

Individual Component identified Deficiency, Proposed Treatment and Goal
Modified from Tassi Ranch Cultural Landscape Report Historic Structures Report Grand
Canyon-Parashant National Monument.

Asset Name	Qty	unit	Deficiencies	Stabilization and or Treatment	Goal
Barn (Historic)/ Chicken Coop	100	SF	The chicken coop is in immediate threat of loss. Removal of vegetation and litter with minimal restoration is necessary to preserve the footprint and basic form of the chicken coop and nesting area.	Clear vegetation and other debris away from remaining structure. Photo document and produce as-built scale drawings of remaining structure. Annually remove vegetation	Stabilize the remnant structure.
Barn (Historic)- Foundation/ Exterior Walls	408	SF	Groundwater saturates the soils around the foundation of the barn causing some of the railroad ties to separate from each other.	Add 1x bracing to the interior walls to stabilize. Annually inspect the structural integrity of the building and repair with in-kind materials as necessary.	Correct the issue and stabilize the structure.
Barn (Historic)- Roof	408	SF	No current deficiencies.	Annually 1) clear any debris from roof, 2) inspect the roof, and 3) repair with in-kind materials as needed.	NA
Dry Ditches and Holding Ponds	650	LF	Woody vegetation is growing in the dry ditch, making it difficult to identify and impacting integrity.	Flush cut all herbaceous and woody vegetation growing in the dry ditch, ditch wall, and to 5ft up the ditch back slope. Remove all debris from site. Annually inspect non-functioning ditch for colonizing woody vegetation. Flush cut any woody vegetation emerging within the ditch or ditch wall.	Stabilize and preserve the dry ditch as a non-functioning historic feature. Ditch and ditch wall can be covered in herbaceous vegetation, but should not be colonized with woody plants.

Entry/Parking Area	14,000	SF	Encroachment of mesquite trees into the area between Pigeon Wash and the ranch yard prevents historically open views to Pigeon Wash and the canyon ridge from ranch house, and parking area.	Flush cut mesquite shrubs on ranch- side of revetment, and within entry/parking area. Every 2-3 years, flush cut new emergent mesquite vegetation on ranch-side of revetment and in entry/parking area. Thin vegetation between Pigeon Wash and ranch yard. Cut stumps level with ground. Every 5 years, parking area should be re-graded and gravel added as needed to maintain a level surface.	Thin vegetation growing between Pigeon Wash and the ranch yard to reestablish more open views. while protecting the area from vehicle traffic
Functioning Ditch	495 (228 current)	LF	Deficiency is overgrown herbaceous and woody vegetation--such as cattails and arrow weed that clog the ditches and damage ditch walls.	Only work on one-third of functioning ditch per year in order to maintain aquatic habitat. Annually flush cut all herbaceous and woody vegetation growing in one- third length of the functioning ditch, ditch wall, and to 5 ft up the ditch back slope using a weed hog trimmer blade or brush blade. Remove all debris from site. Re-contour brushed ditch using a small excavator or track hoe, preferably with an offset arm. Excavate ditch to create a 1-3 ft. wide, flat-bottom ditch, with variable depth. Grade running slope of ditch bottom with minimum 1:100 gradient, to allow positive flow always from springs. Place excavated material on ditch wall. Compact wall material to achieve a stable berm to retain	Clear and re-contour ditches to 1) allow water flow, while protecting amphibians, and 2) relocate breach to a more suitable location that will minimize erosion and increase aquatic habitat.

				<p>ditch water.</p> <p>Preferred timing is outside amphibian spawning season.</p> <p>Repair rodent burrows and breaches in the wall of the ditch using compacted material.</p>	
House (Historic) - Bathroom Addition	140	SF	The floor in the bathroom addition is moist and has scattered debris.	<p>Clean any debris or litter and follow with seasonal cleaning.</p> <p>Add layer of pea gravel.</p> <p>Annually clear debris from the building.</p>	Correct the issue and stabilize the structure.
House (Historic) - Exterior Walls	1,512	SF	Although structurally sound, previous repairs to the mud and concrete mortar have been applied in a manner that obscures the field-stone and changes the character of the mortar joints.	<p>Research and document previous repair work including mortar mixture formula.</p> <p>Unlike the main house, the mortar of the bathroom is cement based.</p> <p>Repair any missing or heavily cracked mortar.</p> <p>Correct recent inappropriate repairs (excessive mortar in joints, discoloration of stone caused by excessive mortar) as part of needed future repairs.</p> <p>Annually monitor mortar for cracks and deterioration, repoint with matching mortar mixture formula as needed.</p>	Assure when repairs are needed, appropriate mortar mixtures are used and applied by skilled masons.
House (Historic) - Windows and Doors	6 Doors, 12 Windows	EA	There are seven window openings in the ranch house in different states of repair. Of the six doors in the house, four are working; two are in need of repair. The two in need of repair are located in the	<p>Photograph and document the current condition and measurements of each door and window.</p> <p>Repair all doors making them operational for use. Keep doors closed when not in use to help provide needed stability.</p> <p>Replicate new sash using remaining historic</p>	Repair and stabilize the structural components of the ranch house.

			northwest room and the entrance to the bathroom.	sash as the template. Rehabilitate any existing sash with replacement parts as needed. Clean existing screen openings to provide maximum air movement and ventilation. Annually 1) inspect windows and doors, and repair within in-kind materials, and 2) clean screen openings to provide maximum ventilation.	
House (Historic) - Floors	1,512	SF	Interior carpet remains in the northwest room of the ranch house. There is some old construction material and wood debris stored inside the building. There is also 2x lumber on the floor that appears to be used as walkways when there is standing water in the rooms.	Remove all carpeting, lumber, and building materials currently being stored in the structure. Place 2 inches of pea gravel in northeast and northwest rooms. Annually clear any debris accumulating in the building that might attract pests or create wet conditions.	Remove materials that retain moisture and create damp conditions in the house.
House (Historic) - Roof	1,512	SF	The roof is loose in some places and the gable end fascia boards have separated, leaving the roof susceptible to wind damage.	Retain the historic metal roof and resecure loose panels using appropriate hardware to avoid loss or deterioration. Re-attach loose boards at eaves with 10d common nails. Inspect roofing system for damage by remove rake edge roofing. Use six-inch heavy duty wood screws to secure gable end fascia pieces and remove added metal ties. Annually inspect roof and repair within in-kind materials.	Stabilize and preserve the roof.

Pigeon Wash Revetment/ Channel	35,000	SF	The current location of the active flood channel in Pigeon Wash has the potential to scour and undercut the revetment.	Relocate active flood channel away from toe of revetment by re- contouring Pigeon Wash. A Corps of Engineers Permit is needed for this work. Construct a new flood channel by excavating a 3-5 ft deep, flat-bottom channel, 5-10 ft wide near the center of Pigeon Wash, parallel to the entry/parking area revetment. Preferred timing is in dry conditions. After flood events inspect and repair revetment as needed. Flood channel is maintained by excavating a 3-5 ft deep, flat-bottom channel, 5-10 ft wide near the center of Pigeon Wash, parallel to the entry/parking area revetment.	Stabilize the revetment to assure safety and prevent loss.
Ranch Core Protection Fence (Historic)	1,610	LF	Fence across ranch road is showing wear.	Construct a peeled juniper or mesquite gate where the fence crosses the ranch road and relocate the existing stile adjacent to the gate. Repair ranch core protection fence by resetting leaning posts, replacing deteriorated posts, and tightening or re-stranding 3-strand wire. Re- use existing components where possible. Retain the form and materials of the fence design where component replacement is needed. Replace posts and 3-strand wire in-kind when replacement is necessary. Annually inspect ranch core fence and make repairs as needed to prevent livestock and feral animal access to the ranch core.	Maintain the historic character of the fence and ensure it functions to restrict feral livestock from the ranch core.

Ranch Corral	9500	SF	Some fence rails comprising the corral are split, loose, or detached from posts; the north (rear) and east (right side) corral fence panels are partially collapsed and becoming overgrown with vegetation.	<p>Repair corral fencing by replacing split or deteriorated posts and rails or re-attaching loose rails. Use existing and salvaged materials where possible, or replace in-kind. Replicate the existing methods of attachment as possible.</p> <p>Establish a 5-10ft wide vegetation-free zone on the exterior of the corral by flush-cutting woody shrubs and brush-hogging or weed whacking vegetation. Remove woody debris. Annually maintain the vegetation-free zone on the exterior of the corral by brush hogging or weed whacking.</p> <p>Every 3- 5 years, replace any damaged or deteriorated corral posts or rails with similar material. Re-attach any detached rails with the same method of attachment.</p>	Repair and stabilize the corral.
Ranch Cottonwood Row	9	EA	Dead, declining, or missing trees in cottonwood row, accumulated deadwood, and tree cavities.	<p>Prune (by certified arborist) all cottonwood row trees to remove attached and hanging deadwood. Thin and reduce the size of canopies to balance weight and reduce the windsail effect.</p> <p>A bucket truck or high-lift is recommended for canopy access.</p> <p>Remove dead or dying cottonwoods and replace with trained suckers at base of trees (where existing) or new rooted cuttings of the same species.</p> <p>Supplemental water (drip irrigation) must be supplied to young trees until root establishment (2-3 years).</p> <p>Every 3-5 years, prune (by certified arborist)</p>	Limb and thin-out crowns to reduce windsail effect and gradually replace cottonwood row with a combination of trained suckers or rooted cuttings of the same species.

				all cottonwood row trees to remove any damaged, diseased or deadwood. Shape canopies of young replacement trees to balance canopy and reduce windsail effect.	
Ranch Fields	8.3	AC	Woody vegetation is encroaching in the ranch fields.	Flush-cut all young woody shrubs - less than 3" in diameter trunk, growing within and around the perimeter of the ranch fields. Stumps should be flush with the ground. Remove exclosure fence from long-term monitoring plot and woody vegetation within if Lake Mead NRA specialists are no longer monitoring vegetation. Every 3-5 years, remove all young woody shrubs - less than 3" in diameter trunk, growing within and around the perimeter of the ranch fields by brush hogging or flush cutting.	Maintain to the degree possible, the open character and historic extent of the ranch fields.
Ranch Perimeter Fence (Historic)	4450	LF	Approximately 1/3 of the north perimeter fence is in poor condition and needs repair. Most of south fence needs repair.	Repair ranch perimeter fence by re- setting fallen and leaning posts, and re-stranding and tightening 3- strand wire. Existing materials should be salvaged and re-used to the extent possible. Replace juniper/mesquite wood or metal posts in-kind, where replacement is necessary. Annually inspect ranch perimeter fence and make repairs as needed, to ensure viable fence.	Repair and preserve the integrity of the fence.
Ranch Road (Previously Wash Road)	1220	LF	Overgrown vegetation is obscuring of approximately 75% of the two-track road through ranch. Water from a breach is eroding of the road	Clear alignment of Tassi Wash (ranch) Road by removing overgrown vegetation. Reestablish a 8-10 feet width for the road using a brush hog/brush blade and weed wacker.	Stabilize and preserve the historic road.

			prism.	<p>Relocate breach in the functioning irrigation ditch to new location.</p> <p>Grade road in eroded prism areas to reestablish road terrace. Place gravel fill in eroded areas and compact to achieve a drivable-road bed for admin vehicles and heavy equipment.</p> <p>Construct new gate and relocate stile crossing with lockable single leaf equipment gate (see core protection fence).</p> <p>Relocate fence ladder (stile) beside new equipment gate to permit hiker access.</p> <p>Annually, maintain Tassi Wash Road by clearing encroaching vegetation using a brush hog, brush blade, and weed wacker.</p> <p>Retain a 8-10 ft. corridor for the two-track road.</p> <p>Every 3-5 years, repair any eroded or slumped areas of the road prism with imported gravel.</p>	
Ranch Yard	1	AC	Overgrown herbaceous and woody vegetation, including young trees, are growing too close to historic structures.	<p>Brush hog or weed-wack vegetation in the ranch yard to ground level. Flush-cut young trees growing within 10 feet of structures. Avoid damaging the roots of mature shade trees.</p> <p>Preferred timing is early spring, before non-native plant materials seed and disperse.</p> <p>Coordinate work with Exotic Plant Management Team.</p> <p>At least twice during the growing season, (minimally at the beginning and end), using a low-set brush hog, or a weed wacker to</p>	The goal for treatment is to reestablish a low herbaceous ground cover (less than 6" tall), with no woody plants, except mature shade trees and shrubs (a minimum of 10

				maintain a low, herbaceous groundcover less than 6" tall. Allow herbaceous debris to remain as a mulch cover.	feet from structures).
Ranch Yard Fence and Gates	310	LF	Sections of the fence protecting the ranch yard from intrusion by feral livestock are in poor condition. In addition, the existing worm fence on the south side of the ranch yard is compatible, but is different in design and character to the historic fence.	Replace welded wire sections with peeled juniper or mesquite gates that match the historic character of the site . In 3-5 years replace existing fence with a peeled Juniper or Mesquite pole fence, based on the style of the historic fence panel near the stock tank. Every 3-5 years, replace any split or deteriorated posts or rails with similar form and materials. Re-attach any detached rails with the same method of attachment.	Short term: repair or replace sections of the fence in poor condition to ensure a viable barrier to livestock. Long term: reestablish a fence that is more historic in character, matching historic fence panel near stock tank.
Ranch Yard Trees	11	EA	Deficiency is accumulated deadwood in willow trees and cottonwood trees, and limbs from both overhanging historic structures.	Prune (by certified arborist) all ranch yard trees to remove deadwood. Thin and reduce the size of tree canopies to balance weight and reduce the windsail effect. Remove limbs that are overhanging the historic ranch structures. A bucket truck or high-lift is recommended for canopy access, however, trees may be scaled by an arborist with safety harness. Every 3-5 years, prune (by certified arborist)	Remove deadwood from canopies, and to limb-up and thin canopies to reduce windsail effect.

				all ranch yard trees to remove any damaged, diseased or deadwood, and remove any limbs overhanging historic ranch structures.	
Shed (Historic) -Floors	100	SF	The interior floor and areas immediately around the shed remain wet, allowing vegetation to grow inside the building.	Remove encroaching vegetation and other debris from the building interior. Cover interior floor with geotextile fabric pinned at the corners. Add pea gravel to the interior and exterior perimeter to inhibit plant growth and help drainage. Annually clear any debris from the building.	Correct the water issue and stabilize the structure.
Shed (Historic)- Foundation/ Exterior Walls	100	SF	The building is leaning five degrees to the west.	Straighten building back to plumb with springboards or jacks and connections. Inspect lower boards and bottom of wall studs. Replace where necessary with in-kind material or sistering new members to the original. After plumbing building add diagonal bracing to north interior wall to help eliminate racking. Annually inspect the structure and repair with in-kind materials as necessary.	Stabilize the structure.

Shed (Historic)- Roof	100	SF	Willow limbs from an adjacent tree rest on the roof, some roof material is missing and there are a few deteriorated rafters.	Repair/replace roll roofing w/ material to match exiting green material. Inspect sheeting and repair or replace where necessary. Refasten at each roof rafter with 8d hot dipped galvanized common nail. Repair any broken rafter tails with discreet 1x sistering and additional screws through roof sheathing. Annually 1) clear any debris from roof, 2) inspect the roof, and 3) repair with materials in-kind as needed.	Repair and stabilize the structure.
Shed (Historic)- Windows and Doors	1 Door, 2 Windows	EA	Window and door openings require repair and replacement of missing components.	Refasten remaining screens. Repair or replace with in-kind material where missing. Reconstruct door and install to help prevent racking. Annually 1) inspect windows and doors, and repair within in-kind materials, and 2) clean screen openings to provide maximum ventilation.	Stabilization of the historic structure.
Springs Drainage System (non historical contribution) - Yard Drainage System			Deficiency is the French drain system does not appear to be draining the saturated soils upslope from the shed and barn.	Use a cable snake or pressure washer to clean out the existing French drain system and ensure that the lines are free flowing. If expanded French drain system fails to fully capture surface flows, excavate two, 18-24 inch wide ditches approx. 18-24 inches below grade that cross the slope behind the barn and shed and convey ground water away from the structures. Ensure that the ditches have sufficient slope to convey water downhill.	Repair the French drain system and plan for a back-up new surface ditch system if necessary.

				Biannually inspect the ditches and repair, as needed, to ensure that it is clear of vegetation, debris, and that water can flow freely.	
Springs Drainage System (non historical contribution)- Stock Tank	1	EA	The hose that once supplied water from the springs to the tank is either clogged or punctured. The tank is no longer flushed with clean water and tends to fill with debris and stagnates.	Bury any exposed sections of the hose so they do not pose a tripping hazard. Puncture a hole in the base of the stock tank and ensure that it drains completely and does not contribute to a pest management problem (mosquito breeding pond). Work with natural resources staff to ensure the timing and repairs will maintain relict leopard frog habitat. Annually inspect the tank to ensure it does not continue to fill with water and create conditions for mosquitos.	Preserve the tank as a non-functioning feature.
Springs Drainage System- Spring Box #2	1	EA	No current deficiencies.	Annually 1) clear encroaching vegetation within approx.10 feet around the structure, 2) inspect the stone masonry structure and repair as needed using materials in-kind. Vegetation debris may be left on the ground as mulch.	NA
Springs Drainage System-Spring Box #1	1	EA	Spring box #1 does not appear to effectively capture all the water from spring seepage. The soil remains heavily saturated around the box and is impacting the barn.	Clean and repair spring box structure: 1) pump water out of the basin of the spring box; 2) remove any debris or excess soil from the interior of the structure; 3) inspect outfall pipes for any cracks, breaks, or failure points; 4) repair the outfall to ensure a watertight seal between the box and the pipe; 5) seal the below ground concrete box walls	Stabilize the structure and increase function.

				<p>with hydraulic cement; and 6) inspect and re-point the above ground stone masonry structure as needed with a matching mortar mix.</p> <p>Annually inspect the interior structure, stone masonry, and wood hatch and repair as needed with materials in-kind.</p>	
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