertical board and batten occurs for roughly 12" above the log framing. The framing of and connection of this pony wall extension to the log wall below are unknown as they are currently concealed with finishes on both the exterior and interior.

At the central room at the east and west gable ends, the log framing and board and batten framing stops at the typical wall top elevation. The gable triangle is filled with clerestory windows with a king post in the center.



Figure 1-192. Holes in decking of the deck of the Guest Cabin (JSS, 06/27/2019)



Figure 1-193. Single collar tie dividing the kitchen from the living spaces (JSS, 06/27/2019)



Figure 1-194. Build up of moss and deteriorating roof sheathing at eave due to excess moisture (JSS, 06/27/2019)

The windows have been boarded up with plywood.

The crawlspace is enclosed by vertical board and batten that spans from the exterior girder down to a wood plate at grade.

Condition: Good to Fair
The walls of the Guest Cabin are generally in good condition showing no major signs of structural distress. There are some localized areas of deterioration of the wall logs, especially along the uphill west side of the cabin. Here soil has encroached on the bottom logs and has trapped moisture against the wood members. This prolonged exposure to moisture creates an inviting environment for decay fungi to deteriorate the wood members.

The crawlspace wall framing is in fair condition with decayed members at grade, including the decayed plate at grade.

At the northwest corner, the stacked log wall has pulled approximately 1" away from the vertical corner post. This displacement is related to the foundation settlement mentioned above.

The connection and construction of the pony wall extension atop the stacked log walls is unknown due to finishes, however the wall in its current configuration appears to be performing satisfactorily. Several key connections at this location, including anchorage of the pony wall to the stacked log wall and anchorage of the king post in the gable end walls, should be verified and/or provided during an exploratory exploration prior to the design phase.

Structural - Lateral System
The lateral force resisting system of the Guest Cabin consists of the horizontal roof and



Figure 1-195. Stacked wall logs of the Guest Cabin abut a vertical post at each corner (JSS, 06/27/2019)



Figure 1-196. Pony wall framing between the top of the log wall and the roof framing (JSS, 06/27/2019)



Figure 1-197. Northwest corner of the Guest Cabin. Note the grade slopes down towards the structure at this corner (JSS, 06/27/2019)

floor diaphragms provided by the sheathing, and the vertical shear walls consisting of the stacked logs.

Condition: Good to Fair

The lateral force resisting system of the Guest Cabin is generally in good condition from the stacked log walls up to the roof. The relatively modest proportions of the building create an adequate resisting system in conjunction with the roof diaphragm provided by the roof sheathing. At the foundations, the lateral force resisting system is in fair condition. There is not adequate bracing or positive connection of the wall system to the foundation elements to transfer the loads created by a wind or seismic event.

Structural - Applicable Codes & Load Requirements

The code references for this assessment include the 2018 International Building Code (IBC), the 2018 International Existing Building Code (IEBC), and ASCE 7-16 Minimum Design Loads for Buildings and Other Structures.

The load requirements for the Moberly Guest Cabin are based on the type of occupancy and geographical location of the building. The required floor live load capacity per ASCE 7-16 for residential use is 40 pounds per square foot (psf). Code requires that all decks have enough capacity to meet the demand of the snow load associated with the site or one and a half times the residential use live load. The building use classifies the structure as Risk Category II for standard occupancy.

The ground snow load required for the site per the Montana Ground Snow Load Finder is 100 psf. The Montana Ground Snow Load Finder is maintained by the Civil Engineering Department at Montana State University and



Figure 1-198. Deteriorating logs at base of wall (JSS, 06/27/2019)



Figure 1-199. Stacked log wall pulled away from vertical post along north elevation (JSS, 06/27/2019)



Figure 1-200. Stacked log wall pulled away from vertical post along north elevation (JSS, 06/27/2019)

was developed using snow data gathered from specific stations around the state. This ground snow load translates to a flat roof snow load on the structure of 84 psf per ASCE 7-16 when wind exposure and thermal conditions are considered.

The basic design wind speed of the site per ASCE 7-16 Figure 26.5-1B is 106 miles per hour (mph).

The site falls within Seismic Design Category D. The Seismic Design Category is a classification given to a structure that is based on the Risk Category of the building and the severity of the design earthquake ground motion at the site. The earthquake ground motion properties of the site are catalogued by the United States Geological Survey (USGS). The two mapped acceleration parameters for the site per the USGS are short period (Ss = 0.537 g) and 1 second period (S1 = 0.168 g). Without site specific soil testing, site soil conditions are assumed to comply with Site Class D resulting in a Seismic Design Category for the Cabin of D. Since the flat roof snow load is greater than 30 psf, 20% of the snow load must be added into the seismic weight of the structure.

Douglas Fir-Larch design values were used to evaluate the load capacity of the structural members.

Condition: **Fair**
The floor framing is overstressed under residential loading. The gabled roof framing does not have adequate collar tie action to resist the site-imposed snow loads as discussed above. The crawlspace lateral system is not adequate for the site specific lateral loads as discussed above.

Existing Conditions & Condition Assessment - Mechanical

Mechanical - General System Description
The Guest Cabin was previously used as a residence, and the mechanical systems are residential-type systems. The heating system for the Cabin consists of electric baseboard heaters throughout the building. In the Living Room on the east wall are two 36" long sections of baseboard heat and one 24" long section. On the north wall there is a 36" long section, a 24" long section, and an integral thermostat section that controls all the heat in the Living Room. In the Bathroom, there is an electric heater in the wall. There is no heat in the Bedroom.

There is no exhaust fan in the Bathroom.

There is a range hood over the electric range, but there is no vent on the outside of the building.

Condition: Poor
During the site visit, there was no power to the building, limiting the ability to test the operation of the mechanical systems. The baseboard heaters were in good condition with touch-up repairs and straightening of baseboard cabinet sections needed. However, there is no heat in the Bedroom.

There is no exhaust for the Bathroom. The range hood exhaust route to the exterior could not be found and is assumed not to exist.

Existing Conditions & Condition Assessment - Plumbing

Plumbing- General System Description
The water source for the building is from a well. See the Civil section for details on the



Figure 1-201. Living room baseboards. (DMD, 6/27/2019)



Figure 1-202. Kitchen range hood. (DMD, 6/27/2019)



Figure 1-203. Well pump, pressure tank, and multiple water lines under cabin. (DMD, 6/27/2019)

existing well system. The main water shut-off is located on outside the east side of the Cabin. The water line that is copper from the north appears to have failed, and a new 1" polypropylene line from the west is routed under the cabin and tees into the existing galvanized line. One leg of the tee is routed to the well pump and pressurization tank while the other leg of the tee is believed to be shut-off and tied to the original main line. No water was present during the site visit. There is a mix of galvanized, polypropylene, and copper pipes under the cabin. The water lines in the Cabin were copper lines. The well pump and pressure tank are located under the Cabin and sit on a concrete pad.

There is a 30-gallon electric water heater located in the Bathroom closet that provides hot water for the plumbing fixtures. The Bathroom has a tank type water closet, lavatory, and shower/tub combination fixture. There is also a kitchen sink located in the Kitchen.

See the Civil section for details on the existing septic system. The waste line was not visible in the crawl space under the cabin, so routing could not be verified.

Condition: Poor
The main water line is a mixture of materials, including the copper and galvanized piping, and has had repairs in the past, indicating that the entire piping system is near failure.

The well pump and pressure tank are in poor condition, and servicing the pump is a challenge with the limited crawl space height.

The water heater is fair condition but is past its expected service life.



Figure 1-204. Electric water heater. (DMD, 6/27/2019)



Figure 1-205. Existing water closet and electric wall heater. (DMD, 6/27/2019)



Figure 1-206. Existing lavatory. (DMD, 6/27/2019)

The plumbing fixtures are in fair condition but are not ABAAS compliant.

Existing Conditions & Condition Assessment - Fire Protection

Fire Protection- General System Description

There is no fire protection system within the building.

Condition: N/A



Figure 1-207. Existing shower/tub combination. (DMD, 6/27/2019)

Existing Conditions & Condition Assessment - Electrical

Electrical - Infrastructure

The existing utility infrastructure is an underground service from a 15kVA 240/120V Pad Mounted Transformer located at the top of the drive lane. The utility transformer appears to be serviced by Flathead Electric Cooperative. The transformer also appears to serve the Main House as well as adjacent private property structures. The existing 200A utility meter pedestal was observed, however currently no meter is installed. The meter appears to serve both the Guest Cabin and the Main House.

The service enters the Cabin from the north end of the building via a weatherhead and enters the load center within the Bathroom closet.

Wiring was not visible, as it was concealed behind walls throughout.

Grounding was not observed at the service entrance to the building.

Condition: Poor

The existing system is mostly in fair condition; however, it is dated and no grounding appears to be present. Therefore, it is not recommended for reuse. The serviceability of the load center is limited, especially in its current location behind the water heater.

Electrical - Branch Circuits

The existing branch circuits appear to be mainly power and lighting loads, and small mechanical loads, fed via wiring routed within the walls. Refer to General Power Outlets and Equipment for additional information.



Figure 1-208. Utility transformer. (MS, 06/27/2019)



Figure 1-209. Utility meter housing. No meter. (MS, 06/27/2019)

Condition: Poor
The existing wiring is believed to be of the building's vintage, aluminum wiring. While the wiring could not be observed, the devices suggest that no grounding is present.

Electrical - General Power Outlets and Equipment
Duplex devices were observed throughout, including two in the Living Room, two in the Bedroom, and five in the Kitchen area - one at 36" adjacent to the Bedroom door, one for the refrigerator, and three above counter. A hood and electric range were also observed within the Kitchen. A garbage disposal was observed below the sink in the Kitchen.

All devices and faceplates were observed to be almond in color, ungrounded devices.

Power was also connected below the Guest Cabin to an existing pump.

Condition: Poor
The existing devices are ungrounded.

Electrical - Lighting Systems
A single lamp, wall-mounted sconce was observed at the exterior adjacent to the front door 101. Without power to the building, operation could not be confirmed. It is anticipated that one of the switches just inside the entry controls this exterior fixture.

A single lamp, work lamp was supported below the Guest Cabin for the crawl space, and appears to be controlled via the switch located at the deck.

Two pendant lights were located in the Living Room/Kitchen area, suspended from the ceiling. Both were a glass globe within a perforated metal cylinder, with a standard medium screw-base lamp.



Figure 1-211. Underground feed to weather head into building. (MS, 06/27/2019)



Figure 1-210. Existing load center. (MS, 06/27/2019)

In the Kitchen, below the cabinets, located directly above the sink area is a surface-mounted copper finish base with white globe with a slatted perforation in the base. Fixture was observed to be a single lamping, medium screw-base.

In the Bedroom, there is another style of the surface-mounted copper finish base with white globe with a patterned perforation in the base. Fixture lamping was not observed, but is assumed to be similar lamping to the other fixtures - single lamping, medium screw-base.

In the Bathroom, two fixture types were observed. Another style of the surface-mounted chrome finish base with white globe with a patterned perforation in the base (similar type, different finish to the Bedroom fixture). Fixture lamping was not observed, but is assumed to be similar lamping to the other fixtures - single lamping, medium screw-base. The second type was a wall-mounted vanity sconce fixture, chrome finish with a patterned glass wrap and pull chain. Lamping appeared to be two medium screw-base lamping.

Condition: Fair
While operation could not be verified without power, the overall condition of the fixtures appear to be in fair condition with cleaning and relamping.

Electrical - Telecommunications
A Centurylink pedestal was observed west of the property, along the main road. An existing underground phone line was observed on the south end of the building, outside of the Bedroom. The underground line appears to be of a recent vintage however, the connection at the building appears to be of an older



Figure 1-212. Load center behind water heater. (MS, 06/27/2019)



Figure 1-213. Existing duplex devices. (MS, 06/27/2019)

vintage. No telecommunications devices were observed within the Guest Cabin.

Condition: Poor
While there appears to be an entrance into the Guest Cabin, it is not wired for telecommunications, and the service appears to need to be reestablished.

Electrical - Fire Alarm
No fire alarm system or residential detection/ notification devices were observed.

Condition: NA
There is no existing system.

Electrical - Security
No security system was observed.

Condition: NA
There is no existing system.

Electrical - Lightning Protection
No lightning protection system was observed.

Condition: NA
There is no existing system.



Figure 1-216. Pump equipment below guest house. (MS, 06/27/2019)



Figure 1-214. Existing sconce at front door. (MS, 06/27/2019)



Figure 1-215. Existing switch at deck. (MS, 06/27/2019)



Figure 1-217. Work light in crawl space. (MS, 06/27/2019)



Figure 1-218. Existing pendant fixtures with medium base lamping. (MS, 06/27/2019)



Figure 1-221. Existing surface mounted fixture at Kitchen sink. (MS, 06/27/2019)



Figure 1-219. Existing surface mounted fixture at Bedroom. (MS, 06/27/2019)



Figure 1-220. Existing surface mounted fixture at Bathroom. (MS, 06/27/2019)



Figure 1-223. Existing vanity wall-mounted fixture at Bathroom. (MS, 06/27/2019)



Figure 1-222. Existing telecommunications pedestal. (MS, 06/27/2019)

Civil & Site

Existing Conditions & Condition Assessment - Civil

Generally the state of the water and sewer systems on the site are considerably antiquated and should be replaced. There is no fire protection and access is very steep.

Civil - Water System

The existing water system is an antiquated, rudimentary system with a developed spring source with valve boxes made from steel garbage cans and other interesting features. Most piping is old galvanized with some newer HDPE. This piping is laid directly on the ground, exposed to the sun, and not insulated. The spring source goes from one perforated 6-foot diameter concrete "riser" in the hillslope near the driveway and is piped to a secondary small concrete storage tank (maybe 2000 gallons) that then holds some volume of water and sets the elevation for distribution. Both the buildings have isolation valves and piping that bring water to the basement (or crawlspace) level, and booster pumps and pressure tanks to set the water pressure at each dwelling.

Condition: Poor

These existing systems will work to supply water, but are not considered a potable water supply. Reports from previous users in the 1990s indicate that this spring source dries up in the late summer months and is not considered reliable. There is another developed spring on the south side of the driveway that serves the Bullhead Lodge complex, and there may be some interconnecting valving in the two systems.

Civil - Wastewater System

For sewer, the Main House has some plumbing that appears to drain to a typical septic system with tank and leach field west



Figure 1-224. Existing water storage cistern (KAT, 6/27/2019)



Figure 1-225. Current spring source (KAT, 6/27/2019)

and then south of the Main House. Records state that a septic tank is located about 15 feet west of the Main House and a drain field to the south. We could find no evidence of this system beyond some grading that would suggest a leach field. No septic tank lid was discovered, and no sizes confirmed. The Main House has a lower level sanitary pump vault with a connection to the main building drain. Records show that the smaller cabin has a separate onsite wastewater system with a 500 gallon tank and leach field east and north of the cabin. No evidence of this system was found and the driveway gets close to this area, so the exact location of this system was not confirmed.

Condition: Poor
The condition of the wastewater systems of the site are unknown, but based on the age of the systems, they likely require maintenance or replacement. Due to the proximity to the lake and ability to pump to a public sewer in the road above, this system can be substantially upgraded.

Civil - Access. Grading, & Drainage
Grade and access at the site is very steep. Generally the site drains down from the main road to the lake.

Condition: Poor
Drainage is a concern at the Main House as the driveway appears to drain at the front door. Historic reports of high groundwater and the presence of underdrains also indicate that drainage is problematic, though this is anecdotal only.

Due to the site configuration, fire trucks are not able to access the Main House.



Figure 1-226. Site slopes steeply to the lake, making access for emergency vehicles difficult (KAT, 6/27/2019)



Figure 1-227. Drainage is directed towards Main House entrance (KAT, 6/27/2019)

Existing Conditions & Condition Assessment - Main House Site

Site - General Description

A sloped asphalt drive leads to the site, where it levels-out adjacent to the building's west elevation. Just north of the building, at the west edge of the asphalt, a low fence of stacked logs indicate a dedicated parking area. From the west edge of the asphalt, grade slopes steeply down to the east. Perpendicular to this slope, just north of the building, partially buried wood planks indicate a since-collapsed stair.

A raised 3'-3-1/2" x 5'-11" concrete step connects the building's west (main) entry to the asphalt drive.

North of the building, young and mature cedar trees and grasses grow. Just east of the building, a mix of flowers and low vegetation grows along the rocky lake shore. It is speculated that these flowers may be planted. More trees - young and mature - grow south of the building.

A series of wood and stone stairs lead downhill from the building's south elevation to the lake.

Condition: Fair to Poor

The paved asphalt drive appears to be in fair condition. A layer of dirt and vegetative debris covers most of the drive.

The concrete entry step is in good condition and slopes away from the building.

Stairs built into the hillside, north and south of the building, are in fair to poor condition. The wood planks are mostly collapsed and at or below grade.



Figure 1-228. Sloped drive leading down from the Guest Cabin (KC, 6/24/2019)



Figure 1-229. Drive on the west side of the building (KC, 6/24/2019)

Existing Conditions & Condition Assessment - Guest Cabin Site

Site - General Description

The site generally slopes to the east. Current grading directs water to the building's west elevation, where it meets a high point at the center. Dirt has collected up against the west and north sides of the building. Upon reaching the west side of the building , water either runs north, draining into the north end of the building, or south and away from the building.

An asphalt road from the main road to the Moberly buildings runs adjacent to the north side of the cabin.

To the west, there are minimal trees near the building. There are several large trees adjacent to building on east.

There is a deteriorated wood enclosure at the north end of the east side of the building. It is speculated that its purpose may be water related. A tree stump is located near the wood enclosure.

From the southeast corner of the deck, the site slopes off to the southeast.

Condition: Poor

Current grading directs water towards the building, resulting in soil build up against the foundation, logs, and board and batten finishes on the exterior.



Figure 1-230. Looking uphill at the Guest Cabin from the northeast (KC, 6/24/2019)



Figure 1-231. Grade sloping into the north and west sides of the Cabin (KC, 6/24/2019)

Part 2: Treatment and Use Overview

Overview

Presented after the Existing Conditions and Condition Assessment, the Treatment section presents recommendations for the repair, protection, and stewardship of the Moberly Main House and Guest Cabin. Treatment recommendations are based on review of historic documentation, assessment of existing conditions, potential future building use, review of the building codes and accessibility, and the application of the Secretary of the Interior's Standards as they apply to the treatment of historic buildings. Recommended treatments are based on direction from NPS that the buildings will be used for residential housing, possibly artist in residence, and will only be used during warmer months. It is anticipated that accessible housing will be provided in the Guest Cabin. If a public use option is considered in the future, see the memo in the appendix for additional information on impacts of this change.

Treatment Priorities

Treatment priorities are classified as one of three options:

- Critical
- Serious
- Minor

A Critical Deficiency of a feature or elements exists where:

- There is advanced deterioration that has resulted in failure of the building feature or element or will result in its failure if not corrected within 2 years, and/or;
- There is accelerated deterioration of adjacent or related building materials as a result of the feature or element's deficiency, and/or;
- There is a threat to the health and safety of the user.

A Serious Deficiency of a feature or element exists where:

- There is deterioration that if not corrected within 2 to 5 years will result in the failure of the building feature or element, and/or;
- A threat to the health and/or safety of the user may occur within 2 to 5 years if the deterioration is not corrected, and/or;
- There is deterioration of adjacent or related building materials and/or systems as a result of the deficiency of the feature or element.

A Minor Deficiency of a feature or element exists where:

- Standard preventative maintenance practices and building conservation methods have not been followed, and/or;
- There is a reduced life expectancy of affected or related building materials and/or systems, and/or;
- There is a condition with long-term impact beyond 5 years.

Chapter Organization

Part 2 contains recommended Treatments for the Main House and Guest Cabin. Each element that was addressed for each building in Part 1 is identified and assigned a priority. Then a description of the recommended Treatment(s) is provided. Recommended treatments are also provided for the civil and site elements.

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Main House

Treatment and Use

The recommended treatment for the Main House is rehabilitation. This allows for altering a building to adapt to continuing use while preserving the historic character. Building use has remained residential since it was originally constructed, though it is currently unoccupied. Future anticipated use of the Main House and Guest Cabin is seasonal artist in residence housing and will not be occupied during the winter. Work includes the update of the building to meet code requirements and systems need to be replaced to restore the building to use.

The exterior of the building has remained mostly unchanged over the years with the majority of the materials appearing original. Limited historical information is available, however on site observations revealed many of the finishes on the interior and exterior are consistent with the period of construction. The general recommended approach in this report is to repair select damaged materials and leave the remaining undamaged materials in place.

Treatment - Architecture

Architecture - Roofing
Priority : Critical
Replace the roofing in kind. All biological material should be removed from the roof. Salvage the ballast and reinstall over the new membrane roof, adding additional ballast to match in kind as needed. Anticipate replacement of 25% of the roof sheathing. Ensure roofing is properly sealed around all vents and other roof penetrations. Install new gravel stop as needed. Replace areas of deteriorated wood fascia in kind and repaint all fascia. Consideration should be given to installing rigid insulation below the membrane roofing. Impacts on the fascia width should be considered and could be mitigated by tapering the insulation down toward the roof edges.

Replace areas of deteriorated painted plywood at the upper roof soffit. At the lower roof, boards which have water damage and/ or mold growth should be replaced in kind. Boards should be replaced back beyond the face of the building on the elevations where they are perpendicularly oriented (see Structural section).

Replace the gutter in kind at both roof levels, prefinished to match the fascia. Downspouts should also be replaced, with the upper roof downspout prefinished a tan color to blend with the chimney. Gutters should be cleaned annually to prevent vegetation and plant debris from accumulating in them.

Architecture - Chimney
Priority : Critical
Remove all biological growth from the cap. Perform mortar analysis of historic mortar to determine texture, color, and strength. Reinstall the fallen chimney cap stone to prevent water infiltration. Repoint all deteriorated mortar.

Architecture - Exterior Walls
Priority : Serious
Remove all biological growth from the vertical siding and trim. Replace any significantly split boards in kind. Replace deteriorated board and batten siding in kind. Prep and repaint all siding and trim.

Remove areas of deteriorated cementitious cap on the stone walls. Install a new cap that matches the existing in color, texture, and strength and slopes away from the building.

Architecture - Deck
Priority : Serious
See Structural section regarding decking and guardrail. Prep and paint the wood railing, stair risers, and joists. Apply a breathable stain with minimal tint to the deck boards to provide protection from the weather. See also the Code section regarding guardrail requirements.

Architecture - Windows
Priority : Minor
Typical All Window Types
Remove remaining existing damaged sealant. Replace with new clear exterior grade sealant impervious to UV and the local temperature range. Clean windows.

Type A
Prep and repaint all exterior wood window elements.

Type B
If clerestory windows in the Kitchen are intended to be operational, install new screens at all four windows. Prep and repaint all exterior wood window elements.

Type C, D & E
Verify continued smooth operation at each window. Prep and repaint all exterior wood window elements.

Architecture - Exterior Doors
Priority : Serious
Type A
Install weatherstripping around the door. See Accessibility section for additional information.

Type B
Install new weatherstripping at the operable leaf of both doors. Replace the escutcheon in kind on the Living Room door.

Type C
Remove the panel covering the half lite. Refurbish the screen and door to allow continued smooth operation. Install weatherstripping around the exterior door. Prep and repaint all exterior door elements.

Type D
Adjust the door or shave down the wood to allow the door to swing freely open and closed. Prep and repaint all exterior door elements.

Architecture - Interior Doors
Priority : Serious and Minor
Type A
Replace all three of the type A doors in the Basement in kind. Salvage the original hardware and install it on the new doors.

Type B
No work is recommended at this time.

Type C
No work is recommended at this time.

Type D
No work is recommended at this time.

Architecture - Interior Finishes
Priority : Serious and Minor
Vestibule / Hall
Remove and replace the carpeting.

Coat Closet at Entry
Remove and replace the carpeting.

Closet 1
After the source of water infiltration is addressed, follow hazardous material procedures to remove the wall and ceiling finishes with mold growth and mitigate any revealed additional materials with mold growth. Replace the carpet flooring.

Bathroom
Remove the loose tile and determine if there is water damage to the gypsum board behind it. Replace any damaged gypsum board and reinstall the tile. Reattach loose wall base. Laminate edging to match the vanity countertop pattern is likely not possible to obtain, install a complementary laminate color or finish the exposed wood countertop edge.

Linen Closet
Remove and replace the carpeting..

Master Bedroom
Remove and replace the carpeting.

Closet 2
No recommended work at this time.

Cubby 1
After the source of water infiltration is addressed, follow hazardous material procedures to remove the ceiling finish with mold growth and mitigate any revealed additional materials with mold growth.

Guest Bedroom
Remove and replace the carpeting.

Main Stair
Remove and replace the carpeting.

Living Room
Polish the brass at the fireplace to remove tarnish. Remove and replace the carpeting.

Kitchen
Adjust cabin drawers to slide freely. Countertop can be replaced with a laminate finish similar to the historic if as new condition is desired or thoroughly cleaned if existing minor staining is determined to be acceptable. Repairing as needed and keeping the built-in appliances/equipment would be preferred over replacement.

Stair to Basement
Remove and replace the laminate flooring on the stairs.

Laundry
Clean the concrete wall and repaint. Replace water damaged wood paneling.

Half Bath
After the source of water infiltration is addressed, follow hazardous material procedures to remove the wall finish with mold growth and mitigate any revealed additional materials with mold growth. Repaint the concrete floor.

Sitting Room
After the source of water infiltration is addressed, follow hazardous material procedures to remove the wall finishes with mold growth and mitigate any revealed additional materials with mold growth. Remove and replace the gypsum board ceiling finish throughout the room and in the shower enclosure. Repaint the walls and replace damaged wood wall paneling and base in kind. Patch concrete floor as required after plumbing work is completed. Repaint the concrete floor and replace the rusted floor drain cover.

Mechanical Closet
Replace the damaged sections of wood wall paneling and cabinet doors in kind.

Water Entry Closet
After the source of water infiltration is addressed, follow hazardous material procedures to remove the wall finishes with mold growth and mitigate any revealed additional materials with mold growth.

Storage Room
Replace areas of missing chinking between the logs.

Architecture - Code / Life Safety Issues
Priority : Critical
See Mechanical section for additional information on fire suppression.

Modify a window in the Guest Bedroom to provide required egress. The lake facing windows provide an opportunity to work within an existing large window opening adjacent to the deck to create an operable egress window without significant impact on the building fabric.

If this building is determined eligible and qualifies for Chapter 12 exceptions, options for retaining the existing handrail/guardrail on the south side of the interior stair should be explored. A handrail could potentially be installed on the opposite side of the stair to meet this requirement.

IEBC allowances provide opportunities to retain the existing deck guardrail. If work on the House is extensive enough to trigger a required upgrade to the guardrail, it should be designed very sensitively. Consideration should be given to retaining the battered design, along with not installing opaque materials above the living room window sill level which would impact that view to the lake.

Architecture - Accessibility
Priority : Serious
Accessible housing at the Moberly site is currently anticipated to be accommodated in the Guest Cabin. To provide an accessible entrance through the front door of the House, install a lever handle and replace the existing threshold with one that is accessible compliant. Provide an accessible pedestrian path on the site to the main entry door.

Treatment - Structural

Structural - Foundation
Priority: N/A
There are no foundation recommendations at this time.

Structural - Floor & Deck Framing
Priority: Critical
Remove all deck railings and decking and cut off cantilevered deck joists at the face of the exterior stud wall. Rebuild the decks with 2x lumber treated with a clear preservative, such as Klear Gard 25, to match the existing depth, with cantilevered joists sistered and lapped back into the floor system. Rebuild the deck railings and decking to match the existing construction with 2x lumber treated with a clear preservative, such as Klear Gard 25. Build the deck guardrails with enhanced connections for code-required loads.
Final consideration of wood preservative treatments during the design phase shall include Historical Architecture and Special Projects Staff.

Cut back the three cantilevered glued laminated timber floor girders 6" to remove the majority of end grain decay at the exposed deck condition. Replace end extension with a dutchman repair of Alaskan Yellow Cedar glued laminated timber matching the dimensions of the existing member. Attach to the existing beam with fiberglass rods and epoxy. Note that this dutchman repair is sacrificial and will need to be replaced in the future. Treat the remaining material with epoxy repair consolidant material, repaint, and protect the tops and ends with sheet metal caps or a bituminous self-sealing

membrane installed prior to replacement deck framing.

Structural - Roof Framing
Priority: Serious
At the high roof, remove and replace deteriorated portions of the plywood sheathing (assumed to be 25% of the roof area). Inspect rafters where sheathing is replaced, remove deteriorated material, and sister as required. Rebuild the eave fascia to match the existing construction.

At the low roof, remove and replace deteriorated portions of the tongue and groove decking (assumed to be 50% of the roof area), including the final span adjacent to the east exterior edge to allow for cantilever action at the eave. Rebuild the eave fascia to match the existing construction.

Structural - Wall Framing
Priority: N/A
There are no wall framing recommendations at this time.

Structural - Lateral System
Priority: Serious
At the low roof, install plywood sheathing over the decking, coordinated with the roof framing treatment noted above.

Install hurricane ties between the roof framing and the wall framing in areas where the roof will be removed to complete other work.

Treatment - Mechanical

Mechanical - General System Description
Priority : Minor
In the Basement, the existing exhaust fan should be removed and a larger exhaust fan capable of exhausting the Half Bath, Shower, and Laundry area should be installed, along with the needed ductwork.

Provide new dryer vent piping that connects to the existing vent line to the outside. Clean the existing vent line to remove any lint or debris from the line.

Throughout the residence, the electric baseboard heaters should be tested for operation and the exterior casings should be realigned for a fully assembled look. However, in the Basement Half Bath, the baseboard heater shall be replaced.

On the Main Level, the fireplace chimney should be inspected and cleaned to verify continued use as a wood-burning fireplace.

The operation of the range hood in the kitchen should be verified, and all ductwork cleaned out. The exhaust ductwork from the range hood that is exposed should be insulated to protect against burn potential. This includes the ductwork that is routed through the closet on the Upper Level.

The exhaust fan in the Upper Level Bathroom should be tested and cleaned.

Treatment - Plumbing

Plumbing - General System Description
Priority : Serious
In the Basement, the main water entry line is galvanized and should be replaced with a new copper line. The new line shall also have new drain down valves installed to allow for draining down the water before the winter season. The well booster pump and tank should be replaced with a new system of the same size. The electric 52-gallon water heater

should also be replaced with a water heater of the same size.

A new 1" copper line to the fire protection system should be installed with a shut-off valve. See the Fire Protection treatment.

Provide a new floor drain in the Basement for the fire protection system and route to the sewage ejector pump. The floor will need to be removed, trenched, and then patched.

Provide all new plumbing fixtures in the Basement, including a new tank-type water closet, lavatory, and shower. Revise cold, hot, waste, and vent piping to accommodate the installation of the new fixtures. Provide a new clothes washer box with water hammer arrestors for the Laundry Room.

Provide a new sewage ejector pump and piping. Replace the existing waste and vent piping out of the sewage ejector pump to eliminate the cast iron hub-and-spigot fittings, use new copper lines for the waste and vent piping.

Replace the main sanitary line exiting the building with a new main to 5'-0" outside the building. See the Civil section for routing of the sanitary line beyond the 5'-0". It is assumed that the sanitary line will gravity drain to a collection point outside the building where it will then be pumped up to the main waste line to the wastewater treatment plant.

On the Main Level, replace the existing kitchen sink, faucet, and garbage disposal.

On the Upper Level, replace the faucets for the lavatory and shower/tub combination.

Treatment - Fire Protection

Fire Protection - General System Description
Priority : Critical
The Main House will be used as a single-family dwelling, and National Fire Protection Association (NFPA) 13D – Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes will be used as the compliance path to NPS Director Order #58 – Structural Fire Management.

Provide a new 1" copper line from the main water entry to a new storage tank and pump system similar to a General Air Products H2hOme tank and pump system Model H2H425-E03 with a 1-1/2" hp motor, 425-gallon tank capacity, and the Advanced Control Panel. Provide new fire protection piping routed throughout the residence utilizing copper lines in exposed areas and fire protection rated CPVC pipe in concealed areas. The system shall be capable of being drained down for the winter season. Route drain line from the fire protection storage tank bulkhead overflow to a new floor drain. Provide flow sensor alarm within the piping system in full compliance with NFPA 13D requirements.

Treatment - Electrical

Electrical - Infrastructure
Priority : Critical
The existing 120/240V service is anticipated to be adequate to support the anticipated use. The main infrastructure is adequate to support the anticipated use, as well as the loads. However, given the serviceability and age of the load center, it is recommended to be replaced, at which time a demand meter and main disconnect or main circuit breaker

should be provided.

The existing underground service lines need to be re-buried to a burial depth required by the NEC.

Electrical - Branch Circuits
Priority : Critical
The branch circuits general quantity appears to be adequate for the intended use, however due to the vintage of the wiring and lack of grounding observed, it is recommended that the branch circuits be replaced. New copper wiring shall be in conduit and be provided with grounding. Layout of devices shall also be provided per residential requirements of the NEC per the intended use. AFCI and GFCI protection shall be provided as required per the NEC. Electrical work shall reuse existing pathways by utilizing pull strings with the existing conductors to repull to the greatest extent possible to minimize impact to finishes. New devices/faceplates will be provided.

Electrical - General Power Outlets and Equipment
Priority : Critical
New devices are anticipated to be provided with the new branch circuits where required due to age and at ungrounded devices. All new devices shall be grounded devices in the same finish as the existing devices to be replaced. GFCI devices shall be provided where located within the Kitchen area per NEC requirements. Electrical work should utilize existing conductors to the extent possible to minimize impact to finishes on the Upper and Main Levels.

New branch circuits shall be provided to accommodate the replaced and new mechanical equipment, including fire protection booster pump, well water pressurization pump, and a sewer ejector pump. New connections and devices for the range and hood shall be provided in the same location.

Electrical - Lighting Systems
Priority : Minor
The existing lighting appears adequate overall for the intended use. It is recommended that energy savings measures be implemented including LED lamping for any replacements, immediate and future, as well as occupancy/vacancy sensors be installed at existing switch locations. Though not required for a residential use, the occupancy or vacancy sensors in the Main House would reduce the opportunity for any lighting to be left on when unoccupied. Should a non-residential use be applied, vacancy/occupancy devices will be required. LED lamping options would allow the existing fixture appearance to be maintained. All fixtures should be thoroughly cleaned and reconnected to the new branch circuit wiring.

Electrical - Speaker System
Priority : Minor
If not anticipated for use, the equipment may be maintained as representation of the previous use.

Electrical - Telecommunications
Priority : Minor
Existing service needs to be reestablished. Telecommunications shall be added as required for intended use to allow for the installation of a phone/data as desired.

Electrical - Fire Alarm
Priority : Critical
No system presently exists. New fire alarm devices shall be provided to meet the requirements for the intended use. A new hardwired fire alarm system should be

provided, with all new detection. Detection devices shall be hardwired with battery backup.

Detection is recommended to be tied into a central head end component that can provide status reporting to a main location for the park. An RF for primary and cellular for secondary reporting would be required.

Electrical - Security
Priority : Minor
There is no existing system. It is recommended that a standalone keypad, auto-locking deadbolt type handle be provided for a timed locking capability such that the Main House cannot be left open when unoccupied. This should be provided with a reporting capability to be monitored by park staff and locked remotely as required.

Electrical - Lightning Protection
Priority : Minor
There is no existing system. Based on the NFPA calculations for risk level associated with recommendations for lightning protection, the risk was within tolerable levels and a lightning protection system is not recommended for this building.

Guest Cabin

Treatment and Use

The recommended treatment for the Guest Cabin is rehabilitation. This allows for altering a building to adapt to continuing use while preserving the historic character. Building use has remained residential since it was originally constructed, thought it is currently unoccupied. Future anticipated use of the Main House and Guest Cabin is seasonal artist in residence housing, these buildings will not be occupied during the winter. Work is needed to update the Guest Cabin per code requirements and the systems need to be updated to restore the building to use.

The exterior of the building retains original character defining features with some alterations made during the 1960s. Limited historical information is available on the interior but onsite observations revealed the majority of the finishes are modern updates. The general recommendation approach in this report is to provide required code and system updates, repair damaged materials and finishes, and leave undamaged surfaces in their current state whether they are historic or modern.

Treatment - Architecture

Architecture - Roofing
Priority : Critical
Replace the wood shingle roofing in-kind. Replace the metal gutter on the edges of the roof adjacent to the deck and install a new downspout. Replace sheathing per recommendations in Structural section.

Architecture - Exterior Walls
Priority : Serious to Minor
See Structural section for recommendations on the logs. Test the composition of the log chinking and match strength, texture, color, and tooling for all new work. Replace the board and batten infill above and below the logs where the wood is significantly deteriorated (assume 50% of board and batten below the logs and 15% above). Depending on regrading plan and final grade, all board and batten below logs may need to be replaced to extend to new grade level. Clean the organic growth from the board and batten and logs which are not replaced.

Architecture - Deck
Priority : Critical
Remove the deck entirely and replace the structural elements per recommendations in that section. Install new decking boards that match the existing. Install new board and batten below the deck. A new guardrail should be installed around the deck that meets current code requirements while retaining the character of the original. Stairs should also be rebuilt and a code compliant handrail installed. A ramp should connect to the deck, see Accessibility section. The guardrail around the porch will need to be designed to accommodate the ramp addition on the south side.

Architecture - Windows
Priority : Minor
Boards should be removed from the exterior of the windows and they should be fully reviewed to determine required work. Adjust windows as needed to restore operability.

Architecture - Doors
Priority : Minor
Type 1
Replace the door with a solid core, half lite wood door. See Accessibility section for additional recommendations.

Type 2
Replace the door with a solid core wood

door. See Accessibility section for additional recommendations.

Architecture - Interior Finishes
Priority : Minor
Living Room
After the roofing work is completed, replace the fiberboard ceiling finish. Replace the carpet flooring.

Kitchen
See Accessibility section for additional recommendations.

Bedroom
Replace the stained ceiling tiles in kind. Replace the carpet flooring.

Bathroom
Replace the flooring with new sheet flooring. See Accessibility section for additional recommendations.

Architecture - Code/Life Safety Issues
Priority : Critical
See Mechanical section for recommendations related to fire suppression.

Architecture - Accessibility
Priority : Critical
Provide an accessible path to the Cabin. Create an accessible parking spot on the west side of the building and install a ramp along the west and south sides of the building that connects to the deck. Widen both exterior door openings to allow 3'-0" doors to be installed within them. Install accessible hardware on both doors.

Within the building, modify the bathroom to provide an accessible layout. This will require modifications to existing walls, a wider door opening, and new fixtures. The kitchen layout will also require modification to provide accessible clearances, along with new appliances and fixtures. The interior door to the bedroom will also need to be widened and a new door installed to provide an accessible door and hardware.

Treatment - Structural

Structural - Foundation
Priority: Serious
Remove the log and stone foundations and provide new concrete pier foundations under the girders that will be concealed by the board and batten sheathing. Lower grade at the west side of the structure or raise the entire structure to remove soil from the wall and to provide adequate crawlspace clearance. To protect the bottom logs on the west elevation from soil encroachment, install a stacked stone or concrete retaining wall along the west side of the structure or raise the entire structure.

Additionally, provide concrete pier foundations at all interior girders as required to increase floor capacity to the required residential loading. All foundations shall extend to frost depth unless movement due to frost heave is acceptable.

Structural - Floor & Deck Framing
Priority: Serious to Critical
Strengthen the floor framing systems to meet current code requirements for residential loading by means of adding intermediate log girders with added interior pier foundations. Replace any deteriorated members in kind with pressure treated material.

Remove and replace the entry deck with construction similar to the original, using pressure treated material for the joists. All new deck framing must meet code capacity

requirements.

Structural - Roof Framing
Priority: Serious to Critical
Strengthen the roof framing of the Guest Cabin by adding collar ties at the central room. The collar ties shall be 2x4 members spanning across each rafter pair at the mid-height of the roof. Alternatively, add two collar ties at quarter points along the top of wall in addition to the existing tie at the middle of the room; ties to be cables, rods, or timber to match existing.

Remove and replace deteriorated plywood sheathing (assumed to be 50% of the roof area). Inspect rafters where sheathing is replaced, remove deteriorated material, and sister as required. Rebuild the eaves with outriggers sistered to the rafters.

Structural - Wall Framing
Priority: Minor
Once the soil is removed per the Foundation recommendations, remove deteriorated portions of the wall logs near grade (especially along the west elevation) and either repair with a dutchman or replace the log in kind.

Remove and replace the crawlspace wall enclosure framing with bottom plate elements that span between the new pier foundations and are adequately located above the grade.

Once foundation work is complete, reset and reattach the separated north stacked log wall to the vertical corner post with new spikes.

Several key connections at the interface between the pony wall extension and the stacked log wall below, including anchorage of the pony wall to the stacked log wall and anchorage of the king post in the gable end walls, should be verified and/or provided during an exploratory investigation prior to design.

Structural - Lateral System
Priority: Minor
During foundation work, provide positive lateral connections between the floor and wall framing to the new foundation elements via anchors and clips.

Install ties between the roof framing and the log wall framing through the pony wall framing in areas where the roof will be removed to complete other work.

Treatment - Mechanical

Mechanical - General System Description
Priority : Serious
The electric baseboard heaters should be tested for operation and exterior casings realigned for a fully assembled look in the Living Room.

The electric wall heater in the Bathroom should be tested for proper operation.

New electric baseboard heat should be installed in the Bedroom.

The Kitchen range hood should have a duct routed to the outside with a weather-protected termination. The existing range hood should be tested for proper operation or replacement.

Treatment - Plumbing

Plumbing - General System Description
Priority : Critical
Provide a new 1" water line from the well to a new well pump and pressurization tank. Provide isolation valves to allow for drain down before the winter season. Well pump and pressurization tank to be installed under the Cabin on the existing concrete pad where the existing system is installed. Provide all new water lines up to the plumbing fixtures and the water heater.

Provide a new water heater, 30-gallon electric tank type in the Bathroom and consult with Historical Architecture and Special Projects Staff. Route new hot water lines to the shower, lavatory, and kitchen sink. Include an expansion tank on the water heater.

Provide all new plumbing fixtures that are ABAAS compliant.

Provide all new sanitary and vent piping for the plumbing fixtures. Route vent line to reuse existing vent opening through the roof.

Provide a new floor drain in the bathroom closet for the water heater T&P valve and fire protection overflow pipe.

Provide all new plumbing fixtures, including a new tank-type water closet, lavatory, and shower. Revise cold, hot, waste, and vent piping to accommodate the installation of the new fixtures.

Treatment - Fire Protection

Fire Protection - General Description
Priority : Critical
The Guest Cabin will be used as a single-family dwelling, and National Fire Protection Association (NFPA) 13D – Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes will be used as the compliance path to NPS Director Order #58 – Structural Fire Management.

Provide a new 425-gallon cistern buried below grade uphill from the cabin. The final location of the cistern will need to be coordinated with the topographical survey. Provide a pump similar to General Air Products XPS18 with pressure switch, water hammer arrestor, check valve, drain valve, and locking ball valve. The pump shall be located under the cabin in a protected enclosure that is accessible for maintenance. Provide a remote control panel in the cabin that is interlocked to the pump and cistern.

Provide new fire protection piping routed throughout the cabin utilizing copper lines in exposed areas and fire protection rated CPVC pipe in concealed areas. The system shall be capable of being drained down for the winter season. Provide flow sensor alarm within the piping system in full compliance with NFPA 13D requirements.

Treatment - Electrical

Electrical - Infrastructure
Priority : Critical
The existing 120/240V service is anticipated to be adequate to support the anticipated use. The main infrastructure is adequate to support the anticipated use, as well as the loads, however given the serviceability and age of the load center, it is recommended to be replaced, at which time a demand meter and main disconnect or main circuit breaker should be provided. Service size should be

evaluated to ensure required loads for all mechanical, plumbing, and electrical needs within the building can be accommodated. New infrastructure locations should be considered to minimize impact on the historic fabric. New exterior infrastructure could be mounted on a Unistrut directly adjacent to the wall of the structure. Options for the panelboard location on the interior will need to be explored during design. If it can be mounted on an exterior wall with a main disconnect, it may not need an exterior disconnecting means if the service goes right into the panel.

Electrical - Branch Circuits
Priority : Critical
The branch circuits general quantity appears to be adequate for the intended use, however due to the vintage of the wiring and lack of grounding observed, it is recommended that the branch circuits be replaced. New copper wiring shall be in conduit and be provided with grounding. Layout of devices shall also be provided per residential requirements of the NEC per the intended use. AFCI and GFCI protection shall be provided as required per the NEC.

Electrical - General Power Outlets and Equipment
Priority : Critical
The devices used throughout the space were ungrounded devices. New devices are anticipated to be provided with the new branch circuits and shall be grounded devices in the same finish as the existing devices to be replaced. GFCI devices shall be provided where located within the Kitchen area per NEC requirements. Electrical work should utilize existing conductors to the extent possible to minimize impact to finishes.

New branch circuits shall be provided to accommodate the replaced and new mechanical equipment, including fire protection booster pump, well water pressurization pump, and a sewer ejector pump. New connections and devices for the range and hood shall be provided in the same location.

Electrical - Lighting Systems
Priority : Minor
The existing lighting appears adequate overall for the intended use. It is recommended that energy savings measures be implemented including LED lamping for any replacements, immediate and future, as well as occupancy/vacancy sensors be installed at existing switch locations. Though not required for a residential use, the occupancy or vacancy sensors in the Guest Cabin would reduce the opportunity for any lighting to be left on when unoccupied. LED lamping options would allow the existing fixture appearance to be maintained. All fixtures should be thoroughly cleaned and reconnected to the new branch circuit wiring.

Electrical - Telecommunications
Priority : Minor
Existing service needs to be reestablished. Telecommunications shall be added as required for intended use to allow for the installation of a phone/data as desired.

Electrical - Fire Alarm
Priority : Critical
No system presently exists. New fire alarm devices shall be provided to meet the requirements for the intended use. A new hardwired fire alarm system should be provided for a residential use, with all new detection. Detection devices shall be hardwired with battery backup.

Detection is recommended to be tied into a

central head end component that can provide status reporting to a main location for the park. An RF for primary and cellular for secondary reporting would be required.

Electrical - Security
Priority : Minor
There is no existing system.

It is recommended that a standalone keypad, auto-locking deadbolt type handle be provided for a timed locking capability such that the Guest Cabin cannot be left open when unoccupied. This should be provided with a reporting capability to be monitored by park staff and locked remotely as required.

Electrical - Lightning Protection
Priority : Minor
There is no existing system. Based on the NFPA calculations for risk level associated with recommendations for lightning protection, the risk was within tolerable levels and a lightning protection system is not recommended for this building.

Civil & Site

Treatment - Civil

Civil - Water System
Priority : Critical
For water, we would expect that due to the low number of residents, this system will not have to meet the requirements of a public water system. However, we would recommend that a well source should replace the spring, providing a more reliable water supply with a potential for higher level of potability. The spring source tanks and associated surface piping and valves boxes should then be removed. Though not required for residential, if the NPS chooses to install disinfection and storage, this would help with fire suppression by providing a storage tank on site. Otherwise, we would recommend options to draft from the lake for fire water supply if permitting allows. If not, locations for fire tanks would need to be determined. See Mechanical section for additional information.

Civil - Wastewater System
Priority : Serious
For sewer, we were able to find an existing "public" sanitary sewer located in Grist Road and this line continues across McDonald Creek to the Apgar wastewater treatment facility. We suggest that the NPS consider adding a lift station (E One unit would be ideal) and pump up the driveway to this sewer line, thereby abandoning the private wastewater treatment and decreasing the impact to the lake and potable water supply well.

Civil - Access, Grading & Drainage
Priority : Serious
We would recommend evaluation of realignment of the driveway. Currently the slope exceeds 20% in some areas and access would be difficult for many two-wheel drive vehicles as well as fire trucks. If the entry point and alignment was shifted south (downhill) and the old collapsed garage was removed, then the driveway could be less steep. There would be a significant number of trees impacted by this roadway and, with no property mapping or topography available, we do not know how the design of a new driveway would work. We recommend doing this added design step sooner than later to determine the feasibility of access. ABA access could only be from vehicles that park in front of the Main House, as all other areas on the site are too steep. During the design process, the realignment measures should include measures to divert water away from the structures. These measures include installing a drain pan at the entrance to the Main House and installing underdrains or foundation drains around the uphill sides of both buildings that daylight out to the slope on the sides of the buildings.

Treatment - Main House Site

Site - General Description
Priority : Serious
Remove the dirt built up over the existing drive. See Civil section for additional recommendations.

Replace the deteriorated wood stairs in the landscape at the north and south ends of the house which lead down to the lake.

Treatment - Guest House Site

Site - General Description
Priority : Critical
Remove soils and other biological material build up adjacent to the building. Regrade the site to provide drainage directed around the

building. See Accessibility recommendations for additional site work. See Civil section for additional recommendations.

Appendix

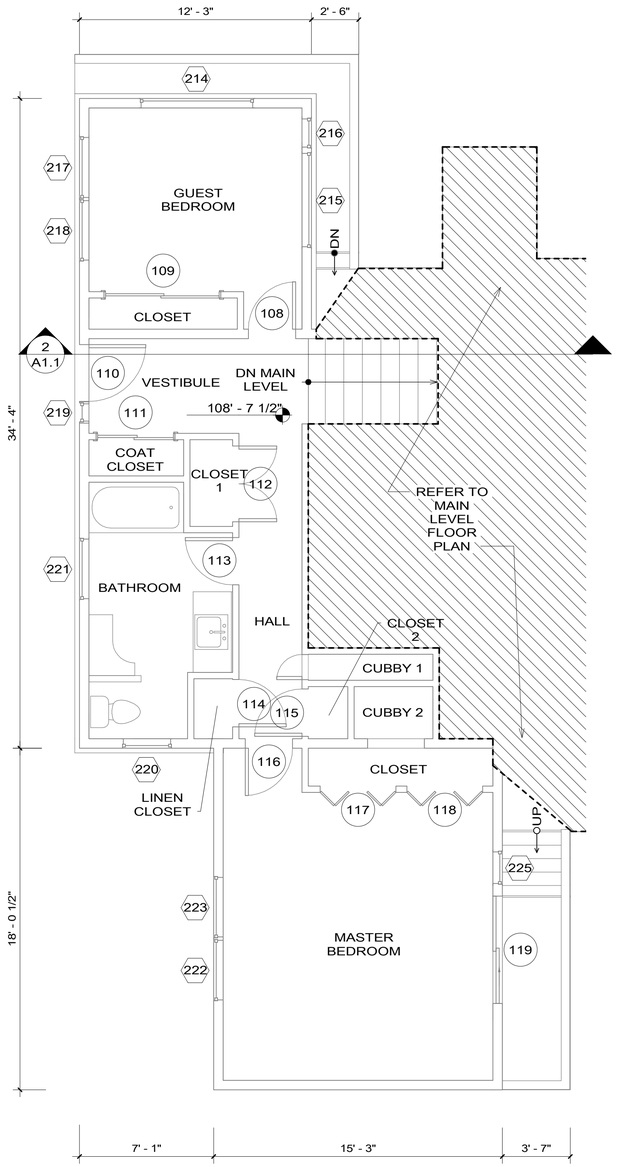
Appendix A - Existing Condition Plans
Appendix B - Use Memo & NPS Response
Appendix C - Cost Estimate
Appendix D - Hazardous Material Test Results
Appendix E - Bibliography

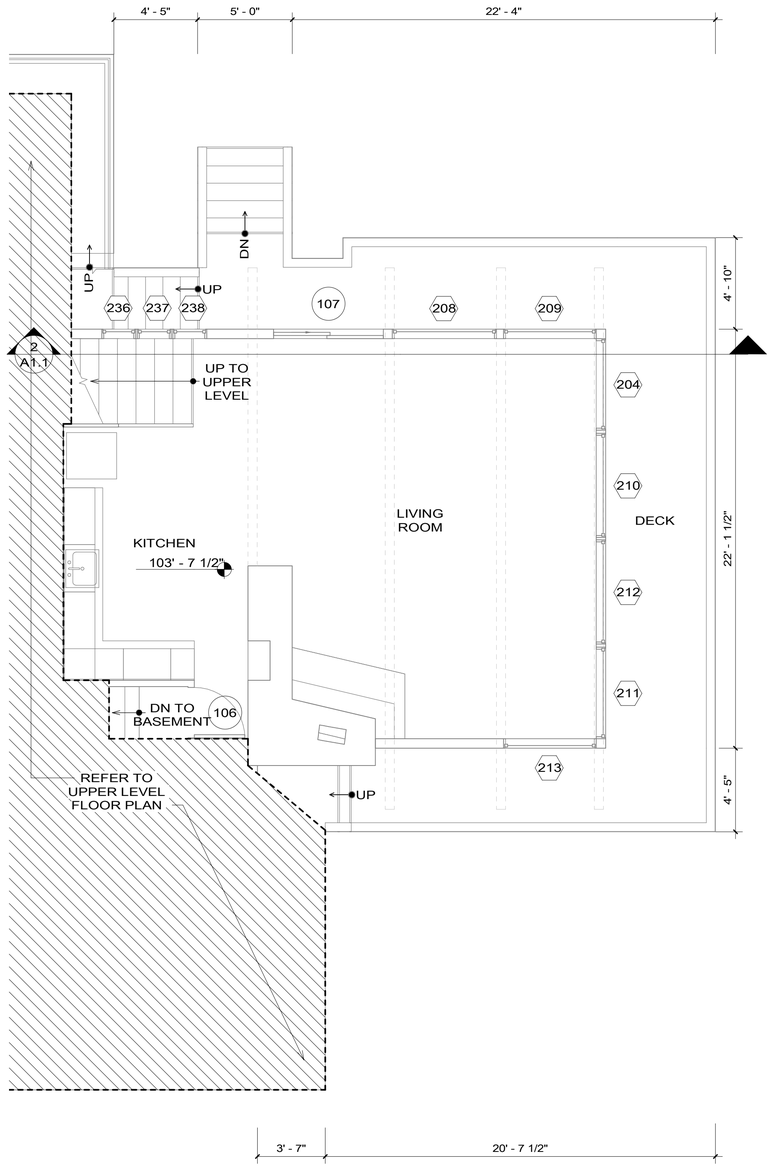
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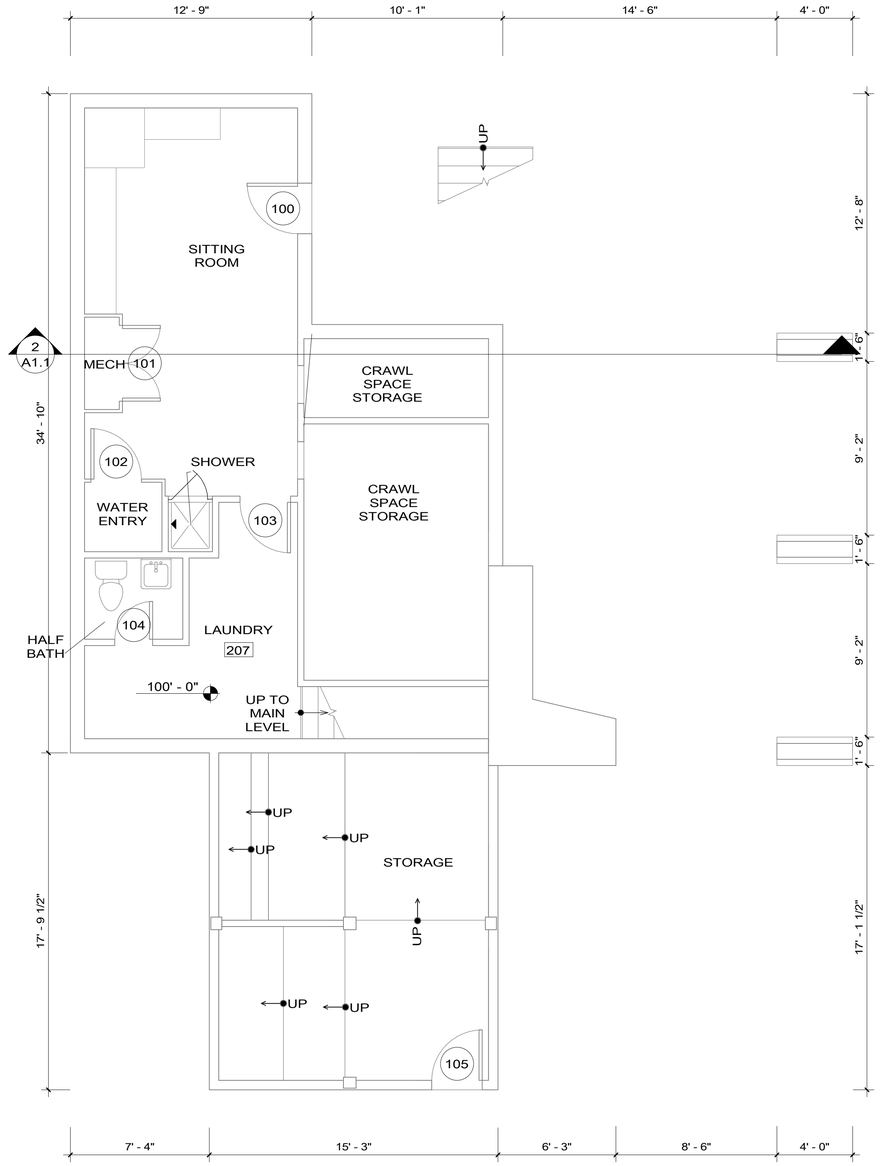
Appendix A. Existing Condition Plans

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3 A1.0 UPPER LEVEL
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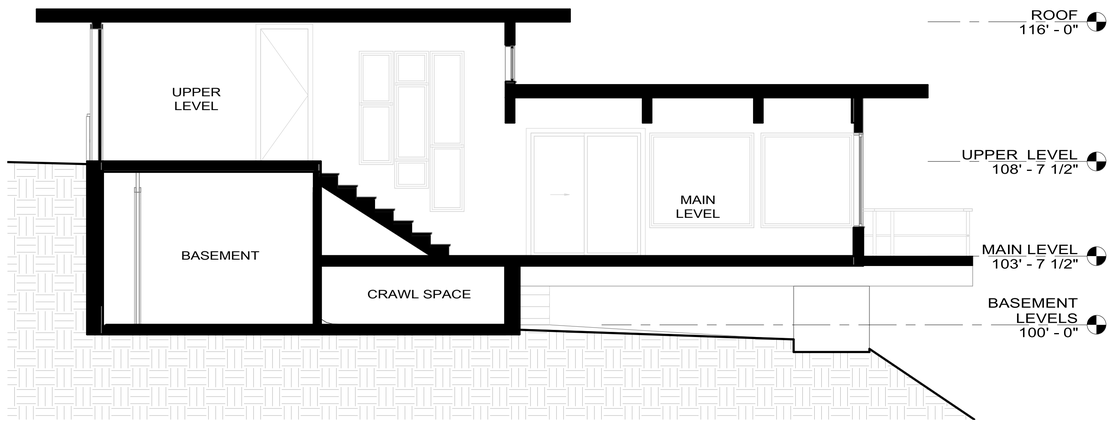
2 A1.0 MAIN LEVEL
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1 A1.0 BASEMENT LEVELS
SCALE A

THESE DRAWING ARE INTENDED TO BE SKETCH PLANS FOR THE HSR USE ONLY AND ARE NOT HABS OR FULL ARCHITECURAL EXISTING CONDITION DOCUMENTS

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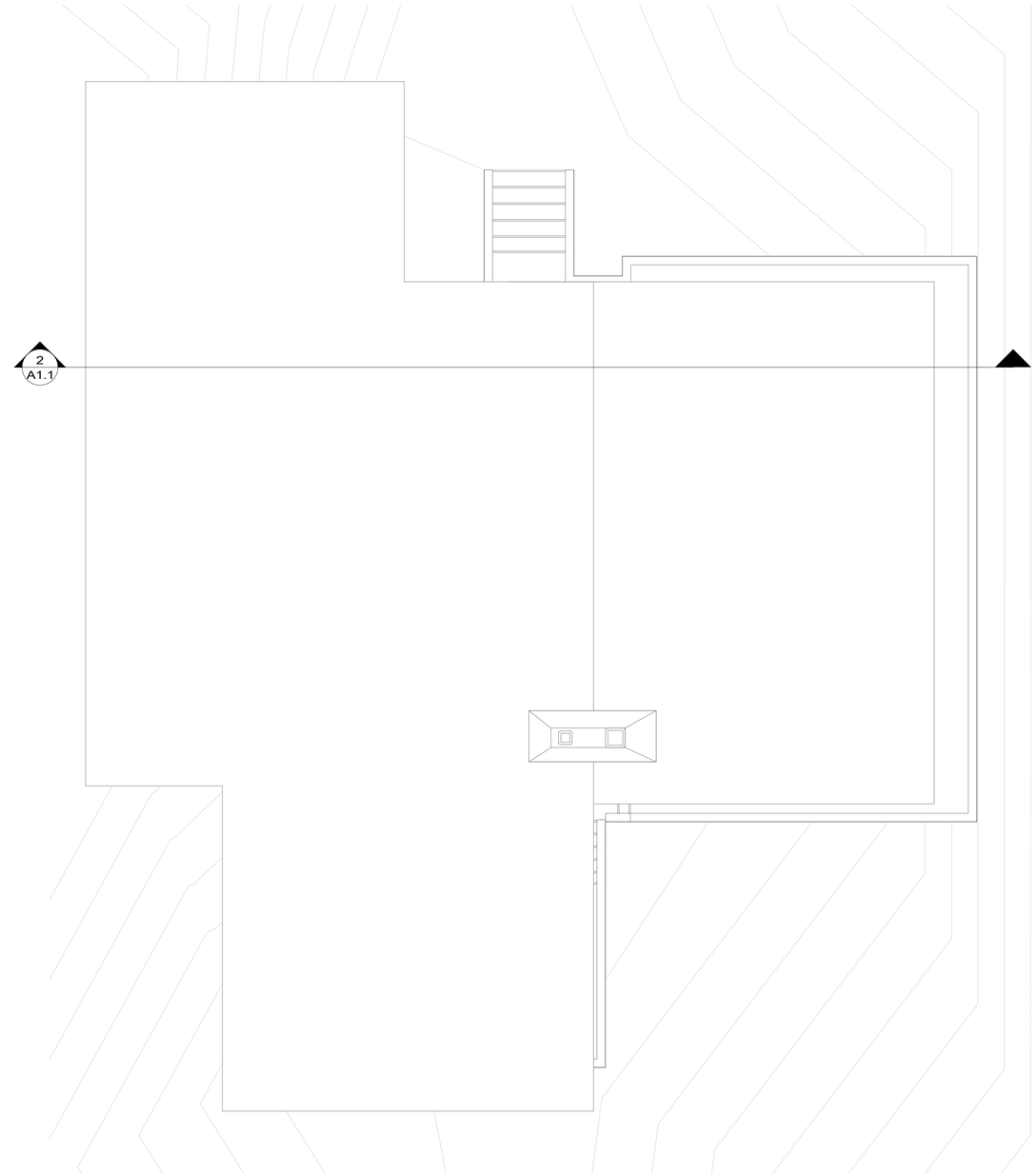
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2 A1.1 BUILDING SECTION - LONGITUDINAL

SCALE A

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1 A1.1 ROOF

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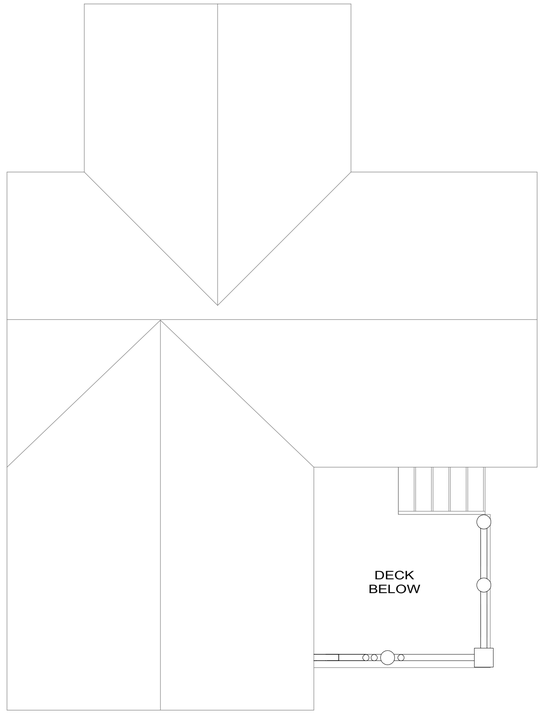
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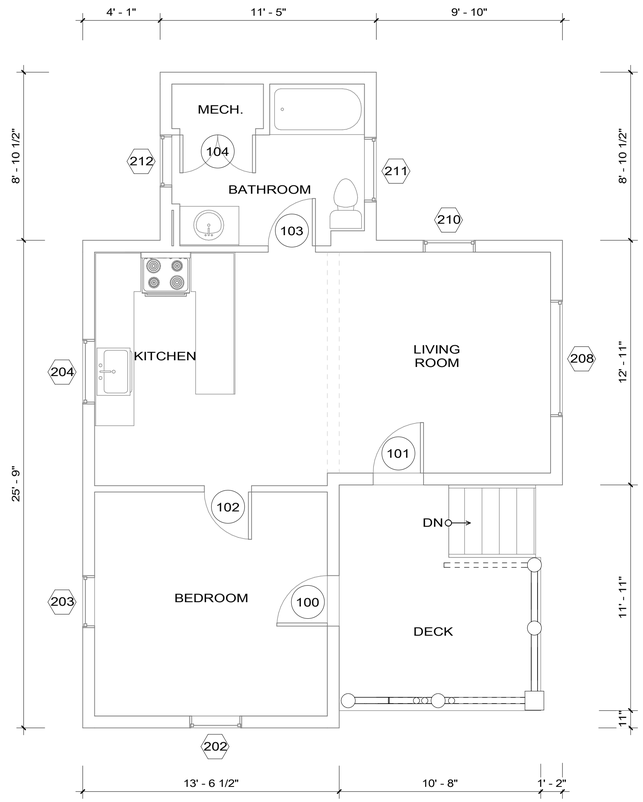
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2 A1.2 ROOF PLAN
SCALE A



1 A1.2 FIRST FLOOR PLAN
SCALE A

THESE DRAWING ARE INTENDED TO BE SKETCH PLANS FOR THE HSR USE ONLY AND ARE NOT HABS OR FULL ARCHITECURAL EXISTING CONDITION DOCUMENTS

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DESIGNED: CADD LWB TECH REVIEW: KC DATE: 07/08/2019	SUB SHEET NO. A1.2	TITLE OF SHEET MOBERLY GUEST CABIN PLANS GLACIER NATIONAL PARK	DRAWING NO. XXX XXXXXX PMIS/PKG NO. XXXXXX SHEET 3 OF 3

Appendix B. Use Memo & NPS Direction

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ANDERSON
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Memo

Date: August 14, 2019

To: Sierra Mandelko, Cultural Resource Specialist, Glacier NP

From: Liz Hallas and Kristen Craig, Anderson Hallas Architects

Subject: GLAC HSR – Moberly Use Options and Impacts

As discussed at our June 28th, 2019 close out meeting, for the consultant team to develop treatments for the Moberly Main House and Guest Cabin, direction is needed from NPS regarding if the use is intended to be residential or transitioned to a public use. Both uses will have different code and accessibility impacts which are presented below to inform the discussion.

The Moberly Main House and Guest Cabin are within a district that has been determined eligible for National Register listing. Modifications were made to the interior of the 1919 Guest Cabin by the Moberlys, but no significant changes appear to have been made since. The Main House appears to be substantially unchanged since it was constructed, with much of the historic fabric intact.

Assumptions for Both Uses:

1. These buildings will be seasonal use only, so winterization will not be included in the treatment recommendations.
2. Treatments to repair damaged fabric or deficiencies in the existing buildings must be completed regardless of the final use.

Impacts of Residential Use:

One of the options NPS is considering is an artist's residence which would continue the historic residential use of the building. From a building code standpoint, since it is not changing use, fewer code required modifications would be triggered. To meet accessibility requirements, one of the buildings would need to be accessible and that could more easily be provided at the Guest Cabin. Based on initial observations, it appears a parking spot could be added to the west side of the building and a ramp installed along the west and south sides of the Guest Cabin to provide access to the deck. Modifications to the building would require widening doors, changing door hardware, and reconfiguring the bathroom and part of the kitchen. However, the historic character and configuration of the Guest Cabin would remain largely intact.

Structurally, the option to maintain the residential status of the buildings does not trigger any code upgrades. All required strengthening and repair is due to deficiencies and wood decay that must be addressed regardless of intended use.

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For Electrical, there are a handful of improvements that would be required for residential use at both buildings to address deficiencies and bring them into compliance with current electrical code. Specific changes for a residential use are:

- Additional power devices (duplex/quads) based on requirements for residential spacing of devices.
- Replacement of residential grade fire alarm equipment – combination smoke detection/etc.
- Considerations for security needs as needed, determined by NPS.

Based on NPS Director Order #58 – Structural Fire Management, we anticipate that a fire suppression system would be required for the building. There is the potential that this could be waived, which would require approval from the Authority Having Jurisdiction and might require mitigation measures. If the buildings are used as Residential use, we can utilize NFPA (National Fire Protection Association) 13D – Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes as the compliance path. This Standard allows for a lower GPM flow rate and hence a smaller main water pipe to the buildings estimated at 2" to each building.

Regardless of the use, improvements will be required to the water and sanitary to update existing systems. For water, we would expect that due to the low number of residents, this system will not have to meet the requirements of a public water system. However, residential use would require a reliable source of potable water be provided for the buildings and the current spring system is not considered potable. We would recommend that a well source should replace the spring, providing a more reliable water supply with a potential for higher level of potability.

Impacts of Public Use:

The second option NPS is considering is a public use which may utilize the buildings as a museum, gathering space or gift shop. A change to this use would trigger a full upgrade to current building code requirements in any area in which work is done. Public use would require both buildings provide accessible access. At the Guest House, the same ramp access proposed for residential use could also serve as ABAAS access for the public.

At the Main House, it is more difficult to make the building ABAAS compliant and full compliance will have an impact on the historic fabric of the building. An ABAAS parking space would have to be created in front of the building, exact location dependent on other site modifications for ramps. To make the interior of the Main House accessible to varying degrees there are four options, listed in order of least to most impact on the historic fabric of the building:

1. Visitor access only to the Upper Level, with visual access only to Main Level.
    a. Main entry door would be widened, along with all room entrance doors on the Upper Level.
    b. Bathroom on the Upper Level would be reconfigured for ABAAS access, including the replacement of historic plumbing fixtures with ABAAS compliant fixtures.
    c. No public access would be provided to Main Level, it would be visual access only.
    d. No public access to the Basement.
        i. This reduces the public restroom count to one and requires study of the addition of another restroom in the building or on the site.

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    e. **This option is not fully ABAAS compliant, nor does it meet Universal Design Principles.**
2. Upper Level access through the front door and Main Level access via an exterior ramp.
    a. Main entry door would be widened, along with all room entrance doors on the upper level.
    b. Bathroom on the Upper Level would be reconfigured for ABAAS access, including the replacement of historic plumbing fixtures with ABAAS compliant fixtures.
    c. Ramp would be installed on the north side of the site to bring visitors to the deck level at the Main Level. This would be approximately 60' of ramp plus landings.
    d. Sliding glass door would need to be replaced with one that meets ABAAS requirements.
    e. No public access to the Basement.
        i. This reduces the public restroom count to one and requires study of the addition of another restroom in the building or on the site.
    f. An additional ramp could potentially provide access to the Basement but would require another 30' of ramp plus landings.
    g. **This option is not consistent with Universal Design Principles because it requires the user to exit the building. Specifically, Main Level users would need to exit the building to use the restroom on the upper level.**
3. Upper Level access through front door and lift installed at south end of Kitchen for access to Main Level.
    a. Main entry door would be widened, along with all room entrance doors on the Upper Level.
    b. Bathroom on the Upper Level would be reconfigured for ABAAS access, including the replacement of historic plumbing fixtures with ABAAS compliant fixtures.
    c. Existing stair down to the Main Level would remain intact. South section of the kitchen would be removed and an ABAAS lift installed to provide access between all three floor levels. Historic fabric would be removed for the installation of the lift.
    d. Modifications would be required in the Basement Level to make all rooms and doors compliant.
    e. **This option is ABAAS compliant. If the lift only connected the Upper and Main Levels, this would not be fully compliant.**
4. Upper Level access through front door and lift to Main Level installed at current stair.
    a. Main entry door would be widened, along with all room entrance doors on the upper level.
    b. Bathroom on the Upper Level would be reconfigured for ABAAS access, including the replacement of historic plumbing fixtures with ABAAS compliant fixtures.
    c. Existing stair down to the main level would be partially removed and a lift installed. Stair potentially would need to be widened into the north section of the kitchen, compromising the historic fabric at this visible/primary area.
    d. Modifications would be required in the Basement Level to make all rooms and doors compliant.
    e. **This option is ABAAS compliant. If the lift only connected the Upper and Main Levels, this would not be fully compliant.**

Structurally, the option to change occupancy triggers code upgrade for an increased live loading from 40psf to 100psf but does not significantly alter the cost of work since much of

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the repair and strengthening is required regardless of use. The only items of work that are triggered by change of occupancy at the Main House are the need to strengthen the two glue-laminated floor beams under the exterior walls and the 6x beam below the center of the south bedroom. Installation of a lift will require modifications to the structural system. Additional structural work is not triggered at the Guest Cabin but the required strengthening would be more robust so as to satisfy the higher required live load.

Based on NPS Director Order #58 – Structural Fire Management, we anticipate that a fire suppression system would be required for the building. There is the potential that this could be waived but this would require approval from the Authority Having Jurisdiction and might require mitigation measures. If the buildings are used as a museum, gathering place, or gift shop, we are required to use NFPA 13 – Standard for the Installation for Sprinkler Systems. This is a more robust requirement for fire sprinklers within each building requiring a higher GPM flow demand than needed for a residential system. The required fire line size to each building would be increased to a 4″ line and require a dedicated floor space of approximately 6′ x 4′ for equipment installation.

Ventilation is anticipated to be naturally provided using the operable windows. This would be a consideration for any museum materials stored in the buildings.

For Electrical, a public use as a museum, gathering space, or gift shop would have specific implications for a commercial space. These items include the anticipated required improvements:

- Additional device requirements as required for use – i.e. floor boxes if used for a meeting space that requires them, etc.
- Replacement of the existing panelboard with one that meets requirements for commercial use.
- Replacement of existing lighting controls to meet Energy Code Requirements with typical automatic control solutions – Vacancy, Occupancy, and Time Clock Control Requirements.
- Consideration for additional IT infrastructure – re-establish incoming phone service, considerations for additional low voltage equipment – IT Space, Rack, Switches, devices throughout, Wireless Access Points (WAP) dependent on the final proposed use.
- Implementation of a fully addressable fire alarm system as required for use.
- Considerations for security needs.

All existing restrooms are anticipated to be available for public use, with modifications to fixtures and layouts as required for ABAAS per above. For water, we would expect that due to the low number of visitors, this system will not have to meet the requirements of a public water system. However, we would recommend that a well source should replace the spring, providing a more reliable water supply with a potential for higher level of potability. If visitor numbers force a public system, then likely we would need to add disinfection and storage.

If a public use option is pursued, potential options for realignment of the driveway should be studied. Currently the slope exceeds 20% in some areas and access would be difficult for many two-wheel drive vehicles. If the entry point and alignment was shifted, then a new driveway could be established which is less steep. There would be significant trees impacted by this roadway and with no property mapping or topography available, we do not know how the design of a new driveway would work. If a public use is considered, we recommend doing this added design step sooner than later to determine the feasibility of access. Public use of the buildings would require ABAAS access and parking spots be provided for both buildings.

Summary
In summary, while both options will require code upgrades to the building, the public use option will significantly impact the historic fabric of the Main House. However, the impact on that fabric varies in each of the presented ABAAS options. Therefore, it is our recommendation to NPS for the uses to be residential – with one unit (Guest Cabin) to be modified for ABAAS and allow the other (Main House) to retain the historic fabric.

We request NPS/AHJ review the impacts of the different uses and ABAAS options and make an initial determination on use. If it is public use, please select the level or levels of possible access that you would like presented in the HSR. Please provide direction to the team by September 4th to direct the treatment(s) described in the HSR.

CC: File

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From:	Mandelko, Sierra
To:	Kristen Craig
Cc:	Elizabeth Hallas; Gilk, Deborah; Riddle, Mary
Subject:	Re: [EXTERNAL] GLAC - Moberly Use Memo
Date:	Friday, August 30, 2019 8:17:08 AM
Attachments:	image009.png image010.png image011.png image012.png

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Hi Kristen:

Thanks again for the memo. These are consistent with the recommendations from our closeout meeting. Please analyze the residential use option for the Historic Structure Report. Due to existing road closures in the winter, we anticipate winterization of the buildings.

Please include this memo in an appendix with the draft/final document.

The last outstanding piece is an updated project schedule.

Respectfully,

Sierra

On Wed, Aug 14, 2019 at 6:41 PM Kristen Craig <kristencraig@andarch.com> wrote:

> Hi Sierra,
>
> Attached is a memo regarding use options and their impacts on the buildings at Moberly for consideration by NPS. Please review and provide direction to our team by September 4th for incorporation into the HSR treatments.
>
> Thanks,
>
> Kristen

Kristen Craig, AIA, Associate

Project Manager

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Appendix C. Cost Estimate

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United States Department of the Interior
National Park Service
Class C Construction Cost Estimate

BASIS OF ESTIMATE

PROJECT INFORMATION

Project:	Moberly Main House & Guest Cabin HSR
Park:	Glacier National Park, Montana
Park Alpha:	GLAC
PMIS Number:	NA
Estimate Date:	2/25/2020 - V1.2
Prepared By:	Jim Flemming
Company:	ACC Cost Consultants, LLC
Address:	8060 SW Pfaffle St., Suite 110
City, State Zip:	Tigard, Oregon 97223
Phone:	503-718-0075

BACKGROUND SUPPORTING MATERIAL (Scope of Work):

This Historic Structures Report (HSR) identifies characteristics and features that convey the historic significance and character of cabins/camps along Lake McDonald and provides a plan for the long-term preservation and stewardship of the existing structures. The report provides park management with a comprehensive understanding of the physical evolution of the cabins and buildings, and provides managers with guidance for care of these features. Treatment recommendations include repair of building exterior & interior surfaces, structural components, mechanical, plumbing and electrical systems.

SOURCE OF COST DATA:

This is a preliminary estimate and therefore the pricing is rough order of magnitude pricing, with input from mechanical and electrical estimators.

ESTIMATE ASSUMPTIONS:

Assume a construction start of summer 2021.

MAJOR CHANGES FROM PREVIOUS ESTIMATE:

No previous estimate has been made for the Moberly Main house and guest cabin.

United States Department of the Interior
National Park Service
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DESCRIPTION OF MARK-UP & ADD-ONS:

Location Factor:	-11.70%	Basis of 2019 RS means = 100.0. Published Index Location, assume Kalispell, Mt. 88.3 Factor = 88.3/100.0 = .883.
Remoteness Factor:	4.40%	Site is approx. 44 miles from published commercial center. Site is in remote location, allow 1.0% per 10 miles - 44 / 10 = 4.4 %
Wage Rate Factor:	0.00%	Explain method and justify value
State & Local Taxes:	1.00%	Montana State Gross Receipts Tax
Design Contingency:	20.00%	No design has been done, this is in preliminary investigative stage, use 20%
Standard. General Conditions:	20.00%	Per NPS Handbook, typical range is 4 to 20%. This is Pre-Design level estimate allow 20%
Government General Conditions:	8.00%	Per NPS Handbook, typical range is 5 to 10%. This is Pre-Design level estimate allow 8.0%
Historic Preservation Factor:	10.00%	All buildings are historical landmarks.
Contractor Overhead:	15.00%	Per NPS Handbook, typical range is 10 to 25%. This is Pre-Design level estimate allow 15%
Contractor Profit:	10.00%	Per NPS Handbook, typical range is 10 to 25%. This is Pre-Design level estimate allow 10%
Bonds and Permits:	3.176%	Bonds 1.105%, Insurance 1.039% & Permits 1.032%
Contracting Method Adjustment:	10.00%	allowance at this stage
Annual Inflation Escalation Factor:	5.00%	Projected annual inflation rate.
Time Until Project Midpoint (Months)	22	assume mid point construction of September 2021.

OTHER COMMENTS:

This estimate is for direct construction cost only. It does not include furnishings & equipment, architect and engineer design fees, consultant fees, inspection and testing fees, plan check fees, financing costs, nor any other normally associated development costs. This is a probable cost estimate based on in-progress documentation provided by the architect. The actual bid documents will vary from this estimate due to document completion, detailing, specification, addendum, etc. The estimator has no control over the cost or availability of labor, equipment, materials, over market conditions or contractor's method of pricing, contractor's construction logistics and scheduling.

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PMIS: NA

Estimate By: Jim Flemming
Date: 2/25/2020 - V1.2

Reviewed By: SJP
Date: 02/25/20

Item No.	Description	Quantity	Unit	Cost/Unit	Total	Total	Total
1	Moberly Main House	2,270	SF	$171	$388,998		
2	Moberly Guest Cabin	600	SF	$504		$302,361	
9	Civil Work	1	VALUE	$360,000			$360,000
18	Not Used						
	Subtotal Direct Construction Costs				**$388,998**	**$302,361**	**$360,000**
	Value of Government Furnished Property (GFP) Included in Direct Cost (see footnote)*				**$0**	**$0**	**$0**
	Direct Cost Subtotal without GFP				**$388,998**	**$302,361**	**$360,000**
	Published Location Factor	-11.70%			-$45,513	-$35,376	-$42,120
	Remoteness Factor	4.40%			$17,116	$13,304	$15,840
	Federal Wage Rate Factor	0.00%			$0	$0	$0
	Montana State Gross Receipts Tax	1.00%			$3,889.98	$3,023.61	$3,600.00
	Design Contingency	20.00%			$77,800	$60,472	$72,000
	Total Direct Construction Costs				**$442,291**	**$343,785**	**$409,320**
	Standard General Conditions	20.00%			$88,458	$68,757	$81,864
	Government General Conditions	8.00%			$35,383	$27,503	$32,746
	Historic Preservation Factor	10.00%			$44,229	$34,378	$40,932
	Subtotal NET Construction Cost				**$610,361**	**$474,423**	**$564,862**
	Overhead	15.00%			$91,554	$71,163	$84,729
	Profit	10.00%			$61,036	$47,442	$56,486
	Estimated NET Construction Cost				**$762,952**	**$593,029**	**$706,077**
	Bonds & Permits	3.18%			**$24,231**	**$18,835**	**$22,425**
	Contracting Method Adjustment	10.00%			$76,295	$59,303	$70,608
	Inflation Escalation	22	Months	5.00%	$80,797	$62,802	$74,774
	Total Estimated NET Cost of Construction				**$944,275**	**$733,968**	**$873,883**

* GFP costs are only used when the Government pre-purchases items, or provides other materials out of Government inventory, to be installed by contractor. Adjustments and Markup on GFP only include Inflation Escalation; No other adjustment factors or O&P markup have been applied.

United States Department of the Interior
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LINE ITEM COST SUMMARY

Project:	**Moberly Main House & Guest Cabin HSR**	**Estimate By:**	Jim Flemming
Park:	**Glacier National Park, Montana**	**Date:**	2/25/2020 - V1.2
Park Alpha:	**GLAC**	**Reviewed By:**	SJP
PMIS Number:	**NA**	**Date:**	02/25/20
Summary Item 1	**Moberly Main House**	**Total Cost:**	$388,998

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
A20	**BASEMENT CONSTRUCTION**					
Level 3 Code	Patch Back S.O.G. after Plumbing Repairs	1	Sum	$ 1,000.00	$1,000	
Level 3 Code	Description	0	Unit	$ -	$0	
	SUBTOTAL BASEMENT CONSTRUCTION	**1**	**VALUE**	**$ 1,000.00**	**$1,000**	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
B10	**SUPERSTRUCTURE**					
Level 3 Code	Rebuild Deck - incl joists - Klear Gard 25 preservative	490	Sf	$ 35.00	$17,150	no p.t. lumber
Level 3 Code	Dutchman Repair to Glu-Lam Beams	3	Ea	$ 750.00	$2,250	
Level 3 Code	Rebuild Deck Railing	140	Lf	$ 75.00	$10,500	
Level 3 Code	Repair Roof Rafters As Needed	1	Sum	$ 10,000.00	$10,000	
Level 3 Code	Install Hurricane Ties @ High Roof	1	Sum	$ 1,000.00	$1,000	
Level 3 Code	Rebuild Eave Fascia	210	Lf	$ 15.00	$3,150	
Level 3 Code	Replace Deteriorated Soffit Boards	2270	Sf	$ 2.50	$5,675	
Level 3 Code	Reinstall Chimney Capstone & Clean Stone	2270	Sf	$ 5.00	$11,350	
Level 3 Code	Test Mortar @ Chimney - Allowance	1	Sum	$ 1,500.00	$1,500	
Level 3 Code	Replace Split Boards & Damaged Siding	2270	Sf	$ 3.50	$7,945	
Level 3 Code	Remove & Replace Deteriorated Cap @ Stone Walls	1	Sum	$ 2,500.00	$2,500	
Level 3 Code	Description	0	Unit	$ -	$0	
	SUBTOTAL SUPESTRUCTURE	**1**	**VALUE**	**$ 73,020.00**	**$73,020**	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
B20	**EXTERIOR CLOSURE**					
Level 3 Code	Clean & paint all Siding & Trim	2270	Sf	$ 5.00	$11,350	

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Summary Item 1 **Moberly Main House** **Total Cost:** $388,998

Level 3 Code	Clean & Paint Deck Railing, decking, risers, joists	2270	Sf	$ 2.00	$4,540	
Level 3 Code	Replace Seals Type A Windows	17	Ea	$ 150.00	$2,550	
Level 3 Code	Screens @ Clerestory Windows	4	Ea	$ 250.00	$1,000	
Level 3 Code	Clean All Windows	30	Ea	$ 50.00	$1,500	
Level 3 Code	Install Weatherstripping, ABA Hdwr @ Main Entry Door	1	Sum	$ 750.00	$750	
Level 3 Code	Install Weatherstripping, Escutcheon @ Type B doors	2	Ea	$ 500.00	$1,000	
Level 3 Code	Install Weatherstripping, Refurbish Type C door	1	Ea	$ 500.00	$500	
Level 3 Code	Adjust Door D to allow free swing operation	1	Ea	$ 500.00	$500	
Level 3 Code	Address Water Infiltration	1	Sum	$ 15,000.00	$15,000	closets, half bath, etc.
Level 3 Code	Replace Areas of Missing Chinking btwn Logs	1	Sum	$ 1,500.00	$1,500	storage room
Level 3 Code	Modify Window in Guest Bedroom for Egress	1	Sum	$ 2,500.00	$2,500	
Level 3 Code	Description	0	Unit	$ -	$0	
SUBTOTAL EXTERIOR CLOSURE		**1**	**VALUE**	**$ 42,690.00**	**$42,690**	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
B30	**ROOFING**					
Level 3 Code	Replace Roof Sheathing - Low Roof - 40%	236	Sf	$ 10.00	$2,360	4x t&g, shtg
Level 3 Code	Replace Roof Sheathing - High Roof - 40%	608	Sf	$ 3.00	$1,824	sheathing only
Level 3 Code	Replace Roofing	1900	Sf	$ 25.00	$47,500	
Level 3 Code	Replace Fascia, Gravel Stops as needed	1900	Sf	$ 2.00	$3,800	allowance
Level 3 Code	Reinstall Ballast	1900	Sf	$ 1.50	$2,850	
Level 3 Code	Rigid Insulation	1900	Sf	$ 5.00	$9,500	
Level 3 Code	Replace Gutters, Downspouts	1900	Sf	$ 2.00	$3,800	
Level 3 Code	Description	0	Unit	$ -	$0	
SUBTOTAL ROOFING		**1**	**VALUE**	**$ 71,634.00**	**$71,634**	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks

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PMIS Number:	**NA**	**Date:**	02/25/20

Summary Item 1 **Moberly Main House** **Total Cost:** $388,998

C10	**INTERIOR CONSTRUCTION**					
Level 3 Code	Replace Type A doors - install orig hdwr	3	Ea	$ 2,000.00	$6,000	
Level 3 Code	Replace Mechanical Closet Doors	1	Pr	$ 750.00	$750	
Level 3 Code	Description	0	Unit	$ -	$0	
	SUBTOTAL INTERIOR CONSTRUCTION	**1**	**VALUE**	**$ 6,750.00**	**$6,750**	

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Summary Item 1 **Moberly Main House** **Total Cost:** $388,998

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
C20	**STAIRCASES**					
Level 3 Code	Modify/New Stair Handrail - Allowance	1	Sum	$ 3,500.00	$3,500	
Level 3 Code	Description	0	Unit	$ -	$0	
	SUBTOTAL STAIRCASES	**1**	**VALUE**	**$ 3,500.00**	**$3,500**	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
C30	**INTERIOR FINISHES**					
Level 3 Code	Replace Carpet	1027	Sf	$ 5.00	$5,137	
Level 3 Code	Replace Laminate Flooring - Stairs	1	Sum	$ 1,500.00	$1,500	
Level 3 Code	Prep Floor	2270	Sf	$ 1.00	$2,270	
Level 3 Code	Replace Finishes @ Closet 1	1	Sum	$ 1,500.00	$1,500	
Level 3 Code	Replace Loose Tile in Bathroom	1	Sum	$ 1,000.00	$1,000	incl's base
Level 3 Code	Finish Exposed Countertop Edge	1	Sum	$ 500.00	$500	
Level 3 Code	Replace Finishes @ Cubby	1	Sum	$ 1,000.00	$1,000	
Level 3 Code	Polish Brass @ Fireplace	1	Sum	$ 500.00	$500	
Level 3 Code	Clean & Paint Concrete Wall - Laundry	1	Sum	$ 1,000.00	$1,000	
Level 3 Code	Replace Damaged Wood Paneling - Laundry	1	Sum	$ 2,000.00	$2,000	
Level 3 Code	Replace Finishes @ Half Bath, Paint Floor	1	Sum	$ 1,500.00	$1,500	
Level 3 Code	Replace Finishes @ Sitting Rm, Paint Floor	1	Sum	$ 3,500.00	$3,500	
Level 3 Code	Replace Damaged Wood Paneling - Mech Closet	1	Sum	$ 1,000.00	$1,000	
Level 3 Code	Replace Finishes @ Water Entry Closet, Paint Floor	1	Sum	$ 1,500.00	$1,500	
Level 3 Code	Misc Finishes	1	Sum	$ 5,000.00	$5,000	
Level 3 Code	Description	0	Unit	$ -	$0	
	SUBTOTAL INTERIOR FINISHES	**1**	**VALUE**	**$ 28,907.00**	**$28,907**	

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Summary Item 1 **Moberly Main House** **Total Cost:** $388,998

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
D20	**PLUMBING**					
Level 3 Code	Replace Main Water Entry Line & Drain Down Valves	1	Sum	$ 1,500.00	$1,500	
Level 3 Code	Replace Well Booster Pump & Tank	1	Sum	$ 3,500.00	$3,500	
Level 3 Code	Replace Water Heater - 52 gallon	1	Ea	$ 1,500.00	$1,500	
Level 3 Code	New Floor Drain for F.P. System - route to Sewer pump	1	Sum	$ 3,000.00	$3,000	
Level 3 Code	WC	1	Ea	$ 1,250.00	$1,250	
Level 3 Code	Shower	1	Ea	$ 2,400.00	$2,400	
Level 3 Code	Lavatory Sink	1	Ea	$ 1,200.00	$1,200	
Level 3 Code	Kitchen Sink faucet & garbage disposal	1	Ea	$ 1,000.00	$1,000	
Level 3 Code	New Faucet for Upper Bathroom Sink	1	Ea	$ 500.00	$500	
Level 3 Code	New Faucet for Upper Shower/Tub Combo	1	Ea	$ 750.00	$750	
Level 3 Code	New Clothes Washer Box w/ water hammer arrestor	1	Ea	$ 750.00	$750	
Level 3 Code	New Sewage Ejector Pump, New Copper Piping	1	Sum	$ 2,500.00	$2,500	
Level 3 Code	Replace Main Sanitary Line out to 5' o.s. Building	1	Sum	$ 1,500.00	$1,500	
Level 3 Code	Misc Plumbing Items	1	Sum	$ 1,500.00	$1,500	
Level 3 Code	Description	0	Unit	$ -	$0	
	SUBTOTAL PLUMBING	**1**	**VALUE**	**$ 22,850.00**	**$22,850**	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
D30	**HVAC**					
Level 3 Code	Replace Exhaust Fan in Basement, w/ ducting	1	Sum	$ 2,500.00	$2,500	
Level 3 Code	Provide New Dryer Vent	1	Ea	$ 750.00	$750	
Level 3 Code	Test Electric Baseboard Heaters for Operation	1	Sum	$ 1,500.00	$1,500	
Level 3 Code	Replace Baseboard Heater in Half Bath	1	Sum	$ 1,000.00	$1,000	
Level 3 Code	Clean & Inspect Chimney	1	Sum	$ 1,500.00	$1,500	
Level 3 Code	Clean & Inspect Range Hood, Ductwork	1	Sum	$ 1,500.00	$1,500	
Level 3 Code	Add New Insulation @ Range Hood Ductwork	1	Sum	$ 1,000.00	$1,000	

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Summary Item 1 **Moberly Main House** **Total Cost:** $388,998

Level 3 Code	Test & Clean Exhaust Fan in Upper Lvl Bathroom	1	Sum	$ 750.00	$750	
Level 3 Code	Misc HVAC Items	1	Sum	$ 1,500.00	$1,500	
Level 3 Code	Description	0	Unit	$ -	$0	
	SUBTOTAL HVAC	**1**	**VALUE**	**$ 12,000.00**	**$12,000**	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
D40	**FIRE PROTECTION**					
Level 3 Code	Fire Pump & Tank System	1	Sum	$ 5,000.00	$5,000	
Level 3 Code	Fire Sprinkler Piping, Heads	2270	Sf	$ 5.00	$11,350	Copper, CPVC
Level 3 Code	Flow Sensor Alarm	1	Sum	$ 1,000.00	$1,000	
Level 3 Code	Description	0	Unit	$ -	$0	
	SUBTOTAL FIRE PROTECTION	**1**	**VALUE**	**$ 17,350.00**	**$17,350**	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
D50	**ELECTRICAL**					
Level 3 Code	UG Utility Line	100	Lf	$ 33.60	$3,360	
Level 3 Code	Trenching	100	Lf	$ 56.00	$5,600	
Level 3 Code	Install MCB Loadcenter	1	Ea	$ 1,120.00	$1,120	
Level 3 Code	Install TVSS	1	Ea	$ 5,880.00	$5,880	
Level 3 Code	Install Circuit-Sprinkler Pump	1	Sum	$ 602.00	$602	
Level 3 Code	Re-circuit Sewage/Booster Pumps	2	Ea	$ 994.00	$1,988	
Level 3 Code	Re-circuit Range/Hood	1	Sum	$ 1,064.00	$1,064	
Level 3 Code	Install New Branch Circuits	1	Sum	$ 9,856.00	$9,856	
Level 3 Code	Install Circuit & Baseboard Heater in Basement Bath	1	Ea	$ 1,498.00	$1,498	
Level 3 Code	Install Duplex Outlet/Cover	20	Ea	$ 70.00	$1,400	
Level 3 Code	Install GFCI Outlet/Cover	5	Ea	$ 84.00	$420	
Level 3 Code	Install LED Lamps	25	Ea	$ 28.56	$714	

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Level 3 Code	Install Occ Sensors	8	Ea	$ 119.00	$952	
Level 3 Code	Install New Comm Line to Building	100	Lf	$ 21.00	$2,100	
Level 3 Code	Trenching	100	Lf	$ 42.00	$4,200	
Level 3 Code	Rough In Data/Phone Location	3	Ea	$ 252.00	$756	
Level 3 Code	Install FA Smoke Detector	8	Ea	$ 350.00	$2,800	
Level 3 Code	Install FA Strobe	4	Ea	$ 378.00	$1,512	
Level 3 Code	Install FA Panel/Dialer	1	Ea	$ 3,892.00	$3,892	
Level 3 Code	Install Keypad Lockset	1	Ea	$ 518.00	$518	
Level 3 Code	Description	0	Unit	$ -	$0	
	SUBTOTAL ELECTRICAL	**1**	**VALUE**	**$ 50,232.00**	**$50,232**	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
E20	**FURNISHINGS**					
Level 3 Code	Replace Kitchen Countertop	1	Sum	$ 1,500.00	$1,500	laminate
Level 3 Code	Adjust Cabinet Drawers in Kitchen	1	Sum	$ 1,000.00	$1,000	
Level 3 Code	Description	0	Unit	$ -	$0	
	SUBTOTAL FURNISHINGS	**1**	**VALUE**	**$ 2,500.00**	**$2,500**	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
F20	**SELECTIVE BUILDING DEMOLITION**					
Level 3 Code	Remove Roofing & Biologic Growth	1900	Sf	$ 1.50	$2,850	salvage ballast
Level 3 Code	Remove Roof Sheathing - 40%	760	Sf	$ 1.00	$760	
Level 3 Code	Remove Flooring	2270	Sf	$ 1.00	$2,270	
Level 3 Code	Remove Loose Tile - Bathroom Walls, floors	1	Sum	$ 750.00	$750	
Level 3 Code	Remove Deck & Railings	1	Sum	$ 2,000.00	$2,000	
Level 3 Code	Remove Concrete Floor for Plumbing Repairs	1	Sum	$ 1,500.00	$1,500	basement
Level 3 Code	M/E/P Removals	1	Sum	$ 2,000.00	$2,000	

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Summary Item 1 **Moberly Main House** **Total Cost:** $388,998

Level 3 Code	Misc Removals	2270	Sf	$ 0.50	$1,135	
Level 3 Code	Hazardous Material Abatement Allowance	2270	Sf	$ 15.00	$34,050	
Level 3 Code	Description	0	Unit	$ -	$0	
SUBTOTAL SELECTIVE BUILDING DEMOLITION		**1**	**VALUE**	**$ 47,315.00**	**$47,315**	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
G10	**SITE PREPARATION**					
Level 3 Code	Remove Dirt Built up on Driveway	1	Sum	$ 1,000.00	$1,000	
Level 3 Code	Add Drain Pan @ Entry	1	Sum	$ 750.00	$750	
Level 3 Code	Add Foundation Drains @ Uphill sides	100	Lf	$ 40.00	$4,000	
Level 3 Code	Misc Site Preparation Items	1	Sum	$ 1,000.00	$1,000	
Level 3 Code	Description	0	Unit	$ -	$0	
SUBTOTAL SITE PREPARATION		**1**	**VALUE**	**$ 6,750.00**	**$6,750**	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
G20	**SITE IMPROVEMENTS**					
Level 3 Code	Replace Deteriorated Wood Steps	1	Sum	$ 2,500.00	$2,500	
Level 3 Code	Description	0	Unit	$ -	$0	
SUBTOTAL SITE IMPROVEMENTS		**1**	**VALUE**	**$ 2,500.00**	**$2,500**	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
TOTAL COST - Moberly Main House		**2270**	**SF**	**$ 171.36**	**$388,998**	

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Park Alpha:	**GLAC**	**Reviewed By:**	SJP
PMIS Number:	**NA**	**Date:**	02/25/20
Summary Item 1	**Moberly Guest Cabin**	**Total Cost:**	$302,361

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
A10	**FOUNDATIONS**					
Level 3 Code	Replace Log & Stone Foundation w/ concrete	120	Lf	$ 150.00	$18,000	
Level 3 Code	Description	0	Unit	$ -	$0	
	SUBTOTAL FOUNDATIONS	**1**	**VALUE**	**$ 18,000.00**	**$18,000**	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
B10	**SUPERSTRUCTURE**					
Level 3 Code	Strengthen Floor Framing - add intermed log girders	600	Sf	$ 25.00	$15,000	
Level 3 Code	Add Collar Ties to Roof Framing	1	Sum	$ 5,000.00	$5,000	
Level 3 Code	Repair Roof Rafters As Needed	1	Sum	$ 10,000.00	$10,000	
Level 3 Code	Rebuild Eave Outriggers	1	Sum	$ 3,500.00	$3,500	
Level 3 Code	Tie Roof Framing to Wall Structure	120	Lf	$ 20.00	$2,400	
Level 3 Code	Tie New Fdn to Wall Structure	120	Lf	$ 10.00	$1,200	
Level 3 Code	Anchor Pony Wall Extension to Log Wall below	1	Sum	$ 5,000.00	$5,000	
Level 3 Code	Connect Gable King Post to wall below	1	Sum	$ 2,000.00	$2,000	
Level 3 Code	Material Testing @ Chinking	1	Sum	$ 1,500.00	$1,500	
Level 3 Code	Description	0	Unit	$ -	$0	
	SUBTOTAL SUPESTRUCTURE	**1**	**VALUE**	**$ 45,600.00**	**$45,600**	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
B20	**EXTERIOR CLOSURE**					
Level 3 Code	Repair or Replace Deteriorated Wall Logs near grade	1	Sum	$ 5,000.00	$5,000	
Level 3 Code	Reset & Reattach N. Stacked Log Wall to Corner Post	1	Sum	$ 1,500.00	$1,500	
Level 3 Code	Replace Deteriorated Siding above Logs - 15%	90	Sf	$ 20.00	$1,800	

United States Department of the Interior
National Park Service
Class C Construction Cost Estimate

LINE ITEM COST SUMMARY

Project:	**Moberly Main House & Guest Cabin HSR**	**Estimate By:**	Jim Flemming
Park:	**Glacier National Park, Montana**	**Date:**	2/25/2020 - V1.2
Park Alpha:	**GLAC**	**Reviewed By:**	SJP
PMIS Number:	**NA**	**Date:**	02/25/20

Summary Item 1 **Moberly Guest Cabin** **Total Cost:** $302,361

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
Level 3 Code	Replace Deteriorated Siding below Logs - 50%	180	Sf	$ 20.00	$3,600	
Level 3 Code	Clean Existing Siding	1	Sum	$ 1,500.00	$1,500	
Level 3 Code	Replace Deck & Stairs Completely	125	Sf	$ 50.00	$6,250	
Level 3 Code	Replace Deck Railing - Log & Rail	25	Lf	$ 150.00	$3,750	
Level 3 Code	Restore Operability to Windows	7	Ea	$ 1,200.00	$8,400	
Level 3 Code	Widen Door Openings to 3'w	2	Ea	$ 750.00	$1,500	
Level 3 Code	Replace Door -Type 1 - SCWD - Half Lite	1	Ea	$ 2,000.00	$2,000	
Level 3 Code	Replace Door - Type 2 - SCWD	1	Ea	$ 2,000.00	$2,000	
Level 3 Code	Paint Doors	2	Ea	$ 130.00	$260	
Level 3 Code	Description	0	Unit	$ -	$0	
	SUBTOTAL EXTERIOR CLOSURE	**1**	**VALUE**	**$ 31,060.00**	**$31,060**	
B30	**ROOFING**					
Level 3 Code	Replace Roof Sheathing - 50%	430	Sf	$ 3.00	$1,290	
Level 3 Code	Replace Roofing - Wood Shingle	860	Sf	$ 25.00	$21,500	
Level 3 Code	Replace Gutters, Downspouts	1	Sum	$ 750.00	$750	
Level 3 Code	Description	0	Unit	$ -	$0	
	SUBTOTAL ROOFING	**1**	**VALUE**	**$ 23,540.00**	**$23,540**	
C10	**INTERIOR CONSTRUCTION**					
Level 3 Code	Modify Kitchen to provide accessible clearances	1	Sum	$ 5,000.00	$5,000	
Level 3 Code	Modify Bathroom to provide accessible clearances	1	Sum	$ 5,000.00	$5,000	
Level 3 Code	Widen Door Opening to Bedroom to 3'w	1	Ea	$ 750.00	$750	
Level 3 Code	New Door to Bathroom - 3'w	1	Ea	$ 2,000.00	$2,000	
Level 3 Code	New Door to Bedroom - 3'w	1	Ea	$ 2,000.00	$2,000	

United States Department of the Interior
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Class C Construction Cost Estimate

LINE ITEM COST SUMMARY

Project:	**Moberly Main House & Guest Cabin HSR**	**Estimate By:**	Jim Flemming
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Park Alpha:	**GLAC**	**Reviewed By:**	SJP
PMIS Number:	**NA**	**Date:**	02/25/20

Summary Item 1 **Moberly Guest Cabin** **Total Cost:** $302,361

Level 3 Code	Paint Doors	2	Ea	$ 130.00	$260	
Level 3 Code	Description	0	Unit	$ -	$0	
SUBTOTAL INTERIOR CONSTRUCTION		**1**	**VALUE**	**$ 15,010.00**	**$15,010**	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
C30	**INTERIOR FINISHES**					
Level 3 Code	Replace Carpet	330	Sf	$ 5.00	$1,650	
Level 3 Code	Replace Sheet Flooring	230	Sf	$ 10.00	$2,300	
Level 3 Code	Prep Floor	560	Sf	$ 1.00	$560	
Level 3 Code	Replace Fibreboard Ceiling Finish	330	Sf	$ 10.00	$3,300	living rm, kitchen
Level 3 Code	Replace Stained Ceiling Tiles in Bedroom	1	Sum	$ 750.00	$750	
Level 3 Code	Misc Finishes	1	Sum	$ 5,000.00	$5,000	
Level 3 Code	Description	0	Unit	$ -	$0	
SUBTOTAL INTERIOR FINISHES		**1**	**VALUE**	**$ 13,560.00**	**$13,560**	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
D20	**PLUMBING**					
Level 3 Code	New 1" Water Line & Drain Down Valves to Pump/Tank	1	Sum	$ 3,500.00	$3,500	verify length
Level 3 Code	Replace Well Booster Pump & Tank	1	Sum	$ 3,500.00	$3,500	
Level 3 Code	Replace Water Heater - 30 gallon	1	Ea	$ 1,500.00	$1,500	incl's expansion tank
Level 3 Code	New Floor Drain for F.P. System, Water Heater	1	Sum	$ 3,000.00	$3,000	
Level 3 Code	New Water lines to fixtures, Water Heater	1	Sum	$ 5,000.00	$5,000	
Level 3 Code	New Waste/Vent lines	1	Sum	$ 3,500.00	$3,500	
Level 3 Code	WC - ABA	1	Ea	$ 1,250.00	$1,250	
Level 3 Code	Shower - ABA	1	Ea	$ 3,200.00	$3,200	
Level 3 Code	Lavatory Sink - ABA	1	Ea	$ 1,200.00	$1,200	
Level 3 Code	Kitchen Sink w/ garbage disposal	1	Ea	$ 1,750.00	$1,750	

United States Department of the Interior
National Park Service
Class C Construction Cost Estimate

LINE ITEM COST SUMMARY

Project:	**Moberly Main House & Guest Cabin HSR**	**Estimate By:**	Jim Flemming
Park:	**Glacier National Park, Montana**	**Date:**	2/25/2020 - V1.2
Park Alpha:	**GLAC**	**Reviewed By:**	SJP
PMIS Number:	**NA**	**Date:**	02/25/20

Summary Item 1 **Moberly Guest Cabin** **Total Cost:** $302,361

Level 3 Code	Misc Plumbing Items	1	Sum	$ 1,500.00	$1,500	
Level 3 Code	Description	0	Unit	$ -	$0	
SUBTOTAL PLUMBING		**1**	**VALUE**	**$ 28,900.00**	**$28,900**	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
D30	**HVAC**					
Level 3 Code	Test Electric Baseboard Heaters for Operation	1	Sum	$ 1,500.00	$1,500	
Level 3 Code	New Baseboard Heater in Bedroom	1	Sum	$ 1,000.00	$1,000	
Level 3 Code	Add Ducting to O/S From Range Hood	1	Sum	$ 1,500.00	$1,500	
Level 3 Code	Misc HVAC Items	1	Sum	$ 1,500.00	$1,500	
Level 3 Code	Description	0	Unit	$ -	$0	
SUBTOTAL HVAC		**1**	**VALUE**	**$ 5,500.00**	**$5,500**	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
D40	**FIRE PROTECTION**					
Level 3 Code	425 Gallon Cistern & Pump	1	Sum	$ 5,000.00	$5,000	
Level 3 Code	Fire Sprinkler Piping, Heads	600	Sf	$ 6.00	$3,600	Copper, CPVC
Level 3 Code	Flow Sensor Alarm	1	Sum	$ 1,000.00	$1,000	
Level 3 Code	Description	0	Unit	$ -	$0	
SUBTOTAL FIRE PROTECTION		**1**	**VALUE**	**$ 9,600.00**	**$9,600**	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
D50	**ELECTRICAL**					
Level 3 Code	UG Utility Line	100	Lf	$ 33.60	$3,360	
Level 3 Code	Trenching	100	Lf	$ 56.00	$5,600	

United States Department of the Interior
National Park Service
Class C Construction Cost Estimate

LINE ITEM COST SUMMARY

Project:	**Moberly Main House & Guest Cabin HSR**	**Estimate By:**	Jim Flemming
Park:	**Glacier National Park, Montana**	**Date:**	2/25/2020 - V1.2
Park Alpha:	**GLAC**	**Reviewed By:**	SJP
PMIS Number:	**NA**	**Date:**	02/25/20

Summary Item 1 **Moberly Guest Cabin** **Total Cost:** $302,361

Level 3 Code	Install MCB Loadcenter	1	Ea	$ 1,120.00	$1,120	
Level 3 Code	Install TVSS	1	Ea	$ 5,880.00	$5,880	
Level 3 Code	Install Circuit-Sprinkler Pump	1	Sum	$ 504.00	$504	
Level 3 Code	Re-circuit Sewage/Booster Pumps	2	Ea	$ 700.00	$1,400	
Level 3 Code	Re-circuit Range/Hood	1	Sum	$ 868.00	$868	
Level 3 Code	Install New Branch Circuits	1	Sum	$ 5,320.00	$5,320	
Level 3 Code	Install Circuit & Baseboard Heater in Bedroom	1	Ea	$ 1,470.00	$1,470	
Level 3 Code	Install Duplex Outlet/Cover	8	Ea	$ 70.00	$560	
Level 3 Code	Install GFCI Outlet/Cover	3	Ea	$ 84.00	$252	
Level 3 Code	Install LED Lamps	12	Ea	$ 28.56	$343	
Level 3 Code	Install Occ Sensors	3	Ea	$ 119.00	$357	
Level 3 Code	Install New Comm Line to Building	100	Lf	$ 21.00	$2,100	
Level 3 Code	Trenching	100	Lf	$ 42.00	$4,200	
Level 3 Code	Rough In Data/Phone Location	2	Ea	$ 252.00	$504	
Level 3 Code	Install FA Smoke Detector	3	Ea	$ 350.00	$1,050	
Level 3 Code	Install FA Strobe	2	Ea	$ 378.00	$756	
Level 3 Code	Install FA Panel/Dialer	1	Ea	$ 3,892.00	$3,892	
Level 3 Code	Install Keypad Lockset	1	Ea	$ 518.00	$518	
Level 3 Code	Description	0	Unit	$ -	$0	
	SUBTOTAL ELECTRICAL	**1**	**VALUE**	**$ 40,053.72**	**$40,054**	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
E10	**EQUIPMENT**					
Level 3 Code	Refrigerator	1	Ea	$ 1,500.00	$1,500	
Level 3 Code	Range w/ hood	1	Ea	$ 2,000.00	$2,000	
Level 3 Code	Microwave	1	Ea	$ 400.00	$400	
Level 3 Code	Description	0	Unit	$ -	$0	
	SUBTOTAL EQUIPMENT	**1**	**VALUE**	**$ 3,900.00**	**$3,900**	

United States Department of the Interior
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Class C Construction Cost Estimate

LINE ITEM COST SUMMARY

Project:	**Moberly Main House & Guest Cabin HSR**	**Estimate By:**	Jim Flemming
Park:	**Glacier National Park, Montana**	**Date:**	2/25/2020 - V1.2
Park Alpha:	**GLAC**	**Reviewed By:**	SJP
PMIS Number:	**NA**	**Date:**	02/25/20

Summary Item 1 **Moberly Guest Cabin** **Total Cost:** $302,361

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
E20	**FURNISHINGS**					
Level 3 Code	Replace Kitchen Cabinets	20	Lf	$ 400.00	$8,000	
Level 3 Code	Replace Bathroom Vanity	3	Lf	$ 300.00	$900	
Level 3 Code	Description	0	Unit	$ -	$0	
	SUBTOTAL FURNISHINGS	**1**	**VALUE**	**$ 8,900.00**	**$8,900**	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
F20	**SELECTIVE BUILDING DEMOLITION**					
Level 3 Code	Remove Roofing	860	Sf	$ 1.50	$1,290	
Level 3 Code	Remove Roof Sheathing - 50%	430	Sf	$ 1.00	$430	
Level 3 Code	Remove Deck & Railings	125	Sf	$ 7.50	$938	
Level 3 Code	Remove Doors	2	Ea	$ 100.00	$200	
Level 3 Code	Remove Flooring	430	Sf	$ 1.00	$430	
Level 3 Code	Demo Kitchen Cabinets, Appliances	1	Sum	$ 1,000.00	$1,000	
Level 3 Code	Demo Bathroom Fixtures, Walls, Etc.	1	Sum	$ 1,500.00	$1,500	
Level 3 Code	M/E/P Removals	1	Sum	$ 2,000.00	$2,000	
Level 3 Code	Misc Removals	600	Sf	$ 0.50	$300	
Level 3 Code	Hazardous Material Abatement Allowance	600	Sf	$ 20.00	$12,000	
Level 3 Code	Description	0	Unit	$ -	$0	
	SUBTOTAL SELECTIVE BUILDING DEMOLITION	**1**	**VALUE**	**$ 20,087.50**	**$20,088**	

United States Department of the Interior
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Class C Construction Cost Estimate

LINE ITEM COST SUMMARY

Project:	**Moberly Main House & Guest Cabin HSR**	**Estimate By:**	Jim Flemming
Park:	**Glacier National Park, Montana**	**Date:**	2/25/2020 - V1.2
Park Alpha:	**GLAC**	**Reviewed By:**	SJP
PMIS Number:	**NA**	**Date:**	02/25/20

Summary Item 1 **Moberly Guest Cabin** **Total Cost:** $302,361

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
G10	**SITE PREPARATION**					
Level 3 Code	Grading for positive Drainage	1	Sum	$ 1,500.00	$1,500	
Level 3 Code	Grading for Accessible Path, Parking	1	Sum	$ 2,500.00	$2,500	
Level 3 Code	Add Foundation Drains @ Uphill sides	75	Lf	$ 40.00	$3,000	
Level 3 Code	Misc Site Preparation Items	1	Sum	$ 1,000.00	$1,000	
Level 3 Code	Description	0	Unit	$ -	$0	
	SUBTOTAL SITE PREPARATION	**1**	**VALUE**	**$ 8,000.00**	**$8,000**	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
G20	**SITE IMPROVEMENTS**					
Level 3 Code	Provide Accessible Path to Front Deck	1	Sum	$ 15,000.00	$15,000	
Level 3 Code	Accessible Parking @ West Side Building	1	Sum	$ 2,500.00	$2,500	
Level 3 Code	New retaining Wall @ West Elevation	36	Lf	$ 275.00	$9,900	
Level 3 Code	Description	0	Unit	$ -	$0	
	SUBTOTAL SITE IMPROVEMENTS	**1**	**VALUE**	**$ 27,400.00**	**$27,400**	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
TOTAL COST - Moberly Guest Cabin		**600**	**SF**	**$ 503.94**	**$302,361**	

United States Department of the Interior
National Park Service
Class C Construction Cost Estimate

LINE ITEM COST SUMMARY

Project:	**Moberly Main House & Guest Cabin HSR**	**Estimate By:**	Jim Flemming
Park:	**Glacier National Park, Montana**	**Date:**	2/25/2020 - V1.2
Park Alpha:	**GLAC**	**Reviewed By:**	SJP
PMIS Number:	**NA**	**Date:**	02/25/20
Summary Item	**Civil Work**	**Total Cost:**	$360,000

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
G10	**SITE PREPARATION**					
Level 3 Code	Grading for Accessibility Requirements	1	Sum	$ 15,000.00	$15,000	allowance
Level 3 Code	Description	0	Unit	$ -	$0	
SUBTOTAL SITE PREPARATION		**1**	**VALUE**	**$ 15,000.00**	**$15,000**	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
G20	**SITE IMPROVEMENTS**					
Level 3 Code	Realignment of Driveway to Lessen slope	1	Sum	$ 60,000.00	$60,000	
Level 3 Code	Description	0	Unit	$ -	$0	
SUBTOTAL SITE IMPROVEMENTS		**1**	**VALUE**	**$ 60,000.00**	**$60,000**	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
G30	**SITE CIVIL/MECHANICAL UTILITIES**					
Level 3 Code	Water System Allowance (Domestic & Fire)	1	Sum	$ 75,000.00	$75,000	new well source
Level 3 Code	Wastewater System Allowance - 500' to exist	1	Sum	$ 200,000.00	$200,000	lift sta., conn to exist
Level 3 Code	French Drain on West Side of Buildings	1	Sum	$ 10,000.00	$10,000	
Level 3 Code	Description	0	Unit	$ -	$0	
SUBTOTAL SITE CIVIL/MECHANICAL UTILITES		**1**	**VALUE**	**$ 285,000.00**	**$285,000**	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
TOTAL COST - Civil Work		**1**	**Sum**	**$ 360,000.00**	**$360,000**	

Appendix D. Hazardous Material Test Results

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Glacier National Park

HAZARDOUS MATERIALS INSPECTION COVER SHEET

Building Title WLD Fish Creek Building #12623 Moberly Residence

Park Location Fish Creek

Building No. 1263 **FMSS Location No.** 7710

PREPARATION FOR SURVEY

1. Check and identify existing HAZMAT records; Identify what was found and where; If none go to paragraph 4

[✓] Local Records search conducted on 8/16/13 by Daryl Kluth Found N (Y/N)

List what was found: _____

[ ] TIC Records search conducted on _____ by _____ Found _____(Y/N)

List what was found: _____

2. If records were found do they address the entire building since the last rehab or renovation? _____(Y/N)
If NO then proceed to paragraph 3; If YES, there is no need to proceed with this form.

3. Check each HAZMAT suspected in this building then elaborate on where these may be located:

[✓] Asbestos Containing Materials: Floor covering

[✓] Lead-based Paint: Bathroom walls

[✓] Rodents (Hantavirus): _____

[✓] Mold: Kitchen and bathroom

[ ] Other: _____

CONDUCT THE SURVEY

4. Identify materials surveyed, date of survey and name of surveyor; (attach HAZMAT Form 2 & floor plan)

Asbestos Survey done; conducted on 8/16/13 by Daryl Kluth

Lead Survey done; conducted on 8/16/13 by Daryl Kluth

Rodent Infestation Survey done; conducted on 8/16/13 by Daryl Kluth

Mold Survey done; conducted on 8/16/13 by Daryl Kluth

_____ Survey done; conducted on _____ by _____

5. From survey send samples for HAZMAT testing (attach HAZMAT Form 3) and complete the HAZMAT Laboratory Testing Checklist (attach HAZMAT Form 4):

12 # of ACM samples sent: 8/16/13 Lab: Reservoirs Environmental Inc.

4 # of Paint samples sent: 8/16/13 Lab: Reservoirs Environmental Inc.

_____ # of Mold samples sent: _____ Lab: _____

_____ Other: _____

6. As a result of the survey:

[ ] **Survey is negative for HAZMAT**

[✓] **HAZMAT confirmed through testing (forms attached)**

[ ] **This is an updated survey to correct the record (forms attached as needed)**

7. [ ] **Records are adequate and no update survey is needed**

Signature Validation:

Daryl J Kluth (Certified Inspector)

Printed name of inspector Daryl Kluth

Inspector's EPA License Number N/A Expires on _____

Inspector's MT License Number MTA-3746 Expires on 04/08/2014

HAZMAT SURVEY Form #2 16 August 2013

BUILDING #1263

MOBERLY RESIDENCE:

The Moberly House is composed of a two-story, irregularly-shaped, flat roofed building on a poured concrete foundation The house was built on a steep sloping bank with the rear of the building is at grade and built over a concrete basement. The lower level steps down a half story from the grade level and extends out over the shoreline resting on heavy poured concrete piers. The flat roof has wide overhanging eaves and the lower level has large exposed beams. The walls are a combination of poured concrete and wood framing. The exterior walls have vertical lapped cedar siding. The exterior has a wrap- around deck with wooden railings and the flat roof consist of asphalt and pea gravel. This building was constructed in 1962.

The interior has a large fireplace constructed of cut stone occupying almost the whole south wall on the main level. The fireplace is vented through a large chimney constructed of the same cut stone.

ASBESTOS: Suspect asbestos containing materials (ACM's) were found in the bathroom and kitchen linoleum, the roofing materials, 12" acoustical ceiling tiles, stonework mortar, the cove base and glue, and sheetrock and tape. Samples of each were taken and sent to Reservoirs Environmental Inc. for further analysis.

LEAD: All painted interior and exterior surfaces were tested for lead using LEAD/CHECK swabs. Positive results were obtained in the basement bedroom and bathroom trim. The basement exterior door and the deck and railings also tested positive for lead. Samples of each were taken and sent to Reservoirs Environmental Inc. for further analysis.

RODENT INFESTATION: Very small amounts of mice droppings found in basement area of the house.

MOLD: Upstairs hall closet has heavy mildew on the sheetrock. This can be eliminated with a bleach solution.

Respectfully,

Daryl Kluth

Building Inspector

Glacier National Park

HAZMAT SURVEY FORM BY MATERIAL

Note: Use one form per suspect hazardous material found in the building

Building #: 1263 Building Description: Moberly Residence

Homogeneous area number: A Type of Material: Surfacing ○ TSI ○ Misc. ◉

Homogeneous Material Description: Roofing tar and tar paper

Functional Space Description: Roof

Friable: Yes ☐ No ☑ Condition of material: Good

Extent of damage: None ○ <10% ◉ >10% ○ <25% ○ >25% ○

Type of damage: Deterioration ○ Water ○ Physical ◉ Dry Rot ○ Rodent ○

Potential for significant damage: Yes ☑ No ☐ Describe: Tree branches falling onto roof

Est'd Quantity of material: Square feet 800

Pipe: Size _____ Footage _____ Size _____ Footage _____

Size _____ Footage _____ Size _____ Footage _____

Type of Substrate (for surfacing materials): _____

RATE EACH OF THE FOLLOWING RISKS	High	Moderate	Low
Accessibility	☐	☐	☑
Contact by general public	☐	☐	☑
Contact by building occupants	☐	☐	☑
Activity near the material	☐	☐	☑
Possibility of vibration damage	☐	☐	☑
Possibility of water damage	☐	☐	☑
Possibility of air erosion	☐	☐	☑
Possibility of vandalism	☐	☐	☑

Comments:

Signature of Inspector: Daryl J Tuth Date: 08/16/2013

Glacier National Park

HAZMAT SURVEY FORM BY MATERIAL

Note: Use one form per suspect hazardous material found in the building

Building #: 1263 Building Description: Moberly Residence

Homogeneous area number: B1,B2,B3 Type of Material: Surfacing ○ TSI ○ Misc. ◉

Homogeneous Material Description: 12" acoustic tiles

Functional Space Description: Bedrooms and hallway

Friable: Yes ☐ No ☑ Condition of material: Good

Extent of damage: None ○ <10% ◉ >10% ○ <25% ○ >25% ○

Type of damage: Deterioration ○ Water ○ Physical ◉ Dry Rot ○ Rodent ○

Potential for significant damage: Yes ☐ No ☑ Describe: _____

Est'd Quantity of material: Square feet 500

Pipe: Size _____ Footage _____ Size _____ Footage _____

Size _____ Footage _____ Size _____ Footage _____

Type of Substrate (for surfacing materials): _____

RATE EACH OF THE FOLLOWING RISKS	High	Moderate	Low
Accessibility	☐	☐	☑
Contact by general public	☐	☐	☑
Contact by building occupants	☐	☐	☑
Activity near the material	☐	☐	☑
Possibility of vibration damage	☐	☐	☑
Possibility of water damage	☐	☐	☑
Possibility of air erosion	☐	☐	☑
Possibility of vandalism	☐	☐	☑

Comments:

Signature of Inspector: Daryl J Kluth Date: 08/16/2013

Glacier National Park

HAZMAT SURVEY FORM BY MATERIAL

Note: Use one form per suspect hazardous material found in the building

Building #: 1263 Building Description: Moberly Residence

Homogeneous area number: C Type of Material: Surfacing ○ TSI ○ Misc. ◉

Homogeneous Material Description: Linoleum floor covering

Functional Space Description: Kitchen

Friable: Yes ☐ No ☑ Condition of material: Good

Extent of damage: None ○ <10% ◉ >10% ○ <25% ○ >25% ○

Type of damage: Deterioration ○ Water ○ Physical ◉ Dry Rot ○ Rodent ○

Potential for significant damage: Yes ☐ No ☑ Describe: _____

Est'd Quantity of material: Square feet 100

Pipe: Size _____ Footage _____ Size _____ Footage _____

Size _____ Footage _____ Size _____ Footage _____

Type of Substrate (for surfacing materials): _____

RATE EACH OF THE FOLLOWING RISKS	High	Moderate	Low
Accessibility	☐	☑	☐
Contact by general public	☐	☐	☑
Contact by building occupants	☐	☑	☐
Activity near the material	☐	☐	☑
Possibility of vibration damage	☐	☐	☑
Possibility of water damage	☐	☐	☑
Possibility of air erosion	☐	☐	☑
Possibility of vandalism	☐	☐	☑

Comments:

Signature of Inspector: Douglas J. Smith Date: 08/16/2013

Glacier National Park

HAZMAT SURVEY FORM BY MATERIAL

Note: Use one form per suspect hazardous material found in the building

Building #: 1263 Building Description: Moberly Residence

Homogeneous area number: D Type of Material: Surfacing ○ TSI ○ Misc. ◉

Homogeneous Material Description: Linoleum floor covering

Functional Space Description: Uostairs bathroom

Friable: Yes ☐ No ☑ Condition of material: Good

Extent of damage: None ○ <10% ◉ >10% ○ <25% ○ >25% ○

Type of damage: Deterioration ○ Water ○ Physical ◉ Dry Rot ○ Rodent ○

Potential for significant damage: Yes ☐ No ☑ Describe: _____

Est'd Quantity of material: Square feet 80

Pipe: Size _____ Footage _____ Size _____ Footage _____

Size _____ Footage _____ Size _____ Footage _____

Type of Substrate (for surfacing materials): _____

RATE EACH OF THE FOLLOWING RISKS	High	Moderate	Low
Accessibility	☐	☑	☐
Contact by general public	☐	☐	☑
Contact by building occupants	☐	☑	☐
Activity near the material	☐	☑	☐
Possibility of vibration damage	☐	☐	☑
Possibility of water damage	☐	☐	☑
Possibility of air erosion	☐	☐	☑
Possibility of vandalism	☐	☐	☑

Comments:

Signature of Inspector: _____ Date: 08/16/2013

Glacier National Park

HAZMAT SURVEY FORM BY MATERIAL

Note: Use one form per suspect hazardous material found in the building

Building #: 1263 Building Description: Moberly Residence

Homogeneous area number: E Type of Material: Surfacing ○ TSI ○ Misc. ◉

Homogeneous Material Description: Sheetrock

Functional Space Description: Dryer room in basement

Friable: Yes ☐ No ☑ Condition of material: Good

Extent of damage: None ○ <10% ◉ >10% ○ <25% ○ >25% ○

Type of damage: Deterioration ○ Water ○ Physical ◉ Dry Rot ○ Rodent ○

Potential for significant damage: Yes ☐ No ☑ Describe: _____

Est'd Quantity of material: Square feet 120

Pipe: Size _____ Footage _____ Size _____ Footage _____

Size _____ Footage _____ Size _____ Footage _____

Type of Substrate (for surfacing materials): _____

RATE EACH OF THE FOLLOWING RISKS	High	Moderate	Low
Accessibility	☐	☑	☐
Contact by general public	☐	☐	☑
Contact by building occupants	☐	☑	☐
Activity near the material	☐	☑	☐
Possibility of vibration damage	☐	☐	☑
Possibility of water damage	☐	☐	☑
Possibility of air erosion	☐	☐	☑
Possibility of vandalism	☐	☐	☑

Comments:

Signature of Inspector: Daryl J. Kuntz Date: 08/16/2013

Glacier National Park

HAZMAT SURVEY FORM BY MATERIAL

Note: Use one form per suspect hazardous material found in the building

Building #: 1263 Building Description: Moberly Residence

Homogeneous area number: F Type of Material: Surfacing ○ TSI ○ Misc. ◉

Homogeneous Material Description: Sheetrock

Functional Space Description: Upstairs hall closet

Friable: Yes ☐ No ☑ Condition of material: Good

Extent of damage: None ○ <10% ◉ >10% ○ <25% ○ >25% ○

Type of damage: Deterioration ○ Water ○ Physical ◉ Dry Rot ○ Rodent ○

Potential for significant damage: Yes ☐ No ☑ Describe: _____

Est'd Quantity of material: Square feet 50

Pipe: Size _____ Footage _____ Size _____ Footage _____

Size _____ Footage _____ Size _____ Footage _____

Type of Substrate (for surfacing materials): _____

RATE EACH OF THE FOLLOWING RISKS	High	Moderate	Low
Accessibility	☐	☐	☑
Contact by general public	☐	☐	☑
Contact by building occupants	☐	☐	☑
Activity near the material	☐	☐	☑
Possibility of vibration damage	☐	☐	☑
Possibility of water damage	☐	☐	☑
Possibility of air erosion	☐	☐	☑
Possibility of vandalism	☐	☐	☑

Comments:

Signature of Inspector: Daryl J. Kluth Date: 08/16/2013

Glacier National Park

HAZMAT SURVEY FORM BY MATERIAL

Note: Use one form per suspect hazardous material found in the building

Building #: 1263 Building Description: Moberly Residence

Homogeneous area number: G Type of Material: Surfacing ○ TSI ○ Misc. ◉

Homogeneous Material Description: Cove base and glue

Functional Space Description: Kitchen

Friable: Yes ☐ No ☑ Condition of material: Good

Extent of damage: None ○ <10% ◉ >10% ○ <25% ○ >25% ○

Type of damage: Deterioration ○ Water ○ Physical ◉ Dry Rot ○ Rodent ○

Potential for significant damage: Yes ☐ No ☑ Describe: _____

Est'd Quantity of material: Square feet 50

Pipe: Size _____ Footage _____ Size _____ Footage _____

Size _____ Footage _____ Size _____ Footage _____

Type of Substrate (for surfacing materials): _____

RATE EACH OF THE FOLLOWING RISKS	High	Moderate	Low
Accessibility	☐	☐	☑
Contact by general public	☐	☐	☑
Contact by building occupants	☐	☐	☑
Activity near the material	☐	☑	☐
Possibility of vibration damage	☐	☐	☑
Possibility of water damage	☐	☐	☑
Possibility of air erosion	☐	☐	☑
Possibility of vandalism	☐	☐	☑

Comments:

Signature of Inspector: Daryl J. Hunter Date: 08/16/2013

Glacier National Park

HAZMAT SURVEY FORM BY MATERIAL

Note: Use one form per suspect hazardous material found in the building

Building #: 1263 Building Description: Moberly Residence

Homogeneous area number: H Type of Material: Surfacing ○ TSI ○ Misc. ◉

Homogeneous Material Description: Mortar

Functional Space Description: Entryway floor

Friable: Yes ☐ No ☑ Condition of material: Good

Extent of damage: None ○ <10% ◉ >10% ○ <25% ○ >25% ○

Type of damage: Deterioration ○ Water ○ Physical ◉ Dry Rot ○ Rodent ○

Potential for significant damage: Yes ☐ No ☑ Describe: _____

Est'd Quantity of material: Square feet 50

Pipe: Size _____ Footage _____ Size _____ Footage _____

Size _____ Footage _____ Size _____ Footage _____

Type of Substrate (for surfacing materials): _____

RATE EACH OF THE FOLLOWING RISKS	High	Moderate	Low
Accessibility	☐	☑	☐
Contact by general public	☐	☐	☑
Contact by building occupants	☐	☑	☐
Activity near the material	☐	☑	☐
Possibility of vibration damage	☐	☐	☑
Possibility of water damage	☐	☐	☑
Possibility of air erosion	☐	☐	☑
Possibility of vandalism	☐	☐	☑

Comments:

Signature of Inspector: Daryl J. Tuttle Date: 08/16/2013

Glacier National Park

HAZMAT SURVEY FORM BY MATERIAL

Note: Use one form per suspect hazardous material found in the building

Building #: 1263 Building Description: Moberly Residence

Homogeneous area number: 1 Type of Material: Surfacing ○ TSI ○ Misc. ◉

Homogeneous Material Description: Mortar

Functional Space Description: Outside stonework

Friable: Yes ☐ No ☑ Condition of material: Good

Extent of damage: None ○ <10% ◉ >10% ○ <25% ○ >25% ○

Type of damage: Deterioration ○ Water ○ Physical ◉ Dry Rot ○ Rodent ○

Potential for significant damage: Yes ☐ No ☑ Describe: _____

Est'd Quantity of material: Square feet 150

Pipe: Size _____ Footage _____ Size _____ Footage _____

Size _____ Footage _____ Size _____ Footage _____

Type of Substrate (for surfacing materials): _____

RATE EACH OF THE FOLLOWING RISKS	High	Moderate	Low
Accessibility	☐	☐	☑
Contact by general public	☐	☐	☑
Contact by building occupants	☐	☐	☑
Activity near the material	☐	☐	☑
Possibility of vibration damage	☐	☐	☑
Possibility of water damage	☐	☐	☑
Possibility of air erosion	☐	☐	☑
Possibility of vandalism	☐	☐	☑

Comments:

Signature of Inspector: _____ Date: 08/16/2013

Glacier National Park

HAZMAT SURVEY FORM BY MATERIAL

Note: Use one form per suspect hazardous material found in the building

Building #: 1263 Building Description: Moberly Residence

Homogeneous area number: J Type of Material: Surfacing ○ TSI ○ Misc. ◉

Homogeneous Material Description: Mortar

Functional Space Description: Fireplace and wall stonework

Friable: Yes ☐ No ☑ Condition of material: Good

Extent of damage: None ○ <10% ◉ >10% ○ <25% ○ >25% ○

Type of damage: Deterioration ○ Water ○ Physical ◉ Dry Rot ○ Rodent ○

Potential for significant damage: Yes ☐ No ☑ Describe: _____

Est'd Quantity of material: Square feet 80

Pipe: Size _____ Footage _____ Size _____ Footage _____

Size _____ Footage _____ Size _____ Footage _____

Type of Substrate (for surfacing materials): _____

RATE EACH OF THE FOLLOWING RISKS	High	Moderate	Low
Accessibility	☐	☑	☐
Contact by general public	☐	☐	☑
Contact by building occupants	☐	☐	☑
Activity near the material	☐	☑	☐
Possibility of vibration damage	☐	☐	☑
Possibility of water damage	☐	☐	☑
Possibility of air erosion	☐	☐	☑
Possibility of vandalism	☐	☐	☑

Comments:

Signature of Inspector: Daryl J Smith Date: 08/16/2013

Glacier National Park

HAZMAT SURVEY FORM BY MATERIAL

Note: Use one form per suspect hazardous material found in the building

Building #: 1263 Building Description: Moberly Residence

Homogeneous area number: K Type of Material: Surfacing ○ TSI ○ Misc. ◉

Homogeneous Material Description: Paint

Functional Space Description: Basement bedroom and bathroom

Friable: Yes ☐ No ☑ Condition of material: Good

Extent of damage: None ○ <10% ◉ >10% ○ <25% ○ >25% ○

Type of damage: Deterioration ○ Water ○ Physical ◉ Dry Rot ○ Rodent ○

Potential for significant damage: Yes ☐ No ☑ Describe: _____

Est'd Quantity of material: Square feet _____

Pipe: Size _____ Footage _____ Size _____ Footage _____

Size _____ Footage _____ Size _____ Footage _____

Type of Substrate (for surfacing materials): _____

RATE EACH OF THE FOLLOWING RISKS	High	Moderate	Low
Accessibility	☐	☑	☐
Contact by general public	☐	☐	☑
Contact by building occupants	☐	☑	☐
Activity near the material	☐	☑	☐
Possibility of vibration damage	☐	☐	☑
Possibility of water damage	☐	☐	☑
Possibility of air erosion	☐	☐	☑
Possibility of vandalism	☐	☐	☑

Comments:

Signature of Inspector: _____ Date: 08/16/2013

Glacier National Park

HAZMAT SURVEY FORM BY MATERIAL

Note: Use one form per suspect hazardous material found in the building

Building #: 1263 Building Description: Moberly Residence

Homogeneous area number: L Type of Material: Surfacing ○ TSI ○ Misc. ◉

Homogeneous Material Description: Paint

Functional Space Description: Outside deck

Friable: Yes ☐ No ☑ Condition of material: poor

Extent of damage: None ○ <10% ○ >10% ○ <25% ○ >25% ◉

Type of damage: Deterioration ◉ Water ○ Physical ○ Dry Rot ○ Rodent ○

Potential for significant damage: Yes ☐ No ☑ Describe: _____

Est'd Quantity of material: Square feet _____

Pipe: Size _____ Footage _____ Size _____ Footage _____

Size _____ Footage _____ Size _____ Footage _____

Type of Substrate (for surfacing materials): _____

RATE EACH OF THE FOLLOWING RISKS	High	Moderate	Low
Accessibility	☐	☑	☐
Contact by general public	☐	☐	☑
Contact by building occupants	☐	☑	☐
Activity near the material	☐	☑	☐
Possibility of vibration damage	☐	☐	☑
Possibility of water damage	☐	☐	☑
Possibility of air erosion	☐	☐	☑
Possibility of vandalism	☐	☐	☑

Comments:

Signature of Inspector: Daryl J Kuntz Date: 08/16/2013

Glacier National Park

HAZMAT SURVEY FORM BY MATERIAL

Note: Use one form per suspect hazardous material found in the building

Building #: 1263 Building Description: Moberly Residence

Homogeneous area number: M Type of Material: Surfacing ○ TSI ○ Misc. ◉

Homogeneous Material Description: Paint

Functional Space Description: Outside deck

Friable: Yes ☐ No ☑ Condition of material: poor

Extent of damage: None ○ <10% ○ >10% ○ <25% ○ >25% ◉

Type of damage: Deterioration ◉ Water ○ Physical ○ Dry Rot ○ Rodent ○

Potential for significant damage: Yes ☐ No ☑ Describe: _____

Est'd Quantity of material: Square feet _____

Pipe: Size _____ Footage _____ Size _____ Footage _____

Size _____ Footage _____ Size _____ Footage _____

Type of Substrate (for surfacing materials): _____

RATE EACH OF THE FOLLOWING RISKS	High	Moderate	Low
Accessibility	☐	☑	☐
Contact by general public	☐	☐	☑
Contact by building occupants	☐	☑	☐
Activity near the material	☐	☑	☐
Possibility of vibration damage	☐	☐	☑
Possibility of water damage	☐	☐	☑
Possibility of air erosion	☐	☐	☑
Possibility of vandalism	☐	☐	☑

Comments:

Signature of Inspector: Daryl J. Smith Date: 08/16/2013

Glacier National Park

HAZMAT SURVEY FORM BY MATERIAL

Note: Use one form per suspect hazardous material found in the building

Building #: 1263 Building Description: Moberly Residence

Homogeneous area number: N Type of Material: Surfacing ○ TSI ○ Misc. ◉

Homogeneous Material Description: Paint

Functional Space Description: Basement entry door

Friable: Yes ☐ No ☑ Condition of material: Good

Extent of damage: None ○ <10% ◉ >10% ○ <25% ○ >25% ○

Type of damage: Deterioration ○ Water ○ Physical ◉ Dry Rot ○ Rodent ○

Potential for significant damage: Yes ☐ No ☑ Describe: _____

Est'd Quantity of material: Square feet _____

Pipe: Size _____ Footage _____ Size _____ Footage _____

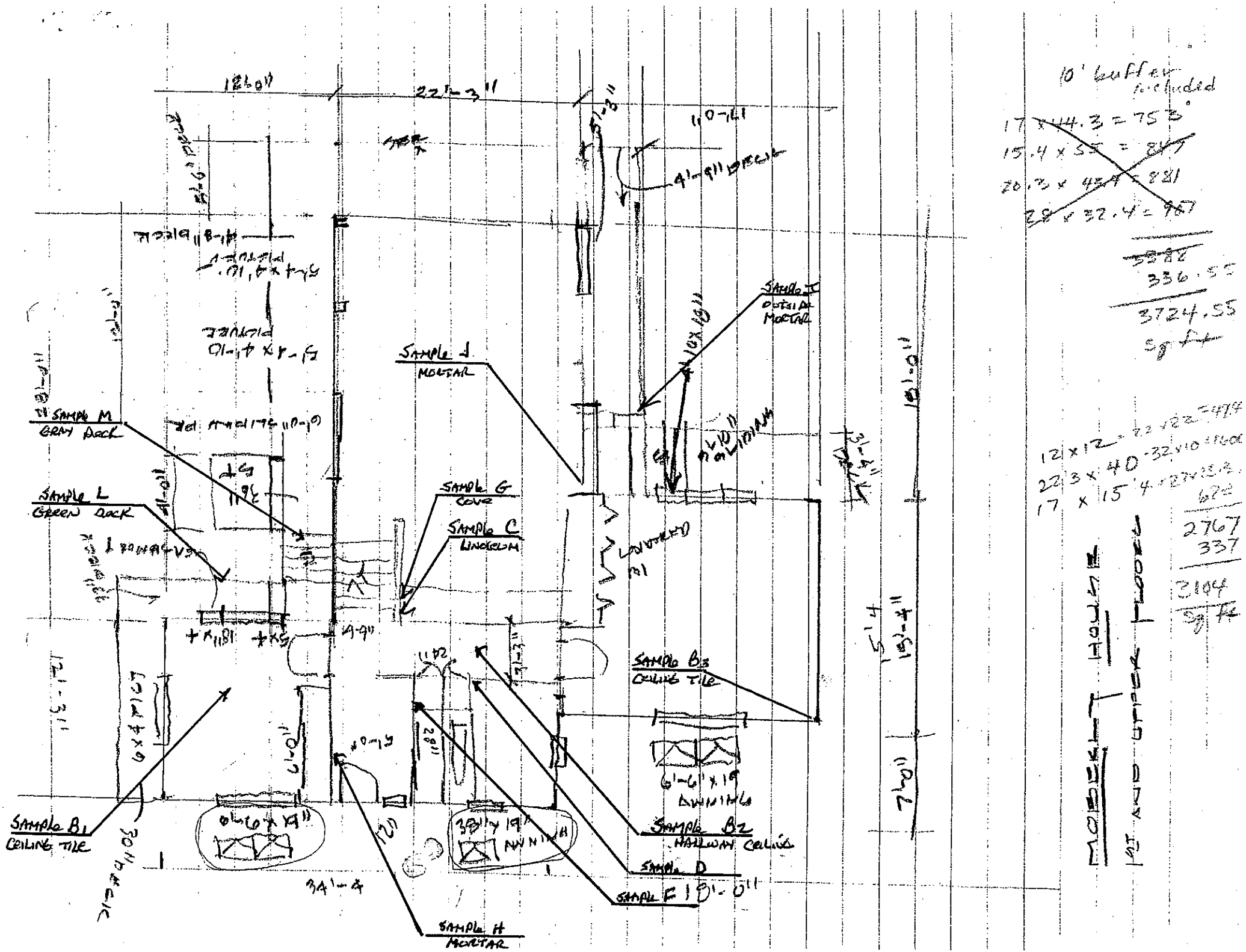
Size _____ Footage _____ Size _____ Footage _____

Type of Substrate (for surfacing materials): _____

RATE EACH OF THE FOLLOWING RISKS	High	Moderate	Low
Accessibility	☐	☐	☑
Contact by general public	☐	☐	☑
Contact by building occupants	☐	☑	☐
Activity near the material	☐	☐	☑
Possibility of vibration damage	☐	☐	☑
Possibility of water damage	☐	☐	☑
Possibility of air erosion	☐	☐	☑
Possibility of vandalism	☐	☐	☑

Comments:

Signature of Inspector: Daryl J. Kuntz Date: 08/16/2013



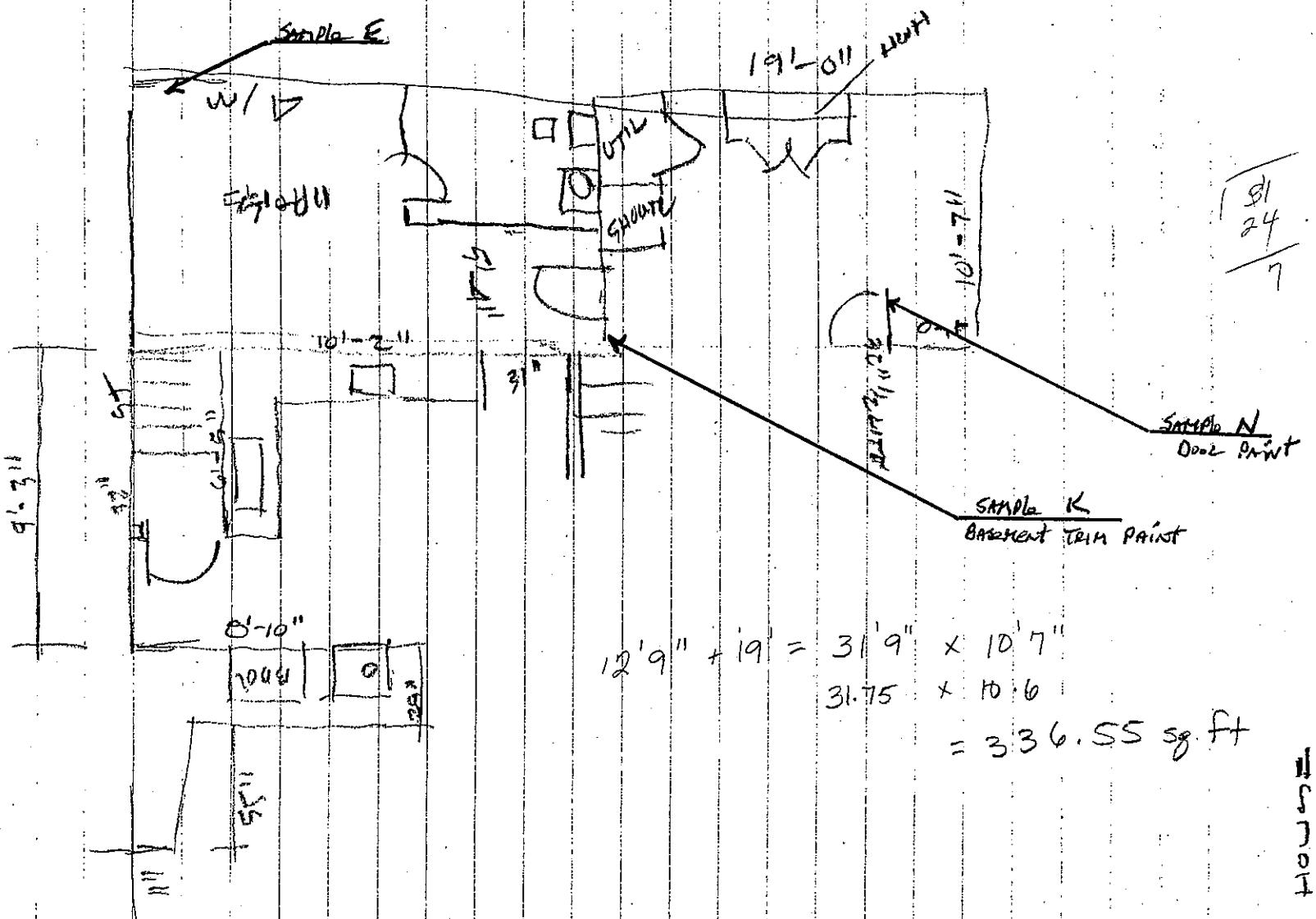
10' buffer included

17 × 44.3 = 753
15.4 × 55 = 847
20.3 × 41 = 821
28 × 32.4 = 907

336.55
3724.55 sq ft

12 × 12 = 144 − 82 = 47
22.3 × 40 − 32 × 10 = 1
17 × 15'4 − 12 × 3.5 =
62

2767
337
3104 sq ft



91
24
7

12'9" + 19" = 31'9" x 10'7"

31.75 x 10.6

= 336.55 sq ft

DAMAGED
NOTICE
TREATMENT

RES 267294

GLACIER NATIONAL PARK

HAZMAT CHAIN OF CUSTODY RECORD

Glacier National Park 1 Going-to-the-Sun Road West Glacier, MT 59936 PHONE: 406-888-7901 FAX: 406-888-7886	**Billing Information:** Contact Name, Address & Phone: Ken Sebrowsky P.O.Box 128 West Glacier, Mt. 59936 406 888-7948	Project Name: Moberly Residence #1263 Project No: Results: MAIL YES or NO YES FAX PHONE 406 888-7948

CLIENT

Reservoirs Environmental Inc.
5801 Logan Street
Denver, Co. 80216

TURNAROUND

Circle One:
RUSH ○ Same Day ○
24 HR ○ Other:
3-5 DAY ◉

SAMPLE #	SAMPLE DESCRIPTION	DATE/TIME	# OF CONTAINERS	PLM - BULK	PCM - AIR (NIOSH 7400)	LEAD - AIR, PAINT, WIPE	REMARKS	RESULTS
B1263-8-16-13 A	Roof tar and paper	07:15 8/16/13	1	☑	☐	☐	Positive stop	
B1263-8-16-13 B1, B2 B3	12" acoustic tiles	07:50 8/16/13	3	☑	☐	☐	"	
B1263-8-16-13 C	Linoleum Kitchen	08:00 8/16/13	1	☑	☐	☐	"	
B1263-8-16-13 D	Linoleum Bathroom	08:00 8/16/13	1	☑	☐	☐	"	
B1263-8-16-13 E	Sheetrock dryer room	08:15 8/16/13	1	☑	☐	☐	"	
B1263-8-16-13 F	Sheetrock and tape upstairs hall closet	08:30 8/16/13	1	☑	☐	☐	"	
B1263-8-16-13G	Kitchen cove base and glue	08:45 8/16/13	1	☑	☐	☐	"	
B1263-8-16-13H	Entryway flagstone mortar	08:55 8/16/13	1	☑	☐	☐	"	
B1263-8-16-13I	Outside rock mortar	09:15 8/16/13	1	☑	☐	☐	"	
B1263-8-16-13J	Stone fireplace and wall mortar	09:30 8/16/13	1	☑	☐	☐	"	
				☐	☐	☐		
B1263-8-16-13K	Basement trim paint	09:45 8/16/13	1	☐	☐	☑		
B-12623-16-13L	Green deck and trim paint	09:55 8/16/13	1	☐	☐	☑		
B1263-8-16-13M	Gray deck paint	10:00 8/16/13	1	☐	☐	☑		
B1263-8-16-13N	Basement door paint	10:10 8/16/13	1	☐	☐	☑		

RELEASED BY: (signature)	DELIVERY METHOD	RECEIVED BY: (signature)	COMPANY/AGENCY OR AFFILIATION	DATE / TIME RECEIVED	SAMPLE CONDITION
	FED-EX		RE-I	8/21/13 @ 9:40	Good

HAZMAT Form 3

Due Date: 8-26-13
Due Time: 5:30

RES 267294
Pb-1 / Pb-2
Page 1 of 2

Reservoirs Environmental, Inc.

REI LAB

5801 Logan St Denver, CO 80216 • Ph 303 964-1965 • Fax 303-477-4275 • Toll Free 866 RES-ENV
Pager : 303-509-2098

INVOICE TO: (IF DIFFERENT)

Company:	Glacier National Park
Address:	1 Going-to-the-Sun Road
	West Glacier MT 59936

Company:	Glacier National Park
Address:	P.O. Box 128
	West Glacier MT 59936

CONTACT INFORMATION:

Contact	Ken Sebrowsky
Phone:	1-406-888-7948
Fax:	1-406-888-7886
Cell/pager:	

Contact	
Phone:	
Fax	
Cell/pager:	

Project Number and/or P.O. #:
Project Description/Location: Moberly Residence #1263
Final Data Deliverable Email Address:

ASBESTOS LABORATORY HOURS: Weekdays: 7am - 7pm
PLM / PCM / TEM ___ RUSH (Same Day) ___ PRIORITY (Next Day) ✓ STANDARD
(Rush PCM = 2hr, TEM = 6hr.)

CHEMISTRY LABORATORY HOURS: Weekdays: 8am - 5pm
Metal(s) / Dust ___ RUSH ___ 24 hr. ___3-5 Day
RCRA 8 / Metals & Welding Fume Scan / TCLP ___ RUSH ___ 5 day ___10 day
Organics ___ 24 hr. ___ 3 day ___5 Day
Prior notification is required for RUSH turnarounds.

MICROBIOLOGY LABORATORY HOURS: Weekdays: 9am - 6pm
E.coli O157:H7, Coliforms, S.aureus ___ 24 hr. ___2 Day ___3-5 Day
Salmonella, Listeria, E.coli, APC, Y & M ___ 48 Hr. ___3-5 Day
Mold ___ RUSH ___24 Hr ___48 Hr ___3 Day ___5 Day

Turnaround times establish a laboratory priority, subject to laboratory volume and are not guaranteed. Additional fees apply for afterhours, weekends and holidays.

Special Instructions: 4 Positive stop on like Homogenous Materials

REQUESTED ANALYSIS

Client sample ID number (Sample ID's must be unique)	PLM - Short report, Long report, Point Count	TEM - AHERA, Level II, 7402, ISO, +/- Quant	Semi-quant, Micro-vac, ISO-Indirect Preps	PCM - 7400A, 7400B, OSHA	DUST - Total, Respirable	METALS - Analyte(s)	RCRA 8, TCLP, Welding Fume, Metals Scan	ORGANICS - METH	MICROBIOLOGY: Salmonella +/-; E.coli O157:H7 +/-; Listeria +/-; Aerobic Plate Count: +/- or Quantification; E.coli +/- or Quantification; Coliforms: +/- or Quantification; S.aureus +/- or Quantification; Y & M: +/- or Quantification; Mold +/- Identification, Quantification	SAMPLER'S INITIALS OR OTHER NOTES	Sample Volume (L) / Area	Matrix Code	# Containers	Date Collected mm/dd/yy	Time Collected hh/mm a/p	EM Number (Laboratory Use Only)
1 B-1263-8-16-13 A	Roof Tar & Paper	✓											1		07:15	10C057SC
2 B-1263-8-16-13 $B_1B_2B_3$	12" Mastic Tiles	✓											3		07:30	57, 58, 59
3 B-1263-8-16-13 C	Kitchen Linoleum	✓											1		08:00	C-2
4 B-1263-8-16-13 D	Bathroom Linoleum	✓											1		08:15	C-1
5 B-1263-8-16-13 E	Sheetrock dryer vent	✓											1		08:30	C-6
6 B-1263-8-16-13 F	Sheetrock - Hall closet	✓											1		08:45	C-3
7 B-1263-8-16-13 G	Kitchen cove base	✓											1		08:55	C-4
8 B-1263-8-16-13 H	Entry Flagstone Mortar	✓											1		09:15	C-5
9 B-1263-8-16-13 I	Outside Rock Mortar	✓											1		09:30	C-8
10 B-1263-8-16-13 J	Fireplace + wall Mortar	✓											1		08:00	C-7

VALID MATRIX CODES

Air = A	Bulk = B
Dust = D	Paint = P
Soil = S	Wipe = W
Swab = SW	F = Food
Drinking Water = DW	Waste Water = WW
O = Other	

ASTM E1792 approved wipe media only

LAB NOTES:

Number of samples received: 10 (Additional samples shall be listed on attached long form.)

NOTE: REI will analyze incoming samples based upon information received and will not be responsible for errors or omissions in calculations resulting from the inaccuracy of original data. By signing client/company representative agrees that submission of the following samples for requested analysis as indicated on this Chain of Custody shall constitute an analytical services agreement with payment terms of NET 30 days. Failure to comply with payment terms may result in a 1.5% monthly interest surcharge.

Relinquished By: Sheryl J. Sutton Date/Time: 8/16/13 15:30
Laboratory Use Only Received By: Date/Time: 8-16-13 @ 17:30 Carrier: FED-EX

Sample Condition. Temp. (F°) ____ On ice Yes / No Sealed Yes / No Intact Yes / No

Results:												
	Contact	Phone Email Fax	Date	Time	Initials	Contact	Phone Email Fax	Date	Time	Initials
	Contact	Phone Email Fax	Date	Time	Initials	Contact	Phone Email Fax	Date	Time	Initials

7-2011_version 1

Due Date: 8/26-8/28
Due Time: 9 Am

Reservoirs Environmental, Inc.

5301 Logan St Denver CO 80216 • Ph 303 954-1985 • Fax 303-477-4275 • Toll Free 866 RESI-ENV
Pager : 303-509-2098

Job # ~~1263 Residence~~
Page 1 of 2

INVOICE TO: (IF DIFFERENT)

Company:	Glacier National Park
Address:	1 Going-to-the-Sun Road
	West Glacier MT 59936
Project Number and/or P.O. #	
Project Description/Location:	

Company	Glacier National Park
Address:	P.O. Box 128
	West Glacier MT 59936

CONTACT INFORMATION:

Contact	Ken Sebrowsky
Phone:	1-406-888-7948
Fax:	1-406-888-7886
Cell/pager:	
Final Data Deliverable Email Address:	

Contact:	
Phone	
Fax	
Cell/pager	

ASBESTOS LABORATORY HOURS: Weekdays: 7am - 7pm

PLM / PCM / TEM ___ RUSH (Same Day) ___ PRIORITY (Next Day) ✓ STANDARD
(Rush PCM = 2hr, TEM = 6hr.)

CHEMISTRY LABORATORY HOURS: Weekdays: 8am - 5pm

Metal(s) / Dust ___ RUSH ___ 24 hr. ✓ 3-5 Day
RCRA 8 / Metals & Welding Fume Scan / TCLP ___ RUSH ___ 5 day ___ 10 day
Organics ___ 24 hr. ___ 3 day ___ 5 Day

Prior notification is required for RUSH turnarounds.

MICROBIOLOGY LABORATORY HOURS: Weekdays: 9am - 6pm

E.coli O157:H7, Coliforms, S.aureus ___ 24 hr. ___ 2 Day ___ 3-5 Day
Salmonella, Listoria, E.coli, APC, Y & M ___ 48 Hr ___ 3-5 Day
Mold ___ RUSH ___ 24 Hr ___ 48 Hr ___ 3 Day ___ 5 Day

Turnaround times establish a laboratory priority, subject to laboratory volume and are not guaranteed. Additional fees apply for afternours, weekends and holidays.

Special Instructions:

REQUESTED ANALYSIS

PLM - Short report, Long report, Point Count
TEM - AHERA, Level II, 7402, ISO, +/-, Quant.
Semi-quant, Micro-vac, ISO-Indirect Preps
PCM - 7400A, 7400B, OSHA
DUST - Total, Respirable
METALS - Analyte(s) Lead
RCRA 8, TCLP, Welding Fume, Metals Scan
ORGANICS - METH
MICROBIOLOGY: Salmonella +/-; E.coli O157:H7 +/-; Listeria +/-; Aerobic Plate Count: +/- or Quantification; E.coli +/- or Quantification; Coliforms +/- or Quantification; S.aureus: +/- or Quantification; Y & M: +/- or Quantification; Mold +/-, Identification, Quantification
SAMPLER'S INITIALS OR OTHER NOTES

VALID MATRIX CODES

Air = A	Bulk = B
Dust = D	Paint = P
Soil = S	Wipe = W
Swab = SW	F = Food
Drinking Water = DW	Waste Water = WW
O = Other	

ASTM E1792 approved wipe media only

LAB NOTES:

	Client sample ID number (Sample ID's must be unique)			Sample Volume (L) / Area	Matrix Code	# Containers	Date Collected mm/dd/yy	Time Collected hh/mm a/p	EM Number (Laboratory Use Only)
1	B-1263-8-16-13	K	Basement trim			1	08/16/13	09:45	1400976
2	B-1263-8-16-13	L	Green Dock Paint			1	"	09:55	
3	B-1263-8-16-13	M	Gray Dock Paint			1	"	10:00	
4	B-1263-8-16-13	N	Basement door paint			1	"	10:10	
5									
6									
7									
8									
9									
10									

Number of samples received: _____ (Additional samples shall be listed on attached long form.)

NOTE: REI will analyze incoming samples based upon information received and will not be responsible for errors or omissions in calculations resulting from the inaccuracy of original data. By signing client/company representative agrees that submission of the following samples for requested analysis as indicated on this Chain of Custody shall constitute an analytical services agreement with payment terms of NET 30 days, failure to comply with payment terms may result in a 1.5% monthly interest surcharge.

Relinquished By: _____ Date/Time: 8/16/13 15:30

Laboratory Use Only
Received By: _____ Date/Time: 8/17/13 @ 9:04 Carrier: FED-EX

Sample Condition: On Ice Yes / No; Sealed Yes / No; Intact (Yes) / No
Temp. (F°) _____

Results:	Contact	Phone/Email/Fax	Date	Time	Initials	Contact	Phone Email Fax	Date	Time	Initials
	Contact	Phone Email Fax	Date	Time	Initials	Contact	Phone Email Fax	Date	Time	Initials

REI LAB **Reservoirs Environmental, Inc.**

August 28, 2013

Subcontract Number:	**NA**
Laboratory Report:	**RES 267294-1**
Project # / P.O. #	**None Given**
Project Description:	**Moberly Residence #1263**

Glacier National Park (Ken Sebrowsky)
1 Going-To-The-Sun Rd.
West Glacier MT 59936

Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American Industrial Hygiene Association (AIHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 267294-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,

Gina Veltraino for
Jeanne Spencer
President

RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0

TDH Licensed Laboratory # 30-0136

TABLE PLM BULK ANALYSIS, PERCENTAGE COMPOSITION BY VOLUME

RES Job Number: **RES 267294-1**
Client: **Glacier National Park (Ken Sebrowsky)**
Client Project Number / P.O. **None Given**
Client Project Description: **Moberly Residence #1263**
Date Samples Received: **August 21, 2013**
Analysis Type: **PLM, Short Report**
Turnaround: **3-5 Day**
Date Analyzed: **August 26, 2013**

ND=None Detected
TR=Trace, <1% Visual Estimate
Trem-Act=Tremolite-Actinolite

Client Sample Number	Lab ID Number	LAYER	Physical Description	Sub Part (%)	Asbestos Content		Non Asbestos Fibrous Components (%)	Non-Fibrous Components (%)
					Mineral	Visual Estimate (%)		
B-1263-8-16-13 A	EM 1009756	A	Black tar w/ black felt	100		**ND**	20	80
B-1263-8-16-13 B1	EM 1009757	A	Tan/white ceiling tile	100		**ND**	90	10
B-1263-8-16-13 B2	EM 1009758	A	Tan/white ceiling tile	100		**ND**	90	10
B-1263-8-16-13 B3	EM 1009759	A	Tan/white ceiling tile	100		**ND**	90	10
B-1263-8-16-13 C	EM 1009760	A	Beige/peach sheet vinyl w/ tan fibrous backing material	100	**Chrysotile**	**18**	3	79
B-1263-8-16-13 D	EM 1009761	A	Beige/brown sheet vinyl w/ gray fibrous backing material	100	**Chrysotile**	**25**	5	70
B-1263-8-16-13 E	EM 1009762	A	White joint compound	TR		**ND**	0	100
		B	White compound	1		**ND**	0	100
		C	White tape	4		**ND**	99	1
		D	White/brown drywall	95		**ND**	35	65

RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0

TDH Licensed Laboratory # 30-0136

TABLE PLM BULK ANALYSIS, PERCENTAGE COMPOSITION BY VOLUME

RES Job Number: **RES 267294-1**
Client: **Glacier National Park (Ken Sebrowsky)**
Client Project Number / P.O. **None Given**
Client Project Description: **Moberly Residence #1263**
Date Samples Received: **August 21, 2013**
Analysis Type: **PLM, Short Report**
Turnaround: **3-5 Day**
Date Analyzed: **August 26, 2013**

ND=None Detected
TR=Trace, <1% Visual Estimate
Trem-Act=Tremolite-Actinolite

Client Sample Number	Lab ID Number	Layer	Physical Description	Sub Part (%)	Asbestos Content: Mineral	Asbestos Content: Visual Estimate (%)	Non Asbestos Fibrous Components (%)	Non-Fibrous Components (%)
B-1263-8-16-13 F	EM 1009763	A	Beige compound w/ pink paint	5	**Chrysotile**	**3**	0	97
		B	White joint compound	35	**Chrysotile**	**4**	0	96
		C	White tape	60		**ND**	99	1
B-1263-8-16-13 G	EM 1009764	A	Brown mastic	2	**Chrysotile**	**3**	TR	97
		B	Tan cove base	98		**ND**	0	100
B-1263-8-16-13 H	EM 1009765	A	Gray granular cementitious material	100		**ND**	0	100

RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0

TDH Licensed Laboratory # 30-0136

TABLE PLM BULK ANALYSIS, PERCENTAGE COMPOSITION BY VOLUME

RES Job Number: **RES 267294-1**
Client: **Glacier National Park (Ken Sebrowsky)**
Client Project Number / P.O. **None Given**
Client Project Description: **Moberly Residence #1263**
Date Samples Received: **August 21, 2013**
Analysis Type: **PLM, Short Report**
Turnaround: **3-5 Day**
Date Analyzed: **August 26, 2013**

ND=None Detected
TR=Trace, <1% Visual Estimate
Trem-Act=Tremolite-Actinolite

Client Sample Number	Lab ID Number	LAYER	Physical Description	Sub Part (%)	Asbestos Content: Mineral	Asbestos Content: Visual Estimate (%)	Non Asbestos Fibrous Components (%)	Non-Fibrous Components (%)
B-1263-8-16-13 I	EM 1009766	A	Gray granular cementitious material	100		**ND**	0	100
B-1263-8-16-13 J	EM 1009767	A	Gray granular cementitious material	100		**ND**	0	100

TEM Analysis recommended for organically bound material (i.e. floor tile) if PLM results are <1%.

Analyzed by: Brett S. Colbert

Data QA: Gina Vettraino

REI LAB Reservoirs Environmental, Inc.

August 28, 2013

Laboratory Code:	**RES**
Subcontract Number:	**NA**
Laboratory Report:	**RES 267294-2**
Project # / PO #:	**None Given**
Project Description:	**Moberly Residence #1263**

Glacier National Park (Ken Sebrowsky)
1 Going-To-The-Sun Rd.
West Glacier MT 59936

Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the American Industrial Hygiene Association, Lab ID 101533 - Accreditation Certificate #480. The laboratory is currently proficient in both IHPAT & ELPAT programs respectively.

Reservoirs has analyzed the following sample(s) using Atomic Absorption Spectroscopy (AAS) / Atomic Emission Spectroscopy - Inductively Coupled Plasma (AES-ICP) per your request. Reported sample results were not blank corrected. The analysis has been completed in general accordance with the appropriate methodology as stated in the analysis table. Results have been sent to your office.

RES 267294-2 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those authorized by the client. The results described in this report only apply to the samples analyzed. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you should have any questions about this report, please feel free to call me at 303-964-1986.

Sincerely,

Jeanne Spencer
President

RESERVOIRS ENVIRONMENTAL, INC.

5801 Logan St., Suite 100
Denver CO 80216

TABLE ANALYSIS: LEAD IN PAINT

RES Job Number:	**RES 267294-2**
Client:	**Glacier National Park (Ken Sebrowsky)**
Client Project Number / P.O.:	**None Given**
Client Project Description:	**Moberly Residence #1263**
Date Samples Received:	**August 21, 2013**
Analysis Type:	**USEPA SW846 3050B / AA (7420)**
Turnaround:	**3-5 Day**
Date Samples Analyzed:	**August 27, 2013**

Client ID Number	Lab ID Number	Reporting Limit (%)	LEAD CONCENTRATION (%)
B-1263-8-16-13 K	EM 1009768	0.0035	0.20
B-1263-8-16-13 L	EM 1009769	0.0030	5.0
B-1263-8-16-13 M	EM 1009770	0.0040	1.4
B-1263-8-16-13 N	EM 1009771	0.0045	4.5

*** Unless otherwise noted all quality control samples performed within specifications established by the laboratory.**

BRL = Below Reporting Limit

Data QA

Glacier National Park

HAZMAT Laboratory Testing Checklist

Project Title: B# 1263 MOBERLY RESIDENCE **PMIS #:** _____ **Location:** FISH CREEK

Date: 09/16/13 **FMSS Location #:** NONE

Description of HAZMAT Work: _____

1. Asbestos:

Date samples taken: 08/16/13 Sampler: DARYL KLUTH Note: Attach Chain of Custody Record (HAZMAT Form 3)

Type, material and quantity of samples taken: LINOLEUM, SHEETROCK AND MUD,COVE BASE, GLUE

Laboratory analyzing samples: REI LABS Date sent to lab: _____ Date results returned: _____

Do results indicate asbestos containing material **> 1.0%?** Yes ☑ (identify type below) No ☐ **(no asbestos hazard exists)**

Check type of asbestos detected:

Tremolite: ○	% content: _____	Actinolite: ○	% content: _____
Anthophyllite: ○	% content: _____	Chrysotile: ◉	% content: 3-25
Amosite: ○	% content: _____	Crocidolite: ○	% content: _____

Location where asbestos sampling results were filed: SHAREPOINT Filer: FOSTER

2. Lead:

Date sample taken: 08/16/13 Sampler: DARYL KLUTH Method of sampling done: LEAD CHECK SWAB

Location of samples taken in building: DOOR, DECK PAINT, TRIM

Laboratory analyzing samples: REI LABS Date sent to lab: 08/16/13 Date results returned: 8/28/13

Do results indicate lead **> 0.5% by weight?** Yes ☑ No ☐ **(no lead hazard exists)**

Location where lead sampling results were filed: SHAREPOINT Filer: FOSTER

3. Hantavirus Potential:

Is there sign of rodent infestation? Yes ☑ No ☐

Location(s) in building where signs were noted: MOUSE DROPPINGS IN BASEMENT

4. Mold:

Is there sign of mold? Yes ☐ No ☑

Describe evidence in detail: _____

Locations) in building where signs were noted: _____

GLACIER NATIONAL PARK
HAZMAT MITIGATION/ABATEMENT PLAN

The following narratives describe the HAZMAT mitigation and/or abatement that will take place when a project is done on this location. The completion of the project will either eliminate or render harmless the known HAZMAT so that it poses no threat to anyone coming into contact with it.

1. **Asbestos Containing Material** (Identify what will be disturbed in a potential project, if the material will be partially or totally removed, if the material will be exposed to occupants and what will be done to communicate its presence):

   WHEN FUNDING BECOMES AVAILABE, A LICENSED CONTRACTOR WILL MITIGATE THE ASBESTOS IN THE BUILDING

2. **Lead-Based Paint** (Identify what will be disturbed in a potential project, what mitigation method will be used, if any material will be exposed to occupants and what will be done to communicate its presence):

   "Park crews will encapsulate all lead-based paint that will be encountered on the project. Encapsulation is accomplished by painting two coats of ChildGuard for a minimum of 6 mils and then painting the final coat over this. Encapsulation does not constitute disturbance of the lead-based paint, which would be scraping and chipping. The paint is pressure washed to release any loose paint and caught by screening, allowed to dry and then transferred to the controlled-entry HAZMAT bucket."

3. **Rodent Presence:** As a minimum a rodent infestation remediation will require: 1) Infestation cleanup procedures complying with GNP Hantavirus Safety Procedures, Sections 4.3 (light infestation) and 4.4 (heavy infestation) cleanup procedures. 2) Following cleanup, written documentation acknowledging infestation remediation provided to the GNP Safety Manager for files retention. Additional mitigation as follows:

   FOLLOW THE ABOVE PARAGRAPH, IN ADDITION, OCCUPANT WILL BE NOTIFIED AND FECES WILL BE CLEANED BY TRAINED PERSONNEL PER GLACIER NATIONAL PARK POLICY

4. **Mold** (Identify what will be done to remove the mold, what will be done to prevent its recurrence and what will be done to monitor future infestations):

   N/A

Glacier National Park

HAZARDOUS MATERIALS INSPECTION COVER SHEET

Building Title WLD Fish Creek Building #1262 Moberly Guest Cabin

Park Location Fish Creek

Building No. 1262 **FMSS Location No.** 7709

PREPARATION FOR SURVEY

1. Check and identify existing HAZMAT records; Identify what was found and where; If none go to paragraph 4

☑ Local Records search conducted on 8/16/13 by Daryl Kluth Found N (Y/N)

List what was found:

☐ TIC Records search conducted on _____ by _____ Found_____(Y/N)

List what was found:

2. If records were found do they address the entire building since the last rehab or renovation? _____(Y/N)
If NO then proceed to paragraph 3; If YES, there is no need to proceed with this form.

3. Check each HAZMAT suspected in this building then elaborate on where these may be located:

☑ Asbestos Containing Materials: Floor covering

☑ Lead-based Paint: Bathroom walls

☑ Rodents (Hantavirus): In Cabin

☑ Mold: Kitchen and bathroom

☐ Other:

CONDUCT THE SURVEY

4. Identify materials surveyed, date of survey and name of surveyor; (attach HAZMAT Form 2 & floor plan)

Asbestos Survey done; conducted on 8/16/13 by Daryl Kluth

Lead Survey done; conducted on 8/16/13 by Daryl Kluth

Rodent Infestation Survey done; conducted on 8/16/13 by Daryl Kluth

Mold Survey done; conducted on 8/16/13 by Daryl Kluth

_____ Survey done; conducted on _____ by _____

5. From survey send samples for HAZMAT testing (attach HAZMAT Form 3) and complete the HAZMAT Laboratory Testing Checklist (attach HAZMAT Form 4):

6 # of ACM samples sent: 8/16/13 Lab: Reservoirs Environmental Inc.

_____# of Paint samples sent:_____ Lab:

_____# of Mold samples sent:_____ Lab:

_____Other:

6. As a result of the survey:

☐ **Survey is negative for HAZMAT**

☑ **HAZMAT confirmed through testing (forms attached)**

☐ **This is an updated survey to correct the record (forms attached as needed)**

7. ☐ **Records are adequate and no update survey is needed**

Signature Validation:

_____(Certified Inspector)

Printed name of inspector Daryl Kluth

Inspector's EPA License Number N/A Expires on _____

Inspector's MT License Number MTA-3746 Expires on 04/08/2014

HAZMAT SURVEY Form #2: 16 August 2013

BUILDING #1262

MOBERLY GUEST CABIN:

This guest cabin was built around 1925 and was originally the Bull Head Lodge guest cabin. It is a single-story, L-shaped log cabin. It underwent a series of alterations in 1961, which included raising the roof about 18 inches and installing new windows and doors. It has a medium-pitched, cross-gabled roof and a small open deck with a log railing. The cabin has vertical log corner posts and concrete daubing between the log spaces. The roof consist of tar paper and cedar shingles.

The interior consist of a living room, kitchen, bathroom, and a bedroom. The interior walls are mahogany wood paneling. The ceiling in the bedroom is 12" acoustic tiles. The floors are plywood with carpeting in the bedroom and linoleum in the bathroom and kitchen areas.

ASBESTOS: Suspect asbestos containing materials (ACM's) were the roofing paper, the linoleum in the kitchen and bathroom areas, the 12" acoustic tile, and the cement daubing on the log work. Samples were taken of each and sent to Reservoirs Environmental Inc. for further analysis.

LEAD: All painted surfaces were tested for lead using LEAD/CHECK swabs. No positive results were obtained.

RODENT INFESTATION: Due to the rooted floor areas mice have free access. Minor droppings were found.

MOLD: None found.

Respectfully,

Daryl Kluth

Building Inspector

Glacier National Park

HAZMAT SURVEY FORM BY MATERIAL

Note: Use one form per suspect hazardous material found in the building

Building #: 1262 Building Description: Moberly Guest Cabin

Homogeneous area number: A1, A2 Type of Material: Surfacing ○ TSI ○ Misc. ◉

Homogeneous Material Description: Log chinking

Functional Space Description: Outside logging

Friable: Yes ☐ No ☑ Condition of material: Good

Extent of damage: None ○ <10% ◉ >10% ○ <25% ○ >25% ○

Type of damage: Deterioration ○ Water ○ Physical ◉ Dry Rot ○ Rodent ○

Potential for significant damage: Yes ☐ No ☑ Describe: _____

Est'd Quantity of material: Square feet 80

Pipe: Size _____ Footage _____ Size _____ Footage _____

Size _____ Footage _____ Size _____ Footage _____

Type of Substrate (for surfacing materials): _____

RATE EACH OF THE FOLLOWING RISKS	High	Moderate	Low
Accessibility	☐	☐	☑
Contact by general public	☐	☐	☑
Contact by building occupants	☐	☐	☑
Activity near the material	☐	☐	☑
Possibility of vibration damage	☐	☐	☑
Possibility of water damage	☐	☐	☑
Possibility of air erosion	☐	☐	☑
Possibility of vandalism	☐	☐	☑

Comments:

Signature of Inspector: Daryl J Tuttle Date: 08/16/2013

Glacier National Park

HAZMAT SURVEY FORM BY MATERIAL

Note: Use one form per suspect hazardous material found in the building

Building #: 1262 Building Description: Moberly Guest Cabin

Homogeneous area number: B Type of Material: Surfacing ○ TSI ○ Misc. ◉

Homogeneous Material Description: Linoleum

Functional Space Description: Bathroom

Friable: Yes ☐ No ☑ Condition of material: Good

Extent of damage: None ○ <10% ◉ >10% ○ <25% ○ >25% ○

Type of damage: Deterioration ○ Water ○ Physical ◉ Dry Rot ○ Rodent ○

Potential for significant damage: Yes ☐ No ☑ Describe: _____

Est'd Quantity of material: Square feet 40

Pipe: Size _____ Footage _____ Size _____ Footage _____

Size _____ Footage _____ Size _____ Footage _____

Type of Substrate (for surfacing materials): _____

RATE EACH OF THE FOLLOWING RISKS	High	Moderate	Low
Accessibility	☐	☑	☐
Contact by general public	☐	☐	☑
Contact by building occupants	☐	☑	☐
Activity near the material	☐	☑	☐
Possibility of vibration damage	☐	☐	☑
Possibility of water damage	☐	☐	☑
Possibility of air erosion	☐	☐	☑
Possibility of vandalism	☐	☐	☑

Comments:

Signature of Inspector: Daryl J Thatt Date: 08/16/2013

Glacier National Park

HAZMAT SURVEY FORM BY MATERIAL

Note: Use one form per suspect hazardous material found in the building

Building #: 1262 Building Description: Moberly Guest Cabin

Homogeneous area number: C Type of Material: Surfacing ○ TSI ○ Misc. ◉

Homogeneous Material Description: Linoleum

Functional Space Description: Kitchen

Friable: Yes ☐ No ☑ Condition of material: Good

Extent of damage: None ○ <10% ◉ >10% ○ <25% ○ >25% ○

Type of damage: Deterioration ○ Water ○ Physical ◉ Dry Rot ○ Rodent ○

Potential for significant damage: Yes ☐ No ☑ Describe: _____

_____

Est'd Quantity of material: Square feet 60

Pipe: Size _____ Footage _____ Size _____ Footage _____

Size _____ Footage _____ Size _____ Footage _____

Type of Substrate (for surfacing materials): _____

RATE EACH OF THE FOLLOWING RISKS	High	Moderate	Low
Accessibility	☐	☑	☐
Contact by general public	☐	☐	☑
Contact by building occupants	☐	☑	☐
Activity near the material	☐	☑	☐
Possibility of vibration damage	☐	☐	☑
Possibility of water damage	☐	☐	☑
Possibility of air erosion	☐	☐	☑
Possibility of vandalism	☐	☐	☑

Comments:

Signature of Inspector: _____ Date: 08/16/2013

Glacier National Park

HAZMAT SURVEY FORM BY MATERIAL

Note: Use one form per suspect hazardous material found in the building

Building #: 1262 Building Description: Moberly Guest Cabin

Homogeneous area number: D Type of Material: Surfacing ○ TSI ○ Misc. ◉

Homogeneous Material Description: Roofing paper

Functional Space Description: Roof

Friable: Yes ☑ No ☑ Condition of material: Poor

Extent of damage: None ○ <10% ○ >10% ○ <25% ○ >25% ◉

Type of damage: Deterioration ◉ Water ○ Physical ○ Dry Rot ○ Rodent ○

Potential for significant damage: Yes ☑ No ☐ Describe: Roof shingles and sheathing are rotted

Est'd Quantity of material: Square feet 600

Pipe: Size _____ Footage _____ Size _____ Footage _____

Size _____ Footage _____ Size _____ Footage _____

Type of Substrate (for surfacing materials): _____

RATE EACH OF THE FOLLOWING RISKS	High	Moderate	Low
Accessibility	☐	☐	☑
Contact by general public	☐	☐	☑
Contact by building occupants	☐	☐	☑
Activity near the material	☐	☐	☑
Possibility of vibration damage	☐	☐	☑
Possibility of water damage	☐	☐	☑
Possibility of air erosion	☐	☐	☑
Possibility of vandalism	☐	☐	☑

Comments:

Signature of Inspector: _____ Date: 08/16/2013

Glacier National Park

HAZMAT SURVEY FORM BY MATERIAL

Note: Use one form per suspect hazardous material found in the building

Building #: 1262 Building Description: Moberly Guest Cabin

Homogeneous area number: E Type of Material: Surfacing ○ TSI ○ Misc. ◉

Homogeneous Material Description: 12" acoustic tiles

Functional Space Description: Bedroom

Friable: Yes ☐ No ☑ Condition of material: Good

Extent of damage: None ○ <10% ◉ >10% ○ <25% ○ >25% ○

Type of damage: Deterioration ○ Water ○ Physical ◉ Dry Rot ○ Rodent ○

Potential for significant damage: Yes ☐ No ☑ Describe: _____

Est'd Quantity of material: Square feet 100

Pipe: Size _____ Footage _____ Size _____ Footage _____

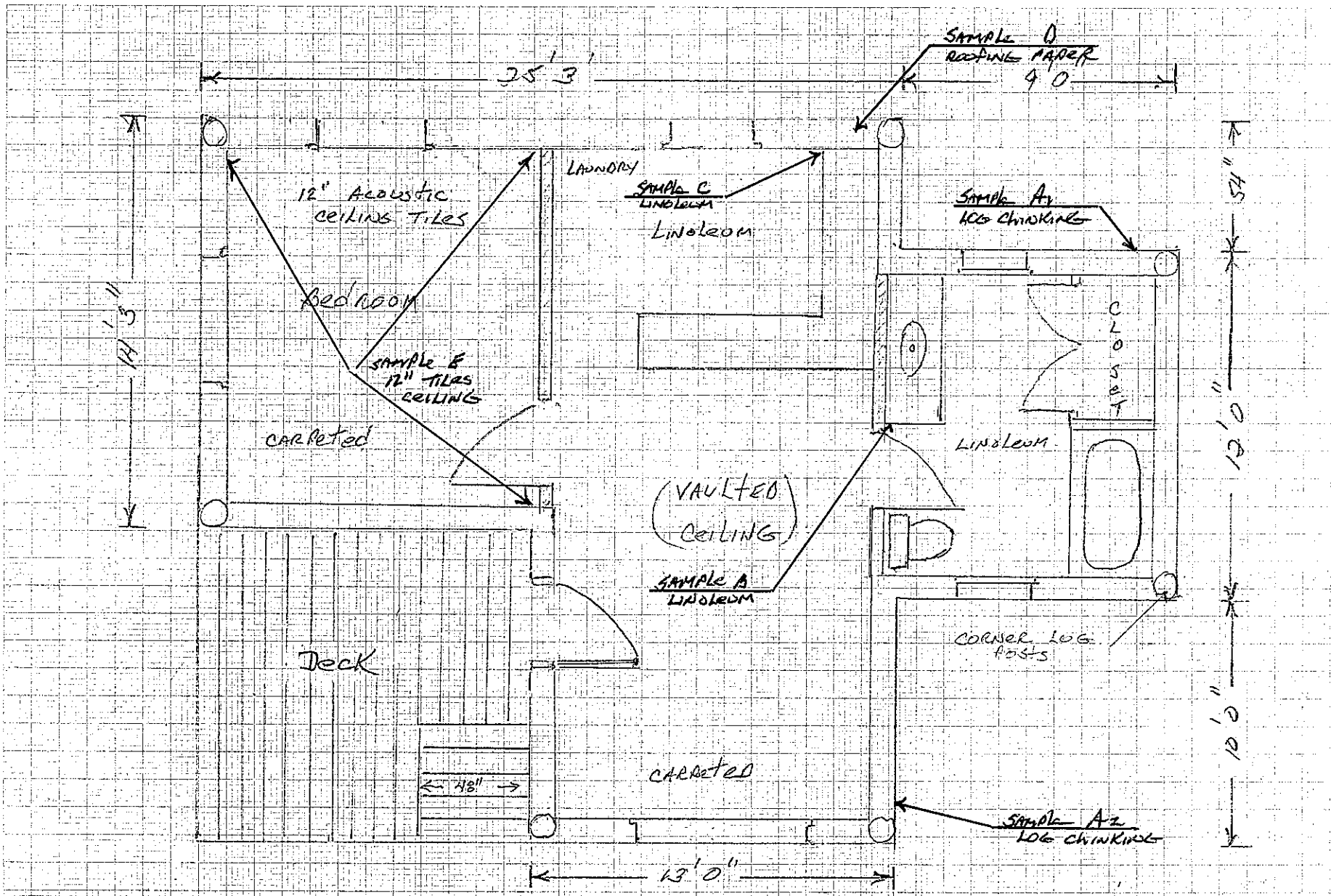
Size _____ Footage _____ Size _____ Footage _____

Type of Substrate (for surfacing materials): _____

RATE EACH OF THE FOLLOWING RISKS	High	Moderate	Low
Accessibility	☐	☐	☑
Contact by general public	☐	☐	☑
Contact by building occupants	☐	☐	☑
Activity near the material	☐	☐	☑
Possibility of vibration damage	☐	☐	☑
Possibility of water damage	☐	☐	☑
Possibility of air erosion	☐	☐	☑
Possibility of vandalism	☐	☐	☑

Comments:

Signature of Inspector: Daryl J. Fleetter Date: 08/16/2013



Moberly House
Guest Cabin

Blue Print

DJK 23 Aug 2018

RES 267253

GLACIER NATIONAL PARK

HAZMAT CHAIN OF CUSTODY RECORD

Glacier National Park 1 Going-to-the-Sun Road West Glacier, MT 59936 PHONE: 406-888-7901 FAX: 406-888-7886	Billing Information: Contact Name, Address & Phone: Ken Sebrowsky P.O.Box 128 West Glacier, Mt. 59936	Project Name: #1262 Guest Cabin Project No: Results: MAIL YES or NO [redacted] FAX PHONE 406 888-7948

CLIENT

Reservoirs Environmental Inc.
5801 Logan Street
Denver, Co. 80216

ANALYSIS REQUIRED

TURNAROUND

Circle One:
RUSH ○ Same Day ○
24 HR ○ Other:
3-5 DAY ◉

SAMPLE #	SAMPLE DESCRIPTION	DATE/TIME	# OF CONTAINERS	PLM - BULK	PCM - AIR (NIOSH 7400)	LEAD - AIR, PAINT, WIPE	REMARKS	RESULTS
B1262-8-16-13 A1 A2	Log chinking	8/16/13 11:00	2	☑	☐	☐	positive stop	
B1262-8-16-13 B	Linoleum bathroom	8/16/13 11:05	1	☑	☐	☐	"	
B1262-8-16-13 C	Linoleum Kitchen	8/16/13 11:15	1	☑	☐	☐	"	
b1262-8-16-13 D	Roofing paper	8/16/13 11:25	1	☑	☐	☐	"	
B1262-8-16-13 E	12" acoustic tiles	8/16/13 11:30	1	☑	☐	☐	"	
				☐	☐	☐		
				☐	☐	☐		
				☐	☐	☐		
				☐	☐	☐		
				☐	☐	☐		
				☐	☐	☐		
				☐	☐	☐		
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RELEASED BY: (signature)	DELIVERY METHOD	RECEIVED BY: (signature)	COMPANY/AGENCY OR AFFILIATION	DATE / TIME RECEIVED	SAMPLE CONDITION
[signature]	FED-EX	[signature]	RES	8/20/13 [illegible]	[signature]

Due Date: 8-24 8:25
Due Time: 5:30 PM

RES 267293

Reservoirs Environmental, Inc.

5801 Logan St. Denver, CO 80216 · Ph: 303-954-1985 · Fax 303-477-6215 · Toll Free 866 RESI-ENV
Pager : 303-509-2098

Page 1 of 1

INVOICE TO: (IF DIFFERENT)

Company	Glacier National Park
Address	1 Going-to-the-Sun Road
	West Glacier MT 59936
Project Number and/or P.O. #	
Project Description/Location	#1262 Forest Collection

Company	Glacier National Park
Address	P.O. Box 128
	West Glacier MT 59936

CONTACT INFORMATION:

Contact	Ken Sebrowsky
Phone	1-406-888-7948
Fax	1-406-888-7886
Cell/pager	
Email: Data Delivery & Email Address	

Contact	
Phone	
Fax	
Cell/pager	

ASBESTOS LABORATORY HOURS: Weekdays: 7am - 7pm

PLM / PCM / TEM ___ RUSH (Same Day) ___ PRIORITY (Next Day) ✓ STANDARD
(Rush PCM = 2hr, TEM = 6hr.)

CHEMISTRY LABORATORY HOURS: Weekdays: 8am - 5pm

Metal(s) / Dust ___ RUSH ___ 24 hr. ___ 3-5 Day
RCRA 8 / Metals & Welding Fume Scan / TCLP ___ RUSH ___ 5 day ___ 10 day
Organics ___ 24 hr. ___ 3 day ___ 5 Day

"Prior notification is required for RUSH turnarounds."

MICROBIOLOGY LABORATORY HOURS: Weekdays: 9am - 6pm

E.coli O157:H7, Coliforms, S.aureus ___ 24 hr. ___ 2 Day ___ 3-5 Day
Salmonella, Listeria, E.coli, APC, Y & M ___ 48 Hr ___ 3-5 Day
Mold ___ RUSH ___ 24 Hr ___ 48 Hr ___ 3 Day ___ 5 Day

"Turnaround times establish a laboratory priority, subject to laboratory volume and are not guaranteed. Additional fees apply for afterhours, weekends and holidays."

Special Instructions: A Positive stop on like homogenous material

REQUESTED ANALYSIS

PLM - Short report, Long report, Point Count
TEM - AHERA, Level II, 7402, ISO +/- Quant
Semi-quant, Micro-vac, ISO-Indirect Preps
PCM - 7400A, 7400B, OSHA
DUST - Total, Respirable
METALS - Analyte(s)
RCRA 8, TCLP, Welding Fume, Metals Scan
ORGANICS - METH
MICROBIOLOGY: Salmonella +/-; E.coli O157:H7 +/-; Listeria +/-; Aerobic Plate Count +/- or Quantification; E.coli +/- or Quantification; Coliforms +/- or Quantification; S.aureus +/- or Quantification; Y & M +/- or Quantification; Mold +/- Identification, Quantification
SAMPLER'S INITIALS OR OTHER NOTES

VALID MATRIX CODES

Air = A; Bulk = B; Dust = D; Paint = P; Soil = S; Wipe = W; Swab = SW; F = Food; Drinking Water = DW; Waste Water = WW; O = Other
"ASTM E1792 appropriate wipe media only"

	Client sample ID number (Sample ID's must be unique)	Sample Volume (L) / Area	Matrix Code	# Containers	Date Collected mm/dd/yy	Time Collected hh:mm a/p	LAB NOTES: EM Number (Laboratory Use Only)
1	B1262-8-16-13 A, A2 Log Chunking			2	8/16/13	11:00	1006375
2	B1262-8-16-13 B Linoleum Bath			1	8/16/13	11:05	51
3	B1262-8-16-13 C Linoleum Kitchen			1	8/16/13	11:15	52
4	B1262-8-16-13 D Roofing Paper			1	8/16/13	11:25	53
5	B1262-8-16-13 E 12" Acoustic Tiles			1	8/16/13	11:30	54
6							55
7							
8							
9							
10							

Number of samples received: 6 (Additional samples shall be listed on attached long form.)

NOTE: RES will analyze incoming samples based upon information received and will not be responsible for errors or omissions in calculations resulting from the inaccuracy of original data. By signing, client/company representative agrees that submission of the following samples for requested analysis as indicated on this Chain of Custody shall constitute an analytical services agreement with payment terms of NET 30 days. Failure to comply with payment terms may result in 1.5% monthly interest surcharge.

Relinquished By: Cheryl Kluth Date/Time: 8/16/13 13:50

Laboratory Use Only
Received By: Date/Time: 8-21-13 0900 Carrier FED-EX

Sample Condition: On Ice Yes / No; Sealed Yes / No; Intact Yes / No
Temp (F°): ____

Results	Contact	Phone	Email	Fax	Date	Time	Initials	Contact	Phone	Email	Fax	Date	Time	Initials
	Contact	Phone	Email	Fax	Date	Time	Initials	Contact	Phone	Email	Fax	Date	Time	Initials

8-22 3505 DE37

REI LAB **Reservoirs Environmental, Inc.**

August 28, 2013

Subcontract Number:	**NA**
Laboratory Report:	**RES 267293-1**
Project # / P.O. #	**None Given**
Project Description:	**#1262 Guest Cabin**

Glacier National Park (Ken Sebrowsky)
1 Going-To-The-Sun Rd.
West Glacier MT 59936

Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American Industrial Hygiene Association (AIHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 267293-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,

Gina Vettraino for
Jeanne Spencer
President

RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0
TDH Licensed Laboratory # 30-0136

TABLE PLM BULK ANALYSIS, PERCENTAGE COMPOSITION BY VOLUME

RES Job Number: **RES 267293-1**
Client: **Glacier National Park (Ken Sebrowsky)**
Client Project Number / P.O. **None Given**
Client Project Description: **#1262 Guest Cabin**
Date Samples Received: **August 21, 2013**
Analysis Type: **PLM, Short Report**
Turnaround: **3-5 Day**
Date Analyzed: **August 26, 2013**

ND=None Detected
TR=Trace, <1% Visual Estimate
Trem-Act=Tremolite-Actinolite

Client Sample Number	Lab ID Number	LAYER	Physical Description	Sub Part (%)	Asbestos Content		Non Asbestos Fibrous Components (%)	Non-Fibrous Components (%)
					Mineral	Visual Estimate (%)		
B1262-8-16-13 A1	EM 1009750	A	Gray granular cementitious material	100		**ND**	0	100
B1262-8-16-13 A2	EM 1009751	A	Gray granular cementitious material	100		**ND**	0	100
B1262-8-16-13 B	EM 1009752	A	Beige/multi-colored sheet vinyl w/ gray fibrous backing material	100	**Chrysotile**	**25**	3	72
B1262-8-16-13 C	EM 1009753	A	Beige/multi-colored sheet vinyl w/ gray fibrous backing material & brown mastic	100	**Chrysotile**	**20**	3	77
B1262-8-16-13 D	EM 1009754	A	Black felt	100		**ND**	65	35
B1262-8-16-13 E	EM 1009755	A	Tan/white ceiling tile	100		**ND**	93	7

TEM Analysis recommended for organically bound material (i.e. floor tile) if PLM results are <1%.

Analyzed by: Brett S. Colbert

Data QA: Gina Vettraino

Glacier National Park

HAZMAT Laboratory Testing Checklist

Project Title: B# 1262 MOBERLY GUEST CABIN **PMIS #:** _____ **Location:** FISH CREEK

Date: 09-16-13 **FMSS Location #:** NONE

Description of HAZMAT Work: _____

1. Asbestos:

Date samples taken: 08/16/13 Sampler: DARYL KLUTH Note: Attach Chain of Custody Record (HAZMAT Form 3)

Type, material and quantity of samples taken: LINOLEUM, ROOFING PAPER, CEILING TILES

Laboratory analyzing samples: REI LABS Date sent to lab: _____ Date results returned: _____

Do results indicate asbestos containing material **> 1.0%?** Yes ☑ (identify type below) No ☐ **(no asbestos hazard exists)**

Check type of asbestos detected:

Tremolite: ○	% content: _____	Actinolite: ○	% content: _____
Anthophyllite: ○	% content: _____	Chrysotile: ◉	% content: 20-25
Amosite: ○	% content: _____	Crocidolite: ○	% content: _____

Location where asbestos sampling results were filed: SHAREPOINT Filer: FOSTER

2. Lead:

Date sample taken: _____ Sampler: _____ Method of sampling done: _____

Location of samples taken in building: _____

Laboratory analyzing samples: _____ Date sent to lab: _____ Date results returned: _____

Do results indicate lead **> 0.5% by weight?** Yes ☐ No ☐ **(no lead hazard exists)**

Location where lead sampling results were filed: _____ Filer: _____

3. Hantavirus Potential:

Is there sign of rodent infestation? Yes ☑ No ☐

Location(s) in building where signs were noted: MOUSE DROPPINGS THROUHOUT BUILIDNG

_____

_____

4. Mold:

Is there sign of mold? Yes ☐ No ☑

Describe evidence in detail: _____

Locations) in building where signs were noted: _____

_____

GLACIER NATIONAL PARK
HAZMAT MITIGATION/ABATEMENT PLAN

The following narratives describe the HAZMAT mitigation and/or abatement that will take place when a project is done on this location. The completion of the project will either eliminate or render harmless the known HAZMAT so that it poses no threat to anyone coming into contact with it.

1. **Asbestos Containing Material** (Identify what will be disturbed in a potential project, if the material will be partially or totally removed, if the material will be exposed to occupants and what will be done to communicate its presence):

   WHEN FUNDING BECOMES AVAILABLE , A LICENSED CONTRACTOR WILL MITIGATE THE ASBESTOS FOUND IN THE BUILDING

2. **Lead-Based Paint** (Identify what will be disturbed in a potential project, what mitigation method will be used, if any material will be exposed to occupants and what will be done to communicate its presence):

   N/A

3. **Rodent Presence:** As a minimum a rodent infestation remediation will require: 1) Infestation cleanup procedures complying with GNP Hantavirus Safety Procedures, Sections 4.3 (light infestation) and 4.4 (heavy infestation) cleanup procedures. 2) Following cleanup, written documentation acknowledging infestation remediation provided to the GNP Safety Manager for files retention. Additional mitigation as follows:

   FOLLOW THE ABOVE PARAGRAPH, IN ADDITION, OCCUPANT WILL BE NOTIFIED AND FECES WILL BE CLEANED BY TRAINED PERSONNEL PER GLACIER NATIONAL PARK POLICY

4. **Mold** (Identify what will be done to remove the mold, what will be done to prevent its recurrence and what will be done to monitor future infestations):

   N/A

Appendix E - Bibliography

Buchholtz, C.W. Man in Glacier. West Glacier, Montana: Glacier Natural History Association, 1976.

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Fladmark, Bruce. "Determination of Eligibility for Moberly Cabin". West Glacier, Montana: Glacier National Park, 1996.

Hufstetler, Mark. "Glacier Historic Structures Narrative Histories". West Glacier, Montana: Glacier National Park, 1988.

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Montana State Historic Property Record Form Moberly Main Cabin 24FH1506 B1262 MT.

Montana State Historic Property Record Form Moberly Guest Cabin 24FH1506 B1263 MT.

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Robinson, Donald H. Through the Years in Glacier National Park. Whitefish, Montana: Sunpoint Press, n.d. reprint of the 4th Revision from 1973.

Vaught, L.O. "History of Glacier". Unpublished manuscript, n.p., n.d. Glacier National Park Archives.

Primary sources
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Ravage, Jessie. Transcription of Interview with Robert S. Lundgren on July 31, 2006.

Book of Private Inholdings up to 1963

Real Estate files

In the Glacier National Park George C. Ruhle Library (West Glacier, Montana)

Harrington, Leona et al. History of Apgar. [n.p., n.d.].

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Flatheas Courier September,24, 1964

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CAMPS ON LAKE McDONALD
GLACIER NATIONAL PARK
Historic Structures Report
Moberly Main House and Guest Cabin

2020