

Tracing: Gabriel Log Barn As A Reflection Of Speculation, Growth, And A Developing Sense Of Permanence In The Northern Rockies

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For many of the early agricultural settlers of the Northern Rockies, the northern latitude combined with the high elevation presented conditions for raising crops and livestock that were entirely new to them. The climatic and geographic setting also imposed numerous unfamiliar demands and constraints on the buildings growers used to house and shelter their harvests and livestock. In terms of economic development, the region remained effectively a remote frontier until 1883, when the Northern Pacific Transcontinental Railroad reached the high mountain valleys of the Montana Territory. The tools and resources available for construction in the region were therefore limited well into the 1890s, when the establishment of industrial and commercial enterprises that supported construction, such as large scale lumber milling operations and the importation of hardware, materials, and machinery began to widely influence building practices.

This essay examines a two story log barn on the Damon Gabriel Homestead in the Gallatin Valley, Montana, and the ways in which it reflects shifting attitudes toward permanence and the evolution of construction capabilities during an era of dramatic change nearing the turn of the century. A homestead is by definition agricultural, hence the changes in building practices are explored in parallel with the development of agriculture in the region. Detailed documentation of the Gabriel homestead site is available

thanks to the efforts of a group of graduate students at Montana State University, School of Architecture.¹ The record drawings and historical report they produced make possible an in-depth analysis of circumstances, materials, construction technology, and building design.

According to Stroebe, et. al., Damon Gabriel was Canadian of French descent, entering the United States as a mercenary in U.S. military. He fought in the Great Sioux War of 1876, The Battle of Powder River and the Battle of the Rosebud, and shortly afterward he narrowly escaped death at the Battle of the Little Bighorn because his exhausted regiment was assigned instead to a resupplying expedition. His decision to join the U.S. military may have been motivated not only by wages, but by the opportunity for citizenship and the right to homestead, a process which was less restrictive in the U.S. than in Canada at the time. After his military discharge he settled in the Gallatin Valley, Montana Territory, and worked as a farm hand for Frank Savar. By 1880 he bought Savar's homestead, 160 acres of fertile bottomland on the Gallatin River at about 5,000 feet elevation, and filed his own homestead claim on the adjacent 160 acres to the west.²

The construction sequence of the 3-bay log barn on his homestead suggests a chronology that reflects evolving attitudes toward tenure and permanence in the region

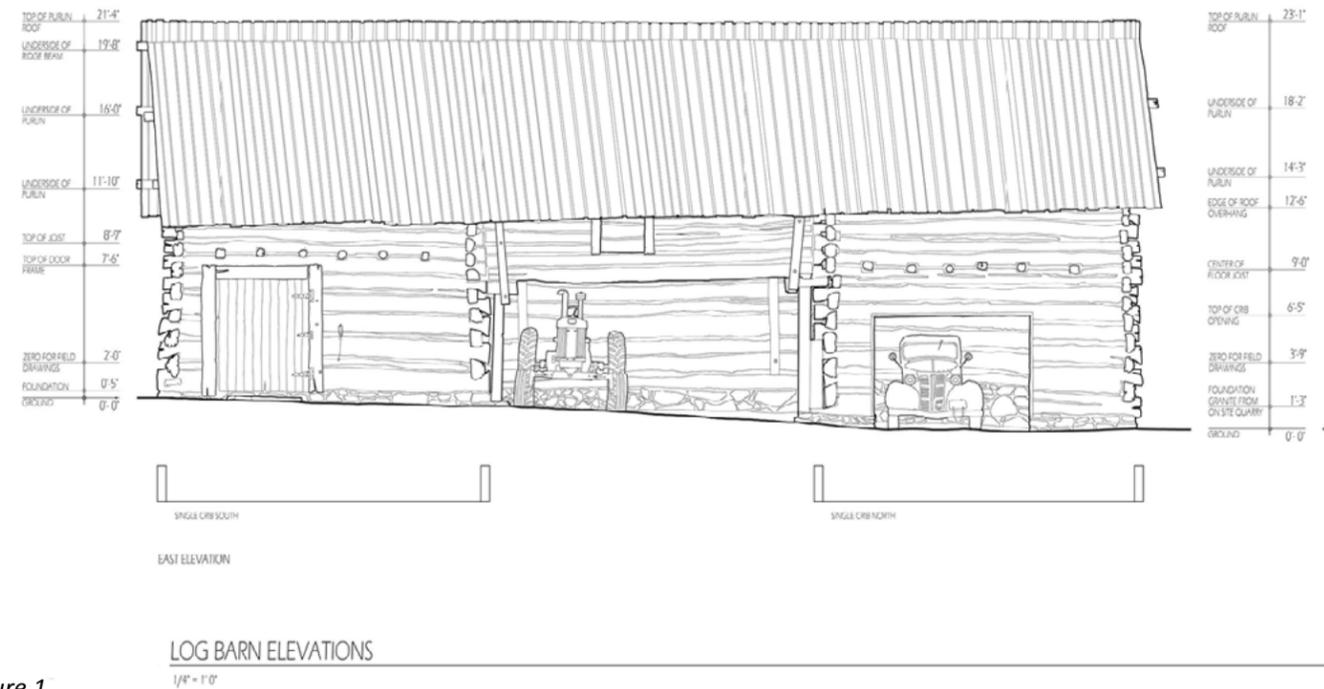


Figure 1

East elevation of the Gabriel log barn as recorded in 2014. Hannah Stroebe, Kate Tilleman, Chelsea Holling, Jessica Proctor, Theresa Lindenau, Urvi Shah, and Andi Duroux, "Gabriel Homestead" Historic American Buildings Survey, National Archives, Washington, D.C., (June 2015), document MT-174, sheet 7.

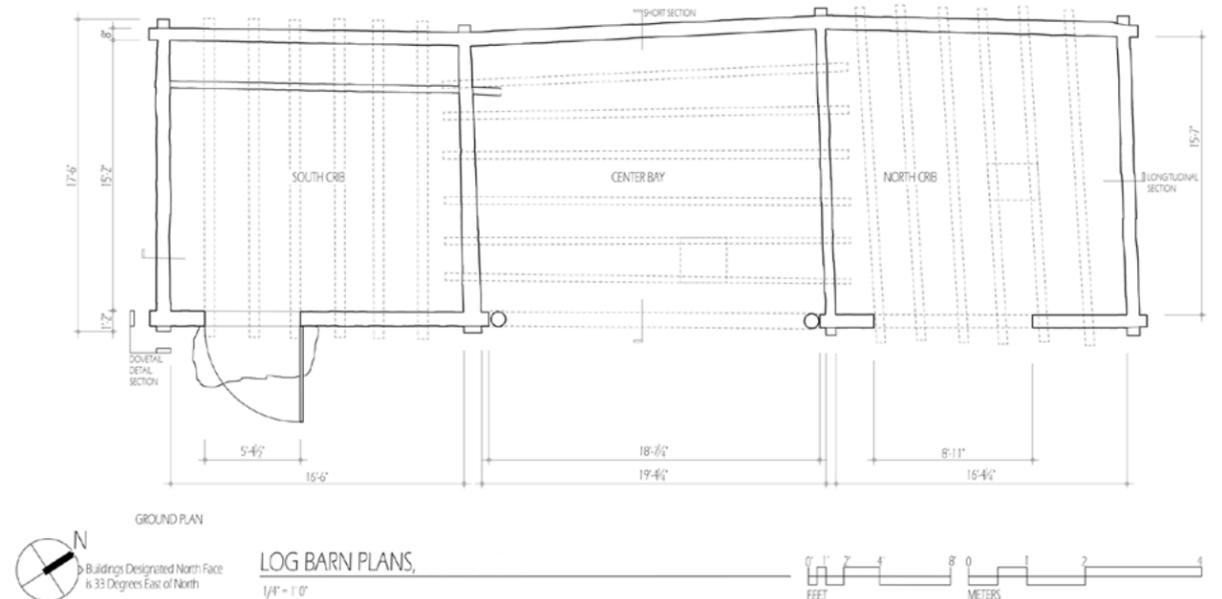


Figure 2

The irregularity in the ground floor plan reveals the hand-built quality of the building. There were no machined materials in the original construction, so squareness was not a primary concern. It was built with a few simple tools that could be carried overland in a wagon, and probably few measuring tools. Drawing from Stroebe, et al, sheet 6.

(figure 1). A theme of speculation and growth is reflected in its gradual evolution. Analysis of the line drawings suggests that this building began as two single-story, single-crib log structures both built by the same craftsman with simple tools and a knowledge of solid joinery.³ The immense size of the logs (up to 18 inches deep) and full dovetail notching indicates the cribs were built with the intention to hold-up under heavy use – probably as shelter for large stock – but may also suggest that they were built with the intention of ultimately supporting a second story. The timber is cottonwood, undoubtedly cut a few hundred yards away on the banks of the Gallatin River. Although its irregularity made it difficult to produce a tight, refined wall, this readily available resource offered an economy of time that might otherwise have been spent in harvesting from evergreen forests a considerable distance away. The timbers are roughly hand-hewn, reducing their weight and bulk, and presenting a moderately finished surface of considerable substance.

In floor plan the north and south cribs are similar in scale, they are relatively un-square, and their depth is loosely matched (figure 2). If the initial intention was to eventually combine them into a single building, the builder worked with limited measuring tools and perhaps haste due to the onset of a long, cold winter. The extent of the original cribs is apparent from the height at which the corner notching changes character entirely, from dovetail to crowned square notching (figure 3). Their height measured from the ground is similar, adding strength to the view that they were a first stage of a speculative, phased construction sequence. However, as they currently sit on sloping ground, this effectively makes one crib a foot shorter than the other (see figure 1) – an unlikely difference if they were built in this location. They may have been built as a matched pair on level ground and moved to this site at a later date. Moving buildings by skidding them on the winter snowpack with horse teams was not uncommon in the region – it allowed many farmsteads to adapt to new demands in an economical way by recycling buildings for new uses.⁴ Stroebe et al hypothesize that the two cribs may have been originally built on Frank Savar’s homestead, as his acreage lay only a few hundred feet to the east.⁵ Since Gabriel had bought Savar’s homestead, it is entirely possible that he moved Savar’s outbuildings to establish evidence of settlement that would help him qualify for the patent on his own land claim. A settler had only a few years after filing the initial homestead claim on the land, before they had to prove-up by completing specific improvements such as the construction of a dwelling, corral fences and agricultural outbuildings, in addition to farming the land. Re-locating Savar’s buildings to his own farmstead represented not only an economy of materials, but of construction time – a strategy which freed him up to make other improvements.

A second phase of construction is represented in a photograph



Figure 3

Typical detail of notching in the cottonwood logs. The first story uses full dovetail notching, while the second story is crowned square notching – the difference in character is indicative of two different builders. The change occurs at approximately 8'-6" from the ground in both cribs. Drawing from Stroebe, et al, sheet 8.

probably taken in the 1880s (figure 4), which illustrates a single-story double-crib building in the location of the present barn, and a twin counterpart to the south. The two log cribs were combined under a single roof, forming a third space between them of similar size (figure 5). The roof was a low-profile ridgepole and purlin form common in early construction in the Rockies, as it was expedient and suitable for sod, a readily available roofing material.⁶ Moisture retained by the sod typically rotted the purlins, and these roofs did not last, but they served the purpose of affordable, rapid, and effective (though temporary) protection from the elements. The center bay between the cribs was originally open to the east and west as a drive-through for a wagon, and may have served as a threshing floor and as shelter for valuable investments such as farm implements. It is clear from the photograph that a single-crib log dwelling (figure 4, lower left), had undergone two expansions by this time – indicating a process of incremental enlargement of a first-season shelter as time and finances allowed, and reflecting a need to accommodate a growing family.

The addition of a second story loft and a steeply sloped gable roof marks the next construction phase on the log barn, visible in a photograph from 1903 (figure 6). It appears to be an improvement made to both of the log barns, representing considerable growth and confidence. This addition is clearly carpentered by a different craftsman than the original cribs, as the log joinery is crowned square notching, similar to the early log dwelling on the site, and the cottonwood logs are a significantly smaller diameter than those in the first story. If these additions are attributed to Damon Gabriel, this adds strength the hypothesis that the original single story cribs were built for Savar’s homestead. The steep gable form – a substantial improvement which sheds snow and rain effectively – is supported by log purlins and ridge beam on queen and king posts which stand atop the log crib walls. The floor joists and roof structure are built entirely with peeled lodgepole pine which provides the requisite straightness, and was an economical choice at the time, as dimensional lumber was highly priced because local lumber mills lacked competition. The outward roof material, however, is board-on-board milled planks, signaling the beginning of a machine age of building, and presenting a more refined appearance and a desire to project a progressive image.

The barn loft space is indicative of the need to store quantities of dry hay. Most ranches began to produce hay in great quantities only after the devastating winters of 1886-87, when large cattle herds starved to death. After this experience a cattle operation which intended to protect its investment against the unpredictable winter elements had to produce an adequate hay supply during the summer months, and to feed cattle daily throughout the winter. Getting hay distributed to herds required the use of working horse teams all winter to draw a large feed sled on the snow. The loft of the log barn would not have stored enough hay for a cattle herd, but it would

provide adequate space for some high quality hay and possibly grain needed to feed a pair of working draft horses during a long winter. Hence the addition of the hayloft represents a business decision to invest more heavily and to persevere even in the face of major setbacks and newly understood limitations. It suggests an optimistic attitude toward the promise of the future. Numerous other indications of growth and overt expressions of permanence in the homestead site by 1903 reinforce this view, such as the completion of the two-story stone masonry house, stone root cellar, and other outbuildings. These improvements are evidence of a family that no longer thought of themselves as pioneers on a remote frontier, but as progressive entrepreneurs, taking calculated risks, growing their business, and participating with confidence in a national market for beef and grain.

Another change was made to the building around the turn of the century. The center bay of the barn was enclosed completely on the west, and its loft was enclosed on the east (figure 7). This log infill was done without the benefit of notching into the existing cribs, instead the entire wall was splinted to the purlins at the eave. The lower story of the west wall was built with the same large diameter cottonwood logs, and similarly hewn as the 1870s crib construction – the tool marks in the surfaces of the logs are identical. This indicates yet another resource-efficient strategy which involved the reuse of construction materials from disused buildings. In this case the logs appear to be from another building of Frank Savar’s tenure. An aerial photograph from 1964 (figure 8) reveals that a possible source for these materials is the twin barn to the south, which was partially dismantled when the photograph was taken. The enclosure provides greater security and shelter for the center bay, an alteration perhaps motivated by the need to house new farming machinery. There were rapid advances in time-saving farm implements which were mass-

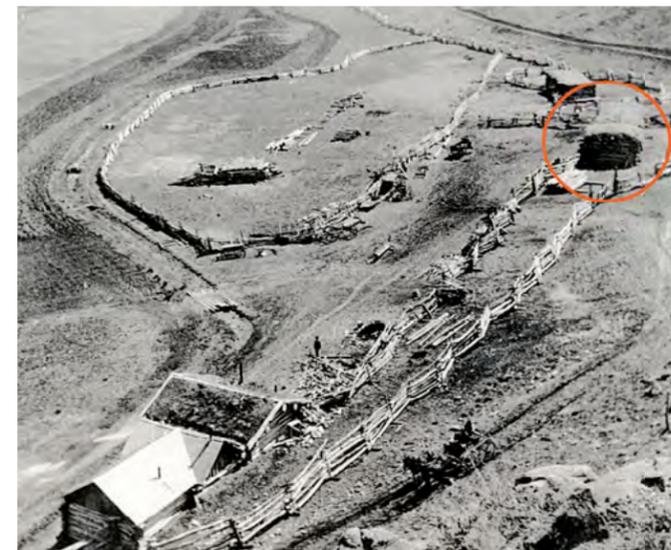


Figure 4

Earliest known photograph of the Gabriel Homestead site, taken from the adjacent buffalo jump. The location had been well-known to local Native Americans probably for many generations, due to the topographic feature of the cliff combined with the nearby spring, making it ideal for harvesting and processing buffalo. The photograph was probably taken in the 1880s, when the Gabriel family lived in the small log dwelling, lower left, and the low profile dog-trot log barns were roofed with sod. Note that an irrigation ditch was already developed around the eastern perimeter (to left of fence). Photo: Dr. Francis and Deloris Kelly family archives.

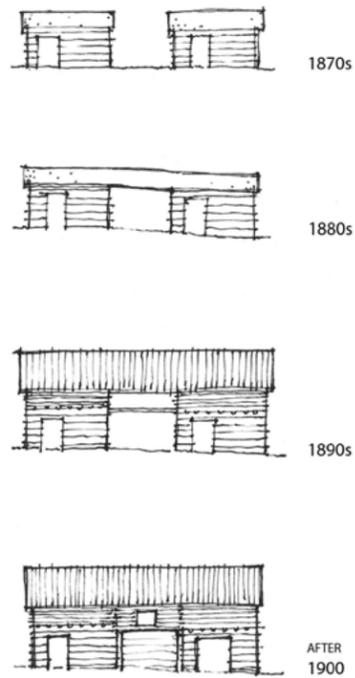


Figure 5

A probable sequence of construction from the 1870s to about 1910. The first phase may have been built by Frank Savar for his 1878 homestead a few hundred yards to the east. Subsequent phases are attributable to Damon Gabriel. The sequence makes a convincing case for a builder with a vision of future growth. Drawings by the author.

produced, affordable, and widely available by mail order after 1900. Implements like the disk plow, seeder, sickle bar, binder, and thresher enabled a tremendous increase in productivity for hay and grain producers, and Gabriel's log barn may have been adapted to protect these investments.

A final improvement and gesture of permanence was undertaken approximately 130 years after the initial single-crib construction. The Kelly family, owners of the homestead since 1968, saved the log barn from imminent collapse due to subsidence which was rotting the base logs. They dismantled it piece-by-piece and replaced the granite blocks on which it had stood with a contemporary foundation. The building was completely restored (completed 2008), with the intention that it stand for many decades to continue to tell the story of early agricultural settlement in the Gallatin Valley. With this intent, one of the most effective decisions the family made was to protect the landscape surrounding the building site from development which threatens rural lands in the region. They placed the acreage that was once held by Damon Gabriel into a conservation easement to preserve the open space, agricultural uses, natural habitation, the creek and the bank of the Gallatin River on the east of the property.⁸



Figure 6

Photograph from 1903. A significant burst of construction, growth, and an expression of permanence is evident in the entire homestead site within a period of 20 years (compare to figure 4, from 1880s). Both of the log barns have a second story addition with steep gable roof, dramatically increasing the capacity for storage of hay, and clearing the ground floor for draft animals. Stroebe, et al report that Gabriel modeled the stone house after a military fort building he had known in Montreal. It served as a projection of successfulness, protection, and permanence. Photo: Dr. Francis and Deloris Kelly family archives.

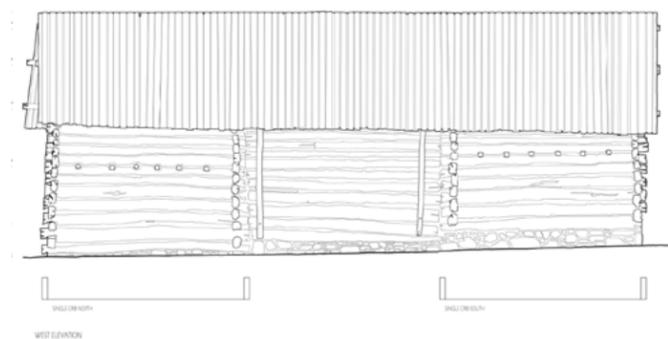


Figure 7

The west elevation reveals the character of the infill at the center bay. None of the added cottonwood logs, either at the ground floor or the second floor are notched into the north or south crib -- evidence that the infill was done after the second story was completed. Since local storm weather tends to blow from the southwest, this enclosure creates great protection from moisture at the center bay, giving it new utility. Drawing from Stroebe, et al, sheet 7.

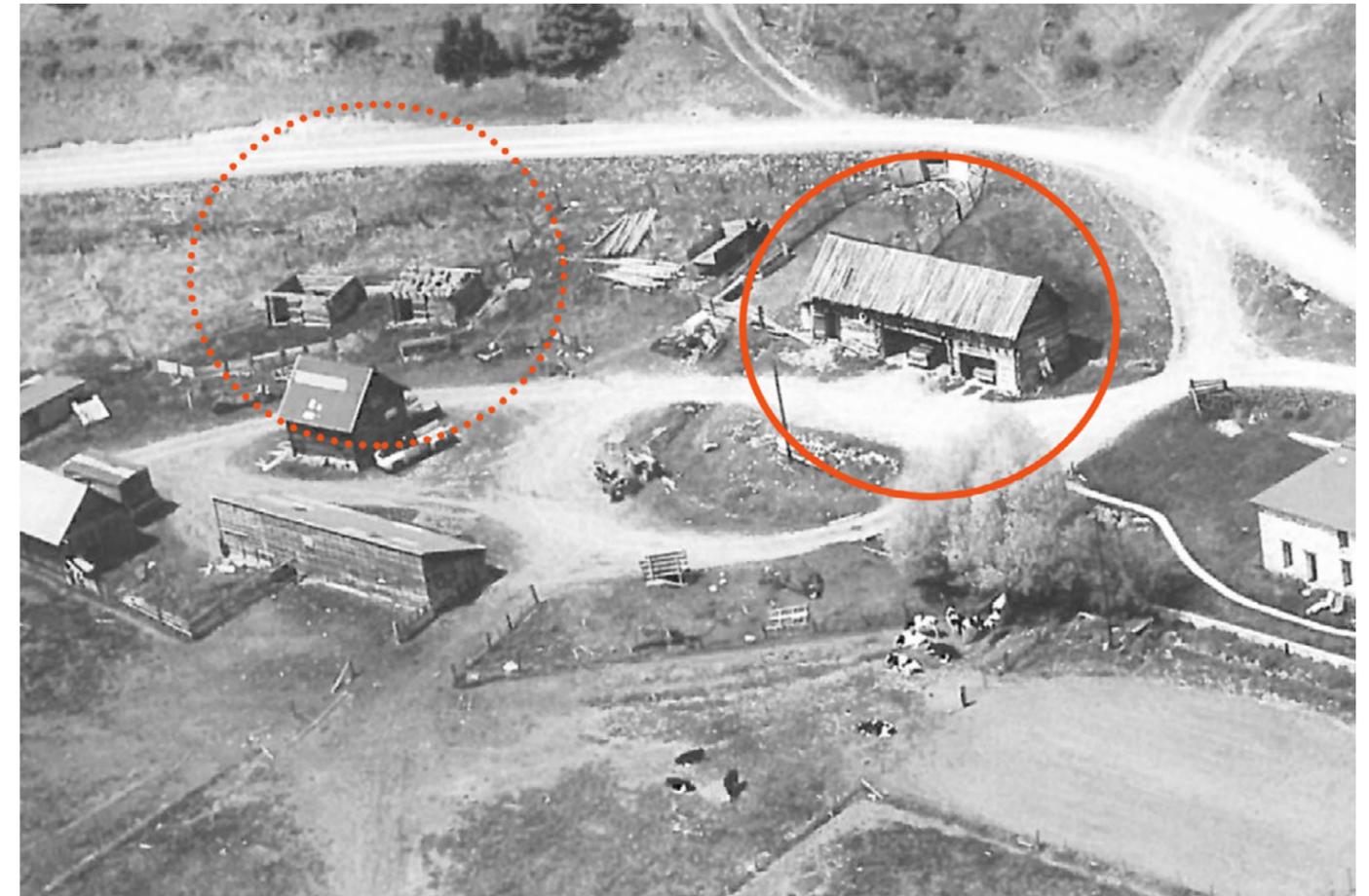


Figure 8

Aerial photograph from 1964. Partially dismantled log barn at left may have been a resource for the logs used to enclose the center bay of the log barn at center. Photo: Dr. Francis and Deloris Kelly family archives.

Notes:

1- The documentation was completed in 2014 as part of a graduate course taught by the author, and was submitted to the Historic American Buildings Survey, and is now housed in the National Archives. Hannah Stroebe, Kate Tilleman, Chelsea Holling, Jessica Proctor, Theresa Lindenau, Urvi Shah, and Andi Duroux, "Gabriel Homestead" Historic American Buildings Survey, National Archives, Washington, D.C., (June 2015), document MT-174.

2- Ibid, Historical Report, 1-2.

3- It is important to note that the granite foundation wall shown in the drawings was introduced during a 2008 restoration. The building originally rested on corner stones of granite, and had dramatically subsided, rotting the base logs. Hannah Stroebe, et al, Historical Report, 5.

4- Maire O'Neill, *Learning Rural Perceptions of Place: Farms*

and *Ranches in Southwest Montana*. Doctoral dissertation (Bozeman: Montana State University, 1997), 93-137.

5- Stroebe, et al, 3.

6- The ridgepole and purlin roof is defined by Terry Jordan, Jon Kilpinen & Charles Gritzner, *The Mountain West: Interpreting the Folk Landscape*, (Baltimore: Johns Hopkins University Press, 1997), 80-81.

7- A photograph of the Gabriel children from 1910 provides a close-up view of the corner notching of the early log dwelling on the homestead. It is a combination of lapped and crowned square notching, and its construction is attributed to Damon Gabriel. Stroebe, et al, 17.

8- Montana Land Reliance holds this easement in perpetuity.