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James A. Martin, Board President
Navarro-by-the-Sea Center for Riparian and Estuarine Research
P.O. Box 1710
Mendocino, CA 94608

RE: Results of Bat Roost Habitat Assessment, Building Surveys and Mitigation Recommendations for Buildings at the Navarro-by-the-Sea Specific Plan Study Area
Navarro River Redwoods State Park
Mendocino County, California

Dear Mr. Martin,

The following report describes the results of two sets of surveys, conducted in November, 2008, and July, 2009, for bats and bat roosting habitat in several buildings located in the Navarro-by-the-Sea area of the Navarro River Redwoods State Park, located in Mendocino County, California. This work was conducted to provide data for the Specific Plan for the area and to understand the degree to which possible bat roosting presents a constraint to stabilization and rehabilitation of the historic Captain Fletcher's Inn and the Navarro Mill Manager's House. In addition to data on potential roost habitat, this report presents a plan for humane eviction (also called "passive relocation", or "bat exclusion") of occupied buildings proposed for demolition or rehabilitation. Also being presented are recommendations for provision of enhanced existing dispersal day/night roost habitat for Townsend's big-eared bat (*Corynorhinus townsendii*), a California Special Concern (CSC) species previously known to occur in the Navarro Inn (Heady 2000, Martin, pers. comm., Cabaniss, pers. comm.).

Funding for this study comes from the grant agreement Navarro-by-the-Sea Center for Riparian and Estuarine Research (NSCR) has with the California Cultural and Historical Endowment for preparation of the Specific Plan of the study area and construction drawings for the Inn.

INTRODUCTION

The Navarro-by-the-Sea Specific Plan study area consists of an 8.5-acre area at the western terminus of the 726-acre Navarro River Redwoods State Park, located west of Highway 1 along Navarro Beach Road in Mendocino County, California. The site is represented in Section 5 of the Albion USGS 7.5-minute topographic quadrangle at Township 15N, Range 17W, at elevations ranging from approximately 10 to 35 feet above mean sea level. It is located on the south side of the Pacific Ocean inlet to the Navarro River.

The study site contains eight buildings, Captain Fletcher's Inn (Navarro Inn), the Navarro Mill Manager's House (Mill House), two Cottages, Workshop, Garage, Chicken Coop, and what appeared to be former stables. The short-term goal for the site is to implement a Stabilization Plan for the Inn, perhaps in summer, 2010, raising it and installing a new foundation, demolish the bar and kitchen additions, dismantling the chimney and fireplace, installing original doors and windows and front porch on ground floor, doing structural retrofitting on the ground floor, replacing the roof, installing a retaining wall behind the building, and demolishing the 1960's-era motel building to make room for equipment for raising the Inn (Martin pers. comm.). Treatment of the Cottages, Workshop, Garage and other structures has not been determined. Specific treatment of the remaining structures, including possible rehabilitation of the Mill House, and any modifications to the Cottages, Garage, and Workshop have not been determined. The Chicken Coop and possible stables building are slated for demolition as part of the current Draft Specific Plan.

The long-term goal for the Inn is to implement a Rehabilitation Plan, currently in preparation. This work would involve roof, fascia, siding, and window replacement/repair, electrical and heating upgrading, and cleaning/sealing the interior and exterior of the Inn. There are some roof rafters that are dry rotted and will have to be replaced when the roof is rebuilt, and the original wood shake shingles are probably completely rotted in places and will have to be stripped, completely exposing the attic when the roof is replaced. The roof replacement may occur as part of building stabilization, if funds are available, otherwise the current temporary metal roof will remain in place until funding is secured.

METHODS

Under Agreement for Subconsulting Services to NSCR, Greg Tatarian conducted one daytime habitat assessments of all of the buildings in the fall of 2008; in summer, 2009, Greg Tatarian and Trish Tatarian conducted a follow-up survey during the bat maternity season. The first survey was conducted on November 8, 2008, with Mike Cabaniss, California Department of Parks and Recreation (CDPR) Restoration Specialist facilitating by providing access; the second daytime assessment was conducted by both Greg and Trish Tatarian on July 9, 2009, with Matt Liebenberg, CDPR Maintenance Supervisor, facilitating.

The November 7, 2008 daytime habitat assessment and survey of the building exteriors and interiors was conducted from 0800 to about 1345. Weather was cool (50F) with some light fog at the start of surveys; fog cleared and temperatures rose to about 70F by the conclusion of surveys. The July 9, 2009 maternity season survey was conducted between 1115 and 1530. Weather was clear and calm, with temperatures rising from the mid-60s to the mid-70s.

November 7, 2008 Surveys:
This was an initial survey to assess the buildings for potential bat habitat and note species and populations of bats using the structures. The Navarro Inn interior inspection was conducted first; after the plywood door covering was removed by Mike Cabaniss. Greg Tatarian surveyed the lower floor rooms, additions, closets, fireplace, stairwell, and all upper floor rooms, closets, followed by the attic. Wall surfaces and floors were examined for evidence of bat fecal pellet accumulations, urine staining, live and/or dead bats, and characteristic odor of bat roosts. The assessment and survey was conducted using a 75,000 candlepower flashlight, as well as a 500,000-candlepower halogen spotlight as needed. The attic was completely surveyed, and selected wall spaces visible from the distal portions of the roof were examined, however none were accessible enough to provide useful observations.

The exterior inspection of the Navarro Inn was conducted using a 500,000-candlepower halogen spotlight to illuminate spaces under eaves, roof materials, and areas around the roofline, and 10 x 42 roof-prism binoculars were used to render detail more accurately. Openings into the exterior wall surfaces, and the junctions of wood beams, rafters and exterior wall surfaces were examined for fecal pellets and staining consistent with entry and roosting by bats.

The same methods were used for the Motel Building, Cottages, Mill House, Workshop, Garage, Chicken Coop, and Stables, in that order.

July 9, 2009 Surveys:
This date was selected to provide data on potential maternity day roost activity by *C. townsendii* or other bat species in the Inn and other structures on the site. The November, 2008 surveys provided useful data on post-breeding dispersal, however the maternity season survey was needed to properly characterize the use of the Inn and other buildings, and assess potential impacts from project activities.

Surveys on this date followed a slightly different pattern to permit Matt Liebenberg sufficient time to remove and replace the plywood door coverings of the various buildings and unlock the door of the Mill House prior to the end of his work day. As a result, the building interiors were surveyed while Matt was present, after which the exteriors were surveyed. The interiors and exteriors of the two cottages were surveyed after Matt had left the site; we removed and replaced two small window coverings to provide access.

The first structure surveyed was the Navarro Inn, beginning with Greg and Trish surveying the lower floor areas, followed by the upper floor rooms and hallway, then the attic space. The same equipment used for the 2008 survey was used in 2009, however for the later survey, AN/PVS-7D night vision goggles were used first in the attic space to limit any potential disturbance to roosting bats, particularly *C. townsendii*, which is a species that is very sensitive to roost disturbance. In addition, cavities in the porch roof soffit of the Mill House were surveyed using a video bore scope.

The interior of the Motel was surveyed next, followed by the Mill House, the Workshop, Garage, Chicken Coop, and Stables.

CONDITIONS AND RESULTS

Navarro Inn - November 7, 2008 Surveys:
This 2-story building is constructed with wood shiplap exterior siding and a corrugated metal roof over composition roofing and skip-sheathing. The eaves are soffited, however portions of the soffit boards are missing from the front and other areas, leaving these spaces open, leading into the attic. Doors and windows are covered with plywood, except for two windows with bars on the east end of the building. Besides the openings into the roof, there are numerous gaps available around the structure for entry by bats, including behind warped plywood coverings and small window openings. The exterior materials are decaying and in poor condition. The interior space is decayed, with the front entry addition ceiling having almost completely disintegrated. Upstairs, gaps in the ceiling lead directly into the attic. Please see Figures 1-4.

The Inn provides suitable day and/or night roost habitat for bats. There are numerous, suitable roost cavities in rooms and closets, most with suitable roost features such as ceiling-mounted light fixtures, commonly chosen by active *C. townsendii*. The upper floor ceiling gaps provide easy access by bats into and out of the attic, and the stairway provides access between floors. *C. townsendii* have been observed in previous years inside the building (Martin pers. comm.), and bats appearing consistent with *C. townsendii* have been observed by CDPR staff as late as January (Cabaniss pers. comm.).

During the 2008 surveys, two *C. townsendii* were observed in the attic, roosting near the ridge on the ridge skip sheathing. Both bats were in torpor. Please see Figure 5. An additional *C. townsendii* was observed roosting from a ceiling joist in a lower floor room at the east end of the building, also in torpor. Fecal pellets consistent for the species were observed scattered in various locations throughout the building, however no large accumulations were noted in any room, closet, or even the attic. Extensive evidence of rodent activity was observed throughout the structure, including the attic.

Navarro Inn – July 9, 2009 Surveys:

The physical condition of the structure was not distinguishable from the previous survey. During this survey, no individual *C. townsendii* or any other species were present anywhere inside the structure, including the attic. No large fecal pellet accumulations were observed, and no new areas of roost staining were observed.

Motel Unit – November 8, 2008 Surveys:
The single-story rectangular-shaped building is constructed with a ½-height brick façade at the front, and wood shiplap siding exterior with a composition shingle roof. The building contains five small rooms. The doors were covered by plywood which was removed for these surveys. Several openings lead into the attic space, including the gable vents and eaves. See Figures 6-9.

The Motel provides suitable day and/or night roosting habitat for bats. Evidence of bat roosting activity, most probably by *Myotis* sp., based on the fecal pellet accumulations, was observed in several of the rooms and in the attic space. Small piles of fecal pellets suggestive of *C. townsendii* were observed beneath ceiling light fixtures in two rooms; however they had almost completely decayed, suggesting that they were very old. No live or dead bats were observed. Extensive evidence of rodent activity was observed throughout the structure, including the attic.

Motel Unit – July 9, 2009 Surveys:
Conditions inside the Motel did not appear to have changed between the two surveys. No live or dead bats were observed inside the structure, including the attic. No new staining or fecal pellet accumulations were noted.

Cottages (West and East) – November 8, 2008 Surveys:
These small, square-shaped single-story buildings are located just east of the Inn, and are in advanced states of decay and partial disassembly inside. They are covered with wood shiplap siding and composition roofing over skip sheathing. Surrounding vegetation has grown up against the structures to a height of around 3-4 feet. There are numerous openings into the buildings at the walls, door and window coverings, and eaves, as well as kitchen wall storage locker extensions, commonly called “California Coolers”. See Figures 10-12.

Both Cottages provide suitable day and/or night roosting habitat for bats, although maternity roost habitat value appears to be very limited, and no evidence of roosting by clusters of bats was observed (fecal pellet accumulations, staining on wood surfaces). One *C. townsendii* was found roosting on a rafter in the westernmost Cottage closest to the Inn. This bat was in torpor, and few fecal pellets were observed. Extensive evidence of wood rat (*Neotoma* sp.) activity was observed throughout the structure, including ceiling space of the eastern Cottage (a large nest of shredded wood and brush as well as large amounts of fecal matter were observed). It was not clear whether all rat activity was limited to *Neotoma* sp., or if Norway rats (*Rattus norvegicus*) or roof rats (*Rattus rattus*) were also using the structures.

Cottage 1 and Cottage 2 – July 9, 2009 Surveys:
Conditions appeared to be unchanged between surveys, except that surrounding vegetation had grown taller around the building exteriors. One *C. townsendii* was observed roosting in the rafters of the western Cottage, which flew immediately out of the structure. The eastern Cottage was empty, and no large bat fecal pellet accumulations were observed in either structure.

Mill House – November 8, 2008 Surveys:
The Mill House is a two-story, wood-sided residential structure, located furthest to the east of the complex of buildings. The farmhouse-style structure includes two dormers atop a steep, composition-shingle roof over butt-fitted board underlayment. There are two small, single-story wings that extend of the east and west ends. Siding is wood shiplap, and eaves are soffited. Doors and windows are uncovered by plywood because this building provides office space for NSCR and CDPR staff, as well as interpretive areas for visitors. A front porch with ceiling board covering the ceiling joists extends partway across the front, and is in fairly advance stages of decay. There are numerous openings into this structure, including the eaves, porch roof, and potentially chimney flashing and dormer roof joints. See Figures 13-16.

The Mill House provides suitable day and night roosting habitat for bats. Evidence of bat roosting activity was observed in the downstairs rooms and attic spaces above each single-story wing. Accumulations of fecal matter in the corners of the rooms downstairs and upstairs, and large accumulations of fecal matter in the attic were observed. The majority of fecal matter was consistent with *Myotis* species. One *Myotis* sp. was observed in the upstairs attic roosting in a crevice formed by the junction of the roof underlayment and brick surface of the chimney. The bat moved into a small crevice before it was possible to capture the bat for examination, but appeared to be *M. californicus*; it was definitely not *M. yumanensis*, based on pelage and skin color. One desiccated *M. californicus* was found laying on the insulation of the attic. Fecal matter consistent with *C. townsendii* was found in an upstairs closet in the office rooms mixed together with those consistent with *Myotis* species, indicating that at least some amount of day and/or night-roosting activity by the former species had occurred at some time in this structure. No *C. townsendii* individuals or insect prey remains were observed in the structure. Extensive evidence of rodent activity was observed throughout the structure, including the attic, where about 15 or more dead deer mice (presumably deer mice (*Peromyscus maniculatus*) were observed, many freshly dead.

Mill House – July 9, 2009 Surveys:
Conditions at the Mill House appeared unchanged between the two surveys. A large bee colony at the rear exterior wall of the structure was observed during these surveys. One *Myotis yumanensis* (identified after capture, then released inside) was observed inside the attic. Recent accumulations of fecal pellets were observed on the floor of the attic, suggesting that this building is used by at least two *Myotis* species (*M. californicus* was previously observed). No *C. townsendii* individuals, fecal pellets or prey remains were observed during this survey, even in the same closet previously noted. The brick chimney that extends upward through the attic and roof from the first floor appears to be a favorite roosting place for Myotis sp. based on fecal accumulations and urine staining. No evidence of a maternity day roost was observed; it is likely that the building is used primarily as a night roost, or day roosting activity could vary seasonally (i.e. post-pup-rearing dispersal).

Mill House Workshop – November 8, 2008 Surveys:
The Workshop is a newer building constructed on old concrete slab sections. The building is covered with wood siding, has wood doors and modern windows. The composition-shingle roof sits atop plywood over open rafters. Large skylights, gable windows, and front and rear wall windows permit large amounts of ambient light into the structure. The building is actively used by CDPR for storage of equipment.

It is highly unlikely the Workshop provides day roost habitat due to the large amounts of light and current levels of human activity. It is somewhat possible the structure could serve as a night roost for some individuals at some time in the future, however no evidence of such use was found.

Mill House Workshop – July 9, 2009 Surveys:
Building conditions appeared unchanged between the two surveys. Some materials inside the structure had been moved prior to this survey, however no evidence of any bat activity was observed inside or outside the structure.

Garage – November 8, 2008 Surveys:
This single-story wood structure is dilapidated, with large portions of the walls and roof open to the elements. Extensive evidence of rodent activity was observed. No evidence of past or present bat activity was observed. It is possible that the building could provide minimal night-roosting habitat for individual bats, although it is too exposed to provide suitable day roosting habitat, and no evidence of day or night roosting activity was found.

Garage – July 9, 2009 Surveys:
Conditions were unchanged, and previously, no evidence of past or present bat activity was observed.

Chicken Coop – November 8, 2008 Surveys:
This small wood structure is open at the door and small openings at walls. It is too exposed to provide suitable day roosting habitat for bats, and no evidence of past or present use by bats was observed. Large amounts of rodent fecal matter were observed inside the structure.

Chicken Coop – July 9, 2009 Surveys:
Conditions were unchanged, and as previously, no evidence of past or present bat activity was observed.

Stables – November 8, 2008 Surveys:
This single-story wood sided structure is in very poor condition, with large portions of walls open to the elements. Overgrown vegetation partially surrounds the structure, and large amounts of rodent fecal matter were observed inside. The interior is too exposed to be suitable for either day or night roosting habitat.

Stables – November 8, 2008 Surveys:
Conditions were unchanged, and as previously, no evidence of past or present bat activity was observed.

BIOLOGICAL BACKGROUND

The status of *C. townsendii* is declining within California (Pierson and Rainey 1998). Surveys from 1987-1991 showed marked population declines over the preceding 40 years, with a 52% loss in number of maternity colonies, a 44% decline in number of available roosts, a 55% decline in total number of animals, primarily adult females, and a 32% decline in the average size of remaining colonies. The primary cause of these declines is human disturbance; this species is roost-limited and extremely sensitive to disturbance of its roosts.

By the time the Pierson and Rainey study was published, only 39 known maternity colonies were known to be extant, using 55 active roost sites. The actual number is not known today, however including a new maternity roost we recently discovered in the San Francisco Bay Area and adding in an arbitrary 10-20% for recently discovered or unknown roosts, there are probably no more than 45 such maternity roost sites for *C. townsendii* in California. The California Natural Diversity Database (CDFG 2009) records show the closest known maternity site to be in Bolinas, Marin County, approximately 85 miles south.

In this geographic area, parturition (birth) of pups occurs in May and June; *C. townsendii* form maternity colonies between March and June depending on climate, with parturition of a single pup between May and July. Recent research shows that use of roosts by *C. townsendii* is quite variable within seasons and between years, which is why multiple surveys over several years are now considered necessary for certain roosts such as mines before absence can be documented properly prior to closure. In contrast, roost fidelity can be high in some roost-constrained locations such as the Coastal California regions (Western Bat Working Group 2005), and in the types of structures such as the Navarro Inn, if human disturbance is not sufficient to cause roost abandonment.

Although *C. townsendii* can form fairly large colonies in caves or mines, and sometimes in buildings, colonies have been decreasing in size (Pierson and Rainey 1998); building colonies may number only a few dozen in many cases. Despite this, bats in building maternity roosts, particularly young, typically cluster together to share body heat. The areas where bats cluster usually exhibit signs of this concentrated use more than other areas of the structure - specifically, staining from body fur and urine, and piles of accumulated fecal matter often designate a favorite roost spot. No such signs were observed in the Navarro Inn, either in the interior living spaces or attic.

Potential Health Concerns
It is expected that the rehabilitation of the Inn will result in permanent exclusion of bats from the building. As a result, there would be no health concerns from bats living in the structure interacting with staff or

visitors. Conservation of the Cottages as dedicated *C. townsendii* roost habitat, as discussed later in this document, would also not result in health risks because the buildings would not be used by humans.

DISCUSSION

The November, 2008 surveys provided an assessment of the building conditions and suitability for roosting by bats, as well as important data regarding post-breeding and dispersal roost use by bats, particularly *C. townsendii*. The July, 2009 survey provided important data on potential maternity and/or bachelor roost use by bats. Day roosts for bats comprise very valuable roost resources; maternity day roosts are considered to be the most critical for bats because larger aggregations of bats and their dependent pups are present in the roost. If the roost is disturbed, closed or destroyed, an entire year's production of bat pups can be affected, as well as the adult females raising them. The July, 2009 surveys, conducted during the peak of the pup-rearing season, provided definitive data on bat use of the Inn.

The survey results suggest that the complex of structures at the site currently provide seasonal dispersal (day and night) roost habitat for individual *C. townsendii*, and could also provide bachelor roost habitat during pup-rearing season (May-August) in three buildings; the Inn and two Cottages. These structures continued to support active and torpid bats well into November, and historically through at least January. There had been some previous roosting activity in the Motel Building, which will be demolished, but none was observed during either the 2008 or 2009 surveys, and the fecal pellet evidence support the conclusion that bat roosting activity has not occurred in the structure for some years. There had been limited fecal evidence found in 2008 in the Mill House that one or more *C. townsendii* individuals had roosted at some point in an upstairs closet, however no such evidence was observed during the follow-up survey in July, 2009, suggesting the fecal matter had been removed during cleaning sometime after our 2008 surveys. This suggests that either no additional roosting by this species had occurred since the first survey, or fecal evidence of roosting activity by *C. townsendii* was removed during normal floor cleaning. Despite this uncertainty, no *C. townsendii* were observed in the structure in July, 2009, which indicates that no maternity roost activity occurs in the Mill House at this time.

The Mill House also supports limited roosting by *Myotis californicus*, observed in 2008, and *Myotis yumanensis*, neither being CSC species. It is not clear whether the building serves as a maternity roost. In this region, *M. yumanensis* is fairly ubiquitous in man-made structures, where it often forms large maternity colonies and can tolerate a higher level of human disturbance near and around their roosts, while *M. californicus* tends to use buildings somewhat less frequently and in smaller numbers. The Mill House could potentially provide suitable day and/or night roost habitat for other bat species, such as Brazilian free-tailed (*Tadarida brasiliensis*) and Big Brown Bat (*Eptesicus fuscus*), neither being CSC species, however no evidence of their use was observed. Pallid bats (*Antrozous pallidus*), a CSC species, could use the Mill House, however there are no CNDDB records of occurrence for *A. pallidus* in the project area, and our previous surveys in locations north and south along the north coast have not resulted in any *A. pallidus* observations. Finally, there is no evidence of use by this species in the Mill House. The Mill House is continually heated with a gas-fired stove in the front downstairs room; this heat travels up the chimney, with runs through the attic, as well as the stairway and upper-floor rooms, radiating into the attic from below. This heat could make the building more hospitable to bats during winter months, and may result in activity of roosting bats that would normally be torpid. It may also increase rodent activity, which appeared to be very heavy in this structure.

The California Environmental Quality Act (CEQA) Sections 15380, 15065 and others (http://ceres.ca.gov/topic/env_law/ceqa/) provides protections for special-status bat species, as well as significant breeding colonies of common species. Potential impacts resulting from the Inn rehabilitation project to *C. townsendii* using the Inn and two Cottages includes possible direct or indirect mortality of individuals resulting from demolition activities, and temporary and/or permanent loss of dispersal/bachelor roost habitat. Loss of dispersal/bachelor roosting habitat may be mitigated by retaining and minimally enhancing the two Cottages so that they provide a more secure roost setting for individual bats. Direct

mortality of individuals must be avoided by conducting humane eviction of bats from the Inn and Motel prior to construction activities. There are some biological constraints that affect this work:

***Exclusion Constraints during Maternity Season*:** Bats are extremely dependent upon roost sites, especially during the pup-rearing (maternity) season in the spring and summer months, and they exhibit a strong propensity to use any other available openings to regain access to the roost when excluded from their primary openings. This is why blockage of openings not currently used by bats for ingress/egress is required before installation of one-way exits, and why all blockage work must be performed with great attention to detail.

In addition, during the maternity roosting season, active adult females leave their young behind in the roost each night until they are capable of flight. Eviction of active bats during maternity season will result in direct mortality of young. Even after young become volant, they are not self-sufficient for additional weeks, after which they can safely be evicted during the time they would normally begin to disperse from the natal roost.

In the San Francisco Bay Area and regions with similar climate in California, the safe period for humane eviction before the maternity season is from about **March 1, or after heavy winter rains and night temperatures are above 40-45F, until about April 15,** after which time females begin to give birth to pups. Late winter rains and/or cold temperatures can delay this time window, but bats should not be evicted any later than April 22 to avoid mortality to gravid females which are dependent upon safe daytime roost sites.

***Exclusion Constraints during Winter Season*:** Besides the maternity season, there is another important biological constraint, which is that bats use buildings not only when they are seasonally active, flying in and out, but also when they are dormant in seasonal winter torpor. That means that during cold and/or rainy months, bats that remain in buildings, such as the Navarro Inn or Mill House, may be in torpor for days or weeks at a time, rousing only occasionally to fly out of the roost for water and opportunistically feed on insects that may still be available. Winter months are not appropriate for bat eviction because bat activity is not predictable; not all individuals in a roost will emerge on any given night and long-distance movements to other roosts are more difficult during winter months, all of which results in high mortality rates.

In the project region, the safe period for pre-winter eviction is **from mid- to late-August (depending on species, but appropriate for *C. townsendii*), until mid-October, or before heavy seasonal rains and before night temperatures drop below 40-45F**, causing bats to enter torpor.

Overview of Eviction Procedure

Typically, the only effective way to permanently exclude bats from a structure is by the combination of two actions, conducted in the following order; 1) careful blockage of all openings which are large enough to allow bats to enter, but are not currently using ("potential openings"), and 2) installation of one-way flaps, tubes, or other species-specific and opening-specific devices placed on the actively used ("active") openings to allow the bats to emerge from the building as they normally would, for food and water, but not to re-enter. After 7-10 days, the one-way valves are removed and those remaining openings are blocked or sealed.

To ensure no re-entry through potential openings, a bat-proof seal is required wherever there are gaps 3/8" x 1/2" or larger. The materials typically used to permanently block these gaps include wood, caulking, metal flashing and other materials that match or complement the construction materials present on the structure. One-way exits on active openings are constructed so that they channel the bats out of the structure through an extension or flap that is impossible to fly or crawl back through to re-enter the structure.

Humane bat eviction will be required at the Motel unit prior to its demolition, unless additional surveys are conducted to confirm absence of bats shortly prior to demolition. If eviction is conducted in lieu of surveys, the temporary eviction materials described below shall be used. The Inn will require an alternative method, described below:

Exclusion Alternative - Navarro Inn:
Because of the poor condition of the Navarro Inn and pending rehabilitation, conducting a typical bat eviction using permanent blockage materials is neither feasible nor cost-effective, since they would all be removed during construction activities, or require installation in such a way that they could be removed for daily work activities and replaced each night to prevent reoccupation by bats, which could be cost-prohibitive.

Instead of exclusion and eviction of bats from the Inn, I recommend that the conditions inside the building be rendered unsuitable for use by bats. Specifically, by increasing the amount of light and airflow into the structure, starting before construction and continuing throughout, the building would no longer be suitable for roosting bats, except perhaps as a night roost by one or two individuals. This is particularly the case with *C. townsendii* due to the species' lack of tolerance of unprotected roost sites. It is highly unlikely that *C. townsendii*, because of their intolerance of human disturbance, will re-inhabit the structure during construction, even if unanticipated project delays occur and work stops, as long as the roost conditions remain unsuitable. The specific actions required are provided below under Mitigation 1-1.

My previous surveys indicated that *C. townsendii* were not entering through the open soffit boards in the front of the building. Although the opening is large and could be suitable for bats that would land at the opening and crawl to a roost location between the rafters, *C. townsendii* roost in the open spaces, not in crevices, and the long run of the roof from the gutter to the attic is not suitable for use by *C. townsendii*. No signs of bat activity at the soffit opening was observed. As a result, opening all soffit boards on the gutter ends will not increase likelihood of use by *C. townsendii*, and opening soffit boards on the gable ends will only add additional airflow and light, both of which are not conducive to bat roosting activity, and in particular, this species.

Unless a building survey by a qualified bat biologist confirms that no bats are present, opening the structure in this manner should only occur when bats are seasonally active to minimize chances for direct mortality caused by inactive bats not being metabolically capable of flight away from the structure prior to construction activities, or indirect mortality resulting from causing bats to rouse and fly during winter months, which could result in loss of stored body fat essential for winter survival.

Concerns over building security during construction can be resolved with appropriate fencing and interior lighting. The structure is not vandal-proof now, so opening it up further will only expose potential vandals more fully.

Are Other Options Available?
Waiting until nightfall and then blocking openings is not effective and can result in mortality of bats because not all individuals leave the roost together, and often many do not emerge each night. Additionally, *C. townsendii* emerges late at night compared to many other bat species, which would mean blockage work would have to be done late at night; which can be unsafe. Legally, no toxicants or other chemicals, including odor and tactile repellents, are allowable for removal of bats from structures.

Best management practices call for only blockage and eviction, as described above. Use of any method other than blockage and eviction, particularly any method that results in mortality of bats, does not address the root problem, which is that unsealed openings will still exist for use by other bats. Non-toxic repellent materials or devices such as sonic repellers have a very low, if any, rate of success with bats. Physical removal of bats from building roosts is usually unsuccessful, and translocation of bats is illegal, and impractical.

Recommended Exclusion Materials - Motel
If a pre-demolition survey shows bats to have reoccupied the Motel, a humane eviction will be required. Because the Motel will be removed very soon after the eviction process (no sooner than 7 days, and not later

than 1 month, potentially), blockage materials used to seal potential (not currently active) openings can be temporary in nature. Poly sheeting, commonly referred to as "visqueen" can be used to block openings around window coverings, roof and soffit openings, for example. Specific locations for temporary blockage materials and precise locations for installation of one-way exits would be provided after the pre-demolition survey, since no obvious evidence of active bat entry points - only potential entry points - has been found to date.

IMPACTS AND MITIGATIONS

Impact 1 - Navarro Inn Stabilization and Rehabilitation
Construction activities could result in disturbance and/or direct mortality of individual day-roosting bats, including *C. townsendii*, a CSC species. Surveys during the 2009 maternity season established that the Inn is not being used as a maternity roost, and mitigation for potential impacts on a maternity roosting colony are therefore not required. Construction activities will likely result in the permanent exclusion of small numbers of individual *C. townsendii* from the rehabilitated Inn.

Following these Mitigation Measures will reduce impacts to less-than-significant.

Mitigation 1-1

Direct mortality of bats must be avoided. This can be accomplished by carefully opening specific portions of the building prior to start of stabilization, foundation, demolition and other structural retrofitting activities and leaving sufficient openings throughout construction to cause the building to be unsuitable for day roosting by bats, particularly *C. townsendii*, by increasing the amount of light and airflow into the structure. This method is in lieu of a conventional "blockage and humane eviction method (also called "passive exclusion") for removing bats prior to demolition or construction activities.

This method would require the following actions:

1) Opening of the structure's soffits, windows and other areas shall occur only when bats are seasonally active; approximately March 1 through approximately October 15. This will minimize chances for direct mortality caused by inactive bats not being metabolically capable of flight away from the structure prior to construction activities, or indirect mortality resulting from causing bats to rouse and fly during winter months, which could result in loss of stored body fat essential for winter survival.

2) Remove plywood window and door coverings for the duration of construction.
2.a) A qualified bat biologist shall conduct a building survey to determine if bats are present in the structure, and if so, to oversee removal of window/door coverings and building soffit boards. The bat biologist will provide training of all construction crews working on demolition and stabilization. The training shall provide information on the bat species of concern, goals of the project, and procedure for daily inspection and what to do if individuals are encountered in the structures during construction.

3) After 2.a, above, open all windows, particularly upper floor, during construction. If replacing windows, they must remain open after installation.

4) After 2.a, above, remove soffit boards at start of construction and do not replace until conclusion of work. See Figures 1-4 for examples.

5) Prior to start of work each day, conduct a survey of the entire structure by a construction foreman trained by the qualified bat biologist, including the attic space, for bats that may have returned to the building overnight.

6) In the unlikely event any bats are found, the qualified bat biologist or bat rescue center specialists must be notified immediately, who will attempt to hand-capture the bat and place it into one of the Cottages. Construction activities in the building shall not proceed until the bat has been successfully relocated outside the building.

7) If any bats are found on more than one occasion after steps 1-4 have been followed, additional portions of the structure may need to be temporarily opened to increase the airflow and light into the structure. This recommendation would be made by the qualified bat biologist after evaluating the conditions and occurrence.

After a pre-construction survey with negative results, or if no bats are present within 5 days after rendering the building unsuitable for roosting as described above, there would be no seasonal restrictions with regards to construction. This is because although *C. townsendii* have been found to disperse to and overwinter in the structure in its current state, the modifications described above will render the building uninhabitable even during winter months.

Mitigation 1-2

Establish the Cottages located to the west of the Inn as dedicated *C. townsendii* day/night, dispersal/bachelor roosting habitat. After either conducting surveys to verify absence of bats, or conducting humane eviction (as in Mitigation 1.1, above) if bats are present, remove all debris from inside the buildings (Fig. 17), and make any necessary repairs to the roof, siding and structure. Remove the ceiling from the easternmost cottage, leaving rafters exposed (Fig. 18). Create new bat entry openings by modifying the exterior openings of the California Coolers to close the existing lower portions with plywood, and opening the top portions which are currently closed (Fig. 19). Conduct periodic vegetation clearing away from the structures, and implement an interpretive program that include use of signs that instructs visitors to stay away from the cabins because they provide habitat for a sensitive species. This interpretive program should be carefully designed to avoid attracting attention to the buildings.

Impact 2 –Motel Unit Demolition

There is a remote possibility that demolition could result in direct mortality of roosting bats, including *C. townsendii,* a CSC species, should they re-inhabit the structure prior to demolition. There is a remote possibility that demolition could potentially result in loss of dispersal/bachelor, day/night roosting habitat for *C. townsendii* and *Myotis* sp., should they re-inhabit the structure prior to demolition.

Following these Mitigation Measures will reduce impacts to less-than-significant.

Mitigation 2-1

Although there was no evidence of recent use by bats, including *C. townsendii*, in the Motel Unit, bats could potentially begin to roost in the structure prior to demolition. To prevent potential direct mortality of bats resulting from demolition activities, a qualified bat biologist shall conduct surveys to verify absence of bats 20-30 days prior to demolition. If bats are present, humane eviction shall be conducted either under supervision of a qualified bat biologist, or by a qualified bat exclusion specialist. The appropriate method for eviction from the Motel would be blockage and eviction; the specific locations for blockage and installation of one-way exits would be determined by the bat biologist at the time of the pre-demolition survey.

Humane eviction shall occur only from about March 1 (or after heavy rains and when night temperatures are above 40F) until April 15, or from August 15 (assuming no heavy rains or

unseasonably cold temperatures have occurred in April, which can delay parturition) until about October 15 (or before heavy rains and before night temperatures get below 40F).

If the survey establishes that no bats are present, instead of humane eviction, all window and door coverings will remain sealed and intact, and all other openings such as gable vents, will be sealed within 48 hours of the survey. The building will remain sealed until demolition begins.

Mitigation 2-2

Although there was no evidence of recent use by bats, including *C. townsendii*, in the Motel Unit, bats could potentially begin to roost in the structure prior to demolition. To prevent potential loss of roosting habitat, conduct surveys and if needed, humane eviction as in Mitigation 2-1 above, then seal until demolition. Follow Mitigation 1-2 above to establish the Cottages as dedicated dispersal roost habitat.

APPENDIX A

Fig. 1, Above. Red arrows show soffit boards, to be removed to increase light and airflow into structure prior to and throughout construction. Maintaining unsuitable environmental conditions for bat roosting activity will substitute for conventional blockage and humane eviction process in this case.

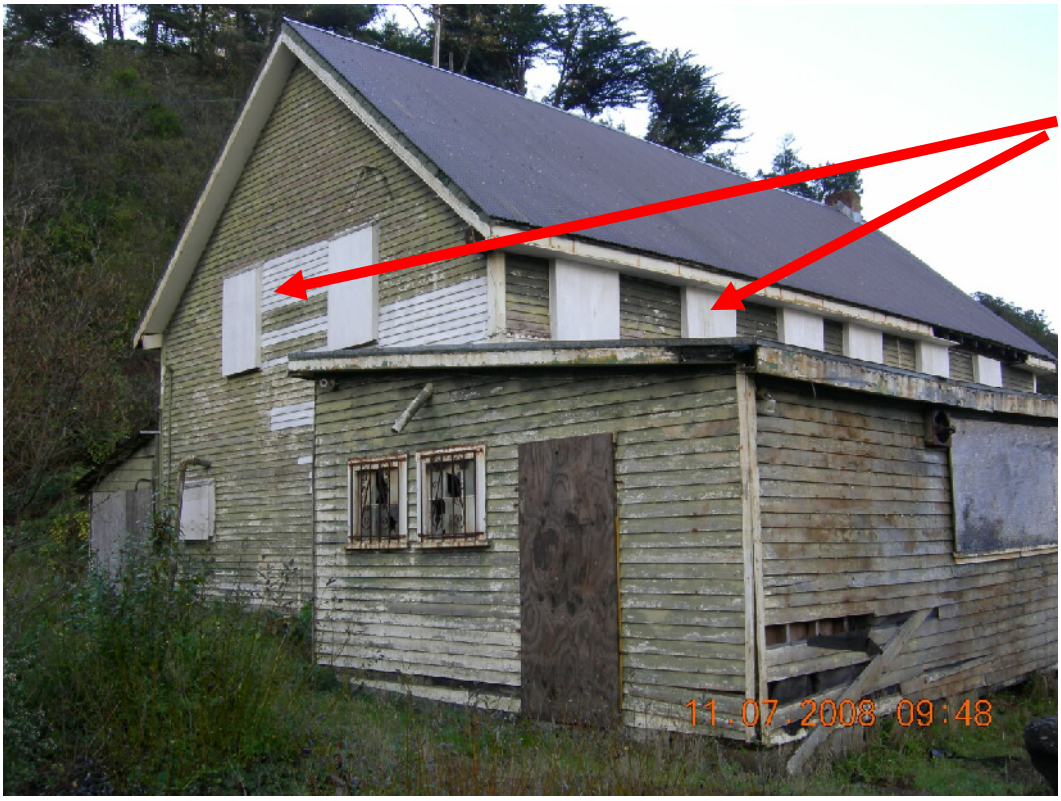

Fig. 2. Front addition, Navarro Inn. Arrows show soffit boards to be removed, as well as window coverings - all of which are to be removed - and windows left open - to increase light and airflow into structure before and throughout construction.

Figure 3. Rear of Inn, showing window covers, all of which are to be removed and windows left open before and throughout restoration.

Figure 4. Remove window covers and open windows prior to and throughout construction.

Figure 5. One of two *C. townsendii* in attic of Inn.

Figure 6. Motel building.

Figure 7. Motel building attic.

Figure 8. Bat fecals in Motel attic – probably *Myotis* sp.

Figure 9. Bat fecals in Motel rooms – probably *Myotis* sp.

Figure 10. West cabin.

Figure 11. Openings into West cabin.

Figure 12. *C. townsendii* in West cabin.

Figure 13. Mill House. Numerous openings available to bats at eaves, possibly dormers, vents.

Figure 14. West wing of Mill House.

Figure 15. Bat fecals in Mill House upstairs closet – probably *Myotis* sp.

Figure 16. *Myotis* sp. in attic at chimney x roof corner.

Figure 17. Example of debris in Cottage to be removed.

Figure 18. Remove decayed partial ceiling in Cottage, leaving rafters exposed.

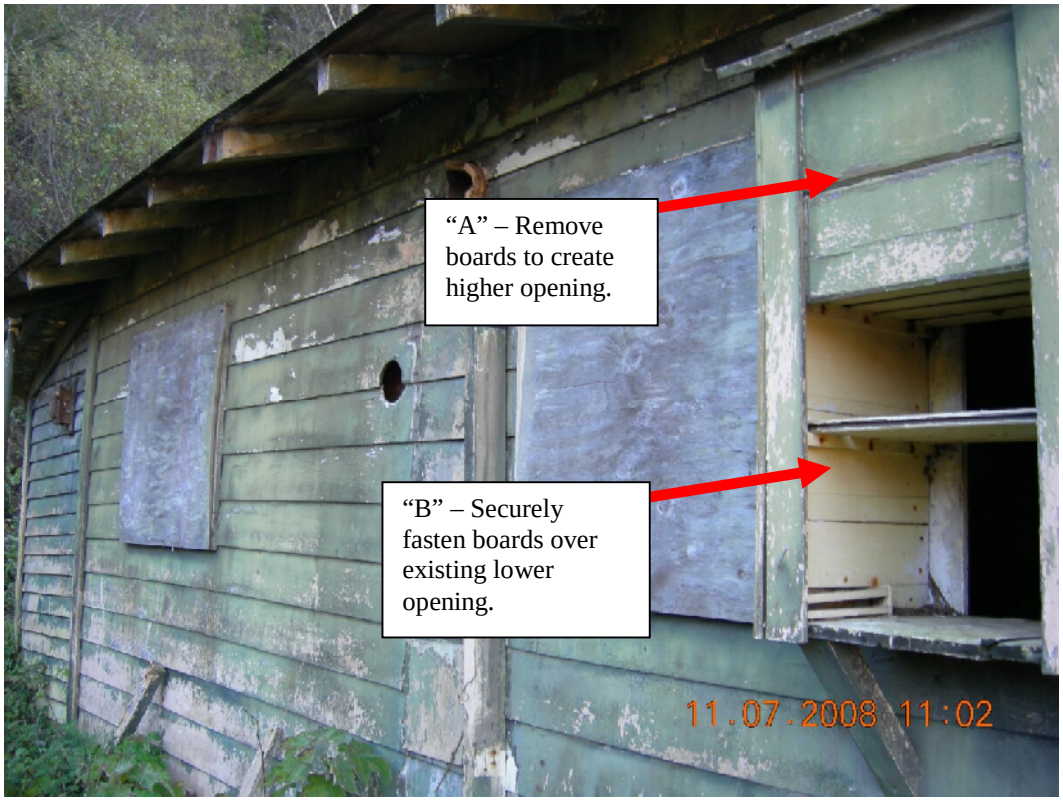

Figure 19. Remove boards from California Cooler section "A". Securely fasten plywood over section "B". Repeat at second cottage.

APPENDIX B

Potential Health Concerns from Bats

The most important health risk associated with bats is rabies, however its impact has been greatly exaggerated by the press and entertainment media. Rabies is an infectious viral disease transmitted through bites of any animal with rabies (raccoons, skunks, fox, etc.). The Centers for Disease Control and Prevention (CDC) considers it quite rarely possible for transmission via infected material (brain tissue, saliva) into the eyes, nose, mouth or wound (http://www.cdc.gov/RABIES/bats.html). Incidence rates for rabies are calculated by researchers to be about 0.5 - 1% averaged over all North American bat species, however the higher reported rate of rabies in bats that are collected or presented for testing does not represent the normal background rate of infection, because usually only suspect bats are tested for rabies. Bats are not known to contract "furious" rabies causing aggression, but rather, "paralytic" rabies, which can cause disorientation or inability to fly. This can increase chances for human contact with infected bats.

Human rabies has become exceedingly rare in the United States, following the decline of rabies in domestic dogs (http://findarticles.com/p/articles/mi_m0GVK/is_5_8/ai_87104051/), resulting in a comparative statistical increase in the proportion of bat rabies cases. Despite this, only 56 cases in Canada and the United States have occurred from 1950 through 2007 (http://www.journals.uchicago.edu/doi/abs/10.1086/586745), resulting in a bat-variant rabies case incidence of 6.7 per billion person-years. From 1990 through 2000, human rabies infections from all sources averaged 2.9 per year, 75% of those from bat-variant strains. By comparison, plague cases in humans averages about 9 per year.

Risks from other now rare diseases are higher than that of contracting bat rabies, and many people live with bats in their homes and other buildings without incident. That does not mean that rabies should not be considered a risk, however precautions with bats should be similar to those for other potential vectors. Specifically, bats should not be handled without gloves, and only if absolutely necessary to remove them from inside a structure. Very young or very old people may not have the caution, visual acuity or physical ability to avoid a bat bite in some circumstances, such as if a sick bat were to fall and be touched or picked up by mistake. Reasonable precautions would include providing information on bat occupancy of certain structures, warnings against handling without proper gloves (leather), and avoiding disturbing roost sites. The CDC provides additional information: (http://www.cdc.gov/RABIES/bats.html) and recommendations.

The risk of human contact with rabid bats in the Inn is extremely low; the population is small and human activity is rare. After building rehabilitation is complete, even if bats are able to re-enter the structure, the available roosting opportunities will be much reduced compared to current conditions, and would almost certainly be limited to the attic space. Many bat species use the surrounding landscape for foraging, and some of the other buildings for day or night roosting, so any incidental bat activity in the Inn should not be considered a human health risk, as long as reasonable precautions are followed. Fears of rabies should not be considered sufficient reason to permanently exclude bats from the Inn or other structures.

Histoplasmosis is a common, worldwide respiratory illness caused by the fungus *Histoplasma capsulatum*. It naturally occurs in soil where conditions are warm and humid, and can be promoted by bird droppings and bat guano. The organism occurs only very rarely in California, and there are no records of recovery of H. capsulatum from bats or bat roosts in areas where the organism is not endemic, and there is no evidence of transmission of the disease from bats to humans (http://www.npwrc.usgs.gov/resource/mammals/housebat/public.htm).

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