Appendix C-1
Bat Habitat Assessment

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BAT HABITAT ASSESSMENT, REPORT, RECOMMENDATIONS – SAMOA PENINSULA LAND-BASED AQUACULTURE PROJECT – SAMOA, CA

SUMMARY

Wildlife Research Associates was hired by GHD to conduct a daytime bat habitat assessment of the exteriors and interiors of buildings and other structures located within the construction boundary of the former LP Samoa Pulp Mill in the unincorporated community of Samoa, CA. These structures will be demolished to facilitate construction of the Samoa Land-Based Aquaculture Project (project) (ICF 2020).

The County of Humboldt Planning and Building Department (County) requested a peer review of the GHD Biological Resource Report for the Samoa Land-Based Aquaculture Project (GHD 2020) that is proposed by Nordic Aquafarms, California. In their peer-review report, ICF found that additional assessments, surveys and Avoidance and Minimization Measures (AMM) for bat species with potential to occur at the project site were recommended (ICF 2020). Greg Tatarian, bat specialist, Wildlife Research Associates[1], conducted a thorough visual survey of the structures as part of a detailed bat habitat assessment; this report details the methods, results, and building-specific measures to prevent direct mortality to bats. In addition, measures to provide suitable replacement roost habitat are discussed.

[1] Greg Tatarian is an independent bat-specialist wildlife consultant with 30 years of experience with bats in human-made structures. He has held a Scientific Collection Permit from the California Department of Fish and Wildlife (CDFW) for approximately 25 years with Additional Authorizations for Research on Bats, including radio-tracking, banding, genetic sampling, mist-netting, and hand-capturing of various species, including California Species of Special Concern (SSC), including pallid bat (*Antrozous pallidus*) and Townsend's big-eared bat (*Corynorhinus townsendii*) (permit currently being renewed as an Entity Permit under new permit procedures). Mr. Tatarian is an expert in conducting habitat assessments, species surveys (bioacoustic, visual and capture) for both day and night roost habitat and has extensive experience with anthropogenic roosts. Has performed inspections of over 4,100 structures, including bridges and buildings, to satisfy CEQA requirements for demolition, development, retrofit and rehabilitation projects. He has personally performed ca. 350 bat evictions from residential, commercial, and institutional structures, and designs, implements, and supervises mitigation strategies including humane bat eviction from bridges, culverts, large buildings, and other settings. Mr. Tatarian has unique and extensive expertise with artificial replacement bat roosts, creating first known successful maternity bat house in California *A. pallidus* in 1995, culminating in successful designs of on and in-structure bridge bat habitat.

SUMMARY OF RESULTS

A visual survey of the exterior surfaces and perimeters of the structures, and interior spaces of all structures safe to enter (see Methods for details) showed that three of the fifteen structures contained evidence of past or present use by roosting bats (see Results). Some structures offer no suitable roost habitat for bats due to excessive light and airflow or other factors, while some structures containing no evidence of past or present use by bats have features that could potentially be used by bats that could be displaced from existing roost structures. Night roost use was more clearly indicated in the three buildings; maternity roost usage was not clearly indicated or precluded, though certainty would require follow-up surveys during maternity season (see Discussion). No overwintering bats were observed in any of the roost features that could be surveyed. Large populations were not indicated, based on staining and fecal accumulations. No indications of Species of Special Concern (SSC) bats were present, including Townsend's big-eared bat (*Corynorhinus townsendii*) and pallid bat (*Antrozous pallidus*); all signs present indicate Myotis species, most likely Yuma myotis (*Myotis yumanensis*) or little brown bat (*Myotis lucifugus*). Although the timing of the demolition of three building will restricted and require mitigation activities described below the majority of the buildings at the site can be demolished without restriction related to bat habitation.

PROJECT DESCRIPTION AND SETTING

The proposed project will redevelop the site of the decommissioned Freshwater Tissue Samoa Pulp Mill facility (pulp mill) to construct an aquaculture facility. Most of the structures, including buildings, tanks, and remnants of structures partially demolished, will be removed and new structures and associated infrastructure built on the site (GHD 2020).

The 36-acre project site is situated in Section 21 of Township 5N, Range 1W on the U.S. Geological Survey Eureka 7.5-minute quadrangle at approximately 22' elevation. The site is designated as Assessor Parcel Number (APN) 401-112-21 and is shown on Figure 1. Buildings names were provided by GHD, however the buildings where evidence of bat activity was observed during our survey were unlabeled, so we have assigned descriptive names in this report.

Construction of the pulp mill began in 1963 and was ultimately shut down by the last owners in 2010, after which some decommissioning was conducted until 2013, and some hazardous remediation was conducted in 2014 (GHD 2020).

METHODS

Prior to arriving at the site, I reviewed Unmanned Aerial Vehicle (UAV) aerial photographs provided by Nordic Aquafarms which showed the structures from many angles and elevations. I also reviewed Google Earth satellite images from many angles to get a preliminary understanding of the condition of the structures.

My daytime habitat assessment was conducted on January 19 and 20, 2021; all building exteriors, as well as the interior of the Machine Building were surveyed on January 19, and interiors of all safely accessible structures were surveyed on January 20. Silos and tanks were not safe to enter, so except for one tank with an open hatch, only exteriors were surveyed, although some aerial photos previously reviewed provided additional detail.

On January 19, I was met by, Misha Schwarz, of GHD at noon, who provided additional detail about the previous habitat evaluation of the site, project description, brief history of the site, and an examination of the boundary of the project site. After he left the site, I conducted a visual inspection of the structure exteriors, beginning with a 1.5-hour survey of the exterior of the 12-story Boiler Building and attached structure connecting to the Smokestack. I used a 20-60 power, 82mm objective spotting scope on a tripod as well as 10

x 42 roof-prism binoculars to examine exterior siding joints, corner wall and roof flashing, attachments to other portions of the structure. A 700-Lumen LED flashlight and a 550-Lumen LED spotlight were used to illuminate cavities and recesses when useful. The remaining buildings were surveyed over the next 3.5 hours. I surveyed all exterior surfaces for signs of past or present use by bats, consisting of urine staining, fur staining at entrances, adhered fecal pellets on walls around entrances or potential exterior roost locations, and fecal pellet accumulations on the ground or other flat surfaces around the perimeter of the structures. Weather was clear and mild with temperatures around 55F, with a light breeze.

On January 20, 2021, I was met by Harbor District Maintenance Worker, Robert Provolt, of, who provided access to all building interiors as well as additional background information about the project site. My survey on January 20 was conducted between 0730 and 1330. Weather was clear and mild with no wind, and temperatures ranging between 49-54F.

I began with the 12-story Boiler Building, examining the interior walls, floors, and equipment of every level, for signs of past or present use by bats, consisting of live or dead bats, fecal pellets adhered to interior walls, windows, or other surfaces, fecal pellet accumulations below suitable roost locations, insect prey remains, audible vocalizations, and characteristic odor. I examined the interior surfaces of exterior siding for gaps at panel overlaps, as well as joints at metal girders and ceiling materials. Equipment that could provide enclosed roosting features was examined, as were other locations with suitable potential cavity, crevice, or open roost features, such as light fixtures, open ducts and pipes, and concrete wall and ceiling sections.

My survey continued with the following structures, as labeled in white by GHD in Figure 1: second Boiler Building (3-story), Brick Silos, concrete/brick Smokestack, Machine Building, Warehouse, Office Building, Water Softener and Filter Tank Support Building, and concrete Structure. In addition, other structures not labeled by GHD in Figure 1 were surveyed and have been further labeled with green arrows as: Softener/Filter Tank Building, Pump House, SUB FL.2 (per sign on door), Concrete Structure 2, Concrete Footings, and Brick Silo near Machine Building. Additional unlabeled tanks are located on the site but contained no suitable habitat and are not provided additional labeling in Figure 1. Binoculars and lights were used as needed, and a small, infrared-sensitive video camera on a 3’ extension pole was used to examine the Smokestack through an opening previously cut into the steel access panel at ground level.

Two small buildings and an elevated water tank north of the project boundary were also surveyed, but contained either no suitable habitat (tank, portable building) or had no signs of past or present use (small building with smokestack).

Bat fecal pellets can be distinguished from rodent droppings by visual and physical examination; bat droppings are easily fragmented, and consist of undigested chitin from insect prey, showing reflectivity of insect exoskeletons. Rodent droppings are usually firm or hard and do not fragment easily. Bird droppings on vertical surfaces are also different from bat fecal pellets or urine staining; birds excrete both urine and feces together, resulting in streaky, white and either black, brown, or green feces components. Bat urine and efflorescence of concrete are often confused, and it can take careful examination to determine the difference; white surface streaking or staining in the presence of fecal pellets is a strong indicator of urine, either alone or together with efflorescence.

RESULTS

Structures with Bat Activity:

The following three structures contained evidence of past or present bat activity. No live or dead bats were present, indicating these structures are not currently used for overwintering roosts during seasonal torpor. The amount and distribution of bat fecal pellets and urine staining do not indicate these structures are being used as maternity roosts, however, they likely serve as either as night roosts between foraging bouts, or

possibly as day roosts for males or non-reproductive females. See Figure 2 for photo for locations of all three structures; additional photos of all buildings are included in this report.

Pump House (SUB BF2)
This is a small concrete structure with a T-beam concrete roof/ceiling located between the square-shaped water reservoir and the large Water Storage tank in the western portion of the project site. Openings occur around the walls of the structure where pipes and conduits have been removed, and potentially through a louvered vent near the access door.

The concrete material together with the concrete T-beam roof/ceiling construction mimics bridge construction design and materials that bats find highly desirable. Roost suitability is very high, only mitigated by what is likely a building that remains cool throughout the summer – too cool to provide suitable maternity roost habitat, since most bats that choose structures select those with warmer temperatures during maternity season so that pups remain at or above their metabolic thermoneutral zone, reducing demands on maternal milk production and care, and maximizing growth and development of pups.

Bat fecal pellets were located in many different locations throughout the building, and urine staining on concrete T-beams and wall sections was evident, though not pronounced. There were no large accumulations of fecal pellets in any one location, and no extensive staining at roost locations which would indicate a large population or long period of roosting activity since site closure in 2010. Evidence of rodent activity was almost non-existent, with very few mouse droppings which required discerning from bat fecal pellets; however, bird activity (nesting, urates) was present in many locations in the building.

Bat fecal pellets were consistent in shape, size and color with *Myotis* species – presumably either *M. lucifugus* or *M. yumanensis*. No fecal matter consistent with either *C. townsendii* or *A. pallidus* was present anywhere in the structure; ample open-roost features were present for the former species, however almost no suitable crevice features suitable for the latter species were present.

SUB FL.2
Situated just east of the Pump House, the building designated Sub FL.2 is a single-story concrete structure with a partial corrugated metal roof and partial concrete roof. Pipes and conduits entering and exiting the structure were previously removed, and gaps and openings into the structure suitable for entry by bats remain as a result.

Bat fecal pellets were present in several different locations throughout the interior of the structure; however, no large accumulations of fecal pellet or urine streaking or staining were present, and no evidence of large populations such as a maternity colony was noted.

Roost suitability is high, though less so than the Pump House and Filter/Softener Tank Building, perhaps mitigated by what is likely a building that remains cool throughout the summer – too cool to provide suitable maternity roost habitat, since most bats that choose structures select those with warmer temperatures during maternity season so that pups remain at or above their metabolic thermoneutral zone, reducing demands on maternal milk production and care, and maximizing growth and development of pups.

Filter/Softener Tank Building
A concrete structure with a concrete T-beam roof, this structure contains pumps, machine equipment, and control stations, and is attached to the concrete Water Softener and Filter Tank support building. The structure is complex, and the concrete material together with the concrete T-beam roof/ceiling construction mimics bridge construction design and materials that bats find highly desirable. The tanks themselves do not provide suitable roost habitat, but inside the structure, roost suitability is very high, only mitigated by what is likely a building that remains cool throughout the summer – too cool to provide suitable maternity roost habitat, since most bats that choose structures select those with warmer temperatures during maternity season

so that pups remain at or above their metabolic thermoneutral zone, reducing demands on maternal milk production and care, and maximizing growth and development of pups.
Bat fecal pellets were located in many different locations throughout the building, and urine staining on concrete T-beams and wall sections was evident, though not pronounced. There were no large accumulations of fecal pellets in any one location, and no extensive staining at roost locations which would indicate a large population or long period of roosting activity since site closure in 2010. Evidence of rodent activity was almost non-existent, with very few mouse droppings which required discerning from bat fecal pellets; however, bird activity (nesting, urates) was present in many locations in the building.

Structures with No Bat Activity:

None of the remaining structures that were safe to enter contained evidence of past or present use by bats. Some structures were not safe or possible to enter (Silos (tanks) with roofs, Smokestack) but have low habitat suitability for reasons discussed below, and others do not provide any suitable bat roost habitat due to materials, construction, and/or condition (Silos with open roofs).

Water Softener and Filter Tank Support Building
Despite being connected to the Filter/Softener Tank Building described above where bat activity is present, no signs of use by bats were present in this concrete, J-shaped structure. Suitable potential habitat is present due to the concrete material and roosting features available; however, bats have not selected it yet, perhaps because it does not offer the temperature range desired.

12-Story Boiler Building
The tallest structure on the project site, the 12-story Boiler Building, is constructed of steel girders with alternating vertical corrugated metal and corrugated fiberglass panels, and a steel roof. Attached to the main portion of the structure is a smaller steel-framed building with corrugated metal siding that housed machinery that connects to the adjacent Smokestack.

A very careful, 1.5-hour visual survey using a spotting scope and binoculars of all of the exterior siding panel overlaps and corner moldings, as well as wall and ground surfaces showed no evidence of use by bats - no fecal pellets or urine staining. However, there are numerous suitable entrances into each structure.

The interior of the 12-story structure is filled in most areas with ambient light, due to the opaque fiberglass wall panels. There are large sections of siding that have fallen from the building. Louvered vents also admit light and airflow. Several dead birds and nests were present in the structure, but no bat fecal pellets, urine, fur staining, live or dead bats were present in the structure. As a result of these observations along with the building conditions, roost habitat suitability is extremely low in this structure.

The smaller attached structure was not possible to enter, however, the same careful visual examination with a high-power spotting scope and binoculars with lights was made, which revealed no exterior signs of use by bats. This structure has slightly greater potential for use by bats in the upper story which could not be surveyed because it is darker inside than the taller structure. However, other portions of the structure that would normally provide suitable roost habitat for bat species using the three structures on the site, such as roof perimeter flashing and corner moldings that overlap the corrugated siding, contained no signs of past or present use by bats.

Smokestack
The roughly 270-foot-tall smokestack is attached via a large diameter pipe to the smaller structure attached to the 12-story Boiler Building. Apparent construction is a relatively smooth concrete outer structure with a concentric inner stack made of firebrick, with lining between the two concentric stacks at the base, tapering to none near the top opening, and a coating over the interior brick of the inner stack. The structure was not safe to completely enter, however I was able to reach into the opening at a hatch in the base, where I was able to photograph and video record the floor and inner walls at the lower portion of the Smokestack and

view up to the top opening. No urine staining, adhered fecal pellets, or accumulated fecal pellets on the floor of the Smokestack were observed. Based on the open top admitting light and moisture from above, lack of protected roost crevices or cavities observed, and lack of bat fecal pellets or urine/fur staining, visible from the base opening up about 100 feet, the Smokestack likely provides poor habitat suitability

2-Story Concrete Building Near Smokestack
Immediately south of the 12-story and attached Boiler Buildings, this concrete structure has small openings in the wall from conduits that had been removed, but no past or present signs of bats in either the lower or upper portions of the structure was observed. This structure has low habitat suitability based on lack of prior evidence of use over the many years it has been decommissioned, but it could potentially become occupied if bats were caused to abandon occupied roosts.

3-Story Boiler Building
Located east of the 12-story Boiler Building at the northern boundary of the project site, this is a steel structure with corrugated metal siding with a band of opaque fiberglass siding around the 2nd story. It is connected to the 12-story Boiler Building by a large diameter pipe and associated gantry. There are openings around the exterior walls, and a portion of the wall is damaged and missing. No signs of past or present use by bats were present either around the exterior or in the interior of the structure. Habitat suitability is low based on conditions inside the building as well as lack of prior evidence of use over the many years it has been decommissioned, but it could potentially become occupied if bats were caused to abandon occupied roosts.

Concrete Footings (Foundations & Structures)
In the interior of the project site, various concrete foundations and structural footing, some very large, remain after prior demolition. None contained suitable habitat for day or night roosting bats.

Structure (concrete)
Labeled "Structure" on Figure 1, this is one of two nearby, similarly designed and constructed 2-story concrete structures. This one is located immediately west of the Machine Building and Warehouse. A set of windows previously removed allows access into the structure at ground level, and there are smaller openings suitable for bats. No signs of past or present use by bats were present, however the upper floor is actively used by barn owls (*Tyto alba*), based on presence of fecal material and regurgitated pellets. Presence of barn owls likely precludes any use by bats in this building, as bats are a prey item of barn owls, and there are no protected roost crevices inside the structure. However, in the absence of nesting barn owls, bats could potentially begin to occupy the building if they were caused to abandon occupied roosts.

Structure 2 (concrete)
Adjacent to and immediately south of a row of brick Silos at the north-central portion of the site is a two-story concrete structure almost identical to the Structure (concrete) noted above. A window in the front doors and other smaller openings around the exterior walls provide suitable entry for bats. The interior was warmer than the other structures inside, and provides highly suitable potential bat roost habitat; although no signs of past or present use by bats were present around the exterior or in the interior of this structure, bats could easily begin to occupy the structure either spontaneously, or due to being caused to abandon other occupied roosts.

Brick Silos (tanks)
These roughly 3-story high brick silos, or tanks were not safe to enter, however one was viewable through an open hatch at the base. Aerial UAV photographs provided by Nordic Aquafarms show several of the tanks with totally or mostly missing roofs, and three tanks still with roofs that had small openings a few inches in diameter. Bats prefer protected roost locations that provide cover from above; the three tanks with no roofs provide no suitable day-roost habitat for bats, The three tanks with roofs had openings too small and not oriented properly for bats to enter and exit those tanks. As a result, tanks with no roof have no habitat suitability for bats; those with intact roofs with small openings have extremely low habitat suitability.

Machine Building
The Machine Building is a long, tall structure located immediately south and attached to the Existing Offices (Office Building) and is attached at the east end of the building to the newer, actively utilized aquaculture building at the eastern portion of the site. This structure is constructed of steel girders covered with alternating panels of corrugated metal and corrugated translucent fiberglass panels. Very large portions of the roof and exterior walls are missing.

The interior of the structure has high ambient illumination, with strong airflow throughout all but the most protected portions or rooms inside the structure. On the ground level, there is a length of concrete-walled rooms, with concrete joists and beams supporting an upper-level floor. These concrete beams and walls would normally provide very good roost habitat for bats; however, the light and airflow are excessive for use by day-roosting bats. There may also be insufficient shelter for bats from airflow during the night, because no signs of past or present use by bats were present at locations that would normally be expected to provide suitable roost habitat. Additionally, a survey of the interior rooms and other recessed, protected internal tank structures showed no evidence of past or present use by bats anywhere inside the structure. Given the high ambient daytime light and windy conditions throughout most of the building, habitat suitability, except potentially for small numbers of night-roosting bats, is extremely low.

Brick Silo (tank) Near Machine Building
Smaller and not as tall as the row of brick tanks at the north portion of the site, this tank is located at the southwest corner of the Machine Building. The access hatch was open, allowing an inspection which showed no past or present use by bats inside the tank. The roof consisted of opaque green panels that allowed light from above into the tank.

Existing Offices and Warehouse
Labeled Existing Offices in Figure 1, the Office Building and Warehouse are enclosed together with corrugated metal siding. The Existing Offices are actively used by tenants and were not accessible for an interior survey. Construction is a mixture of concrete, concrete block, wood, and metal. The exterior siding of the Office Building and Warehouse is of much more recent construction, and the condition is excellent.

The Warehouse portion of the structure is actively used as a space shared by a tenant operating a cleaning business, and for other purposes by the Harbor District tenants (Provolt, pers. comm.). The Warehouse portion comprises the space between the attached Machine Building immediately south, and the Existing Offices on the north side of the building. There are openings into the structure that are suitable for bats, however, a careful visual examination showed no signs of entry by bats - no urine or fur staining on walls or openings, no adhered bat fecal pellets on walls or windows, and no accumulated fecal pellets on the ground surfaces. A survey of the shared spaces inside the structure, including the leased portion of the Warehouse, and all spaces and rooms, used by Harbor District tenants, showed no signs of past or present use by bats. As a result, habitat suitability is low.

BACKGROUND REGULATORY AND BIOLOGICAL INFORMATION

Regulatory Status of Bats

Bats are protected as nongame mammals in California under California Fish and Game Code (FGC) (See Appendix A). Thirteen species are classified as Species of Special Concern (SSC) (CDFW 2020); none are currently listed as Threatened or Endangered. Typically, only special-status species, comprised of Threatened, Endangered, and SSC are addressed in California Environmental Quality Act (CEQA) review and documentation. However, non-SSC bats can often form maternity colonies large enough to be considered significant local breeding populations under CEQA which provides protections for nursery sites. In addition, many bat species will roost together, including special-status bats that may form smaller colonies that are less easily detected or observed than their more commonly occurring cohorts (Tatarian, personal observations).

For these reasons, protections such as measures to prevent direct mortality of special-status bat species are generally also best applied to non-special-status bat species if they have large breeding populations. Habitat replacement measures for SSC bats may also be appropriate for non-SSC bats if the maternity colony is large and the loss would be significant to the local population.

General Roosting Ecology

Bats in California can be separated into two categories based on social structure. The first category consists of colonial species that roost in groups throughout the year in natural and anthropogenic (human-made) habitat including caves, rock outcrops and crevices, mines, culverts, buildings, bridges, and trees. Colonial bats roost in groups of dozens to 10s or 100s or thousands; examples include Brazilian free-tailed bat (*Tadarida brasiliensis*), *M. yumanensis*, *M. lucifugus*, big brown bat (*Eptesicus fuscus*), and two SSC species – pallid bat (*Antrozous pallidus*) and *C. townsendii*, among others.

Colonial bats roost together in maternity roosts to raise young beginning in spring months into summer, concluding in early fall. Some bat species migrate to regions where they can remain active throughout the winter, but other species remain nearby or make smaller seasonal movements to winter roosts where they spend cold, rainy months in hibernation or in torpor (a light form of hibernation interspersed with occasional activity when weather conditions permit). In some cases, bat dispersing from maternity roosts may use dispersal roosts that differ from either maternity or winter roosts. Reproductive males generally roost separately from females and young during maternity season, either individually or in small groups in roosts referred to as bachelor roosts. Roosts for colonial bat species can include one or more of the following: caves, mines, rock crevices or outcrops, buildings, bridges and cavity, crevice or exfoliating bark roost features in trees. A more detailed description of roost types, and temporal patterns of usage is provided in the sections below.

The second category consists of solitary, obligate tree-roosting species that include western red bat (*Lasiurus blossevillii*) and hoary bat (*Lasiurus cinereus*) that typically roost exclusively or almost exclusively alone in trees, with the exception of females when raising their young. No habitat for these species occurs on or adjacent to the project site.

Bats are dependent on roost sites for protection from predators and weather, and bats spend most of their lives in roosts. Availability and selection of roosts influence distribution, population density, reproduction, foraging, social structure, seasonal movements, and more (Altringham 1996). Because of the importance of suitable roosts, bats typically show strong site fidelity to permanent roost sites, both natural and anthropogenic, and maternity roost sites elicit very high site fidelity (Kunz 1982), although roost fidelity is variable among species (Lewis 1995). Bats are the longest-living mammal for their size (Wilkinson and South 2002), with records of individuals in the wild of 30 years – and the oldest bat, a male Brandt's myotis (*Myotis brandtii*) reaching at least 41 years of age (Locke 2006). As a result, bats have a long individual and colonial memory of roost sites, further driving roost fidelity behavior. Because of this high site fidelity behavior by bats, signs of usage are often well established. Typical signs of roosting bats in buildings include urine staining on exterior landing surfaces, fecal pellet accumulation, and characteristic odor. These signs are also usually present to varying degrees in natural roost sites such as trees, rocks, and caves.

Roost Types and Usage by Bats

Colonial Bat Species

Bats use a wide variety of roost sites that can be divided into "natural roosts," and man-made or "anthropogenic" roosts. Natural roost sites include caves, tree hollows, rock crevices, and exfoliating tree bark. Anthropogenic roost sites are analogous to natural sites, and include buildings, mines, and bridges (Barbour and Davis 1969, Constantine 1961, Davis and Cockrum 1963, Fenton 1983, Kunz 1982, Rainey and Pierson 1996). Some species roost only in tree cavities or under bark; others use a wider range of roost types, both natural and anthropogenic.

Depending on the species, day roosts generally consist of crevices and cavities, with males often roosting separately from females. Breeding and maternity care may take place in day roosts, where young remain until volant, and females may return throughout the night to lactate for young. In buildings, bats can roost in crevices formed where fascias or gutters overlap walls, between rafters, behind wood moldings, or under metal flashing. Colonies may also use more open spaces, such as interior rooms, attics, or ceiling spaces. Night roosts are generally more open and accessible, but still provide light, airflow, and protection from predators, while permitting easier ingress and egress between foraging bouts. Night roosting sites may be found on exterior walls, beneath shed roofs, or in breezeways.

Although some species exhibit preferences for caves, mines, and rock outcroppings, many species adapt readily to structures such as bridges, which can provide day roosting opportunities in crevices; and to larger cavities that provide protection during the day and retain heat during night roosting hours.

Temporal Patterns of Roost Usage

Seasonal

Use of roosts by bats varies temporally and spatially throughout annual cycles as well as shorter seasonal and daily cycles. Bats in the project regions are not actively flying year-round. During the maternity season, nonvolant young of colonial bats remain in the roost until at least late summer (generally the end of August, but varies slightly with locality and bat species), after which they may disperse from the natal roost or remain in the roost into or through the winter. If roosting bats do not migrate in the winter months to regions where they can remain active, or to hibernacula where they can hibernate, they will typically enter winter torpor, rousing only occasionally to drink water or opportunistically feed on insects. The onset of torpor depends on environmental conditions, primarily temperature and rainfall. Many bats overwinter in building roosts that maintain suitable, cool temperatures, particularly near and along the coast of Northern California and Southern Oregon, where winter temperatures are more temperate than further inland.

Daily

Roost types are generally referred to as day roosts (sometimes also called bachelor roosts) which are used during breeding season by males and/or nonreproductive females, day maternity roosts (used for pup-rearing by females), night roosts (used by all volant bats during seasonal periods of bat activity—e.g., when foraging), dispersal roosts (could be different roost locations where breeding occurs, or while dispersing to winter roosts), and winter roosts (used either for hibernation or torpor).

Because bats are nocturnal, day roosts typically involve periods of rest, and night roosts are associated with temporary rest, prey processing, and intraspecific communication interspersed with periods of foraging (Kunz 1982). Roosts are not exclusively day or night roosts, however. Maternity roosts are used by young both day and night, and females return from foraging at night to feed their pups, so these are both day and night roosts. This is also true for some bachelor roosts, dispersal roosts, and especially for winter roosts when bats are in torpor or hibernation.

Suitable day (bachelor), day maternity, dispersal, and winter roosts, as stated earlier, elicit high site fidelity in colonial bat species, and limit occurrence, species, distribution, and behavior of bats. However, bats are more opportunistic in their selection of night roosts, which occur within the range of foraging activities, which can vary individually through resource competition, partitioning, and temporal availability of insect prey. This might imply that site fidelity at these roosts would be low, however, studies (Lewis 1994, Pierson 1999, and unpublished radio telemetry studies and personal observations by G. Tatarian) suggest that night roosts elicit high night-to-night and year-to-year site fidelity.

General Information – Measures to Prevent Mortality of Bats in Buildings

To prevent direct or indirect mortality of bats roosting in structures resulting from demolition, renovation or reconstruction activities, it is generally necessary to passively remove bats from the structure. There are two known effective methods, and a third that can sometimes be effective in a limited number of situations and conditions; 1) "humane eviction", or "bat exclusion", which relies on the bats' ability to fly out of the roost, utilized when the building is in sufficiently sound condition, 2) partial dismantling of key components of the structure to significantly alter the temperature, light and airflow inside the structure, causing bats to abandon on their own, and 3) introduction of light and airflow into the roost to cause bats to abandon.

During the typical humane eviction process, all potential but unused entry points into the structure are sealed first, except those that are actively being used by bats. The active entry points are fitted with one-way exits, which are left in place 7-10 days to allow all bats to emerge normally during nightly feeding flights. The one-way exits are then removed, and the remaining openings sealed until the building will be demolished more than 30 days after humane eviction or left in place if the building will either be demolished within 30 days, or if the building will not be demolished, but repaired or renovated. Upon completion of construction activities, the one-way exits are either removed and sealed if bats are to be permanently excluded or removed and left open if bats are to be allowed to re-enter the structure. This work must be conducted by, or under direct supervision or instruction by a bat biologist qualified in humane bat eviction methods and materials.

In some cases, the physical condition of the structure is so poor that humane eviction as described above is not possible. If that occurs, the building must be carefully, and selectively dismantled in such a way that the internal environment is altered sufficiently to cause bats to abandon the roost and not return. This must occur under the guidance of a bat biologist qualified in partial dismantling of structures for bat eviction, in order to prevent direct or indirect mortality of bats. The three structures on this project site with signs of bat activity fall into this category, making them candidates for the following method.

The last method is effective only in limited circumstances where the roost area is sufficiently confined for the introduction of light, and possibly airflow, to significantly alter the roost conditions, causing bats to abandon the roost. With this method, multiple LED, AC-powered, 2,000 or higher-Lumen shop lights are aimed at the roost locations throughout the night when bats are actively flying in and out of the structure. The lights are switched off during the day to prevent undue stress on any individuals that have not abandoned the roost at night, but are turned on again each night. In some cases, opening portions of the structure to permit additional airflow, or installing AC-powered fans to increase airflow, is required to supplement the lighting. Generally, roost abandonment occurs within 4-7 nights of this treatment. This method can be less aggressive in nature than partial dismantling, but is not effective in all settings, such as where bats are roosting in crevices, rather than exposed cavities, rooms, ceilings, attics, etc.

Consumer-grade acoustic bat deterrent devices have been shown to have little to no efficacy, however, research has been conducted with large, very loud, and costly ultrasonic amplified deterrent speakers to deter bats from wind generators, bridges, and buildings. These devices have limited effective range, so multiples are needed for separate rooms and large buildings, and some must be connected to computers, increasing cost and complexity. It is unlikely they would be effective where bats are roosting in crevices, rather than exposed cavities, rooms, ceilings, attics, etc.

Because non-volant young may be present during maternity season (except in the case of bachelor roosts), and adult and juvenile bats may be present during winter months, removal of confirmed or presumed-occupied bat roost habitat, including humane eviction from or partial dismantling of structures (or two-step removal of bat habitat trees in project where they occur), must be conducted only during seasonal periods of bat activity. In the project region, the following dates comprises two seasonal periods of bat activity that includes and protects all bat species that would occur in the area:

1) between about March 1 (or after evening temperatures 1-2 hours before sunset rise above 45F and/or no more than 1/2" of rainfall occurs 24 hours before or after planned habitat removal), and April 15, or;

2) between September 1 and about October 15, but only when evening temperatures 1-2 hours before sunset are above 45F and/or no more than 1/2" of rainfall occurs 24 hours before or after planned habitat removal.

Note that rain periods during these seasonal periods of bat activity will delay humane eviction/partial dismantling/2-step tree removal, but that these activities may resume when suitable conditions are met, until the end of the seasonal period of bat activity. Also, seasonal periods may be different for other locations, based on elevation, latitude, or other factors.

DISCUSSION

Analysis of Survey Results

Bat activity was observed in three buildings - **Pump House (SUB BF2), SUB FL.2, and Filter/Softener Tank Building**. Evidence suggests roosts are not used during winter months when bats are in seasonal torpor. The likelihood of maternity roost usage appears to be minimal but could not be confirmed by the results of this winter season survey. The amount and distribution of bat fecal pellets, fur staining at roosts and openings, and urine staining, do not support the conclusion that large numbers of bats have been using the structures, nor is there any indication that the only two SSC bat species, *C. townsendii* and *A. pallidus*, have been roosting in any of the structures. The evidence suggests the roosts are used as night roosts, or daytime roosts for males and non-reproductive females, however, there is always a possibility that small maternity colonies may have occurred in the past or could do so in the future.

Bat species in those three buildings appear to be limited to either *M. lucifugus* or *M. yumanensis*, based on the type of roosting surfaces and spaces selected, and urine and fecal pellet evidence. These are the two most likely species that have been roosting inside the buildings on the project site, based on the evidence observed. Either species can form roost colonies ranging from dozens to many hundreds of individuals, although *M. yumanensis* can form larger maternity colonies of a few thousand (Tatarian, pers. obs.). Long-eared Myotis (*Myotis evotis*), although included in the table of species in the Biological Resources Report (GHD 2020), is unlikely to occur in the project site, preferring brush, woodland and forest habitats which are not present (Harvey, M.J., J.S. Altenbach and T.L. Best 1999). In addition, *M. evotis* forms small colonies, and would not be likely to leave the volume of fecal pellets observed.

In many of the structures, no signs of bat use were present, but suitable potential habitat exists. These include the upper room on the smaller structure attached to the 12-story Boiler Building; the Filter/Softener Tank support structure; Structure (concrete), Structure 2 (concrete) and; Warehouse. the upper room on the smaller structure attached to the 12-story Boiler Building; the Filter/Softener Tank support structure; Structure (concrete), Structure 2 (concrete) and; Warehouse. These buildings appear to provide the suitable potential shelter from light and airflow, and in the case of the concrete structures, the most thermal stability, which is highly preferred by bats during the maternity season. As a result, bats evicted or deterred from using the three known roost buildings could begin to use the currently unoccupied structures that contain suitable potential habitat for limited night-roosting activity if they are left in place prior to removal of the three known occupied buildings.

There are several structures with no evidence of bat activity and that have very low, or no habitat suitability. These include the 12-story Boiler Building; Machine Building; Existing Offices; Brick Silos (tanks), 3-story Boiler Building; Concrete Foundations, Structures and Footings and; water tanks. Seasonal timing of removal of these structures is less critical than with those containing suitable potential habitat, but noise and

vibration from demolition may cause adult female bats that could be roosting during maternity season or winter months in the three known occupied buildings to abandon the roost, leading to mortality of non-volant young.

Effective Strategies to Prevent Direct Mortality of Bats

Follow-up surveys should be conducted during early and mid-maternity season to determine whether the three previously occupied structures (Pump House (SUB BF2), SUB FL.2, and Filter/Softener Tank Building) contain maternity colonies, bachelor (or non-reproductive female) colonies, or night roost only colonies. If none of the roosts are occupied by maternity colonies, partial dismantling and deterrence measures of those structures could occur during maternity season because all bats would be volant and able to abandon the roosts. If maternity colonies are present, this work would be restricted to seasonal periods of bat activity as previously described, with a larger buffer between occupied structures and demolition activities (e.g. 500' vs. 300'), and use of explosives would be restricted to seasonal periods of bat activity only. If roosts are only occupied at night, restrictions on demolition could potentially be reduced or eliminated since bats would not be present during the day when demolition is conducted.

It is not possible to predict with accuracy the demolition activity tolerance level of bats that may be present in the three known occupied buildings, however, the project site is large, with many structures located between 310' and 505' from the Building SUB FL.2, between 461' and 720' from the Pump House, and between 554' and 664' from the Filter/Softener Tank Building (Google Earth distance measurements).

Excluding the Smokestack and 12-story Boiler Building that will be demolished with explosives (Schwarz, pers. comm.), most of the remaining buildings except for previously occupied roost structures and the Concrete Foundations and Structures which are within a noise and vibration disturbance distance from those structures would be removed without explosives prior to partial dismantling and deterrence measures to cause bats to abandon the three known roost buildings in order to prevent bats from relocating to previously no used by bats. Specific recommendations for each structure follow below.

Use of Mitigation Roost Habitat

Replacement roost habitat is sometimes warranted when loss of significant amounts of roost habitat are removed. Replacement habitat can include properly designed bat houses large enough to support several hundred individuals in different locations around a project site, and in sufficient quantity to support the existing population or more, or concrete panel structures added to an appropriate building or other structure, or made to be free-standing. For example, large concrete roost features are often added to or built into bridges to provide on-site mitigation habitat. Off-site mitigation habitat poses several challenges; it is unlikely to support habitat for the bat colony that is actually displaced, and off-site property is rarely available for mitigation bat habitat. My own studies show that if replacement habitat is placed more than about 75' from an existing roost, the rate of occupancy of the replacement roost is reduced to the same rate as that of a roost placed at greater, random distances.

Additionally, only a few species of bats will occupy bat houses, and the bat house or roost feature must be designed to accommodate the target species. Fortunately, both *M. yumanensis* and *M. lucifugus* will readily adopt properly-designed and build artificial replacement roost habitat. Bat houses are not occupied by *C. townsendii*, but *A. pallidus* readily occupy properly designed and built bat houses. However, there is no indication that either SSC species *C. townsendii* or *A. pallidus* have been roosting on the project site.

If follow-up surveys indicate maternity colonies totaling greater than 1,000 individuals of a non-SSC bat such as either *M. yumanensis* or *M. lucifugus* are present in any of the previously occupied structures, this could be considered a significant local nursery site under CEQA, and installation of artificial roost habitat designed to support these species and population should be installed within the boundaries of the project site,

preferably away from structures and tanks that will be later installed, along the southern boundary of the project site.

PROJECT-SPECIFIC RECOMMENDATIONS

Based on the results of this survey, it is reasonable to presume presence of bats during maternity season and potentially during winter months in the Pump House (SUB BF2), SUB FL.2, and Filter/Softener Tank Building, and to conduct partial dismantling and/or deterrence measures to cause bats to abandon the roosts during seasonal periods of bat activity when there are no non-volant young during maternity season, or non-volant bats of any age class during winter torpor.

Also, structures on the site should be removed in a sequence that will first remove those structures with no suitable habitat and those with suitable potential, unoccupied habitat, after which the Pump House (SUB BF2), SUB FL.2, and Filter/Softener Tank Building and Concrete Foundations, Structures and Footings would occur only during seasonal periods of bat activity, and only after partial dismantling and/or deterrence measures have caused bats to abandon the buildings.

Additionally, specific measures to avoid direct mortality of bats can differ depending on whether the three previously occupied roosts provide either; maternity roost habitat (occupied day and night), bachelor (and/or non-reproductive female) roost habitat (occupied day and night), or night roost habitat only.

Two additional surveys of the interiors of the three previously occupied structures should be conducted by a qualified bat biologist; one in late April or early May when likely occupied by females just before or after parturition, and one in mid-June when pups would be present.

If maternity colonies are present, demolition activities should first be conducted on structures located furthest from the occupied structures (>500’ – e.g. Machine Building) and limited to mechanical removal only (no explosives) until after young are self-sufficiently volant. After that time and after non-occupied structures are removed, specific measures to cause bats to safely abandon the occupied roosts would be conducted between September 1 and about October 15, or between about March 1 and April 15, at which time explosives could be used for demolition.

If day roosts are occupied only by males or by non-reproductive females, demolition of structures further than 300’ should first be conducted since no non-volant bats would be present, but the distance would reduce likelihood of the potential of stress-related mortality. After non-occupied structures are removed, specific measures to cause bats to safely abandon the occupied roosts would be conducted between September 1 and about October 15, or between about March 1 and April 15.

The use of explosives to demolish the Smokestack and 12-story Boiler Building would be very likely to cause roost abandonment despite their distance from the Pump House (SUB BF2), SUB FL.2, or Filter/Softener Tank Building, and could result in direct or indirect mortality of non-volant young if maternity colonies are present, so these structures should be removed only during seasonal periods of bat activity unless follow-up surveys by a qualified bat biologist establish that no maternity or winter colonies are present. For the same reason, the Concrete Foundations and Structures are close to the Pump House (SUB BF2), SUB FL.2, and Filter/Softener Tank Building, so should be removed only during seasonal periods of bat activity detailed previously in this report, at the same time or after bats have abandoned the three known roost structures. More specific recommendations follow below.

As stated previously, humane eviction and exclusion using blockage and one-way exits from Pump House (SUB BF2), SUB FL.2, and Filter/Softener Tank Building is not feasible due to the size and condition of the structures. Instead, a combination of partial dismantling (including opening doors and windows) and

deterrent measures consisting of use of 2,000 or greater-Lumen LED work lights and large circulating fans are recommended. This work must be conducted during seasonal periods of bat activity as detailed previously in this report.

Table 1 provides detailed recommendations for the sequence of actions for each structure, along with seasonal guidelines. The three structures with bat activity noted in pink shading in Table 1 as well as nearby Foundations, Structures, and Footings require specific actions during seasonal periods of bat activity only; many other structures should be removed first during any seasonal period to enable progress with demolition as well as create noise and vibration that will help reduce habitat suitability of the other structures.

Please refer to Figure 1 for names and locations of structures, Figure 2 showing bat occupied structures, as well as subsequent Figures showing other relevant structures.

Additional Partial Dismantling Details:

1) Remove structures shown in Table 1, rows 1 – 9 first using conventional demolition.
2) After all structures shown in Rows 1-9 in Table 1 below have been demolished, remove Smokestack (Row 10), 12-Story Boiler Building (Row 11) (using explosives/conventional demolition), Concrete Foundations Structures and Footings (Row 12), and Pump House (SUB BF2), SUB FL.2, and Filter/Softener Tank Building (Rows 13-15) *only*:
    a. During seasonal periods of bat activity:
        i. Between about March 1 (or after evening temperatures 1-2 hours before sunset rise above 45F and/or no more than 1/2" of rainfall occurs 24 hours before or after planned habitat removal), and April 15, or;
        ii. Between September 1 and about October 15, but only when evening temperatures 1-2 hours before sunset are above 45F and/or no more than 1/2" of rainfall occurs 24 hours before or after planned habitat removal.

    b. Following these procedures for Pump House (SUB BF2), SUB FL.2, and Filter/Softener Tank Building:
        i. Open all doors.
        ii. Remove louvered vents if present and any window covers.
        iii. Install LED work lights aimed toward ceiling throughout building in quantity noted for each building in Table 1; operate only during nighttime hours, switching off each morning.
        iv. Install large (24" – 36" diameter) air circulating fans aimed towards ceilings (1 for each enclosed space); operate only during nighttime hours, switching off each morning.
3) Conduct a follow-up survey 4-7 nights after steps a-c above;
        i. If bats are present, a qualified bat biologist will recommend additional actions to cause bats to abandon the roosts.
        ii. If no bats are present, begin demolition of buildings within 7 days.

Please let me know if you have any questions, concerns, or clarifications.

Sincerely,

Greg Tatarian

TABLE 1.

DETAILED RECOMMENDED ACTIONS AND TIMING FOR EACH STRUCTURE

ORDER OF ACTIONS	STRUCTURE NAME (Figure 1)	RECOMMENDED TIMING OF ACTIONS	DETAILED ACTIONS
1	Machine Building	Any time prior to partial dismantling and demolition of potentially occupied structures 13, 14, and 15.	Demolish and remove
2	Warehouse	Any time prior to partial dismantling and demolition of potentially occupied structures 13, 14, and 15.	Demolish and remove
3	Existing Offices	Any time prior to partial dismantling and demolition of potentially occupied structures 13, 14, and 15.	Demolish and remove
4	Brick Silos (all)	Any time prior to partial dismantling and demolition of potentially occupied structures 13, 14, and 15.	Demolish and remove
5	Structure (concrete)	Any time prior to partial dismantling and demolition of potentially occupied structures 13, 14, and 15.	Demolish and remove
6	Structure 2 (concrete)	Any time prior to partial dismantling and demolition of potentially occupied structures 13, 14, and 15.	Demolish and remove
8	3-Story Boiler Building	Any time prior to partial dismantling and demolition of potentially occupied structures 13, 14, and 15.	Demolish and remove
9	2-Story Building Near Smokestack	Any time prior to partial dismantling and demolition of potentially occupied structures 13, 14, and 15.	Demolish and remove
9	Elevated Water Tanks	Any time prior to partial dismantling and demolition of potentially occupied structures 13, 14, and 15.	Demolish and remove
10	Smokestack	A) If maternity colonies are present in *any* Structure 13, 14, or 15: *Actions at right only March 1 – April 15, or September 1 – October 15.* B) If only bachelor/non-reproductive colonies are present in *all* Structures 13, 14, 15: *Actions at right only March 1 – October 15.* C) If *only* night roost colonies are present in *all* structures 13, 14, and 15: *Demolish any date, only during day.*	Demolish and remove
11	12-Story Boiler Building and attached structure	A) If maternity colonies are present in *any* Structure 13, 14, or 15: *Actions at right only March 1 – April 15, or September 1 – October 15.* B) If only bachelor/non-reproductive colonies are present in *all* Structures 13, 14, 15: *Actions at right only March 1 – October 15.* C) If *only* night roost colonies are present in *all* structures 13, 14, and 15: *Demolish any date, only during day.*	Demolish and remove

12	Foundations & Structures, Footings	A) If maternity colonies are present in *any* Structure 13, 14, or 15: *Actions at right only March 1 – April 15, or September 1 – October 15.* B) If only bachelor/non-reproductive colonies are present in *all* Structures 13, 14, 15: *Actions at right only March 1 – October 15.* C) If *only* night roost colonies are present in *all* structures 13, 14, and 15: *Demolish any date, only during day.*	Demolish and remove
13	Pump House (SUB BF2),	A) If maternity colonies are present in *any* Structure 13, 14, or 15: *Actions at right only March 1 – April 15, or September 1 – October 15.* B) If only bachelor/non-reproductive colonies are present in *all* Structures 13, 14, 15: *Actions at right only March 1 – October 15.* C) If *only* night roost colonies are present in *all* structures 13, 14, and 15: *Demolish any date, only during day.*	1. Open all doors 2. Remove louvered vents 3. Install 4 LED work lights aimed toward ceiling throughout building 4. If a follow-up survey shows no bats are present after 7 nights, demolish building
14	SUB FL.2	A) If maternity colonies are present in *any* Structure 13, 14, or 15: *Actions at right only March 1 – April 15, or September 1 – October 15.* B) If only bachelor/non-reproductive colonies are present in *all* Structures 13, 14, 15: *Actions at right only March 1 – October 15.* C) If *only* night roost colonies are present in *all* structures 13, 14, and 15: *Demolish any date, only during day.*	1. Open all doors 2. Remove louvered vents 3. Install 6-8 LED work lights aimed toward ceiling throughout building 4. If a follow-up survey shows no bats are present after 7 nights, demolish building
15	Filter/Softener Tank Building	A) If maternity colonies are present in *any* Structure 13, 14, or 15: *Actions at right only March 1 – April 15, or September 1 – October 15.* B) If only bachelor/non-reproductive colonies are present in *all* Structures 13, 14, 15: *Actions at right only March 1 – October 15.* C) If *only* night roost colonies are present in *all* structures 13, 14, and 15: *Demolish any date, only during day.*	1. Open all doors 2. Install 4 LED work lights aimed toward ceiling throughout building, as well as 4 LED work lights aimed toward ceiling in J-shaped support building for Filter and Softener Tanks. 3. If a follow-up survey shows no bats are present after 7 nights, demolish building

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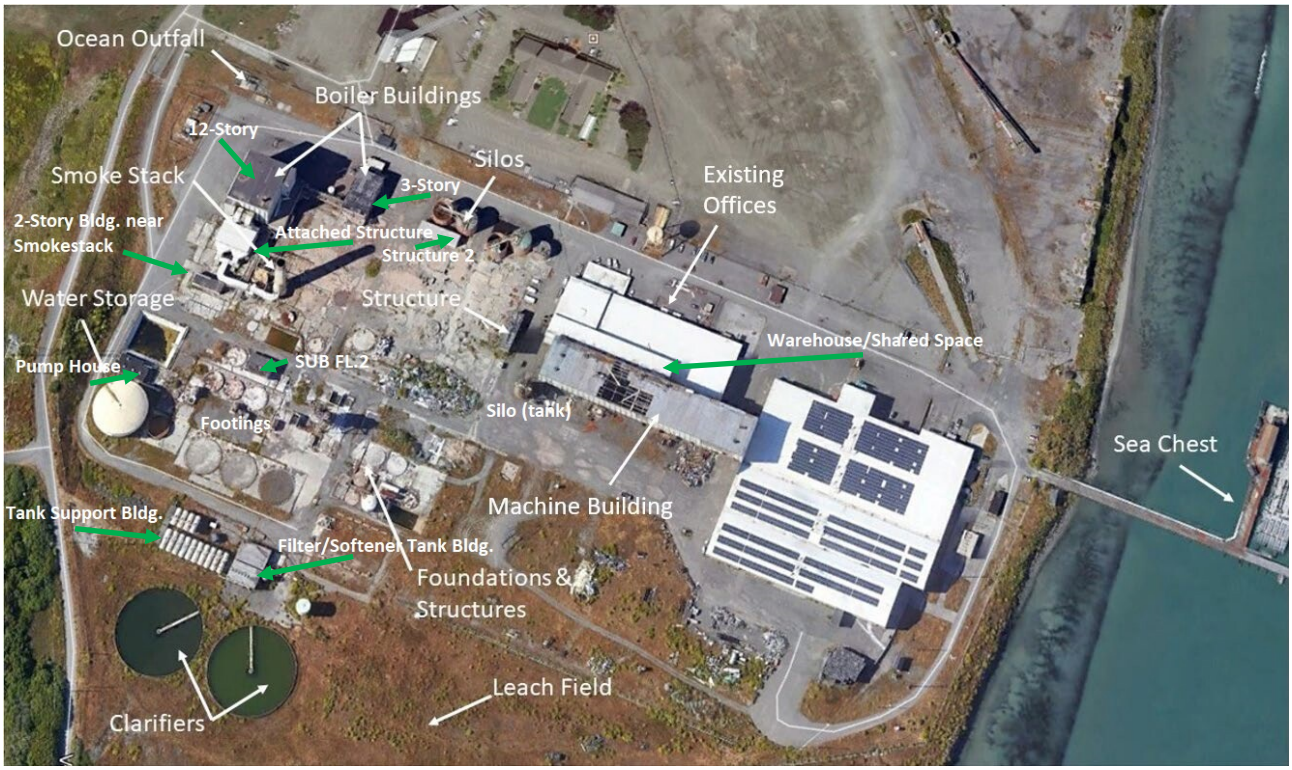

Figure 1. Structure names referenced in this report. White labels and arrows, GHD; white labels and green arrows, Wildlife Research Associates.

Figure 2. Three buildings with evidence of roosting bats.

Figure 3. Pump House. Bat activity noted throughout. Remove only during seasonal periods of bat activity after conducting partial dismantling/deterrence measures as detailed in text.

Figure 4. Interior of Pump House. Bat activity noted throughout. Remove only during seasonal periods of bat activity after conducting partial dismantling/deterrence measures as detailed in text.

Figure 5. Bat fecal pellets noted in several locations throughout Pump House.

Figure 6. Bat fecal pellets noted in several locations throughout Pump House.

Figure 7. Building SUB FL.2. Bat activity noted in several interior locations.

Figure 8. Building SUB FL.2. Bat activity noted in several interior locations.

Figure 9. Building SUB FL.2. Bat activity noted in several interior locations.

Figure 10. Building SUB FL.2. Bat activity noted in several interior locations.

Figure 11. Filter/Softener Tank Building (left) and attached Tank Support Building (right)

Figure 12. Interior of Filter/Softener Tank Building. Evidence of use by bats inside this structure, but not present in the attached, J-shaped Tank Support Building.

Figure 13. Bat fecal pellets observed in Filter/Softener Building. Some rodent activity also noted.

Figure 14. Interior of J-shaped Tank Support Building attached to Filter/Softener Tank Building. No signs of use by bats, but suitable potential habitat.

Figure 15. West-facing portion of 12-Story Boiler Building and attached structure. No signs of past or present use by bats around exterior or interior.

Figure 16. East- facing portion of 12-Story Boiler Building and attached structure. No signs of past or present use by bats.

Figure 17. Interior of 12-Story Boiler Building. Large amounts of light and in some locations, airflow, not conducive to bat roosting activity. No signs of past or present use found.

Figure 18. Interior of 12-Story Boiler Building. Large amounts of light and in some locations, airflow, not conducive to bat roosting activity. No signs of past or present use found.

Figure 19. Interior of 12-Story Boiler Building. Large amounts of light and in some locations, airflow, not conducive to bat roosting activity. No signs of past or present use found.


Figure 20. Interior of 12-Story Boiler Building. Large amounts of light and in some locations, airflow, not conducive to bat roosting activity. No signs of past or present use found.

Figure 21. No signs of past or present bat activity in connected structure.

Figure 22. No signs of past or present bat activity in connected structure.

Figure 23. 2-Story Building near Smokestack and 12-Story Boiler Building. No signs of use by bats around exterior or interior.

Figure 24. Smokestack, middle and top portion.

Figure 25. Open mouth of Smokestack – Unmanned Aerial Vehicle (UAV) photo by Nordic Aquafarms.

Figure 26. Interior lower portion of Smokestack. No signs of roosting bats.

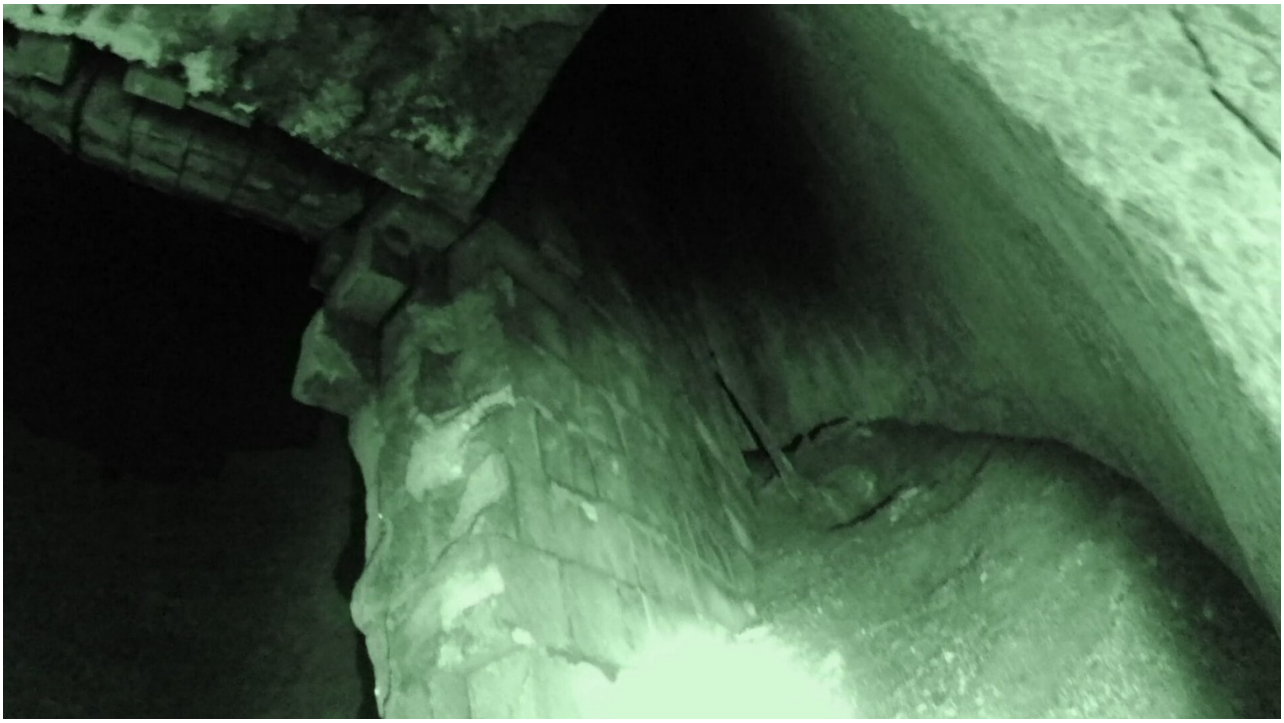

Figure 27. Open mouth of Smokestack – Unmanned Aerial Vehicle (UAV) photo by Nordic Aquafarms.

Figure 28. South-facing portion of 3-Story Boiler Building just east of 12-Story Boiler Building. No signs of bat activity, exterior or interior.

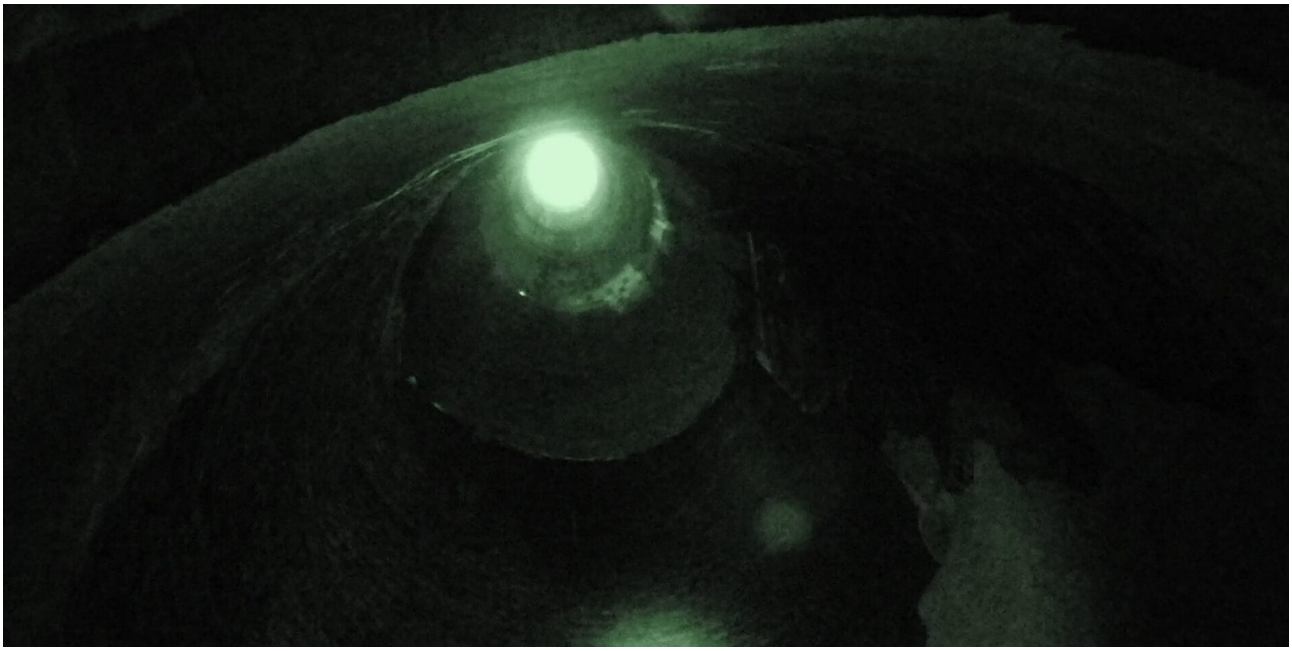

Figure 29. Open mouth of Smokestack – Unmanned Aerial Vehicle (UAV) photo by Nordic Aquafarms.

Figure 30. South-facing portion of 3-Story Boiler Building just east of 12-Story Boiler Building. No signs of bat activity, exterior or interior.

Figure 31. West-facing portion of 3-Story Boiler Building just east of 12-Story Boiler Building. No signs of bat activity, exterior or interior.

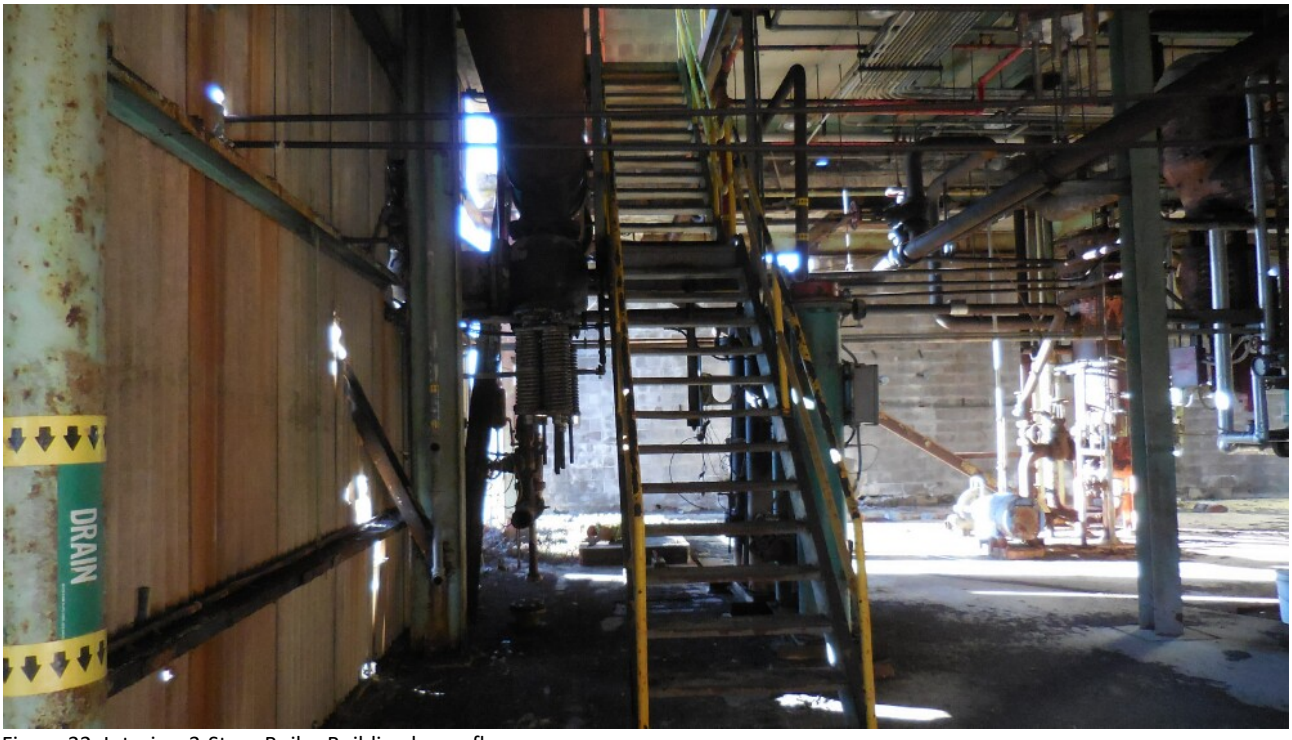

Figure 32. Interior, 3-Story Boiler Building lower floor.

Figure 33. Interior, 3-Story Boiler Building.

Figure 34. Interior, 3-Story Boiler Building.

Figure 35. Brick Silos (tanks) located at north-central portion of site. Structure 2 is visible in foreground. No signs of past or present use by bats in Structure 2, tanks not safe to survey interiors, but 2 have open tops, no suitable habitat; remainder have no suitable openings for bats.

Figure 36. Interior – Structure 2. No signs of bats, but suitable habitat present in upper floor.

Figure 37. Steel tanks in interior of site. No suitable bat habitat.

Figure 38. Elevated water tank, north portion of site just outside boundary, but may be removed. No suitable bat habitat.

Figure 39. Unmarked building outside north boundary – no signs of use by bats.

Figure 40. Portable building outside north boundary – no signs of use by bats, no suitable entry points.

Figure 41. Structure – 2-story building in foreground, Existing offices at left side of large structure, Warehouse and Shared Spaces in central part of building behind Structure, and Machine Building and Silo at right.

Figure 42. Existing Offices at left, Silo (tank), Warehouse and Shared Spaces in middle portion of large structure, and Structure (2-story, concrete) in foreground at right. No signs of past or present use by bats in any of these structures.

Figure 43. Existing Offices (leased to tenants), and entry to Warehouse and Shared Spaces.

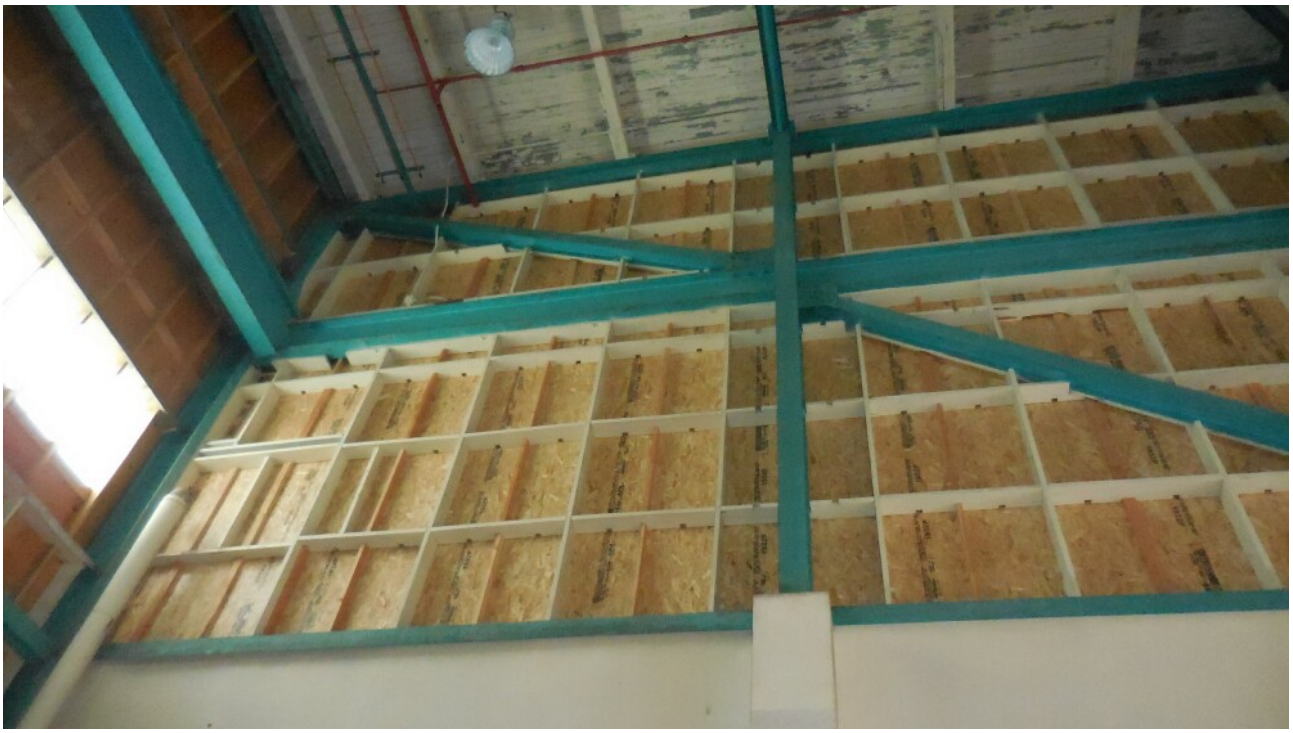
Figure 44. Wall at entry to Warehouse and Shared Spaces.

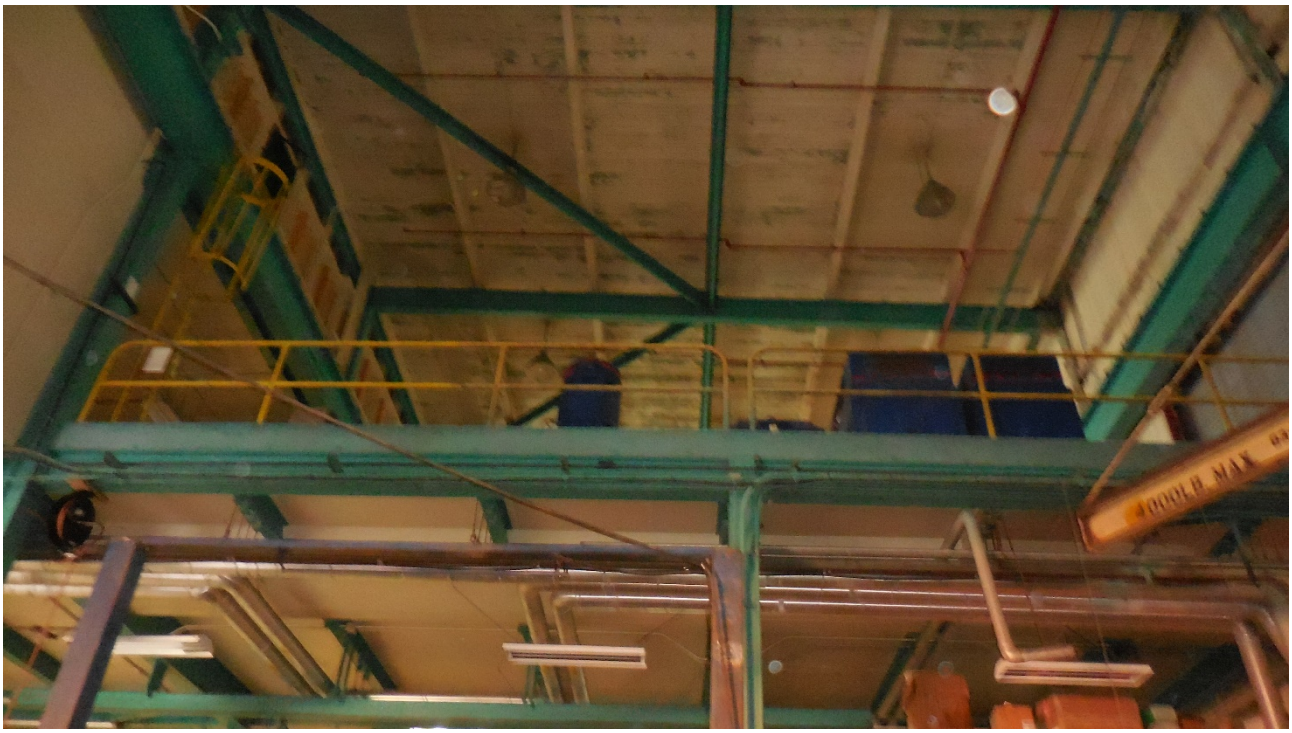

Figure 45. Warehouse and Shared Spaces structure.

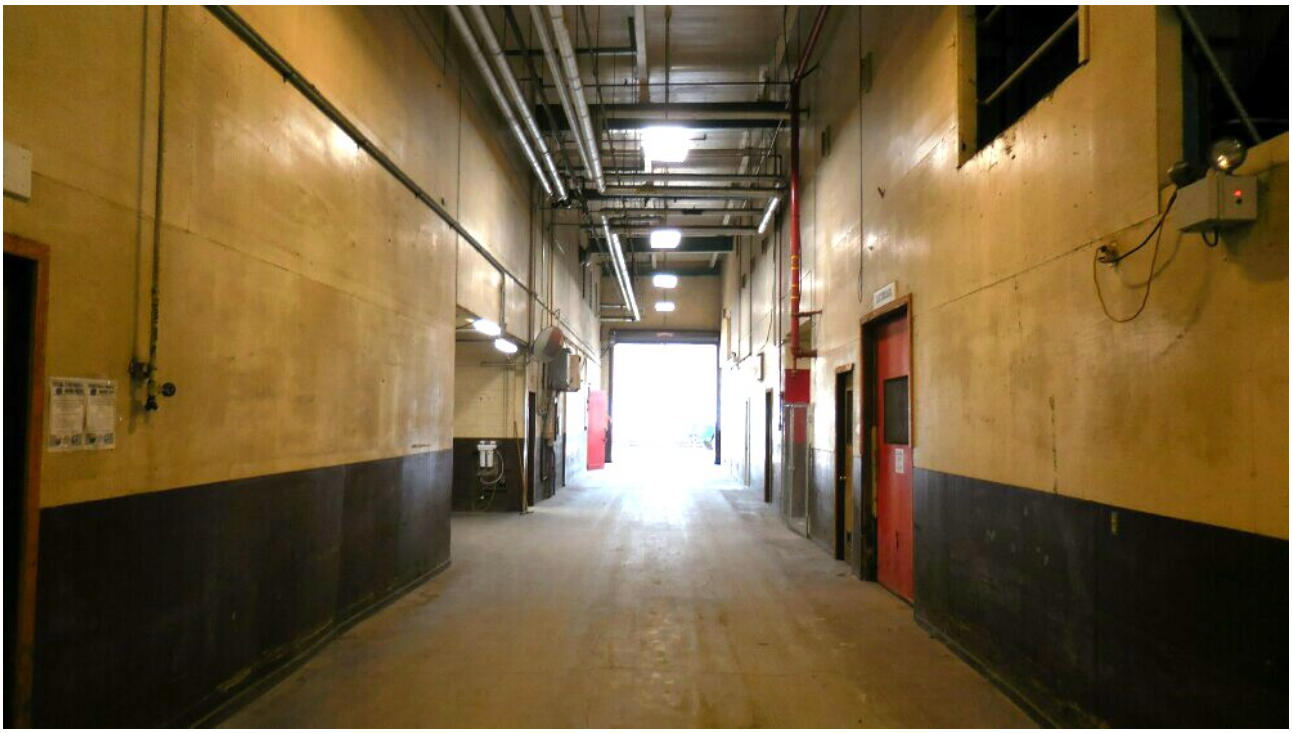

Figure 46. Warehouse and Shared Spaces structure.

Figure 47. Interior, Shared Spaces structure.


Figure 48. Interior of 2-story Structure near Machine Building and Warehouse.

Figure 49. T-beam ceiling girders provide good suitable habitat for bats, although no signs of use were present. However, Structure and Structure 2, identical in construction, should be removed prior to removal of bat-occupied structures to prevent bats abandoning those buildings from moving into these structures.

Figure 50. Machine Building. Extremely large structure has many large openings in walls and roof. No signs of past or present use by bats observed around exterior, or in interior large open spaces or enclosed rooms.

Figure 51. Continued view of Machine Building. Extremely large structure has many large openings in walls and roof. No signs of past or present use by bats observed around exterior, or in interior large open spaces or enclosed rooms.

Figure 52. Interior of Machine Building – large amounts of light and airflow, not conducive to bat roosting activity.

Figure 53. Interior of Machine Building – large amounts of light and airflow, not conducive to bat roosting activity.

Figure 54. Interior of Machine Building – large amounts of light and airflow, not conducive to bat roosting activity, even in more protected locations such as this concrete wall and girder ceiling area.

Figure 55. Interior of Machine Building – large amounts of light and airflow, not conducive to bat roosting activity, even in more protected locations such as this concrete wall and girder ceiling area.

Figure 56. Enclosed and partially-enclosed rooms inside Machine Building – no signs of past or present use by bats.

APPENDIX A.

LAWS AND REGULATIONS PERTAINING TO BATS

Bats are afforded various levels of protection under State Law (Appendix 1). Of the 25 bat species that occur within California, 12 are identified as Species of Special Concern (CDFW 2019). In addition, non-SSC species are also afforded consideration under the California Environmental Quality Act (CEQA), primarily when significant local breeding populations may be impacted. All bats in California are protected under various codes and regulations (see Appendix 1), and additional attention is paid to SSC bats and other taxa, impacts to which often are sufficient to trigger CEQA review and/or documentation, and in some cases, CDFW permitting (e.g., Lake and Streambed Alteration Agreement, when appropriate). Appendix II provides a list of laws and regulations pertaining to bats.

Bats are afforded protection under the laws and regulations below:

- **California Fish and Game Code**
    - Section 86 defining "Take"
    - SECTION 1600 – LAKE AND STREAMBED ALTERATION PROGRAM
    - Section 2000 – Unlawful taking…
    - Section 2014 – State Policy: Conservation of natural resources…
    - Section 3007 – License or permit; necessity of
    - Section 4150 – Nongame mammals
    - **California public resources code, division 14, section 21000 et seq. (CEQA statute)**
    - **California code of regulations, title 14: including but not limited to:**
        - Section 251.1 – harassment of animals
        - CEQA Regulations (Section 15000 et seq.)
            - Section 15380 – Endangered, Rare or Threatened Species
            - Section 15382 – Significant Effect on the Environment
            - Appendix G – Environmental Checklist
    - **Caltrans environmental policy**
    - **Caltrans Environmental Procedures**
    - **Federal Highway Administration (FHWA) Environmental Policy**
    - **FHWA Environmental Procedures**