

Bates Well Ranch

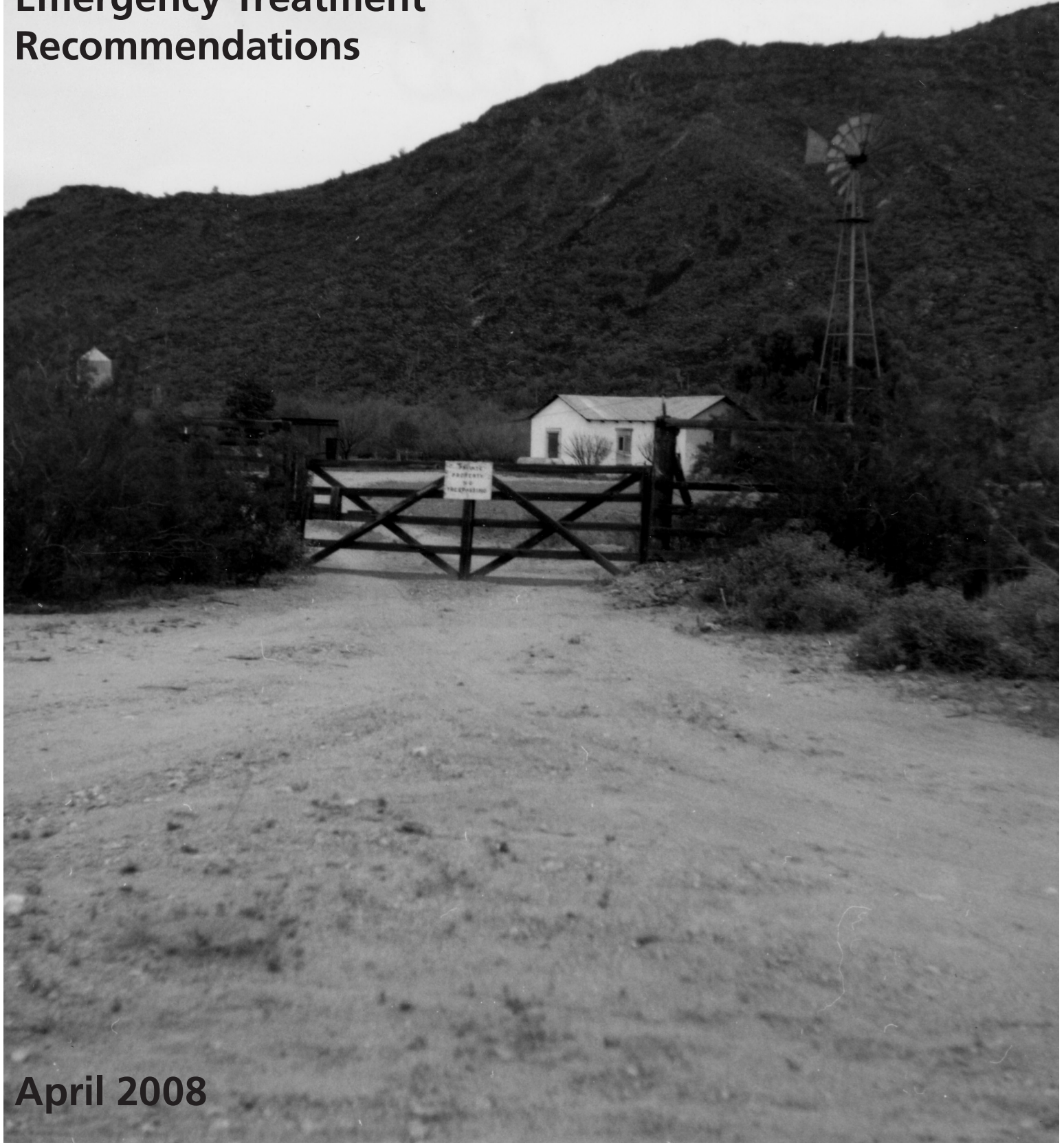
Organ Pipe National Monument

National Park Service
U.S. Department of the Interior

Vanishing Treasures Program



Emergency Treatment Recommendations



April 2008

The National Park Service Vanishing Treasures Program

Bates Well Ranch Organ Pipe Cactus National Monument

Emergency Stabilization Report



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Cover Photo: Entrance to Bates Well Ranch, c. 1970

Photo: ORPI Historic Photo Collection

Above: Blades from Windmill No. 3, March 2008

Photo: Randall Skeirik, NPS

Preface

This supplemental survey, guideline and Scope of Work are the result of a site visit, assessment, and review of existing documents made between March 9 and March 14, 2008 by Architectural Conservator Jake Barrow, Archeologist Joe Tuomey, Historical Architect Randy Skeirik, and Volunteers Pete and Jean Carroll.

The primary document reviewed for this work was the *2007 Historic Structures Report* prepared by the University of Arizona College of Architecture and Landscape Architecture under the Direction of Professor R Brooks Jeffery.

The focus of this scope is on emergency treatments using an applied philosophy of preservation “as is” with the long term goal of preserving the landscape and its features in order that the park will have an option of further preservation and interpretation in the future.

In addition to the HSR the following documents were reviewed:

- 1988 National Register Nomination and SHPO letter of determination of Jan. 8, 1993

- 1994 Resource Management Plan

- Site visit notes January 24-25, 2007 Barrow, et.al.

- Deficiencies noted and outlined based on HSR 1/23/08 Tuomey, Kenny, Sprenger

The approach being applied in this Scope of Work is to provide for life safety, prevent structures from collapse, design actions to contribute to long term stabilization goals, and design all treatments to be fully reversible. The 2008 Draft Vanishing Treasures Guidelines for the Management of Archeological Sites are being followed.

All location maps, site plans, and sketch floor plans used in this report were reproduced from the *2007 Historic Structures Report* prepared by the University of Arizona College of Architecture and Landscape Architecture.

A digital photographic record was made in the course of the field survey and that is being made available to the park in an attached CD.

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Condition Survey (supplementing the June 2007 HSR)
Preservation Guidelines, and
Proposed Scope of Work for:
Bates Well Ranch
Organ Pipe Cactus National Monument

Executive Summary

The architectural remains at Bates Well Ranch are vernacular in style and represent a particular lifestyle of ranching. They are unique and as such, deserve a high level of attention since there are no other similar typologies available. (see HSR for detailed description of resources)

During the site visit of March 2008 the Decision Tree of the Draft Vanishing Treasures Guidelines for the Management of Archeological Sites was applied to establish fundamental goals and background of the project.

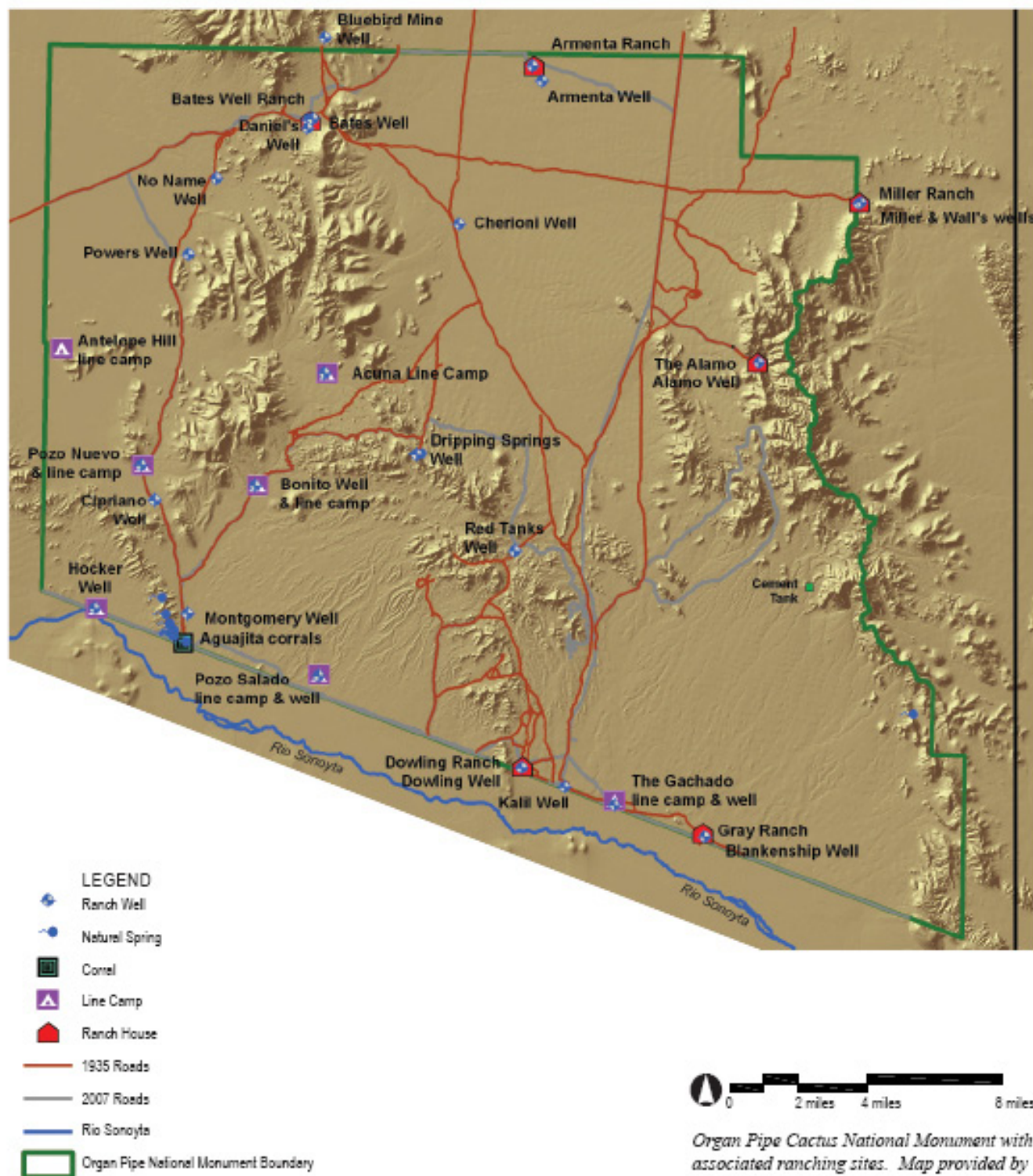
The site is listed on the National Register and it has a nomination establishing the period of significance as 1913-42 with a focus on ranching. It is on the List of Classified Structures and current reports are up to date. The site is considered a Vanishing Treasures Resource since the architectural remains are in a ruinous and semi ruinous condition. There is no intent to restore these structures or to reuse them for another purpose. They materially represent the cultural history of ranching in this part of the Sonoran Desert of Arizona.

Park wide and site specific priorities have not been set and as a result this current phase is focused on emergencies only. Much documentation and research has been completed with the following notable exceptions: a



complete archeological survey has not been conducted; there is no cultural landscape inventory or plan; and an interpretive plan for the site has not been included in the Draft Annual Interpretation Plan for FY08. Since these documents are either in draft or not in planning at the moment, consultation regarding potential treatments for the site with SHPO or Tribal parties has not occurred.

Recent photographic documentation indicates a rapid rate of change with immanent loss of structures occurring. This deterioration is so rapid on the blacksmiths shop, the Ocatillo shed, and Chico's house that any further losses will result in the total collapse of these structures. Once these structures have collapsed it will be virtually impossible to reinstitute their architectural form. They will be lost. Another structure in this vicinity that was not identified in the HSR (which we have labeled as a chicken coop) is also in this category. Drainage



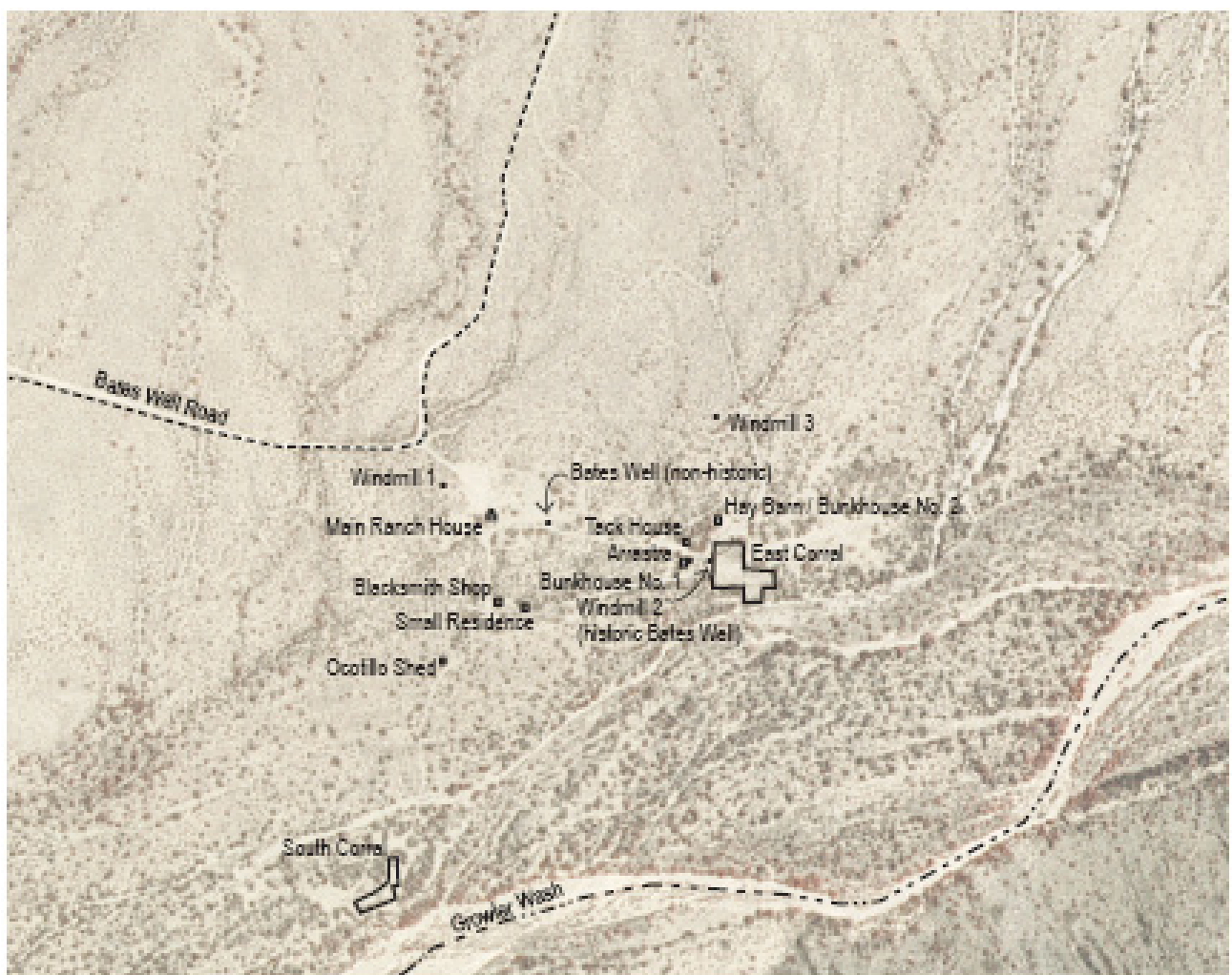
and transportation corridors (site trails) are at extreme risk with deterioration occurring at an alarming rate. It is becoming difficult if not impossible to follow a designated route from place to place on the ranch. Thus harm may be done to the environment “off trail”. The historic drainages have been disrupted with run off now obliterating one of the roadways and damaging a corral fence.

An additional impact to the site is the encroachment of the Borderlands Patrol which has taken over the parking lot for a temporary facility containing vehicles, lodging, and other associated equipment and supplies. The effect of this installation is diminishing to the ranch site which is now obscured and visitor parking is inadvertently eliminated. The site is very uninviting. (See attachment- 2004 Harper Report.)

No preservation plan has been prepared to date due to the lack of resources to conduct the comprehensive data gathering required to assemble such a plan. A comprehensive plan will involve a multidisciplinary team necessarily including a landscape architect, historical Architect, conservator, maintenance personnel, interpretation, archeologist, and others. Other site research will be required to render this management tool useful.

In the meantime emergency actions are required to prevent total losses and an effective monitoring program should be instituted.

Temporary treatments were applied in May 2007 to prevent several buildings from collapsing. This amounted to installing some diagonal bracing to frames and fastening down some corrugated roofing that was in danger of blowing away. These diagonal braces will be replaced in the course of the proposed work. At an unknown previous time some “T” fencing was installed at strategic locations along fence lines to



Buildings and structures at the Bates Well Ranch site included in this report



Supplemental Survey Notes

Preservation Recommendations, and Scope of Work

Priorities

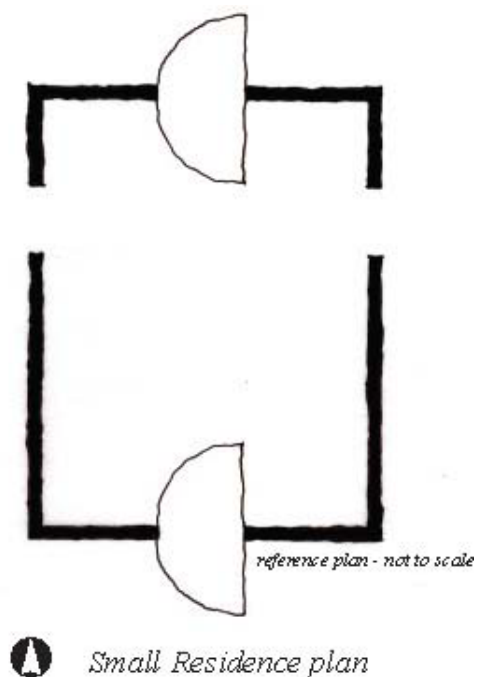
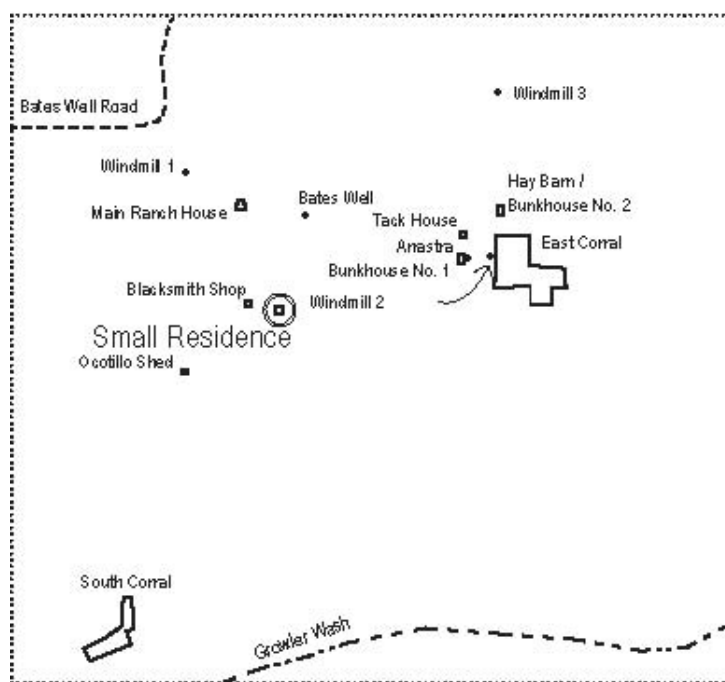
The highest priority for work are to first focus on the four actively falling down buildings, deal with the roadways/pathways, and drainage. The second priority is to address the most pressing deterioration on other structures associated with structural failures and roofing problems, closing up the buildings, and reestablishing the fencing. Many of these problems are serious safety issues for employees, volunteers, and visitors. The goals achieved by this scope are intended to extend the life of the structures “as is” for 10 years with monitoring and possible minimal intervention on an “as needed basis”. Pressing safety problems will be corrected.

There are two fundamental diagnoses of deterioration at Bates that are universal. These are wooden element deterioration from fungal rot and termites and roofing deterioration. UV degradation is a factor but of less importance. The wooden elements consisting of fence posts, posted foundations, sills, plates, posts, studs, headers, trims, windows, doors, rafters, decking, and siding all exhibit damage to some extent. This damage has led to weaknesses which in turn led to failure and collapse. Where pieces have collapsed which threaten other sections a critical need exists to reinstate the collapsed portion to hold other parts together. This is particularly true where construction redundancy does not exist in the more vernacular structures. At this stage only the most pressing replacements are called out. Field decisions during the process will be required to know where to limit these replacements and supplemental structural additions. Only deteriorated portions will be removed or supplemented. Good sound material will be left and spliced into with new matching material and in some cases, deteriorated material will be left in place and supplemented in “Dutchman” style (side spliced with a similar piece).

All wood in contact with the ground and new wood will be treated with appropriate Borate products and ground areas around wooden structures will be treated with chemical insecticide such as “Termidor”. These actions require IPM approvals. Prior to recommending the “Termidor” treatment bate stations can be placed around the buildings to observe if termites are still active. These can be 2 by 4 stakes driven in the ground and checked periodically. Basic roofing repair is fundamental to keep water out.

Small Residence (Chico’s House)- HS01B

This structure (Figure 1) is in an active state of collapse. (See HSR for description.) Unless treated very soon,



this structure will be lost. It is very important to a comprehensive understanding of the site, as all auxiliary structures are in ranch landscapes. It is a lightly framed one room structure. The northeast corner has failed and the roof is collapsing in the corner. As with many of the ranch structures the posts are set into the ground and they have rotted at their bases. The northeast end rafter is no longer in place.. Within the last five years the ramada on the west side of the house was destroyed by a tree falling on it. Much of the debris from the ramada is piled next to the house. A pie safe located on the southwest corner is collapsing and almost completely deteriorated. Some remaining floor boards for the house are set in the dirt.



Figure 1: Front view of Chico's House (the Small Residence) showing how the structure is leaning to the left. Without rapid intervention, this building will collapse.

Photo: Randall Skeirik, NPS

In order to prevent this structure from collapsing (Figure 2), a simple super structure consisting of treated 4 by 4 posts and beams will be assembled on the north and south interiors to hold the remaining framing up. These can be left in place to serve as modern stabilizing elements. Temporary shoring and jacks can be used to stand the structure up and get it into alignment. Once it is adjusted within reason then new supporting members can be added. The two frames will be set directly on the grade and be attached to one another with diagonal 1 by 4s. These diagonals will be placed on the inside surface of the 4 by 4. To keep them in plane the first diagonal attached will be let into a slot prepared before assembly and the second one attached to the flush surface of the 4 by 4. The top beam of the 4 by 4 frame will extend several inches beyond the width of the frame in order to pick up the load of two parallel plates supporting the roof. The frames themselves will be fitted with small diagonal bracing to keep them square in their corners. It is important that these frames be carefully constructed, tightly joined with slots and pockets, and be built with good quality materials. It will be dry fitted and prepared outside using templates and measurements attained from the somewhat straightened structure and then assembled inside. Since the structure is very light weight (it can easily be moved by one person pushing/lifting) there should be no problem adjusting the various remaining parts. The new frame will be date stamped and



Figure 2: Interior view of Chico's House before and after the building was straightened and a temporary brace installed. This straightening was accomplished without tools, and braced with materials found on-site. Without permanent bracing, this building will soon collapse.

Photos: Randall Skeirik, NPS

stained grey to be more compatible with the older original wood. Loose framing, siding, and trim parts can be fastened back onto the structure when the plates have been attached to the 4 by 4. The south end gable rafter will have to be fitted with a new 2 by 4 since the original is gone. This can be accomplished with tie wire or pre-drilled frame screws. A four light sash is still in place on the west side and this should be left and encased in a protective frame until the future time when this window can be stabilized properly. The protective frame consists of 2 matching 1 by 4 frames slightly larger than the original opening which can be through fastened to each other sandwiching the historic piece without fastening to it. A piece of hardware cloth is to be attached to the inside of the outside frame in a prepared rabbet. Once the bracing frames are in place, a few boards need to be placed back on the plates to support missing corrugated roofing which should be screwed back down after pre-drilling. Here and there supplemental framing pieces may be required to stabilize a section. These will be reversible, date stamped, and stained grey to match all new pieces added.

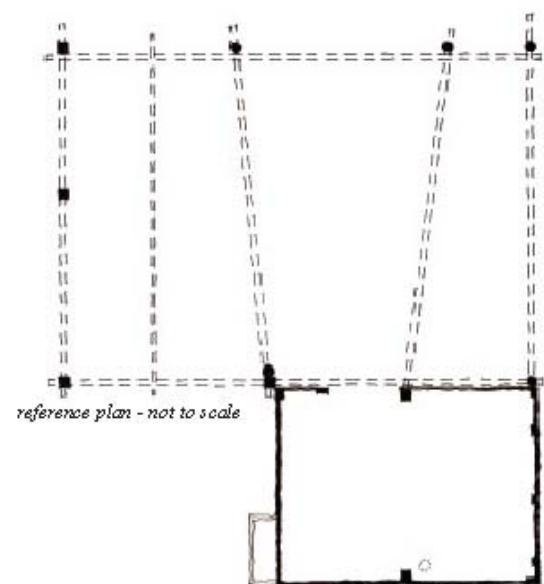
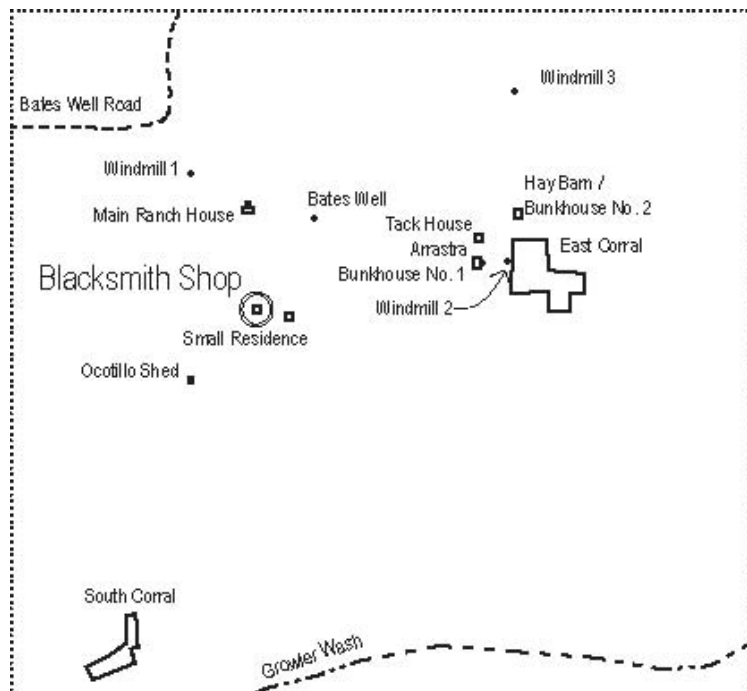
Any pieces of wood that can be reinstated with certainty back in their original locations should be wired or screwed back on. Otherwise they should be left where they are until such time as a site archeologist can map the wood elements and better determine provenience.

The rear door should be reset and fixed shut in a manner that allows access but with effort such as screws. The front door may be fitted with a hardware cloth framed screen so that visitors may see inside. Entering the structure should be discouraged and prevented.

The pile of lumber left over from the ramada should be removed and re-piled at least 18" away from the house. If possible minimal parts of the ramada which may be identified can be re-established to indicate this important structure by setting one or two features back in place (corner posts for example). Treating any lumber in contact with the ground with Borates is recommended. This particular pile of lumber has lost it provenience thus when it gets re-stacked it should be stickered so that rodent habitat is not provided.

The Blacksmith Shop- HS01C

After the water source and delivery structures, The Blacksmiths Shop may be the most important auxillary structure on site due to the essential nature of this enterprise to a ranching operation. The shop consists of an boards and sheet metal sided enclosed section with a low roof and a ramada on the north side of the enclosed part. The ramada consists of steel pipes set on timber posts and mesquite logs. It was once covered with Saguaro ribs some of which are in place and some are on the ground. Some features such as a collapsing saw horse remain. The shop is currently in an active state of collapse. Left without treatment, this structure will be a pile of debris in the near term. Several key elements replaced will prevent immanent collapse.



 *Blacksmith Shop and ramada plan*

The center most post has become dislodged and fallen eastward. This post supports the ridge beam for the enclosed portion as well as contributes to supporting the central steel pipe beam of the ramada. A splice can be added to the existing post and it can be reset to support the ridge pieces. It may need a diagonal to hold it upright. It will be necessary to use tie wire to hold all this together. The ridge down the enclosed section will have to be spliced and reset. The east end wall has to be tied into the ridge. The northwest corner will require some supplemental timber to be reestablished minimally enough to establish the design of the protruding corner which is an architectural anomaly of unknown use. Likewise the post for the southwest corner of the



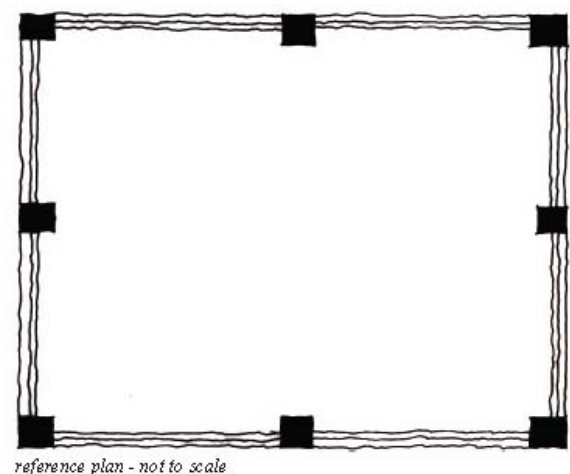
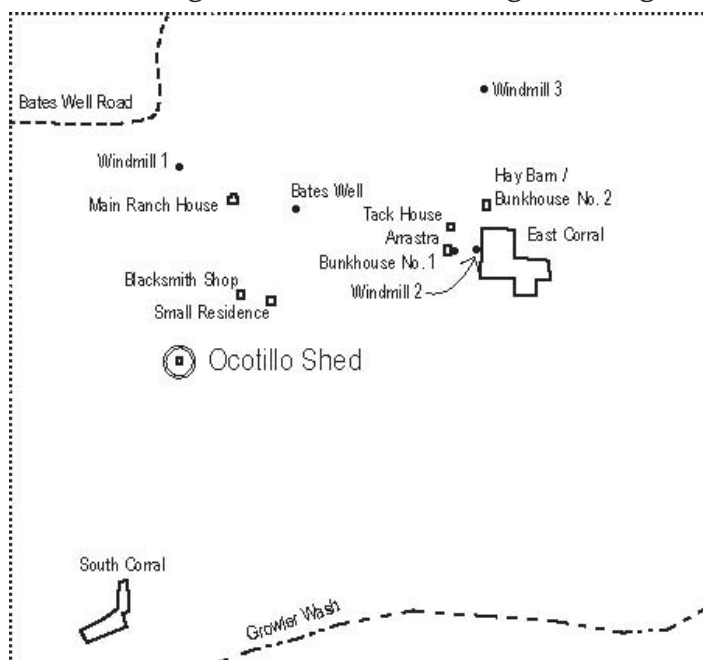
Figure 3: The Blacksmith Shop with the ramada shown to the left. This building has suffered significant deterioration over the past two years, but has not yet reached the point where it cannot be preserved. Photo: Randall Skeirik, NPS

ramada has rotted at the bottom and will have to be reinstated. A new treated dutchman splice base can be pinned with fiber glass rod and epoxy to the solid upper portion and this 6 ½" by 7 ½" post which then can be reset back into the ground to prevent further collapse of the ramada. An option would be to set two "T" type posts adjoining the original and tying the post to them. Much of the Saguaro covering for the ramada is laying on the ground. In order to reduce rodent habitation and rather than discarding these resource materials they should be bundled up in tied sections and reset up on the ramada. A few new pieces may be required to provide adequate bearing to support sections too short to rest on the pipes. A few loose and fallen roof boards can go back up on the ridge of the enclosed portion to allow the few pieces of sheet metal there to be replaced and wired on. It is not intended at this time to totally reinstate the roofing.

If pieces of wood lying on the ground can be reinstated by locating where they came from with certitude, they should be replaced. It is not the intent to reintegrate the structure totally at this time.

The Ocotillo Shed- HS01G

The Ocotillo Shed (Figure 4), which is actually constructed of posts set into the ground with saguaro ribs wired together to serve as siding, is falling down. A few important measures can prevent imma-



Ocotillo Shed plan

nent collapse. The fallen debris from inside the structure should be examined carefully noting the provenience of the pieces. Pieces will be wired back in place if the original location can be determined. Saguaro laying around will be wired back in place. Some corrugated roofing pieces can be screwed or wired back down in a few places where enough deck can be reinstated to provide minimal support. On either side two 1 by 4 boards which serve as outside rafter roof supports have been nailed out of place probably in an effort to alter the roof to a shed from a pitch. Earlier photos show this roof as a pitch. These should be fastened in their original position and a 1 by 4 header across the door opening will be replaced in kind. Keeping the doorway integral to the shed is important. Loose pieces laying on the ground which can be re-attached where they were originally should be reattached.



Figure 4: Jake Barrow, VT exhibit specialist inspecting the Ocotillo Shed. Actually constructed of saguaro ribs strung between railroad tie posts, this small structure needs immediate treatment to prevent collapse.

Photo: Randall Skeirik, NPS

The Coop

Not far from Chico's house heading northeast, a small chicken wired structure remains which is not identified in the HSR (Figure 5), thus there is no site number. This structure is still standing and deserves to be stabilized to prevent total loss. This element serves to provide tangible evidence of its history and location. Future research may identify this feature. A chicken feeder and the wrapping of chicken wire suggests that it may have served as a chicken house. It is rapidly deteriorating. A few limited actions can preserve remnants of this feature. The gate and post it hung on have fallen over. This should be reestablished by splicing a new bottom on the post and resetting it in position. An alternative would be to set two "T" posts and wire the post/jamb to it. Alternative steel type posts can be used instead of the green "T" posts. The existing corners will be stabilized with "T" posts in the same manner as fencing is being stabilized on site.

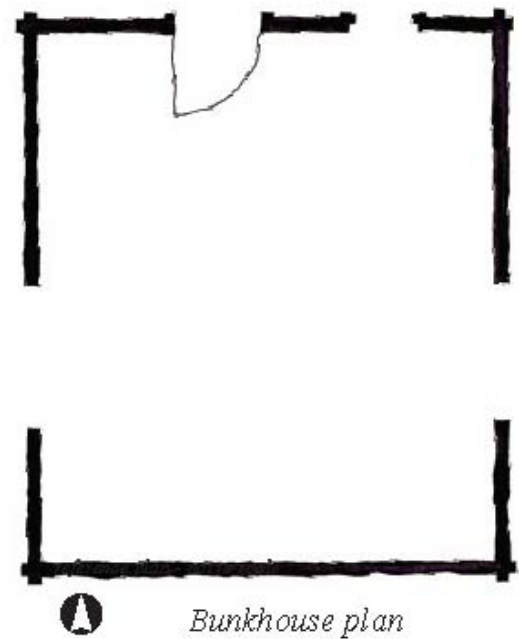
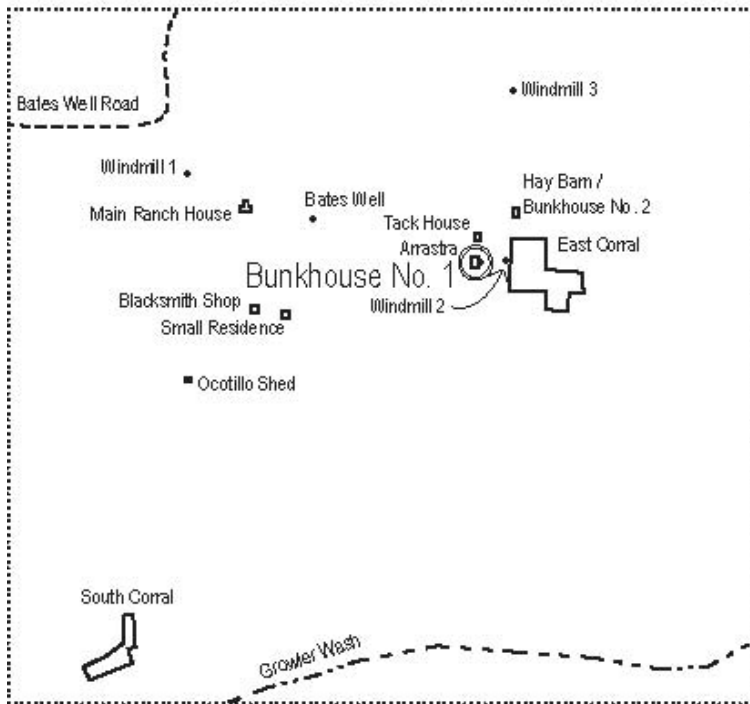


Figure 5: Not identified in the HSR, this small structure was enclosed with both saguaro ribs and chicken wire, and was possibly a chicken coop.

Photo: Randall Skeirik, NPS

Bunkhouse- HS01E

The bunkhouse is a lightly framed structure with emergency conditions related to flooring and substrate floor framing. Only the most serious issues are being addressed at this time. The building is constructed on 8 by 8 wood post piers buried in the ground on the perimeter. For some reason these posts are not on the outside corners but set as much as 12 inches with the corners cantilevered in space. Flat laid plates (2 by 6) are set on these posts along the north south axis. A 2 ½" by 7 ½" beam laid flat runs down the center supporting 2



by 4 floor joists which are on approximate 24" centers and bear on the 2 by 6 plates. The center of this beam has termite damage and the timber supports in the center are out of place. The $\frac{3}{4}$ " by 11 $\frac{1}{2}$ " floor decking is nailed all the way to the outside edge of the structure and the wall studs are set on a plate on top of the flooring. Flooring has rotted and deteriorated in some areas leaving very spongy sections or holes in the floor. Extensive termite damage exists throughout. One joist is cracked. It is possible to crawl under the building just barely. Due to deterioration of the post and framing in the southeast corner, the structure is listing in this direction. The interior is littered with animal waste and debris. Protective screening has been torn partly off the openings. The north elevation window NW1 was a 4 over 4 double hung window with portions of the original sash still in place. The top has glazing while the bottom sash has only one vertical muntin left. These features require protection.

The roof framing and roof material appear in satisfactory condition.

The emergency treatment recommendations are limited to replacing the rotted post, supporting the floor, selective replacement of deteriorated floor boards, and securing widows and doors.

In order to replace the SE corner post the original one will have to be excavated under the supervision of the archeologist. Temporary interior diagonal bracing can be added to keep framing in place, but this might not be necessary as the structure is so light weight. A new treated post can be installed on top of a solid rock set on undisturbed ground. Shimming will be required to maintain loading. The 2 by 4 joist has deteriorated in the corner and will have to be supplemented with a new piece to pick up the floor and frame above. It is not necessary to attempt to level the building as it is likely that this condition has existed for a very long time. The goal is the stabilize the structure and prevent further settlement.

In order to stabilize the floor, the three center floor boards that terminate in the doorway can



Figure 6: The Bunkhouse
Photo: Joe Tuomey, NPS

be carefully lifted. Once repairs are made, these will be replaced. Sections of missing floor and areas which are rotted will have to be replaced. Only missing and completely deteriorated wood will be replaced and joints will be made on the centers of joists for splices. It is currently assumed that these floor boards are #2 (tight knots) pine without surface finish but this needs to be verified so that the new boards are similar in character. When these center boards are up, repairs can be made to the substrate. The center failed section of the main beam (Figure 7) will be sistered with supplemental treated timber on either side fastened at least 24" onto solid wood in both directions. The existing timber supports will be reset to pick up the loads. While open other weak areas will have solid blocking applied to undisturbed soil to provide support, such as the cracked 2 by 4 joist.

Eventually all the rotted and termite eaten wood (Figure 8) will have to be addressed but this will be a time consuming and difficult task. Any work done now must consider the future goal so as not to preclude the introduction of more new pieces in the future.

The window openings require protective measures similar to those being applied elsewhere. Frames will be constructed to which hardware cloth are applied and they are attached to the opening by through bolting the frames together sandwiching the existing window elements. The front north elevation window NW1 will have a frame made to protect the entire unit to safeguard the upper sash and screen the lower open section. No evidence remains in place to indicate how the side windows were treated. Simple 2 by 4 jambs remain. These will be fitted with simple frames mounted with hardware cloth and screening. Pieces of a 9 light sash remain on the floor and an earlier photo showed how the east window may have been a single sliding sash. This element should be kept in the house with plans to reinstall it in the future.

Arrastra

The Arrastra (Figure 9) feature located to the east side of the building is a very significant feature from an earlier period. Vegetation is growing all around and under this feature. In order that this feature not be lost, weeding the Arrastra is recommended.



Figure 7: The longitudinal beam in the floor of the Bunkhouse is cracked. Timber supports were added some time in the past, but have been displaced.

Photo: Joe Tuomey, NPS



Figure 8: Some sections of the wood siding on the Bunkhouse have suffered severe termite damage. Replacement of this material may be desirable in the long-term, but it is not a high priority.

Photo: Joe Tuomey, NPS



Figure 9: The Arrastra, a device for milling ore, is located immediately adjacent to the Bunkhouse. Because it would have been impossible to use the arrastra as it is currently located, it is assumed that it was in place prior to the placement of the bunkhouse, and was no longer in use at that time.

Photo: Joe Tuomey, NPS

Tack House- HS 91F

The tack house (Figure 10) is constructed of 4 by 4 posts set directly into the ground and horizontal 1 by 4 siding is nailed to the exterior of these posts. There is no floor. It has a corrugated roof. The basic problem with the tack house is that the posts have rotted at the base. Therefore the building is settling and could be moved by a heavy wind. Emergency treatment recommended is to install 1 by 4 diagonal bracing throughout the interior attached with double headed nails to the existing 4 by 4 posts. Pre-drilling will prevent split outs of the diagonals. In some locations blocking will have to be added to keep the braces in line and where the 4 by 4s have deteriorated the braces will be nailed onto the solid wood portions. Borate treatment as has been specified for wood in contact with the soil is recommended.

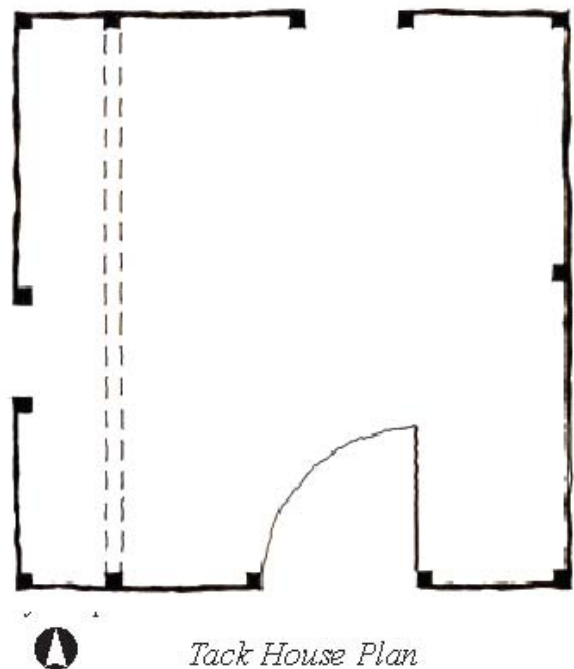
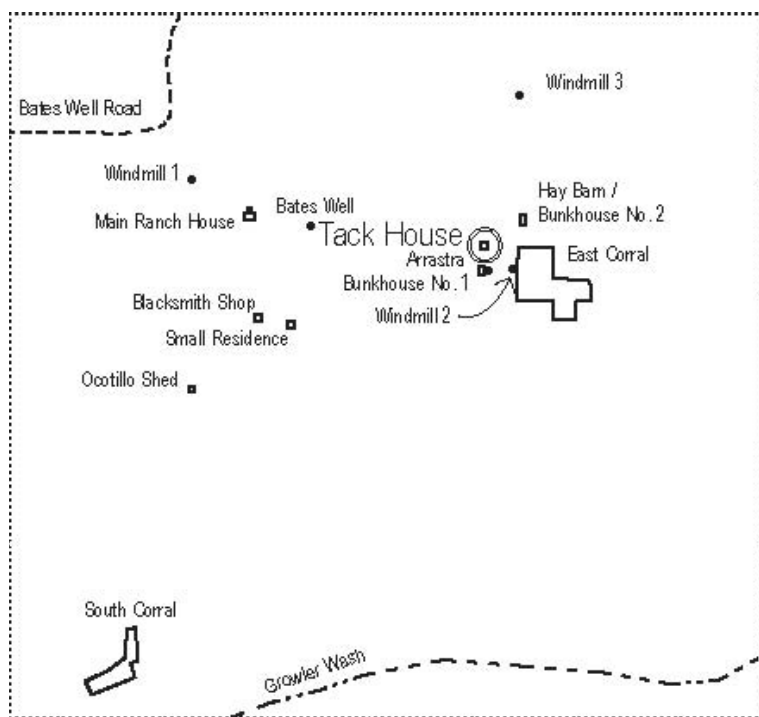
Two form stakes will be driven into the ground at each corner and these will be connected to the 4 by 4 with double stranded tie wire to prevent sideways movement of the building.

The door has come off the jamb and is laying on the ground. It should be reattached in the open position and fixed as such with some grade stakes driven on either side into the ground. A frame with hardware cloth should be constructed and fixed over the opening to prevent entry. If attached with screws it can be removed for maintenance.



Figure 10: The Tack House is an important component of the ranch complex. Constructed with posts buried directly into the ground, the bottom ends of those posts have completely deteriorated.

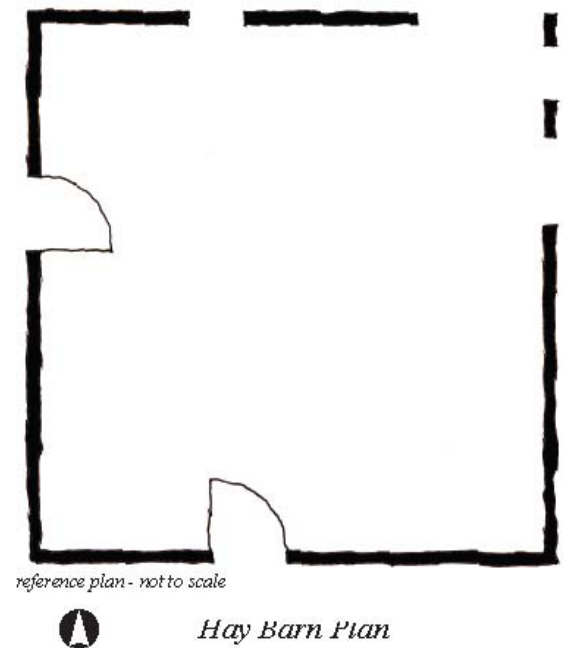
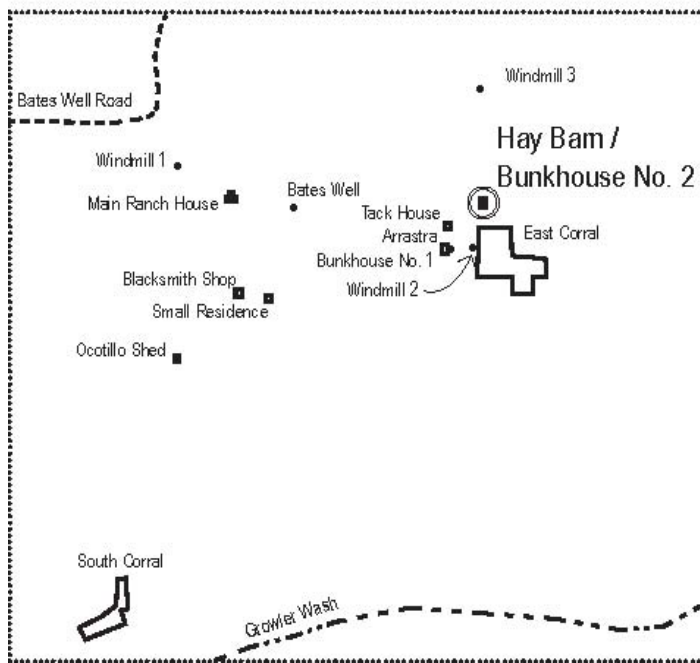
Photo: Joe Tuomey, NPS



Tack House Plan

Hay barn- HS01D

The hay barn (Figure 11) is a very unusual structure due to the unique framing. It is basically constructed of assembled panels which are approximately 4' by 8'. The panels are made of 2 by 4 framing and have horizontal siding of various types attached. These panels are then nailed together edge to edge to make the walls. The walls had no diagonal bracing and it might be assumed that the panels performed some kind of diaphragm action to resist racking. Perhaps the way the barn is constructed contributes to the idea that this building was moved from another location and may be composed of pieces from different buildings. Now that deterioration has taken its toll, modifications are required.



The hay barn has benefitted from temporary bracing that was installed to prevent collapse. (Figure 12) The basic problem with this structure is that the framing has no internal bracing mechanism to prevent racking and the gable ends are not tied to the rafters to prevent over turning. Diagonal and end wall bracing installed in 2007 has helped prevent collapse but these elements should be replaced for more efficient framing. In addition the northeast corner and north side of the sill and plate are completely deteriorated and have fallen out of place. If left, this side of the building will likely collapse. There are a significant number of holes in the roof and much missing siding. The barn has two doors and what appear to be five windows openings without sash. Doors are in place. Gaps exist where siding has deteriorated and fallen off. Siding has been prepared and is on hand to match the various types.

Emergency treatments will address the most serious and pressing problems only. The sill and plate on the northeast side (Figure 13) need to be replaced and pulled back into alignment. As with all wood replacement any solid portion of a piece will be retained and only the rotted deteriorated portion will be replaced. This will be done by splicing using adhesives, pins, and joints cut into the wood. A solid block footing is required to maintain the existing level and prevent further



Figure 11: The Hay Barn. The vertical seam visible in the siding to the right of the door indicates where two different framing panels were joined. Because construction and siding types differ between some of the panels it can be inferred that this building was assembled with pieces removed from more than one structure. It is likely that the panels came from buildings originally associated with the nearby Growler Mine.

Photo: Joe Tuomey, NPS



Figure 12: The gable-end walls of the Hay Barn have been braced because the wall's top plate and the tie to the bottom chord of the rafter are structurally inadequate. This temporary bracing should be removed and replaced with a more permanent and aesthetic solution.

Photo: Joe Tuomey, NPS

listing. New diagonal bracing will be installed to the interior frame. This installation will not block any openings. Diagonals will work around the openings. Two bracing boards will be attached to the chords of the rafters running the length of the building and these will attach to the end walls to prevent over turning. These will effectively divide the ceiling space into thirds. All new bracing will be attached with framing screws, be date stamped and stained grey to mitigate the appearance. Bracing will be carefully installed and cut to fit precisely as this work helps to enhance the appearance of the structure, being distinguishable but compatible and not obscuring any historic fabric. Once the rafter chord ties have been installed, the angle bracing currently attached to the floors can be removed.



Figure 13: Along the north elevation of the hay barn, the 2x6 sill plate of the wall is severely deteriorated. This photo shows a point at mid-span where the plate is completely crushed where it sits on a concrete foundation block.

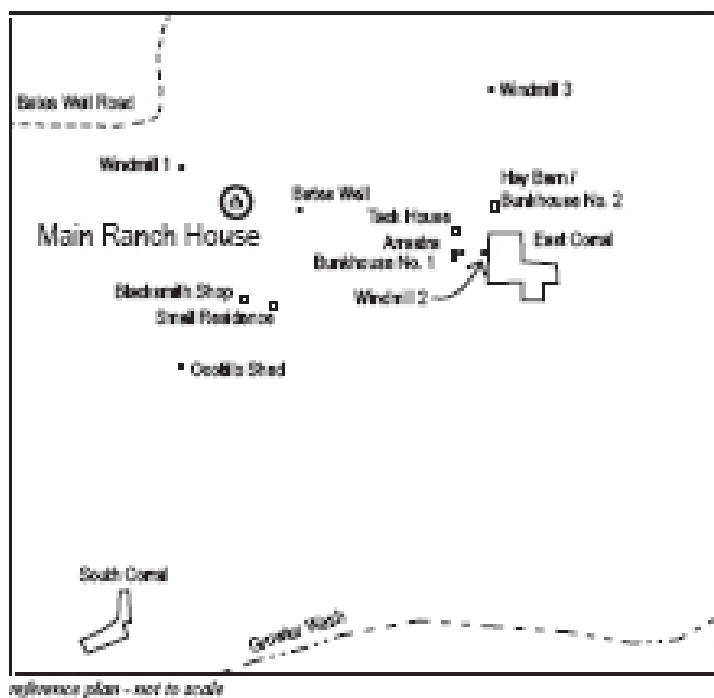
Photo: Randall Skeirik, NPS

All missing siding pieces will be replaced in kind and substrate deficiencies can be addressed by installing sistering splices at points where solid nailing exists. Nails will match historic and not be galvanized so that staining continues as it did historically. The window openings are simply 2 by 4 jambs without any evidence of sash. No stops or rabbets are in place. Frames with hardware cloth will be assembled to secure these openings. Since there are no stops, 1 by 2 stop will be attached to the center of the 2 by 4 jamb to which the screened frames can be attached using through bolts to tie the two frames together. The new stops must be stamped and grey stained so that they can not be misinterpreted for original pieces.

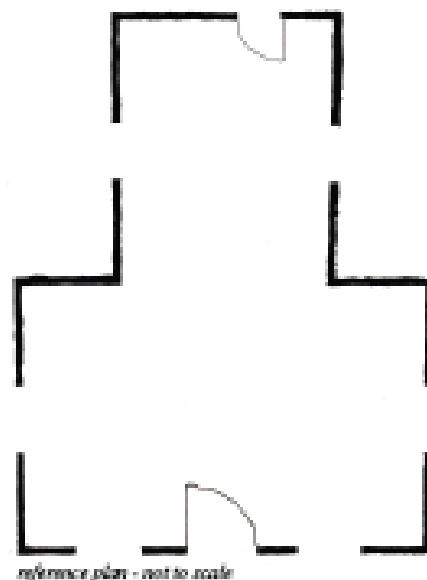
In order for the public to see inside, the south facing door can be fixed open and a reinforced hardware cloth screened frame can be constructed and installed in the opening.

Main Ranch House- HS01A

The Main Ranch House (Figure 14) is the most conventionally built of any of the structures at Bates Well. It consists of 2 by 4 framing set on timber sills with a poured concrete floor. Conventional but lightly construct-



reference plan - not to scale



Plan of Main Ranch House



Figure 14: The Main House at Bates Well Ranch. The house was assembled from two separate buildings that were moved to the ranch from the nearby Growler Mine site after the mine closed. Photo: Joe Tuomey, NPS

floors were poured within the form of these sills and frame walls were set up on the sills. At one window opening the top of the concrete floor is approximately 3 ½ " above exterior grade. At the southeast corner where a rodent hole had tunneled toward the sill, a little bit of further excavation revealed the remains of the wood sill. It has rotted. A good assumption is that this condition is universal. Where visible the plates on the sill are deteriorated from both rot and termite activity. The baseboard is sound and it is tightly nailed to the plates and the 2 by 4 studs. It rests on the slab and contributes secondarily to holding up the walls which no longer are supported by the rotted sills. While at present this condition is not exhibiting settlement, its only a matter of time until these fabrics will fail and compress. Correcting this problem now will prevent further more serious deterioration in the future. Supervised test pits can be dug at intervals along the foundation to verify the conditions.

Rotted sills or sections of sills will have to be replaced. Rodent proofing will be installed during this action. In order to accomplish this task, excavation along the sides of the building will be required to be accomplished one side at a time. Bracing the interior roof rafters at bearing points with a temporary superstructure mounted on the interior set onto the concrete slab can prevent any settling from occurring during the construction. Excavations will have to be monitored by the park archeologist. This is very important since archeological record of the site is limited and much useful information may be retrieved which can inform the record. When the excavation is complete and the rotted sill removed and documented, a new treated sill may be installed. If any part of the historic sill is viable, it will be saved by splicing in the new to the old. It will be necessary to establish solid bearing on the disturbed soil by setting solid block on undisturbed soil and shimming up the sill to the plates. Where visible the base plates have been destroyed by termite activity and these will also have to be replaced. These can be removed from the excavation side and the nails cut or pulled out as well. New plates can be installed from the excavation side, inserted up to the studs, braced and fastened with galvanized framing screws. Concealed "TECO" type connections may be used to connect pieces. Care should be taken to pre-

ed rafters are set on double plates supported by studs. The exterior is stuccoed over vertical wood planks. Chicken wire serving as stucco mesh is visible in some locations and not in others. The stucco exhibits vertical micro cracking indicative of shrinkage. The roof is corrugated galvanized roofing. Windows were double hung single light 1 over 1 with screens. Window parts are available for restoration purposes. Historical documentation indicates that this building was assembled from two which were moved to the site.

The critical emergency high priority structural issues currently recognized are the rotted sills and roof structure. Only the most serious safety and resource issues are being addressed at this time.

The sills of the ranch house (Figure 15) appear to be railroad ties reused set into the earth at grade. It is unlikely that there is any foundation or footing for these sills. It appears as if the concrete



Figure 15: The timber footing projects out beyond the northwest corner of the building, the only place where it can be observed without excavation. Photo: Joe Tuomey, NPS

serve the base of the stucco on the exterior as this will not be treated at this time. Work will occur from the exterior excavation and the interior where Homosote wall covering material can be carefully removed and replaced after structural repairs. Studs that have severe termite damage can be left in place for the record but can be “sistered” with treated 2 by 4 only where the damage exists over lapping onto section sections approximately 16”.

Before backfilling the trenches stainless steel hardware cloth will be installed to approximately 18” beneath grade laid out along the angle of repose from the base of the sill support and up into the rear side of the stucco. Maintaining the angle of repose along the foundation will prevent any out of plane forces to effect or move blocks set to support the new sills.

The critical structural deterioration of the roof system is limited to the hip rafter on the north/south axis of the

south wing which loads to the framing of the wall partition between the two wings. The plate and framing beneath this rafter has been destroyed by termites. (Figure 16) At the time of this assessment no settlement was evident but with time this section will fail. The framing consists of the door jamb, header, and cripple structure above the opening. Repair consists of carefully removing the trim from the door jamb and removal of the Homosote wall material from around and over the door. Care must be taken with this removal since the intention will be to reinstall these materials when the repairs have been made. Plates will have to cut out where they are termite destroyed and spliced in an over lapping way to disperse the loads. Deteriorated studs and cripples can be “sistered” so the original stays in place. Attachment of the original rafter foot to the new supplemental framing can be accomplished using a standard “Teco” type framing connection. Once the structure has been repaired, documented, and date stamped, the Homosote and the door trims can be reattached. Trim and wall coverings that are no longer attached or on site will not be replaced consistent with a Vanishing Treasures philosophical approach.

Other non structural but equally important tasks required at this time are roofing repairs and window and door treatments.

The roof is currently leaking and one section is rusted through. (Figure 17) The north east corner of the south wing is loose and wind has been lifting this corner causing nails to pop. Repairs will consist of cutting a section of like material- galvanized corrugated sheet metal roofing 13” by approximately 60” long to be installed over the rotted sections on the north end of the north wing. The piece will be attached down through the existing by pre-drilling and attaching it with gasketted roofing screws down to the rafters below. Hammering down nails on this roof will only further damage the existing by vibrating existing nails and roof loose.

At the north east side of the south wing, the roofing is loose at the eave and the purlins are also loose. (Figure 18) While some of these materials are deteriorated they do not have to be replaced at this time. Reversible repairs consist of using plumbers perforated strapping to tie the purlins back down to the rafter tails. This can be attached on the rear sides of the rafter tails to be less visible. These should be fastened with screws to avoid vibration hammering. The corrugated roofing and be attached back down to the purlins and rafters where appropriate by drilling a hole down through the materials and installing a gasketted carriage bolt, (ca. 5/16”) down through the section



Figure 16: Area of the top plate of this wall has suffered termite damage at the point where it carries one of the roof rafters.

Photo: Joe Tuomey, NPS



Figure 17: Nail hole patterns strongly suggest that the corrugated metal roofing on the Ranch House has been reused. Although it shows numerous rust patches only area has rusted through at this time.

Photo: Joe Tuomey, NPS

to a custom cut and drilled rectilinear washer of stiff sheet metal material. This piece should be approximately 1" by 2".

There are many holes in the roofing through which rain water is leaking into the interior and causing deterioration including the initial stages of fungal rot on wood elements. Historical sources indicate that this building was moved to its present location from the Growler mine. The roofing may have been removed and replaced accounting for the excessive number of nail holes. These holes can be caulked for temporary repair reducing the infiltration of water. Caulk, such as Red Devil 0767 AC grey gutter and lap seal, can be applied in the holes to seal them temporarily. Lifted nails should be re-nailed or removed if they no longer have purchase into the substrate.

The current window coverings consist of plywood sheets with screened small cut outs in the center to allow light and ventilation to enter. These are lag bolted into the historic jambs. These panels preclude the possibility for the window casing trim from being in place. Several pieces of historic trim were on site laying on the ground nearby. While these window coverings do provide some level of protection preventing unwarranted entry and screening prevention for wildlife, they have significantly impacted the appearance of the structure in a negative way. The use of lag bolts is potentially harmful to the historic substrate as moisture will enter and begin a corrosion, fungal rot process. These panel covers should be replaced to protect the interior, provide lighting and viewing inside, and maintain the character of the historic structure.

The recommended approach is to reconstruct the historic sash and install Plexiglas or Lexan as glazing rather than glass. These will be fixed open at the bottom several inches to allow for ventilation. Historic screens will be reconstructed and replaced to further protect the production windows and prevent animals and insects from getting in the slightly open sash. Jambs and some of the framing around the window opening will have to be repaired with new material and/or spliced where required. All new wood will be Borate treated and painted as they were historically to protect them from weathering and to be compatible with existing historic elements. This portion of the project is considered limited focused restoration to accomplish a larger stabilization agenda. The window treatment has not been determined in the kitchen over the sink and should be left and the historic design can be determined.



Figure 18: Deterioration of the purlins at this corner has allowed the nails that attach the roofing to pull out. The wind has caught this corner and is working more nails loose. Without reattachment, this section of roof will soon fail.

Photo: Joe Tuomey, NPS

proach is to reconstruct stall Plexiglas or Lexan. These will be fixed open to allow for ventilation. Historic screens will be reconstructed and replaced to further protect the production windows and prevent animals and insects from getting in the slightly open sash. Jambs and some of the framing around the window opening will have to be repaired with new material and/or spliced where required. All new wood will be Borate treated and painted as they were historically to protect them from weathering and to be compatible with existing historic elements. This portion of the project is considered limited focused restoration to accomplish a larger stabilization agenda. The window treatment has not been determined in the kitchen over the sink and should be left and the historic design can be determined.

The front door is similar to the windows in that the frame of the original door remains. It appears that this door had glass panels. They are no longer in place. A screen door on the ground outside appears to have been hung at the front. The west door to the kitchen is the main entrance and this door is serviceable.

To best preserve these features they should be fastened shut. The public can see into this house through windows and if there is nothing inside, it is hoped that they won't break in. The kitchen entrance door should be fitted with a pad lock on looped hinged padlock hasp. The screws mounting this should be 3/4 " only so that if someone tries to break in, the screws will become dislodged before the jamb or door style is torn apart. In this way only minor damage is caused. If over time this solution becomes unmanageable, a decision to leave the door unlocked may be taken. The front door and screen can be fixed shut. Temporary plywood panels can be used for the front door where glass has been lost.

Birds have been entering the building by way of the gable ends where space exists between the purlins and the end rafter. In most cases these areas are blocked. On the east side there is an area where the roof is lifting and the blocking is missing. This section should be reattached with blocking and rolled screening should be pushed down into all the gable end sections between the purlins where the blocking does not tightly fit. This will inhibit birds and bats from entering the building.

South Corral

The South Corral is the smaller of the two corral complexes at Bates Well Ranch. It is divided into three large enclosures with a smaller pen adjacent to the cattle chute. It is generally “L” shaped in plan and incorporates at least three different types of fencing that reflect the types of material that were available at the time that each was constructed.

Some fences are constructed entirely of mesquite, using paired vertical mesquite poles to support stacked horizontal mesquite poles. (Figure 19). Known as cribbed mesquite, this fence type represents a low cost fence made entirely from locally available, naturally occurring materials. A second type of fencing uses heavy timbers, mostly recycled railroad ties that are set vertically in the ground. These timber posts are closely spaced forming a “stockade”, with barbed wire strung horizontally (Figure 20). Finally, some timbers have been installed horizontally, with the end of each run stacked on, and alternating with, the adjacent sections. (Figure 21). The corral remains in fair condition, although several lengths of fencing are lying on the ground.

As a significant feature of the ranch, the fences that form the corral should be maintained. Those that are still standing should be preserved as they are, and those that have fallen should be restored to their original appearance. Because the below grade sections of the posts that have fallen are gone, and the below grade sections of the standing posts area all compromised, an alternative support structure will be needed to allow the fences to remain upright.

A system that is already in use at Bates Well Ranch (See Figure 20) appears to present the greatest opportunity for structural stability and the retention of original fabric, with relatively little visual impact. Sections of fencing have been stabilized simply by driving metal “T” posts into the ground adjacent to the original deteriorated posts. The metal posts are wired to the originals providing support and preventing collapse. To provide adequate support, six-foot long posts should be used, with two feet driven into the ground.

For lighter weight fence types that are still standing, the metal posts should be installed approximately six feet apart, or at each original post, whichever distance is greater, and should alternate between the inside and outside faces of that run of fence. For heavier fence types that are still standing (like those constructed with timber posts), the spacing could be the same, but it may be necessary to install the metal posts on both the inside

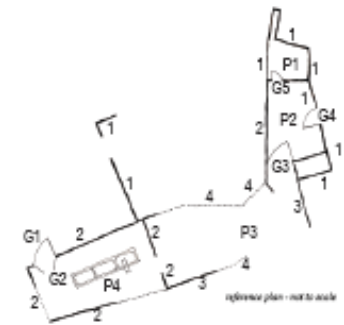
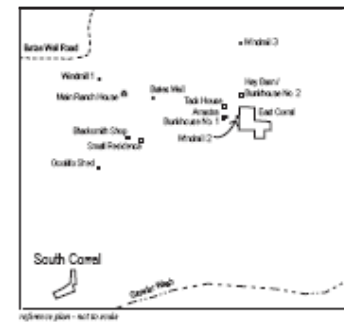


Figure 19: Constructed of interlocked, stacked mesquite poles supported by paired mesquite posts, this fencing represents a type made entirely of indigenous materials. The buried portions of the mesquite posts are highly susceptible to insect infestation and rot and as a result, many of the posts have failed allowing sections of this type of fence to collapse.

Photo: Randall Skeirik, NPS



Figure 20: Stockade type fencing made from reused railroad ties. Even though these timbers were originally treated with creosote, the below-grade sections have deteriorated over the years. Note the green “T” posts that have been installed to help keep the fence upright.
Photo: Randall Skeirik, NPS



Figure 21: Stacked timber fencing made from reused railroad ties utilized material more efficiently than the stockade type. Although inherently more stable, the overlapping section of each run is supported by a post, and like the stockade fence, these posts have rotted below grade allowing sections to fall.
Photo: Randall Skeirik, NPS

and outside faces of the original posts, sandwiching the original wood post and wiring the three together.

For fallen sections of fencing, it will be necessary to restore the fallen fence to an upright position. The technique for this will likely vary, with the possibility of standing some types back up intact, while others will need to be dismantled and reconstructed. In all cases, new steel posts, appropriately spaced, should be installed on the side opposite to which the fence has fallen. If the fence can be raised intact, the raised posts can be tied to the new supports and the repair is complete. If the fence must be dismantled, the post alone will be raised and tied to the new support and the cross members reconstructed to match the appearance of the original fence. As with standing sections of fence, if the fence is heavy or unstable, it may be necessary to install a second metal post on the opposite side to sandwich the original posts.

The new metal posts should be painted a dark brown or grey color to match the color of the posts they will be supporting so that they are not visually intrusive.

East Corral

The East Corral is the larger of the two corral complexes at Bates Well Ranch. It is divided into one small and three large enclosures that generally form an “L” shape. It incorporates at least four different types of fencing that each reflects the types of materials that were available at the time they were constructed.

Some fences are constructed entirely of mesquite, using paired vertical mesquite poles to support stacked horizontal mesquite rails. (Figure 22). Known as cribbed mesquite, this fence type represents a low cost fence that is made entirely from locally available, naturally occurring materials. A second type of fence utilizes regularly spaced mesquite poles to support strands of barbed wire. In some cases the posts are closely spaced to form a stockade (Figure 23), and in others, they are spaced as much as 6 feet apart to form a more traditional barbed wire fence (Figure 24).

Another type of fencing uses heavy timbers (mostly recycled ties from a local railroad that was dismantled



Figure 22: Constructed of interlocked, stacked mesquite rails supported by paired mesquite posts, this fencing represents a type made entirely of indigenous materials. The buried portions of the mesquite posts are highly susceptible to insect infestation and rot and as a result, many of the posts have failed allowing sections of this type of fence to collapse.
Photo: Randall Skeirik, NPS



Figure 23: Stockade type fencing made from closely spaced mesquite posts strung with barbed wire. As with other fence types that use mesquite posts, many of the posts have rotted off below grade causing the fence to collapse.
Photo: Randall Skeirik, NPS

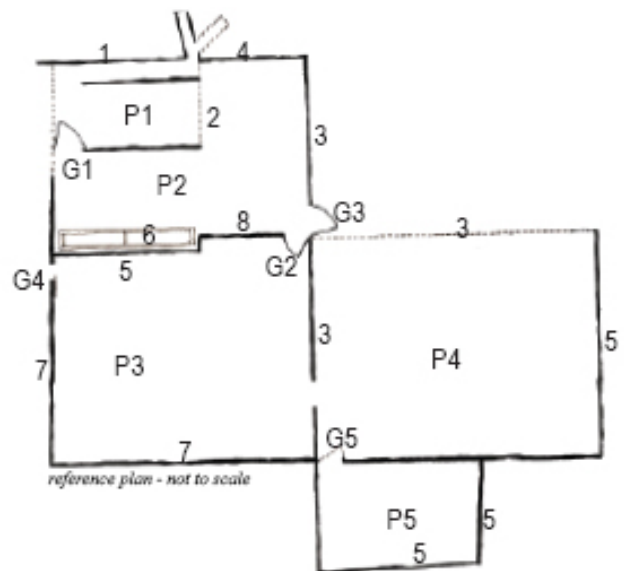
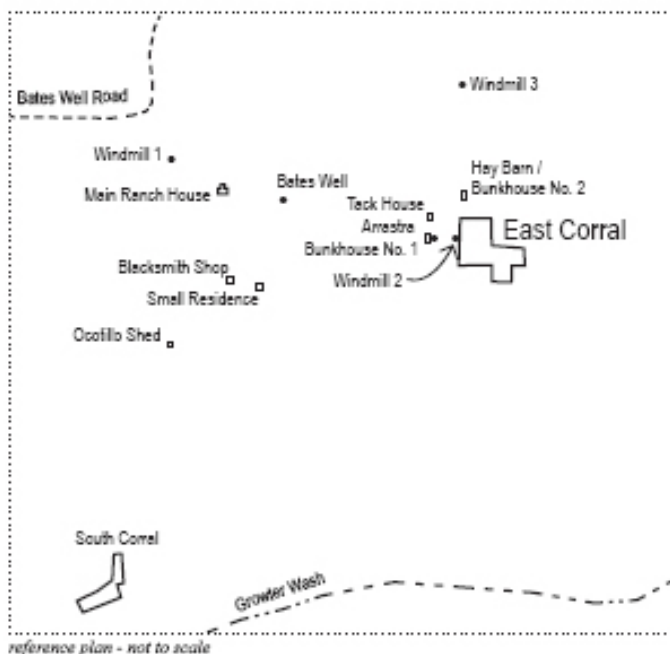


Figure 24: A more typical barbed wire fence made with mesquite posts strung with barbed wire. As with other fence types that use mesquite posts, many of the posts have rotted off below grade causing the fence to collapse.
Photo: Randall Skeirik, NPS

in the 1950s) that are set vertically in the ground. These timber posts are closely spaced as a stockade, with barbed wire strung horizontally (Figure 25). Finally, some timbers have also installed as widely spaced posts to support horizontal sawn board rails (Figure 26).

The corral remains in fair condition, although substantial sections of the fence types that use mesquite posts are lying on the ground. The majority of the timber posts, because they were typically treated with creosote, are still standing although the below grade sections are seriously deteriorated.

As a significant feature of the ranch, the fences that form the corral should be maintained. Those that are still standing should be preserved as they are, and those that have fallen should be restored to their original appearance. Because the below grade sections of the posts that have fallen are gone, and the below grade sections of the standing posts area all compromised, an alternative support structure will be needed to allow the



Plan view of the East Corral. P signifies Pen, G signifies Gate and along with the numbers correspond with the illustrations on the following pages. Dashed lines signify collapsed fencing.



Figure 25: Stockade type fencing made from closely spaced timbers strung with barbed wire. Even though these posts have been treated with creosote, many have rotted off below grade causing sections of this type of fence to collapse. Photo: Randall Skeirik, NPS



Figure 26: Post and board fencing made from widely spaced timber posts and dimensional lumber rails. This is the least common type of fencing at Bates Well Ranch and is mostly associated with the cattle chute, which is of similar construction. Photo: Randall Skeirik, NPS

fences to remain upright.

A system that is already in use at Bates Well Ranch appears to present the greatest opportunity for structural stability and the retention of original fabric, with relatively little visual impact. Sections of fencing have been stabilized simply by driving metal “T” posts into the ground adjacent to the original deteriorated posts. The metal posts are wired to the originals providing support and preventing collapse (Figure 20). To provide adequate support, six-foot long posts should be used, with two feet driven into the ground.

For lighter weight fence types that are still standing, such as widely spaced posts with barbed wire, the metal posts should be installed approximately six feet apart, or at each original post, whichever distance is greater, and should alternate between the inside and outside faces of that run of fence. For heavier fence types that are still standing (like those constructed with timber posts), the spacing could be the same, but it may be necessary to install the metal posts on both the inside and outside faces of the original posts, sandwiching the original wood post and wiring the three together.

For fallen sections of fencing, it will be necessary to restore the fallen fence to an upright position. The technique for this will likely vary, with the possibility of standing some types back up intact, while others will need to be dismantled and reconstructed. In all cases, new steel posts, appropriately spaced, should be installed on the side opposite to which the fence has fallen. If the fence can be raised intact, the raised posts can be tied to the new supports and the repair is complete. If the fence must be dismantled, the post alone will be raised and tied to the new support and the cross members reconstructed to match the appearance of the original fence. As with standing sections of fence, if the fence is heavy or unstable, it may be necessary to install a second metal post on the opposite side to sandwich the original posts.

The new metal posts should be painted a dark brown or grey color to match the color of the posts they will be supporting so that they are not visually intrusive.

Windmill Number 2 Water Tank

Adjacent to Windmill Number 2 there is a raised water storage tank. The cylindrical tank is constructed of galvanized metal that is fastened together with rivets. The tank is approximately six feet tall, and six and half feet in diameter. (Figure 27)

The tank sits on a raised wooden platform that is approximately 10 feet square. The platform is supported on a structure of sill beams, posts, and diagonal braces, much of which is constructed from recycled railroad ties. There are three sill beams that are set in the ground, all of which run from east to west. One sill beam runs along the north side, one along the south, and one down the



center. All three sill beams are approximately 7 ½ inches wide, 7 inches deep and are between 6'-1" and 6'-6" long. The central and south sill beams, and the east end of the north beam are badly deteriorated and are being crushed by the weight of the platform and tank above. This has caused the platform to settle unevenly. As a result, the posts and platform are now leaning, with some posts as much as 6" out-of-plumb over their length.

Spanning the tops of the posts, and running in the same direction as the sill beams, are 4x6 support beams that have been laid with the 6" dimension laid horizontally. Running perpendicular to these are 4x6 crossbeams oriented with the 6" dimension laid vertically, some single and some paired. The cross beams carry the 2x decking on which the water tank sits. One of the crossbeams have cracked at mid-span where it is supported by the center beam. It is likely that the platform was originally constructed without a center beam and that the third, central beam was installed when the crossbeams started to fail. This notion is supported by the fact that the beams and posts used on the north and south sides are consistent in size and construction while the central supports are quite different, suggesting that they could have been added at a later date after the original structure started to fail.

Because the availability of water is central to both the historic and prehistoric use of the area of Bates Well Ranch, the equipment and materials used to acquire, store and transport that water are central to the interpretation and understanding of the site. For that reason, we are recommending that the deteriorated members of the storage tank support structure be replaced with new material that is milled to the same dimensions as the originals. However, because railroad ties have traditionally been treated with creosote, a known carcinogen, the replacement members will instead be treated with borates (liquid and rods) and will be stained to replicate the appearance of creosote treated lumber.

Although liquid borates can be brush applied, treatment is best accomplished by soaking the new wood in the borate solution. A trough can be constructed using a frame of wood beams, or by digging a trench in the ground. The frame, or trench, is lined with heavy plastic sheet, and the members to be treated are set inside and covered with borate solution. Soaking time will vary according to the size of the lumber. In addition to the use of liquid borates, borate rods should be installed in holes drilled in the ends of the sill beams. Manufacturer recommendations will determine the size, placement, and quantity of rods to be used. The ends of the holes should be filled with wood plugs. Once the borate treatments have been completed, the wood should be stained to match the appearance of the original, creosote treated lumber.

To replace the sill beams, the entire structure will need to be lifted so that the new beams can be installed below. A number of methods can be used to lift the structure, including screw jacks, hydraulic jacks, or even scaffold framing. Whatever the method used, the jacks should probably lift the main beams that support the platform, bringing along the support posts, and possibly the sill beams as well. Most of the connections are toenailed, so the posts may not stay attached when the platform is lifted. On the other hand, if the nails into the sill beams cannot be pulled, they may need to be cut with a sawz-all.

Other considerations in repairing this structure will be the need to move the platform back into alignment with the sill beams below. The methodology for this will vary but almost certainly require the removal of the existing cross bracing, especially that which has been installed after the structure began to lean. Realigning the platform may involve pushing or pulling it while adjusting the bracing that would be used in conjunction with screw or hydraulic jacks, or by sliding the platform on the lifting beams that would be used with scaffolding.



Figure 27: Water tank associated with Windmill Number 2. Note that the sill beam at the bottom front is badly deteriorated. This deterioration has allowed the support frame to wrack and has required the installation of additional diagonal bracing. Because the tank no longer holds water, the danger of collapse is small, nevertheless, the deteriorated framing members should be repaired or replaced.

Photo: Randall Skeirik, NPS

With the new sill beams in place, the bottom end of each post should be inspected for deterioration. If less than 30% of the cross-section of any post is deteriorated, no repair will be needed. If the deterioration is more extensive, then a structural dutchman patch should be installed.

With the new sill beams in place, and any needed repairs made to the posts, the jacks can be slowly released and the platform gently seated onto the new sill beams. Prior to fully releasing the jacks, crossbracing should be installed that replicates the historic configuration. Finally, the posts will need to be attached to the new sill beams, and toenailing with galvanized 20p nails will be adequate to make the connection. Pilot holes should be used to prevent splitting as the nails are driven through the posts.

Windmills Number 1, 2, and 3

Of the three windmills, Windmill #2 is the most intact although none are functioning. The frames are all in good condition. At present the only recommended action is to remove the first 10' ft of ladder so that the public will be dissuaded from climbing on these towers.



*Figure 28: Windmill Number 1. Note blades at base of tower.
Photo: ORPI Photo Collection*



*Figure 29: Windmill Number 2 with adjacent water tank.
Photo: Randall Skeirik, NPS*



*Figure 30: Windmill Number 3. Note the blades on the ground in the lower right.
Photo: Randall Skeirik, NPS*

Site Work and Drainage

The site and landscape are as important as the structures to the Ranch. Vegetation, roads, and drainage are the immediate emergency issues at Bates. Vegetation needs to be controlled where it is encroaching on structures, pathways and in and around corrals and other cultural features. Cutting brush and green growth which are obviously taking over the walking routes and encroaching on buildings and fences needs to occur. It is very important that the historic road ways be minimally maintained so that they can continue to be used, rather than create new pathways. The roadways can be easily delineated with natural means such as clearing vegetation, piling slash, stacking a few rocks, laying a log on the ground, etc. so that anyone visiting the site knows where to walk.

The historic drainages have been breached with new drainages now carrying water in routes not previously used. The new drainages must be blocked so that the historic ones can continue to function. Upland from the windmill the historic drainage has been breached so that water now floods down the roadway and into the corral area. This needs to be blocked so that water proceeds where it used to flow and the road can be protected. Re-grade around all structures to insure positive drainage and add swales where necessary to drain water away from structures into the main drainage towards the southwest. Regrade around the ranch house to keep water away from the foundation area.

Treatment and Monitoring

Treat all wood that is or will be in contact with the ground with Borates and use Impel rods where appropriate. Install termite monitors in the form of pine stakes at strategic locations to be checked for active termites. If active termites are discovered then ground treatment with Termidor will be required. IMP approvals will be needed.

Wood that remains on the ground for architectural record needs to be treated with Boracates and replaced on sand or a rock, slightly up out of the dirt. Piles of wood debris should be checked for provenience, documented, and, if unusable in its original location, placed in protected storage. Leaving piles encourages rodent infestation.

Periodic monitoring using a notebook of photos of selected areas and aspects is required:

- Inspect drainages for proper flow
- Check pathway impacts
- Inspect roofing edges for lifting,
- Inspect roof nails for popping
- Check interiors of roofed structures for leaking
- Set out bait stations and monitor for live termite activity
- Examine stucco cracks and compare to look structural settlements.
- Inspect building access to ensure doors and window treatments are preserved
- Check wall board (Homoste) for visitor damage such as graffiti and holes punched in.,
- Inspect drainages
- Inspect for animal infestation
- Insure that the windmill break is engaged.

National Park Service
U.S. Department of the Interior

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