Conservation Guide

Murie Ranch Historic District , Moose, Wyoming

August 2007, Prepared by Harrison Goodall

National Historic Landmarks are nationally significant historic places designated by the Secretary of the Interior because they possess exceptional value or quality in illustrating or interpreting the heritage of the United States. Today, fewer than 2,500 historic places bear this national distinction.

"Murie Ranch is the most important property associated with Adolph, Olaus, and Margaret (Mardy) Murie, whose studies and advocacy changed the way the federal government and scientific community study and manage natural lands and their wildlife populations. The Muries supported an ecological approach to wildlife management which considers all the organisms in a biotic community to be important for their interaction with each other and minimal human intervention in the natural environment which led to the establishment of nation Wilderness areas. The Muries placed a strong emphasis on public education to create support for protection of natural areas and were influential in the creation of the Arctic National Wildlife Refuge. Adolph and Olaus Murie carried out important baseline studies of major American mammals such as grizzlies, wolves, elk and coyotes, examining them as part of their ecology rather than as isolated organisms, and providing a foundation for their study and management."

from National Historic Landmark (NHL) Statement of Significance for Murie Ranch Historic District.

At first glance the structures at the Murie Ranch / Center look very ordinary and typical for a surviving dude ranch in the Jackson Hole area. Similar buildings can also be found on ranches and other properties throughout the general region. There seems like nothing special about the architecture with the well crafted log residence, a basic dining hall building, and a collection of small guest log cabins. But the difference is that they are associated with the Adolph, Olaus, and Mardy Murie. It was their ranch and and important part of the Murie life. So what was originally and typically ranch buildings are now monuments to be protected and preserved in perpetuity. This is a tall order considering the primary building material is quite fragile and wants to deteriorate easily and the climate can be harsh.

The stewardship of the buildings at the Murie Ranch are to be guided by the Secretary of the Interior's Standards for the Treatment of Historic Properties. Copies of this should be available for and reviewed by all staff. Two important and essential goals: the preservation of historic materials and workmanship and the preservation of each building's distinguishing character. Character refers to all those visual aspects and physical features that comprise the appearance of every historic building.

The Murie Center management has been in the initial phase of preserving the structures by rehabilitating most of them. A major rehab effort was accomplished during the 2001-2003 period. Those that were not included were the Murie Residence, Woodshed, Estes Cabin, Robins Nest, and Moviewood. But these are in line for the process or are planned for major work in the near future.

But there is yet another factor in the stewardship of the Murie Ranch - conservation. Conservation is the encompassing process of not just preserving and repairing but of concentrating on protection of the historic fabric and actively preventing or reducing the continual degrading and deterioration actions. This is just what conservators do with objects in a museum. Designated historic buildings are fine objects in a museum that is exposed to the weather. Indeed, in many places around the world they are considered an open air museum. This presents serious challenges. Now, in addition to developing and implementing strategies for conserving wild places and wildlife, the staff is also managing a museum of sorts.

What some may call a Maintenance Plan or Program might more accurately be defined as a Conservation Plan as it relates to a significant historic site. It is not just a prescribed way of fixing, repairing, or maintaining. But it is this, too. It is a conscious effort to retain the character, appearance, workmanship, and fabric not just of the buildings but the site as is for 100, 300, 500 years and more.

This document is not that Conservation Plan. It will take some time for this to evolve. But it is intended to stimulate and promote an attitude and dedication toward conservation of the Murie built environment in conjunction with the respect for the natural environment. Think of it as a guide for now. Following are some considerations that may lead to a plan.

Site

Description:

With exception of the addition of the Bathhouse and the loss of a number of outbuildings, the Murie Ranch site is about the same as it was during much of the Murie residency. The vegetation has changed as it has matured and probably the roads, parking lots, and paths have modified the general character of the core complex. But overall, the ambience of the central site has been retained.

Conservation Issue:

Over time, with grand plans or with every day details, keep in mind why the site was nominated to be a National Historic Landmark. Indeed, at some near point in time it would be prudent for the the Murie Ranch / Center to further define how they perceive the core complex, the Historic District, will “look and feel” in the years ahead to provide a reminding guide for future managers and staff.

Treatment:

To help guide this effort take many photographs of the buildings and throughout the central complex. Define the visual and architectural character as it exists and how the founding managers of the site feel it should be conserved. This can be done in a writing, graphic, and/or oral format. Of course, site elements will change over time, but without a plan it could transform into something that was never intended.

Rationale:

The Murie Ranch is not only a visual and physical commemoration of the Murie’s. It will also be a living image of life in Jackson Hole during the early to mid 1900’s. Before too many modifications occur, it is strongly advised to conceptualize the future of the site.

Roof Covering

Description:

Most of the roofs are covered with “5V” metal roof panels, 36” wide green granual rolled roofing, and corrugated metal panels. Most of the roofs are insulated with a foam board between the sheathing exposed on the interior and the roof covering. All of the “5V”

roofs have been replaced in the early 2000 rehabilitation of the buildings. The roof on Robins Nest was installed in 2007.

Conservation Issues:

All of the "5V" roofs and rolled roofing roofs are in good condition. The exception is the roof on the Woodshed next to the Murie House. The corrugated roof on the Murie House has loose panels and should be refastened now prior to the major rehab work which is in the planning stages. It is of the highest priority that roofs be in good condition and do not leak. Roofs must be be free of leaves, needles, and other organic matter to prevent water flow and corrosion / deterioration.

Treatment:

Roofs must be inspected carefully annually for leaks, popping nails or fasteners, loose or lifting panels, and open seams. Always clean roofs with organic matter on them and make repairs to loose panels or lifting roll roofing. Note when the roof covering is on its last five years of life cycle.

Rationale:

A leaking or deteriorated roof has the high potential of damaging and deteriorating the historic fabric and craftsmanship below it. Roofs should be maintained to always be in excellent condition.

Roof Structure

Description:

Most of the roofs have a log purlin structure with vertical rough sawn plank sheathing. Originally and historically, the log purlins extended out beyond the roof edges and had a pointed end applied with an axe. On some buildings the purlins have deteriorated and been cut back under the roof line with some being repaired with epoxy or another stabilizing material. Others, such as the Garage, were rehabbed in early 2000 incorrectly and are only compatible to the cut off purlins.

Conservation Issues:

Although log purlins that extend out into the weather are bound to deteriorate and are unquestionably a poor construction technique, they clearly define the historic and architectural character of the buildings. They require constant attention to retard decay and their extending ends may require replacement.

Treatment:

Attempt to prolong the deterioration of the purlins; their form and workmanship. They should be cleaned and have a BoraCare preservative applied periodically. Do not cut off purlins under the roof line to get rid of the decay problem. Replace by splicing if and when needed.

Rationale:

The extending rustic cut purlins define the historic and architectural character of the buildings and should be preserved.

Roof Drainage

Description:
All roofs are without any gutters or ways of controlling the water runoff off the roof covering.

Conservation Issues:
At present many of the roofs dump water off their edges unto stoops and steps below. This runoff causes splash at the step / stoop which continually wets the door and surrounding jamb and wall logs. Wetting causes deterioration and staining.

Treatment:
Two buildings (Montana and Alatna) had water deflectors installed just above the door and at the edge of the metal roofs. Roof runoff is directed to the edge of the deflector so that it will not drop or splash on the step / stoop. These were installed in 2007 on an experimental basis pending their performance through a full year weather cycle. If they prove successful they should be installed in other similar locations.

Rationale:
Splash on steps / stoops accelerates the deterioration of the building fabric. The deflectors make only a minor visual intrusion yet perform an important practical and preservation function. Additionally, they can easily be modified or removed with no impact to the structure.

Log Walls

Description:
All of the buildings at the Murie Center are of log construction with exception of the Frame Cabin. Some of the structures have round notches at their corners with extending crowns while most have a hog trough corner with extending half notch sill logs. Originally the logs were laid up with the bark on but over time most of the bark has come off the lodge pole pine logs.

Conservation Issues:
With exception of the Bathhouse, which is not historic, all of the logs in the buildings are weathered and degraded due to UV, especially on the south facing walls, and are heavily checked, but have only minor decay areas. The rehab process in the 2002 to 2004 included the replacement of most of the seriously deteriorated logs. But all logs have organic matter, blow dirt, needles, and pollen in their checks. The upward faces have a heavy mold growth and their downward faces are dirty. Logs near the top of the walls and under the roof overhang still have some finish from about 30 years ago, all lower logs have lost their color to leaching due to splash and constant wetting. The surfaces of these lower logs are more brittle, dry, and more absorbent than the upper logs. Fungal and mold growth and dirt degrade the logs and create a poor appearance.

It appears that the log walls have not been cleaned or that they have had a protective finish on them for decades. There is also evidence of ants and mice in the walls.

Treatment:

All log walls require an initial comprehensive cleaning to remove many years worth of dirt, mold, and growth. Follow the recommended cleaning procedure for the initial cleaning. After that only mild periodic cleaning will be needed. Log surfaces, checks, connections, and areas susceptible to decay and insect infestation should be treated with a borate preservative. Use a glycol base borate (BoraCare) if exposed to the weather, a water based borate (TimBor) if it is to be covered with a protective finish. Inject BoraCare or a concentrated borate preservative into checks that face upward or that show signs of decay.

Follow the preventive maintenance schedule and Procedure booklet.

Rationale:

Although logs will not last forever, if they get to the point where replacement is the only option the loss will not only be of the original historic fabric but the workmanship and appearance as well. Periodic cleaning, application of preservatives, and keeping a finish on the logs will greatly extend their life but will be least costly for long term preservation.

Chinking / Daubing

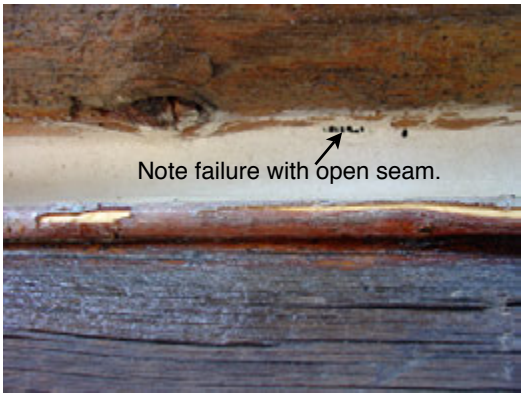
Description:

There are three types of chinking or daubing between the logs. Some have a split pole wood chinking usually nailed with 12 or 16 penny nails. Behind the chinking and between the logs are oakum (originally) or Perma Chink chinking material. Most wood chinking is not tight fitting but with the oakum and synthetic chinking it fills in most openings. Wood chinking has the most desirable appearance.

Mortar daubing (chinking) was used originally on some of the cabins. A willow sapling was nailed along the upper part of each log to hold the daubing in place. Mortar daubing can be found on Chena Cabin. All of the cabins on with west side of the site that originally had historic mortar daubing were inappropriately converted to a synthetic latex chinking - Perma Chink.

Now, after the rehab work done in 2002 or so, Alatna, Montana, Garage, and Bathhouse have Perma Chink chinking.

Additionally, a number of buildings have wood or mortar chinking but someone has tried caulking some openings in both the interior and exterior with the Perma Chink.



Conservation Issues:

Chinking / daubing reduces the air infiltration and insulates between the logs and provides a certain appearance. It also is supposed to keep insects and rodents from getting through to the inside.

On new logs, logs that have not weathered after peeling more than a month or two, Perma Chink and other synthetic chinking generally

works fine if installed properly. When the logs and wood walls expand and contract the latex chinking gives and remains adhered to the logs. When using synthetic chinking on logs exposed to the weather for more than a few months, a year, 20 years, or 80 years, as the logs expand and contract the chinking stays adhered to the very surface of the weathered wood but shears from the log beneath. Because of this in over 50 or more applications where synthetic chinking has been used on historic buildings I have seen 100% failure. The chinking pulls away from the log leaving a gap allowing water to become trapped beneath. Also, synthetic chinking does not look like mortar daubing. It does not have the same profile, color, texture, or appearance. Next, it is not necessarily more "maintenance free". With 100% failure it requires more maintenance than mortar. But above all it is not historic. If the mission of the site and objective of preserving the structures is to keep them looking historic by not altering their architectural character then synthetic chinking should not be used. Just like painting a historic building pink when it has always had a log oil on it, the same analogy can be said for synthetic chinking. Further, the Secretary of Interior's Standards does not recommend it.

Synthetic chinking should not be used in checks, in connections, or as a caulking all for the very same reasons. If caulking must be done for energy conservation then specific materials and techniques are to be used.

On the contrary, it does make sense to put synthetic chinking between the logs and under wood chinking if it cannot be seen. It acts as an inert filler.

Treatment:

Maintain the existing wood chinking and mortar daubing. Keep the Perma Chink synthetic chinking until multiple open seams occur. Then remove it being careful not to damage the historic logs. Admittedly, this will be very difficult and quite time consuming. Replace with the original - mortar daubing. Daubing with a formula of 9 sand, 4 Type S lime, and 1/2 to 1 part grey portland cement has worked well on most historic buildings. But make test samples and allow them to fully dry before daubing the entire building.

Rationale:

Simply said, synthetic chinking has no place on the exterior of historic structures. It does not perform, does not look historic, and is not historic. It may be used behind wood chinking but not to be visible.

Windows

Description:

Most of the windows on the site are original and have wood sash. Window types include sliders (double hung turned on its side), hopper (swing inward with hinge at bottom), casement (inward swinging with hinges on a side), and double hung (independent sashes that go up and down on tracks).

Most are in relatively good condition, however, almost all fit poorly, provide very little insulation, and allow massive air infiltration to the interior. But again, they are original, historic, and are important character defining features to be retained and preserved.

Some glass is old "wavey glass" and some has been replaced with a modern float glass. Nearly all of the trim has been replaced but should be considered as historic. All glazing is flexible and modern.

Conservation Issues:

Typical conservation problems with windows include broken glass, deteriorating or missing glazing, deterioration or loose sash, especially at the lower corners, damaged, loose, or deteriorated jambs, sills, or trim. But

in almost all cases the finish is no longer providing protection to the window units.

Treatment:
All window units need periodic cleaning. The wood get coated with mold, dirt gets in the tracks or on the sills, and the window elements become loose and weathered. All repairs and general maintenance should preserve the appearance and workmanship of the original windows and their materials. Since the buildings are being occupied there is a need for the windows to be functional otherwise they are likely to become damaged. Periodically the window units require a finish for protection from the elements.

Rationale:
From a strictly functional standpoint it might make sense to replace the windows with those that provide a much higher level of insulation, tighter fitting, or are better weather-stripped. But since the windows are critical character defining features of the buildings and of the site they should be preserved, maintained, and used as they are for now. Repair rather than replace any window elements. But do provide long term protection through cleaning and keeping the finish sound.

Doors

Description:
Most of the doors are constructed of vertical planking. Widths vary and some have battens over the plank seams. Some also have “dutch doors”, double doors in which the upper portion of the door can open independent of the lower portion. A couple of doors are not historic with one being made of fir plywood. The hardware seems to vary from door to door as does the sill construction and jamb details. Nearly all if not all have no finish.

Conservation Issues:
It is not yet known if all of the doors were of similar construction. It would be very safe to assume that they were made of planks with various methods of back supports. The Bathhouse and Garage doors should be excluded because they are not to be considered historic. The others should have a common appearance.

Some of the doors have been repaired or modified and exhibit extremely poor workmanship. A couple of doors had exposed screws that are a safety hazard and others with multiple phillips head screws in the trim. All workmanship should match or be compatible with the doors of the period in which the cabins were built.

Similar issues are with the type of hardware and the workmanship employed for their attachment.

Most of the doors have lost the protection of a finish and are stained and severely weathered as a result. All doors require constant attention for their operation and protection.

Treatment:
Select a similar door style and use throughout the buildings. Having a period door is better than having one that is not at all compatible. The same is true for the hardware, especially for the method of locking. All fasteners that clash with the period methods of fastening should be removed and modified.

Doors must be kept operational at all times so that guests do not try to force or damage the door units.

All water stains should be removed from the doors and a protective finish applied.

Window and Door Screens & Storms

Description:

The wood screen and storm units on the windows and doors are not historic and do not match the original screens that were on the building originally. Indeed, their appearance and construction are not appropriate for the historic buildings, especially as historic landmark buildings. Although made out of wood they are not compatible to the visual period of the cabins, the craftsmanship and hardware does not match the period, the screen have an aluminum frame around them that is visually intrusive. Indeed, the screens are most difficult to make repairs because some of the aluminum cannot be easily be removed.

Conservation Issues:

The screens and storms may be functional but they are not appropriate to the site or to each building they are on. They detract from the rustic character of the buildings.

Treatment:

Clean and maintain the existing screens and storms until a decision is made to replace them with ones that match the period and materials of the originals. This has yet to be defined. Research other dude ranches or similar buildings in the area for reference.

Rationale:

The screens and storms are character defining features that are very noticeable both from a distance and close-up. Those installed in 2002 are a poor substitute for the original or early style. They stand out as being new rather than blending with the rustic appearance of the buildings.

Steps / Stoops / Porch Floors

Description:

The steps, stoops, and porch floors were all reconstructed in 2002 and are not historic. The appearance and construction of the originals are not known. Perhaps this can be found in historic photographs. The current units are constructed of varying widths of 1” rough sawn planks nailed to a box frame.

Conservation Issues:

Most of the steps, stoops, and porch floors are either setting on the dirt or are very close to it. Moisture from rain, wet soil, and snow melt are creating moisture within the wood. Dirt accumulates between the spacing in the planking which also retains moisture against the wood. These conditions accelerate fungal deterioration and encourage insect infestation.

Some of the steps and stoops are sloping toward the building causing water runoff to drain against the sill logs and foundation rather than run away from the walls.

Water runoff from the eave ends of roofs can drip unto the plank surfaces and splash against the doors causing staining and accelerated deterioration.

Constant wetting and drying causes increased expansion and contraction of the wood causing the nails to lift above the surface. This can create a safety issue.

Treatment:
Wood elements need to be set up on stone or masonry pads so they are not in contact with the ground. All dirt near the wood element must continue to be graded and/or pulled back to allow water to drain away from the steps and stoops. Dirt splashed against and on the wood must be brushed off periodically.

Annually treat the wood elements with BoraCare preservative to reduce fungal growth.

Refer to the the section on roof drainage for controlling roof edge runoff and drip.

Rationale:
Admittedly the the steps, stoops, and porches are not historic but do represent an economic value and potential safety issues. They should be maintained to extend their functional life.

Drainage / Grade

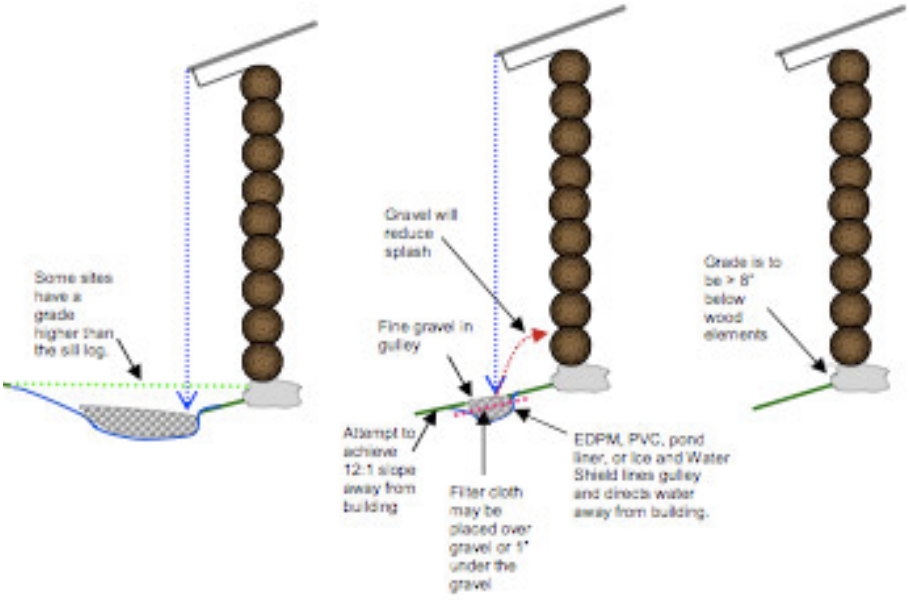
Description:
Buildings on a sloping grade can have surface water from rain and snow melt flow toward or accumulate near the foundation or exterior walls. Roof runoff drips on the ground under eaves creating splash back against the walls and slowly creates drip gullies and ponding.

Conservation Issues:
Moisture or saturation in the ground causes increased potential for vegetation growth, fungal decay, and puddling. During freeze cycles the wet soil pushes against foundation walls with the potential for heaving and cracking the foundation.

Surface drainage causes gradual erosion and grade build-up against or near a building. This raising of the grade decreases the minimum 8" that should be maintained between the top of the grade and wall wood elements. It has been noted that the grade of some buildings have risen to the point where water from puddling is entering the foundation vents an flooding and saturating the areas under the flooring. This condition causes condensation under heated floors, mold and fungal growth, and creates a haven for animals, rodents, and insects.

Treatment:
Surface water and roof runoff must always be directed away from buildings. In some situations it must be collected and channelized to assure it will not accumulate near the base of the walls or create splash conditions.

Splash can be reduced under roof eaves with gravel that diffuses or



angles the water in such a way that directs it away from the building.

Erosion and vegetation growth always make periodic maintenance of drainage and drain issues and conditions necessary.

Rationale:

Water is the greatest enemy to buildings, especially wood historic structures. It must always be controlled to prevent damage and deterioration. Drainage and grade issues should be of the highest of conservation priorities.

Exterior Finish

Description:

For practical purposes, all of the buildings as of 2007 have no functional finish on the exteriors. Originally or at an early period of time, a clear log oil of some type was applied to all of the wood elements. Only a crystalized coating of this can be observed on the upper portions of the walls under the cover of the roof overhangs. The lower portions of the logs the finish has been weathered or flushed to the extent where it is worn or no longer exists. Sunlight, constant wetting, and freeze-thaw cycles have leached out the natural color from the wood and decomposed the lignin and other extractives causing a silvery gray color. On the upper portions of the logs and in other locations on the trim microorganisms such as fungi, mold, and mildew have formed. This is caused by a combination of intense radiation from the sun and fed by the linseed oil in the early finish. Additionally, it appears that the exterior walls have not been cleaned in many years, if at all, and have layers of grime on the upper surfaces.

Conservation Issues:

The weathering effect is a natural process for unprotected wood. This chemical and mechanical damage occurs on the surfaces and gradually deepens inward. As it does additional moisture is absorbed increasing the swelling, shrinkage resulting in increased stresses in the wood and causing intracellular cracks and checks. The wood becomes brittle, pockets of decay form, and the wood begins to fragment.

Wood and especially logs will not last forever, however, the useful life of can be extended by cleaning, applying a wood preservative, and keeping a finish on the surfaces. Cleaning is a necessary to remove dirt and surface growths, a borate preservative will reduce or eliminate fungal and mold growth, and a high quality penetrating finish will help protect the wood from UV, moisture, and additional growths.

Treatment:

Cleaning the exterior initially will require considerable more effort and more harsh chemicals than subsequent periodic cleaning. In all cases use the mildest cleansers on the structure and be sure to

wash them out of the wood with repeated rinsing with clean water. Cleaning is always important so that the dirt and mold will not become trapped within the finish.

Applying a borate wood preservative on the surface of the logs and trim and saturate deep and large checks and connections with a high concentration of BoraCare or Jecta. TimBor or BoraCare preservative may be used after cleaning. TimBor may be used if a finish is to be applied over it. After careful analysis, Transformation finish by Sashco Co. (www.sashco.com) in a natural color has been selected as the finish to be used. Always follow manufacture's instructions and the specific procedures prepared for the Murie site.

Rationale:

Cleaning, applying a wood preservative and finish helps protect wood elements, preserves the historic fabric, and provides a better appearance.

Interiors

Description:

Most of the interiors reveal exposed log walls with wood chinking and exposed ceilings with purlins and rough sawn vertical plank sheathing. And most of these surfaces are natural and without any finish. Some, like the Murie Residence and Homestead have finish which has not yet been identified. Some rehabbed areas have been covered with wall board and painted.

Floors and floor finishes vary from building to building. Some have the original 1 X 4" t & g planking with a varnished finish and others have been replaced.

Many cabins have been modified inside with bathrooms, kitchens, interior walls, lighting, heating units, electric, and the likes.

Conservation Issues:

Dirt may continue to darken the interior surfaces. Although some interiors have been stained and a finish applied, it is recommended to leave the log interiors bare and as they are at this time.

The primary concern with the floors relates to abrasive dirt and wear to the flooring. Even if the flooring is not historic, it does represent a sizable cost for replacement, if needed.

Always keep in mind that conservation goal for the site is to retail the rustic "look and feel" of the site, exteriors, and interiors. Modifications must be functional for the times, but make every attempt to keep the interiors generally compatible to the 1920's period. The exceptions are those additions that were made after the original construction.

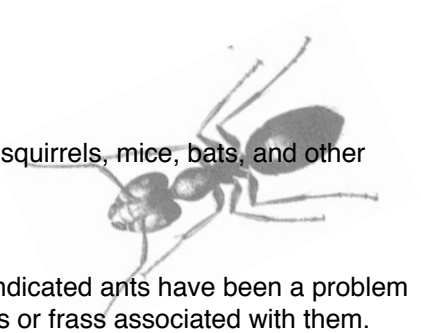
Treatment:
Clean all interior ceiling, wall , window, and door elements periodically. Vacuum and use Murphy's Oil Soap as a cleanser. Follow the instructions for the product. Other than dirt and a gradual darkening of the bare wood or patina, interior surfaces are about the same as they have been historically. Keep them that way.

Do not put nails, staples, screws or other objects into the walls or make any visual attempts filling up seams. Do not damage the wood chinking or place any synthetic chinking or caulking in cracks and crevices. Look for other alternatives if necessary to discourage rodents.

Floors may require frequent vacuuming to remove sand, stones, and other abrasives that could degrade the wood or finish on the flooring. Be sure to remove all dirt in seams and in between planking. Annually wash down the floors with Murphy's Oil Soap. Refinish the floors with a dull polyurethane finish when worn and needed.

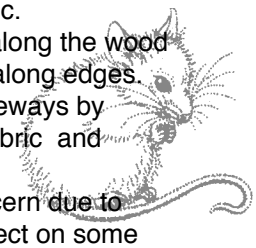
Rationale:
Remember about retaining the undisturbed integrity of the historic fabric for 100, 200, or 500 years from now. Holes, damage areas, abrasion, patches can alter the historic fabric forever. Keep in mind that modifications can and do change the way the interior will look into the future.

Insects / Rodents / Varmints



Description:
Evidence revealed the presence and impact of ants, chipmunks and/or squirrels, mice, bats, and other animals.

Conservation Issues:
- Insects - ants were found in and around most buildings. Murie staff indicated ants have been a problem for a long time. Initial observations did not reveal large carpenter ants or frass associated with them. The smaller ants are annoying but poise less of a conservation threat to the building fabric.
- Chipmunks or some other critter - exterior storm doors and windows have been nibbled along the wood edges. It is a small animal because of the location of the damage. All of the chewing is along edges.
- Mice - Mice have been invading most buildings and are making nests, enlarging passageways by chewing, and leaving droppings. In addition to being annoying, they are damaging the fabric and leaving unsanitary excrement.
- Bats - Bats may be minimal impact to the fabric of a structure the are a major safety concern due to their excrement (guano), the smell, the mess that is created, and to the psychological effect on some people.
- Other rodents - larger animals are burrowing under foundations creating drainage tunnels from along the perimeter of buildings to the spaces under the floor system.



Treatment:
- Insects - Ants and other insects can be controlled by applying a borate preservative (it is also an insecticide) in suspect areas and along sills and foundations. It may be applied as a liquid or as a powder using TimBor. Repeated applications will be necessary. Monitor and record all locations of insect infestation, application of insecticides, dates, amounts, and results.

- Chipmunks or some other critter - unknown treatment at this time
- Mice - First and foremost, mice are looking for food. Clean, remove, or secure all food and food aromas. But do remember that mice can enter 1/4" diameter holes so stuffing and filling holes in a National Landmark building may not productive and certainly is not appropriate. Do not do anything to the building that cannot be easily reversed. But first learn about controlling mice. Google on "controlling mice" and study a number of results. Talk to the Park to learn ecological ways of controlling or eliminating them. Remember the ecological ethic. And keep the interior clean.
- Bats - Learn about bat habitat and how to control bats. Again, get information on line and from the Park. Think about the same treatments as defined above for mice. Do not do anything to the building that cannot be easily reversed.
- Other rodents - insert 1/4" hardware screen 18" deep into the soil along the side of the foundation. Do not allow any of the screen be visible.

Rationale:
"Critters" can be destructive to a building and unhealthy for occupants. Always approach the treatments from a conservation standpoint - both for the building and the ecology of the environment. Always record treatments and results.

Electric Panels and Wiring

Description:
Nearly all buildings have an electrical panel with conduit leading to it. All are necessary; all are obtrusive.

Conservation Issue:
Electric panels do not really impact the preservation of the structure but they sure are unnecessarily visually intrusive and objectionable.

Treatment:
Conceal the panels and conduit. First try painting them to match the color of the building behind.

Rationale:
Try to not make the non historic elements stand out. Try to blend them with the building.

Visual Intrusions & Damage

Description:
Many of the buildings have staples, small nails, electric and telephone wires and other non historic and visually intrusive objects.

Conservation Issue:
Staples, nails, screws make holes in historic landmark fabric. One would not put screws into the fender of a classic 1932 Ford car; nor would one use a screw to fix the top of a 1880 table in a museum; and should they be put into a historically significant structure. Holes accelerate the deterioration process and are not a way to treat the structures.

There are wires and cables attached to and draping some buildings. Additionally, PermaChink has be used on many buildings to fill in gaps. They are a visual intrusion and damaging to the fabric, especially when it will have to be removed.

Treatment:
Help all staff understand how to treat and live with historic fabric. Have periodic sessions about understanding the importance of the site and its significance.

Rationale:
Respect National Historic Landmark buildings.

Trees and Vegetation

Description:
There are many trees, live and dead, as well as branches within 25' of the buildings. Likewise, there is much dead wood on the ground around the buildings and brush is growing against or within 5' of most of the buildings.

Conservation Issue:
Trees, limbs, and downed dead wood is an EXTREME FIRE HAZARD and potentially damaging historic buildings should they fall on or against the buildings. Trees close to a structure, especially when snow drifts and bridges between them and a roof can be damaging during the thaw process. And, vegetation near a wood structure restricts air movement and retains snow and ice accumulation.

Treatment:
Continually meet with the Fire Chief at the Park to discuss and develop a Hazard Tree and Emergency Fire Protection Plan. It is extremely important initially and should be continued annually. Based on the conditions of 2007 this is critical.

Remove all live and dead trees within 25' of buildings. Plant one or more to replace it 35' to 50' away. Remove all dead wood within 50' of buildings and keep vegetation cut to the ground within 5' of buildings.

Rationale:
All dead trees must be removed immediately. They are not historic, the buildings are.

Fire Cache

Description:
There is no provision for immediately extinguishing or attempting to control a fire other than small fire extinguishers and a garden hose.

Conservation Issue:
Should a fire of any size break out in any of the cabins it could take many, many valuable minutes before the Park fire department could get to the site. By then serious consequences could have occurred.

Treatment:
Consider creating one or two fire caches equipped with high volume hose and some basic fire equipment. The structure could be very small, less than 2 feet high and adjacent to a fire hydrant. One such

hydrant is in front of Estes Cabin. The cache could be made to blend with the vegetation.

Hold monthly or more frequent fire drills and exercises to train staff about what to do in the event of a fire. Coordinate the drills with the Park.

Have the Fire Chief of the Park review the site and provide suggestions for better fire protection. Note: As mentioned previously, have the Park fire staff develop a fire prevention and action plan for the Center.

Rationale:
The potential for a fire in one of the buildings is real. The possibility of a brush or forest fire is critical. Having equipment for a quick response could save valuable minutes and possibly a calamity. Just imagine if a fire broke out in the Studio.

Alarms

Description:
All of the buildings have a hard wired smoke detecters, some with outside audible horns. Only a few of the alarms were tested. (all failed) No carbon dioxide alarms were found.

Conservation Issue:
Early detection of a fire is essential. Communication about a detected fire or smoke is important to link with the staff, director, and the fire department. Time can be critical.

Although not a conservation issue, having a carbon monoxide detector in buildings that have open flames is an important safety device... and required by code.

Treatment:
Inspect and test all detectors monthly or more frequently. Make sure audible horns function and that the staff and the Park know what to do in case of a real emergency.

Replace batteries annually.

Rationale:
Properly functioning alarms are essential.

Handicapped Accessibility

Description:
None of the building is handicapped accessible by ADA standards.

Conservation Issue:
Accessibility is not a conservation issue but an important issue that should be discussed.

Treatment:
Identify all of the buildings that have the practical potential for being handicapped accessible. Discuss and define what it would take to make some accessible. If not possible document reasons why it is not possible without dramatically altering the structure(s).

Rationale:
Caring for those less fortunate is always a concern.

Emergency Preparedness Plan

Description:
There is a need for an emergency preparedness plan for the site. Plans like this generally sit idle until an event occurs and then decisions must be made under a crisis condition and often without coordination. And how should specific decisions be made if it is not possible to contact the Director and Ranch Manager.

There should be a written plan for some or all of the following:

- what to do in case of a fire...what to do 10 minutes after the fire is extinguished
- what are the most important objects to protect or to remove in the event of a fire
- how should the staff react and function in the event of a forest / brush fire
- what is the evacuation route in case of a fire
- what is the chain of command or communication link in case of a fire
- what should be done if a water line bursts
- what should be done in the event of a power failure, massive snow storm, excessive snow loading on the roofs
- and others

Conservation Issue:
Emergencies could seriously impact the integrity of the historic site and buildings. Having a plan that lays out what to do, by whom, and who to communicate with can make a huge difference.

Treatment:
Think out all the possible emergencies that are likely to occur on the site. One by one begin to outline an approach and direction for what to do for each.

For many, many models Google on “emergency preparedness plan historic buildings”.

Many of these similar plans can be found online. Find some that relate and use them as a model. But above all, emergency plans or their whereabouts must be known by all staff.

Rationale:
No one wants an emergency. But they happen. And when they do their is often little time to think about what is urgent and what is important. Plan ahead.

Bone Yards / Objects around the Site

Description:
There are multiple accumulations of objects and materials that need a home away from the landmark buildings.

Conservation Issue:
Many of the items around the site are much too close to the historic buildings. Much of the issue is visual; some is related to impact to the buildings. Items that are stacked or leaning against the walls encourage trapped moisture, insects, rodents, and splash. Wood piles and accumulated objects can become a substitute habitat.

Further, it visually tells visitors how a historic site is managed.

Treatment:
Either move items that are immediately unnecessary to locations that are away from the historic buildings or out of sight. Or it could be that they are no longer needed.

Explore possible ways to expand the storage of objects and materials. Perhaps the Park might have a building that could be used for storage.

Rationale:
Although the Murie Ranch may have been a somewhat typical working ranch at one time, today it is a showcase and center for people to focus on “wild places and wildlife”.

Documentation

Description:
Keep a record of all actions and treatments on the historic structures.

Conservation Issue:
The treatments, including major work, modifications, and every day maintenance repairs done on the buildings should be documented for those trying to understand the pathology and history of the National Landmark structures 50, 100, 250, 500 years from now. Just like a dentist, physician, and aircraft mechanic, all actions are to be recorded for future use.

Important to know includes what specifically was done, what fabric was replaced or modified, what finishes, chemicals, and materials were used, when the treatments took place, and the reasons or rationale for doing the work.

Treatment:
Documentation can be done in a variety of ways.

- Have a folder for each structure and keep a log or listing with description of all work performed on the structure. A preprinted work log sheet may help with the organization. Always include sequenced photographs of the work.

- Prepare a completion or project report of the work that was performed. Require it from contractors as well. Include all of the details about the treatments and work. Include copies of the contract, agreements, and information relating to the project.

- Incorporate all work into a facilities management program or maintenance system. Most systems provide a way for creating a history of work and for archiving it.

Rationale:
Over time it is helpful to know not only what was done to a building but what treatments worked and those that didn’t. Just like with work to your teeth, it provides a better historic understanding of the conservation work and of all changes made. This may not seem significant immediately but as directors, staff, or conservators change 10 times or so over the years it becomes more useful.

To be continued..... this is just the beginning. *Harrison Goodall*