

Appendix C

Avoidance and Minimization Measures

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AMM1, Establish Buffers. Project proponents will design projects to avoid and minimize direct and indirect effects of permanent development on the sensitive natural communities specified in Table 4-1 (herein referred to as *sensitive natural communities*) and covered species habitat specified in Table 4-1 by providing buffers, as stipulated in the relevant sensitive natural community AMMs (Section 4.3.3) and covered species AMMs (Section 4.3.4). On lands owned by the project proponent, the project proponent will establish a conservation easement, consistent with Section 6.4.1.3, *Land Protection Mechanisms*, to protect the buffer permanently if that land is being offered in lieu of development fees, as described in Section 4.2.2.6, *Item 6: HCP/NCCP Fees or Equivalent Mitigation*. The project proponent will design buffer zones adjacent to permanent residential development projects to control access by humans and pets (AMM2, *Design Developments to Minimize Indirect Effects at Urban-Habitat Interfaces*).

Where existing development is already within the stipulated buffer distance (i.e., existing uses prevent establishment of the full buffer), the development will not encroach farther into the space between the development and the sensitive natural community.

This AMM does not apply to seasonal construction buffers for covered species, which are detailed for each species in Section 4.3.4, *Covered Species*.

A lesser buffer than is stipulated in the AMMs may be approved by the Conservancy, USFWS, and CDFW if they determine that the sensitive natural community or covered species is avoided to an extent that is consistent with the project purpose (e.g., if the purpose of the project is to provide a stream crossing or replace a bridge, the project may encroach into the buffer and the natural community or species habitat to the extent that is necessary to fulfill the project purpose).

AMM2, Design Developments to Minimize Indirect Effects at Urban-Habitat Interfaces. For development projects implemented adjacent to non-agricultural natural communities and covered species habitats, project proponents will incorporate urban-habitat interface elements into project design to minimize the following indirect effects of the development on adjacent habitat areas:

- ▲ Noise and visual disturbances that diminish the ability of covered and other native wildlife species to use the habitat.
- ▲ Increased numbers of pets (e.g., dogs, cats) that can result in harassment and mortality of covered and other native wildlife species.
- ▲ Increased levels of direct habitat disturbances associated with increased human access to habitats (e.g., destruction of vegetation and injury or mortality of wildlife associated with use of off-road vehicles).
- ▲ Escape or planting of invasive nonnative plants.

This AMM does not apply to development where it is immediately adjacent to existing developed lands.

The project proponent will implement the following urban-habitat interface design elements and activities, as applicable, to each discretionary project:

- ▲ Place roads or other non-residential spaces, such as parks or greenbelts, rather than lots at the urban-natural community interface. The benefits of this may include a reduction in the number of incidences of pets entering the natural communities.
- ▲ Design roads, bike paths, and trails to discourage entry of humans and pets into adjacent natural communities and promote citizen policing at the natural community periphery.

- ▲ Establish barriers that discourage entry of humans and pets into natural community areas.
- ▲ Design fences to prevent pets from escaping yards into adjacent natural communities, control entry and dumping of trash into adjacent natural communities, and when appropriate, shield adjacent natural communities from visual disturbances that may interfere with normal wildlife behavioral patterns.
- ▲ Fence new public roads associated with developments to prevent unauthorized public access into habitat areas and effectively direct wildlife to specially designed crossing structures.
- ▲ Design development drainage systems and implement appropriate best management practices to avoid changes to overland flow and water quality in natural community areas, including streamcourses.
- ▲ Design development lighting to avoid projecting light into adjacent natural community areas. For lights at or near the urban-natural community interface, use low-glare lighting to minimize lighting effects on natural communities.

AMM3, Confine and Delineate Work Area. Where natural communities and covered species habitat are present, workers will confine land clearing to the minimum area necessary to facilitate construction activities. Workers will restrict movement of heavy equipment to and from the project site to established roadways to minimize natural community and covered species habitat disturbance. The project proponent will clearly identify boundaries of work areas using temporary fencing or equivalent and will identify areas designated as environmentally sensitive. All construction vehicles, other equipment, and personnel will avoid these designated areas.

AMM4, Cover Trenches and Holes during Construction and Maintenance. To prevent injury and mortality of giant garter snake, western pond turtle, and California tiger salamander, workers will cover open trenches and holes associated with implementation of covered activities that affect habitat for these species or design the trenches and holes with escape ramps that can be used during non-working hours. The construction contractor will inspect open trenches and holes prior to filling and contact a qualified biologist to remove or release any trapped wildlife found in the trenches or holes.

AMM5, Control Fugitive Dust. Workers will minimize the spread of dust from work sites to natural communities or covered species habitats on adjacent lands.

AMM6, Conduct Worker Training. All construction personnel will participate in a worker environmental training program approved/authorized by the Conservancy and administered by a qualified biologist. The training will provide education regarding sensitive natural communities and covered species and their habitats, the need to avoid adverse effects, state and federal protection, and the legal implications of violating the FESA and NCCPA Permits. A pre-recorded video presentation by a qualified biologist shown to construction personnel may fulfill the training requirement.

AMM7, Control Nighttime Lighting of Project Construction Sites. Workers will direct all lights for nighttime lighting of project construction sites into the project construction area and minimize the lighting of natural habitat areas adjacent to the project construction area.

AMM8, Avoid and Minimize Effects of Construction Staging Areas and Temporary Work Areas. Project proponents should locate construction staging and other temporary work areas for covered activities in areas that will ultimately be a part of the permanent project development footprint. If construction staging and other temporary work areas must be located outside of permanent project footprints, they will be located either in areas that do not support habitat for covered species or are easily restored to prior or improved ecological functions (e.g., grassland and agricultural land). Construction staging and other temporary work areas located outside of project footprints will be sited in areas that avoid adverse effects on the following:

- ▲ Serpentine, valley oak woodland, alkali prairie, vernal pool complex, valley foothill riparian, and fresh emergent wetland land cover types.
- ▲ Occupied western burrowing owl burrows. [Occupied for the purpose of AMM8 means at least one burrowing owl has been observed occupying the burrow within the last three years. Occupancy of a burrow may also be indicated by owl sign at the burrow entrance, including molted feathers, cast pellets, prey remains, eggshell fragments, or excrement at or near a burrow entrance or perch site]
- ▲ Nest sites for covered bird species and all raptors, including noncovered raptors, during the breeding season.

Project proponents will follow specific AMMs for sensitive natural communities (Section 4.3.3, Sensitive Natural Communities) and covered species (Section 4.3.4, Covered Species) in temporary staging and work areas. For establishment of temporary work areas outside of the project footprint, project proponents will conduct surveys to determine if any of the biological resources listed above are present.

Within one year following removal of land cover, project proponents will restore temporary work and staging areas to a condition equal to or greater than the covered species habitat function of the affected habitat. Restoration of vegetation in temporary work and staging areas will use clean, native seed mixes approved by the Conservancy that are free of noxious plant species seeds.

AMM9, Establish Buffers around Sensitive Natural Communities. The buffers for each sensitive natural community are as follows:

- ▲ Alkali prairie and vernal pools: The area necessary to provide the hydrologic conditions needed to support the wetlands within these natural communities (250 feet). Covered activities will avoid vernal pools or alkali seasonal wetlands by 250 feet [Alkali seasonal wetlands are seasonal wetlands within the alkali prairie natural community], or other distance based on site specific topography to avoid indirect hydrologic effects. A buffer of less than 250 feet around vernal pools or alkali seasonal wetlands will be subject to wildlife agency concurrence that effects will be avoided. Considerations that may warrant a buffer of less than 250 feet may include topography (i.e., if the surrounding microwatershed extends less than 250 feet from the pool or wetland), intervening hydrologic barriers such as roads or canals, or other factors indicating that the proposed disturbance area does not contribute to the pool's hydrology. Other considerations may include temporary disturbance during the dry season where measures are implemented to avoid disturbance of the underlying claypan or hardpan, and the area is returned to pre-project conditions prior to the following rainy season.
- ▲ Valley foothill riparian: One hundred feet from canopy drip-line. If avoidance is infeasible, a lesser buffer or encroachment into the sensitive natural community may be allowed if approved by the Conservancy and the wildlife agencies, based on the criteria listed in AMM1. Transportation or utility crossings may encroach into this sensitive natural community provided effects are minimized and all other applicable AMMs are followed.
- ▲ Lacustrine and riverine: Outside urban planning units, 100 feet from the top of banks [Defined as the area within which water is contained in a channel.]. Within urban planning units, 25 feet from the top of the banks.
- ▲ Fresh emergent wetland: Fifty feet from the edge of the natural community.

AMM10, Avoid and Minimize Effects on Wetlands and Waters. Project proponents will comply with stormwater management plans that regulate development as part of compliance with regulations under National Pollutant Discharge Elimination System (NPDES) permit requirements. Covered activities that result in any fill of waters or wetlands will also comply with requirements under Section 404 of the Clean Water Act, State Water Resources Control Board (State Board), Fish and Game Code Section 1602, and Regional Board regulations. Other than requirements for buffers, minimizing project footprint, and species-specific measures

for wetland-dependent covered species, this HCP/NCCP does not include specific best management practices for protecting wetlands and waters because they may conflict with measures required by the USACE, State Board, Regional Board, and CDFW.

AMM11, Minimize Take and Adverse Effects on Palmate-Bracted Bird's Beak. Palmate-bracted bird's-beak is covered by the Yolo HCP/NCCP only for the removal of suitable habitat and not for the removal of palmate-bracted bird's beak plants. This AMM ensures compliance with this provision. To determine if palmate-bracted bird's-beak is present and could be affected, the project proponent will conduct a planning-level survey for this species for any covered activities to be conducted within 250 feet of suitable habitat (as defined in Appendix A, *Covered Species Accounts*). The survey will be conducted during the period from May 31 to September 30 and will be consistent with *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (California Department of Fish and Game 2009).

The project proponent will avoid occupied habitat where palmate-bracted bird's beak has been located within any of the last 15 years (seed viability could be as little as three years and as much as six years, as described in Appendix A, Section A.1.2, *Species Description and Life History*). The project proponent also will avoid any new occurrences of this species identified during planning-level surveys. Avoidance will require a 250-foot setback from the occupied habitat, or greater distance depending on site-specific topography to avoid hydrologic effects. A shorter buffer distance may apply if it is determined to avoid effects and is approved by the Conservancy, USFWS, and CDFW. Mortality of palmate-bracted bird's beak individuals will be avoided, except as needed through management activities that provide an overall benefit to the species.

AMM12, Minimize Take and Adverse Effects on Habitat of Valley Elderberry Longhorn Beetle. The project proponent will retain a qualified biologist who is familiar with valley elderberry longhorn beetle and evidence of its presence (i.e., exit holes in elderberry shrubs) to map all elderberry shrubs in and within 100 feet of the project footprint with stems that are greater than one inch in diameter at ground level. To avoid take of valley elderberry longhorn beetle fully, the project proponent will maintain a buffer of at least 100 feet from any elderberry shrubs with stems greater than one inch in diameter at ground level. *AMM1, Establish Buffers*, above, describes circumstances in which a lesser buffer may be applied. For elderberry shrubs that cannot be avoided with a designated buffer distance as described above, the qualified biologist will quantify the number of stems one inch or greater in diameter to be affected, and the presence or absence of exit holes. The Conservancy will use this information to determine the number of plants or cuttings to plant on a riparian restoration site to help offset the loss, consistent with Section 6.4.2.4.1, *Valley Elderberry Longhorn Beetle*. Additionally, prior to construction, the project proponent will transplant elderberry shrubs identified within the project footprint that cannot be avoided.

Transplantation will only occur if a shrub cannot be avoided and, if indirectly affected, the indirect effects would otherwise result in the death of stems or the entire shrub. If the project proponent chooses, in coordination with a qualified biologist, not to transplant the shrub because the activity would not likely result in death of stems of the shrub, then the qualified biologist will monitor the shrub annually for a five-year monitoring period. The monitoring period may be reduced with concurrence from the wildlife agencies if the latest research and best available information at the time indicates that a shorter monitoring period is warranted. If death of stems at least one inch in diameter occurs within the monitoring period, and the qualified biologist determines that the shrub is sufficiently healthy to transplant, the project proponent will transplant the shrub as described in the following paragraph, in coordination with the qualified biologist. If the shrub dies during the monitoring period, or the qualified biologist determines that the shrub is no longer healthy enough to survive transplanting, then the Conservancy will offset the shrub loss consistent with the preceding paragraph.

The project proponent will transplant the shrubs into a location in the HCP/NCCP reserve system that has been approved by the Conservancy. Elderberry shrubs outside the project footprint but within the 100-foot buffer will not be transplanted.

Transplanting will follow the following measures:

1. **Monitor:** A qualified biologist will be on-site for the duration of the transplanting of the elderberry shrubs to ensure the effects on elderberry shrubs are minimized.
2. **Timing:** The project proponent will transplant elderberry plants when the plants are dormant, approximately November through the first two weeks of February, after they have lost their leaves. Transplanting during the non-growing season will reduce shock to the plant and increase transplantation success.
3. **Transplantation procedure:**
 - a. Cut the plant back three to six feet from the ground or to 50 percent of its height (whichever is taller) by removing branches and stems above this height. Replant the trunk and stems measuring one inch or greater in diameter. Remove leaves that remain on the plants.
 - b. Relocate plant to approved location in the reserve system, and replant as described in Section 6.4.2.4.1, *Valley Elderberry Longhorn Beetle*.

AMM13, Minimize Take and Adverse Effects on Habitat of California Tiger Salamander. The project proponent will retain a qualified biologist to identify any suitable aquatic and upland habitats for California salamander (as defined in Appendix A, *Covered Species Accounts*) present in and within 500 feet of the project footprint during planning-level surveys. The qualified biologist will also assess whether critical habitat could be affected by the covered activity.

Except for habitat management and enhancement, all covered activities will provide a 500-foot setback from aquatic California tiger salamander habitat. If a covered activity is outside the Dunnigan Creek Unit of California tiger salamander critical habitat and, as designed, will not avoid aquatic habitat by at least 500 feet, the project proponent will either conduct visual and dip-net surveys, consistent with CDFW protocol, during the period for November 1 to May 15 (California Department of Fish and Game 2003) or assume presence. If the species is present or assumed to be present, the covered activity will not remove aquatic habitat until at least four new occupied breeding pools are discovered or established in the Plan Area and protected in the Plan Area. After the four new occupied breeding pools are protected, and with concurrence of USFWS and CDFW, up to three breeding pools may be affected. The breeding habitat may not be removed if USFWS and CDFW determine that the covered activity would remove a significant occurrence of this species that could be necessary for maintaining the genetic diversity or regional distribution of the species. This AMM applies to California tiger salamander aquatic habitat and surrounding uplands, as defined by reference to the setbacks described above; it does not apply to cultivated agricultural lands (i.e., agricultural lands other than grazing lands) or other low-value upland habitat for California tiger salamander.

AMM14, Minimize Take and Adverse Effects on Habitat of Western Pond Turtle. There are no specific design requirements for western pond turtle habitat, however, project proponents must follow design requirements for the valley foothill riparian and lacustrine and riverine natural communities described in AMMs 9 and 10, which require a 100-foot (minimum) permanent buffer zone from the canopy drip-line (the farthest edge on the ground where water will drip from the tree canopy, based on the outer boundary of the tree canopy). If modeled upland habitat will be impacted, a qualified biologist must be present and will assess the likelihood of western pond turtle nests occurring in the disturbance area (based on sun exposure, soil conditions, and other species habitat requirements).

If a qualified biologist determines that there is a moderate to high likelihood of western pond turtle nests within the disturbance area, the qualified biologist will monitor all initial ground disturbing activity for nests that may be unearthed during the disturbance, and will move out of harm's way any turtles or hatchlings found.

AMM15, Minimize Take and Adverse Effects on Habitat of Giant Garter Snake. The project proponent will avoid effects on areas where planning-level surveys indicate the presence of suitable habitat for giant garter snake. To avoid effects on giant garter snake aquatic habitat, the project proponent will conduct no in-water/in-channel activity and maintain a permanent 200-foot non-disturbance buffer from the outer edge of potentially occupied aquatic habitat. If the project proponent cannot avoid effects of construction activities, the project proponent will implement the measures below to minimize effects of construction projects (measures for maintenance activities are described after the following bulleted list).

- ▲ Conduct preconstruction clearance surveys using USFWS-approved methods within 24 hours prior to construction activities within identified giant garter snake aquatic and adjacent upland habitat. If construction activities stop for a period of two weeks or more, conduct another preconstruction clearance survey within 24 hours prior to resuming construction activity.
- ▲ Restrict all construction activity involving disturbance of giant garter snake habitat to the snake's active season, May 1 through October 1. During this period, the potential for direct mortality is reduced because snakes are expected to move and avoid danger.
- ▲ In areas where construction is to take place, encourage giant garter snakes to leave the site on their own by dewatering all irrigation ditches, canals, or other aquatic habitat (i.e., removing giant garter snake aquatic habitat) between April 15 and September 30. Dewatered habitat must remain dry, with no water puddles remaining, for at least 15 consecutive days prior to excavating or filling of the habitat. If a site cannot be completely dewatered, netting and salvage of giant garter snake prey items may be necessary to discourage use by snakes.
- ▲ Provide environmental awareness training for construction personnel, as approved by the Conservancy. Training may consist of showing a video prepared by a qualified biologist, or an in-person presentation by a qualified biologist. In addition to the video or in-person presentation, training may be supplemented with the distribution of approved brochures and other materials that describe resources protected under the Yolo HCP/NCCP and methods for avoiding effects.
- ▲ A qualified biologist will prepare a giant garter snake relocation plan which must be approved by the Conservancy prior to work in giant garter snake habitat. The qualified biologist will base the relocation plan on criteria provided by CDFW or USFWS, through the Conservancy.
- ▲ If a live giant garter snake is encountered during construction activities, immediately notify the project's biological monitor and USFWS and CDFW. The monitor will stop construction in the vicinity of the snake, monitor the snake, and allow the snake to leave on its own. The monitor will remain in the area for the remainder of the work day to ensure the snake is not harmed or, if it leaves the site, does not return. If the giant garter snake does not leave on its own, the qualified biologist will relocate the snake consistent with the relocation plan described above.
- ▲ Employ the following management practices to minimize disturbances to habitat:
 - Install temporary fencing to identify and protect adjacent marshes, wetlands, and ditches from encroachment from construction equipment and personnel.
 - Maintain water quality and limit construction runoff into wetland areas through the use of hay bales, filter fences, vegetative buffer strips, or other accepted practices. No plastic, monofilament, jute, or similar erosion-control matting that could entangle snakes or other wildlife will be permitted.

Ongoing maintenance covered activities by local water and flood control agencies typically involve removal of vegetation, debris, and sediment from water conveyance canals as well as resloping, rocking, and stabilizing the canals that serve agricultural water users. Maintenance of these conveyance facilities can typically occur only from mid-January through April when conveyance canals and ditches are not in service by the agency, although some drainages are used for storm conveyance during the winter and are wet all year. This timing

is during the giant garter snake's inactive period. This is when snakes may be using underground burrows and are most vulnerable to take because they are unable to move out of harm's way. Maintenance activities, therefore, will be limited to the giant garter snake's active season (May 1 to October 1) when possible. All personnel involved in maintenance activities within giant garter snake habitat will first participate in environmental awareness training for giant garter snake, as described above for construction-related activities. To minimize the take of giant garter snake, the local water or flood control agency will limit maintenance of conveyance structures located within modeled giant garter snake habitat (Appendix A, *Covered Species Accounts*) to clearing one side along at least 80 percent of the linear distance of canals and ditches during each maintenance year (e.g., the left bank of a canal is maintained in the first year and the right bank in the second year). To avoid collapses when resloping canal and ditch banks composed of heavy clay soils, clearing will be limited to one side of the channel during each maintenance year.

For channel maintenance activities conducted within modeled habitat for giant garter snake, the project proponent will place removed material in existing dredged sites along channels where prior maintenance dredge disposal has occurred. For portions of channels that do not have previously used spoil disposal sites and where surveys have been conducted to confirm that giant garter snakes are not present, removed materials may be placed along channels in areas that are not occupied by giant garter snake and where materials will not re-enter the canal because of stormwater runoff.

Modifications to this AMM may be made with the approval of the Conservancy, USFWS, and CDFW.

AMM16, Minimize Take and Adverse Effects on Habitat of Swainson's Hawk and White-Tailed Kite. The project proponent will retain a qualified biologist to conduct planning-level surveys and identify any nesting habitat present within 1,320 feet of the project footprint. Adjacent parcels under different land ownership will be surveyed only if access is granted or if the parcels are visible from authorized areas.

If a construction project cannot avoid potential nest trees (as determined by the qualified biologist) by 1,320 feet, the project proponent will retain a qualified biologist to conduct preconstruction surveys for active nests consistent with guidelines provided by the Swainson's Hawk Technical Advisory Committee (2000), between March 15 and August 30, within 15 days prior to the beginning of the construction activity. The results of the survey will be submitted to the Conservancy and CDFW. If active nests are found during preconstruction surveys, a 1,320-foot initial temporary nest disturbance buffer shall be established. If project related activities within the temporary nest disturbance buffer are determined to be necessary during the nesting season, then the qualified biologist will monitor the nest and will, along with the project proponent, consult with CDFW to determine the best course of action necessary to avoid nest abandonment or take of individuals. Work may be allowed only to proceed within the temporary nest disturbance buffer if Swainson's hawk or white-tailed kite are not exhibiting agitated behavior, such as defensive flights at intruders, getting up from a brooding position, or flying off the nest, and only with the agreement of CDFW and USFWS. The designated on-site biologist/monitor shall be on-site daily while construction-related activities are taking place within the 1,320-foot buffer and shall have the authority to stop work if raptors are exhibiting agitated behavior. Up to 20 Swainson's hawk nest trees (documented nesting within the last 5 years) may be removed during the permit term, but they must be removed when not occupied by Swainson's hawks.

For covered activities that involve pruning or removal of a potential Swainson's hawk or white-tailed kite nest tree, the project proponent will conduct preconstruction surveys that are consistent with the guidelines provided by the Swainson's Hawk Technical Advisory Committee (2000). If active nests are found during preconstruction surveys, no tree pruning or removal of the nest tree will occur during the period between March 1 and August 30 within 1,320 feet of an active nest, unless a qualified biologist determines that the young have fledged and the nest is no longer active.

AMM17, Minimize Take and Adverse Effects on Habitat of Western Yellow-Billed Cuckoo. The project proponent will retain a qualified biologist to conduct planning-level surveys and assess whether habitat for western yellow-billed cuckoo (as defined in Appendix A, *Covered Species Accounts*) is present within 500 feet of covered activities. If habitat is present, the project proponent will redesign the project to avoid or minimize activities within 500 feet of western yellow-billed cuckoo habitat. If the activity will encroach within

500 feet of habitat and there are no breeding (or nesting) season records for the species within one-quarter mile of the covered activity within the previous three years, a qualified biologist will conduct planning-level surveys for active nests, consistent with USFWS protocol (Appendix N), during the period from June 1 to August 30. Operations and maintenance activities that do not occur during the breeding season (June 1 to August 30) and do not remove western yellow-billed cuckoo habitat are not required to conduct surveys or record searches; no further avoidance or minimization is necessary for such activities.

If an occupied territory is discovered during planning-level surveys, or there is a record of the species occurring within one-quarter mile of the covered activity within the previous three years, the project proponent will design the project to avoid activities within 500 feet of suitable habitat, unless the Conservancy, USFWS, and CDFW approve a shorter distance.

If an activity occurs within 500 feet of suitable habitat during the breeding season, regardless of whether or not a qualified biologist detected the species during planning-level surveys or there are records for the species in the area, a qualified biologist will conduct preconstruction surveys that are consistent with USFWS protocol (Appendix N) during the same season when the activity will occur. If the biologist finds active territories (i.e., presence of a singing male), the project proponent will avoid activity within 500 feet of suitable habitat that is contiguous with the territory from June 1 to August 30. Adjacent parcels under different land ownership will be surveyed only if access is granted or if the parcels are visible from authorized areas.

AMM18, Minimize Take and Adverse Effects on Western Burrowing Owl. The project proponent will retain a qualified biologist to conduct planning-level surveys and identify western burrowing owl habitat (as defined in Appendix A, *Covered Species Accounts*) within or adjacent to (i.e., within 500 feet of) a covered activity. If habitat for this species is present, additional surveys for the species by a qualified biologist are required, consistent with CDFW guidelines (Appendix L).

If burrowing owls are identified during the planning-level survey, the project proponent will minimize activities that will affect occupied habitat as follows. Occupied habitat is considered fully avoided if the project footprint does not impinge on a nondisturbance buffer around the suitable burrow. For occupied burrowing owl nest burrows, this nondisturbance buffer could range from 150 to 1,500 feet (Table 4-2, *Recommended Restricted Activity Dates and Setback Distances by Level of Disturbance for Burrowing Owls*), depending on the time of year and the level of disturbance, based on current guidelines (California Department of Fish and Game 2012). The Yolo HCP/NCCP generally defines low, medium, and high levels of disturbances of burrowing owls as follows.

- ▲ **Low:** Typically 71-80 dB, generally characterized by the presence of passenger vehicles, small gas-powered engines (e.g., lawn mowers, small chain saws, portable generators), and high-tension power lines. Includes electric hand tools (except circular saws, impact wrenches and similar). Management and enhancement activities would typically fall under this category. Human activity in the immediate vicinity of burrowing owls would also constitute a low level of disturbance, regardless of the noise levels.
- ▲ **Moderate:** Typically 81-90 dB, and would include medium- and large-sized construction equipment, such as backhoes, front end loaders, large pumps and generators, road graders, dozers, dump trucks, drill rigs, and other moderate to large diesel engines. Also includes power saws, large chainsaws, pneumatic drills and impact wrenches, and large gasoline-powered tools. Construction activities would normally fall under this category.
- ▲ **High:** Typically 91-100 dB, and is generally characterized by impacting devices, jackhammers, compression (“jake”) brakes on large trucks, and trains. This category includes both vibratory and impact pile drivers (smaller steel or wood piles) such as used to install piles and guard rails, and large pneumatic tools such as chipping machines. It may also include large diesel and gasoline engines, especially if in concert with other impacting devices. Felling of large trees (defined as dominant or subdominant trees in mature forests), truck horns, yarding tower whistles, and muffled or underground

explosives are also included. Very few covered activities are expected to fall under this category, but some construction activities may result in this level of disturbance.

The project proponent may qualify for a reduced buffer size, based on existing vegetation, human development, and land use, if agreed upon by CDFW and USFWS (California Department of Fish and Game 2012).

Table 4-2¹ Recommended Restricted Activity Dates and Setback Distances by Level of Disturbance for Burrowing Owls

Time of Year	Level of Disturbance (feet) from Occupied Burrows		
	Low	Medium	High
April 1–August 15	600	1,500	1,500
August 16–October 15	600	600	1,500
October 16–March 31	150	300	1,500

Notes: ¹ Table number corresponds to the numbering provided in the HCP/NCCP.

Source: Yolo Habitat Conservancy 2018

If the project does not fully avoid direct and indirect effects on nesting sites (i.e., if the project cannot adhere to the buffers described above), the project proponent will retain a qualified biologist to conduct preconstruction surveys and document the presence or absence of western burrowing owls that could be affected by the covered activity. Prior to any ground disturbance related to covered activities, the qualified biologist will conduct the preconstruction surveys within three days prior to ground disturbance in areas identified in the planning-level surveys as having suitable burrowing owl burrows, consistent with CDFW preconstruction survey guidelines (Appendix L, Take Avoidance Surveys). The qualified biologist will conduct the preconstruction surveys three days prior to ground disturbance. Time lapses between ground disturbing activities will trigger subsequent surveys prior to ground disturbance.

If the biologist finds the site to be occupied¹ by western burrowing owls during the breeding season (February 1 to August 31), the project proponent will avoid all nest sites, based on the buffer distances described above, during the remainder of the breeding season or while the nest is occupied by adults or young (occupation includes individuals or family groups that forage on or near the site following fledging). Construction may occur inside of the disturbance buffer during the breeding season if the nest is not disturbed and the project proponent develops an AMM plan that is approved by the Conservancy, CDFW, and USFWS prior to project construction, based on the following criteria:

- ▲ The Conservancy, CDFW, and USFWS approves the AMM plan provided by the project proponent.
- ▲ A qualified biologist monitors the owls for at least three days prior to construction to determine baseline nesting and foraging behavior (i.e., behavior without construction).
- ▲ The same qualified biologist monitors the owls during construction and finds no change in owl nesting and foraging behavior in response to construction activities.
- ▲ If the qualified biologist identifies a change in owl nesting and foraging behavior as a result of construction activities, the qualified biologist will have the authority to stop all construction related activities within the non-disturbance buffers described above. The qualified biologist will report this information to the Conservancy, CDFW, and USFWS within 24 hours, and the Conservancy will require

¹ Occupancy of burrowing owl habitat during preconstruction surveys is confirmed at a site when at least one burrowing owl or sign (fresh whitewash, fresh pellets, feathers, or nest ornamentation) is observed at or near a burrow entrance.

that these activities immediately cease within the non-disturbance buffer. Construction cannot resume within the buffer until the adults and juveniles from the occupied burrows have moved out of the project site, and the Conservancy, CDFW, and USFWS agree.

- ▲ If monitoring indicates that the nest is abandoned prior to the end of nesting season and the burrow is no longer in use by owls, the project proponent may remove the nondisturbance buffer, only with concurrence from CDFW and USFWS. If the burrow cannot be avoided by construction activity, the biologist will excavate and collapse the burrow in accordance with CDFW's 2012 guidelines to prevent reoccupation after receiving approval from the wildlife agencies.

If evidence of western burrowing owl is detected outside the breeding season (September 1 to January 31), the project proponent will establish a non-disturbance buffer around occupied burrows, consistent with Table 4-2, as determined by a qualified biologist. Construction activities within the disturbance buffer are allowed if the following criteria are met to prevent owls from abandoning important overwintering sites:

- ▲ A qualified biologist monitors the owls for at least three days prior to construction to determine baseline foraging behavior (i.e., behavior without construction).
- ▲ The same qualified biologist monitors the owls during construction and finds no change in owl foraging behavior in response to construction activities.
- ▲ If there is any change in owl roosting and foraging behavior as a result of construction activities, these activities will cease within the buffer.
- ▲ If the owls are gone for at least one week, the project proponent may request approval from the Conservancy, CDFW, and USFWS for a qualified biologist to excavate and collapse usable burrows to prevent owls from reoccupying the site if the burrow cannot be avoided by construction activities. The qualified biologist will install one-way doors for a 48-hour period prior to collapsing any potentially occupied burrows. After all usable burrows are excavated, the buffer will be removed and construction may continue.

Monitoring must continue as described above for the nonbreeding season as long as the burrow remains active.

A qualified biologist will monitor the site, consistent with the requirements described above, to ensure that buffers are enforced and owls are not disturbed. Passive relocation (i.e., exclusion) of owls has been used in the past in the Plan Area to remove and exclude owls from active burrows during the nonbreeding season (Trulio 1995). Exclusion and burrow closure will not be conducted during the breeding season for any occupied burrow. If the Conservancy determines that passive relocation is necessary, the project proponent will develop a burrowing owl exclusion plan in consultation with CDFW biologists. The methods will be designed as described in the species monitoring guidelines (California Department of Fish and Game 2012) and consistent with the most up-to-date checklist of passive relocation techniques². This may include the installation of one-way doors in burrow entrances by a qualified biologist during the nonbreeding season. These doors will be in place for 48 hours and monitored twice daily to ensure that the owls have left the burrow, after which time the biologist will collapse the burrow to prevent reoccupation. Burrows will be excavated using hand tools. During excavation, an escape route will be maintained at all times. This may include inserting an artificial structure, such as piping, into the burrow to prevent collapsing until the entire burrow can be excavated and it can be determined that no owls are trapped inside the burrow. The Conservancy may allow other methods of passive or active relocation, based on best available science, if approved by the wildlife agencies. Artificial burrows will be constructed prior to exclusion and will be created less than 300 feet from the existing burrows on lands that are protected as part of the reserve system.

² The Conservancy will maintain a checklist of passive relocation techniques. CDFW will approve the initial list, and the Conservancy will update as needed in coordination with CDFW.

AMM19, Minimize Take and Adverse Effects on Least Bell's vireo. The project proponent will retain a qualified biologist to conduct planning-level surveys and determine if habitat for least Bell's vireo (as defined in Appendix A, *Covered Species Accounts*) is present within 500 feet of covered activities. If habitat is present, the project proponent will redesign the project to avoid or minimize activities within 500 feet of least Bell's vireo habitat. If the activity will encroach within 500 feet of habitat and there are no breeding season records for the species within one-quarter mile of the covered activity within the previous three years, the qualified biologist will conduct planning-level surveys for active territories, consistent with USFWS (2001) guidelines, during the breeding season (April 1 to July 15). Operations and maintenance activities that do not occur during the breeding season and do not affect least Bell's vireo habitat are not required to conduct surveys or record searches, and no further avoidance or minimization is necessary for such activities.

- ▲ If an occupied territory is discovered during planning-level surveys, or there is a record of the species occurring within one-quarter mile of the covered activity within the previous three years, the project proponent will design the project to avoid activities within 500 feet of suitable habitat, unless the Conservancy, USFWS, and CDFW approve a shorter distance.
- ▲ If an activity occurs within 500 feet of suitable habitat during the breeding season, regardless of whether or not the species was detected during planning-level surveys or there are records for the species in the area, a qualified biologist will conduct preconstruction surveys, consistent with USFWS (2001) guidelines, during the same season when the activity will occur. If active territories are found, the project proponent will avoid activity within 500 feet of the habitat from April 1 to July 15. This buffer may be reduced with approval from the Conservancy, USFWS, and CDFW.
- ▲ The project proponent will avoid disturbance of previous least Bell's vireo territories (up to three years since known nest activity) during the breeding season, unless the disturbance is to maintain public safety. Least Bell's vireo uses previous territories; disturbance during the breeding season may preclude birds from using existing unoccupied territories.
- ▲ The required buffer may be reduced in areas where barriers or topographic relief features are adequate for protecting the nest from excessive noise or other disturbance. Conservancy staff members will coordinate with the wildlife agencies and evaluate exceptions to the minimum nondisturbance buffer distance on a case-by-case basis. Adjacent parcels under different land ownership will be surveyed only if access is granted or if the parcels are visible from authorized areas.
- ▲ If occupied territories are identified, a qualified biologist will monitor construction activities in the vicinity of all active territories to ensure that covered activities do not affect nest success.

AMM20, Minimize Take and Adverse Effects on Habitat of Bank Swallow. The project proponent will retain a qualified biologist to identify and quantify (in acres) bank swallow nesting habitat (as defined in Appendix A, *Covered Species Accounts*) within 500 feet of the project footprint. If a 500-foot buffer from nesting habitat cannot be maintained, the qualified biologist will check records maintained by the Conservancy and CDFW to determine if bank swallow nesting colonies have been active on the site within the previous five years. If there are no records of nesting bank swallows on the site, the qualified biologist will conduct visual surveys during the period from March 1 to August 31 to determine if a nesting colony is present.

For operations and maintenance activities or other temporary activities that do not remove nesting habitat and occur outside the nesting season (September 1 to February 28), it is not necessary to conduct a record search, planning and preconstruction surveys, or any additional avoidance measures. If activities will occur during the nesting season, surveys will be necessary as for other covered activities, but the 500-foot survey distance and buffer distance may be reduced upon Conservancy and wildlife agency approval based on site-specific conditions, such as the level of noise and disturbance generated by the activity, the duration of the activity, and the presence of visual and noise buffers (e.g., vegetation, structures) between the activity and the nesting colony.

If an active bank swallow colony is present or has been present within the last 5 years within the planning-level survey area, the Conservancy, USFWS and CDFW will be notified in writing within 15 working days, and the project proponent will design the project to avoid adverse effects within 500 feet of the colony site(s), unless a shorter distance is approved by the Conservancy, USFWS, and CDFW, based on site-specific conditions such as visual barriers (trees or structures) between the activity and the colony. Adjacent parcels under different land ownership will be surveyed only if access is granted or if the parcels are visible from authorized areas.

The reserve system management plan including bank swallow habitat will provide examples of additional measures that may apply to activities on reserve system lands to avoid and minimize effects on bank swallow.

AMM21, Minimize Take and Adverse Effects on Habitat of Tricolored Blackbird. The project proponent will retain a qualified biologist to identify and quantify (in acres) tricolored blackbird nesting and foraging habitat (as defined in Appendix A, *Covered Species Accounts*) within 1,300 feet of the footprint of the covered activity. If a 1,300-foot buffer from nesting habitat cannot be maintained, the qualified biologist will check records maintained by the Conservancy (which will include CNDDDB data, and data from the tricolored blackbird portal) to determine if tricolored blackbird nesting colonies have been active in or within 1,300 feet of the project footprint during the previous five years. If there are no records of nesting tricolored blackbirds on the site, the qualified biologist will conduct visual surveys to determine if an active colony is present, during the period from March 1 to July 30, consistent with protocol described by Kelsey (2008).

Operations and maintenance activities or other temporary activities that do not remove nesting habitat and occur outside the nesting season (March 1 to July 30) do not need to conduct planning or construction surveys or implement any additional avoidance measures.

If an active tricolored blackbird colony is present or has been present within the last five years within the planning-level survey area, the project proponent will design the project to avoid adverse effects within 1,300 feet of the colony site(s), unless a shorter distance is approved by the Conservancy, USFWS, and CDFW. If a shorter distance is approved, the project proponent will still maintain a 1,300-foot buffer around active nesting colonies during the nesting season but may apply the approved lesser distance outside the nesting season. Adjacent parcels under different land ownership will be surveyed only if access is granted or if the parcels are visible from authorized areas.

Avoidance and Minimization Measures within the Reserve System

Reserve system activities, including agricultural activities as described in Appendix M, *Yolo County Agricultural Practices*, have the potential to result in take of covered species. Covered species potentially affected by ongoing reserve system activities, and measures to avoid and minimize these effects, are described below. Prohibited land uses and other restrictions on reserve lands will be stipulated in the conservation easements, as described in Section 7.5.5.3.2, *Minimum Restrictions within a Yolo HCP/NCCP Conservation Easement*. Management practices on reserve lands will be developed with landowners, further described in the management plans, and approved by the wildlife agencies. The species included below are the covered species most likely to be affected by covered activities in the reserve system because they are most likely to occur on cultivated lands. Cultivated lands consist of working landscapes on which agricultural activities take place on a regular basis. The potential scenarios described below for which take could occur are not exhaustive, however, and site-specific conditions could warrant different or additional measures to avoid and minimize take of the covered species found on cultivated lands that will count toward conservation commitments. The Conservancy will describe these avoidance and minimization measures as applicable in site-specific conservation easements or management plans that the wildlife agencies will approve. For bank swallow, agricultural practices on reserve system lands will comply with AMM20, *Bank Swallow*, above.

VALLEY ELDERBERRY LONGHORN BEETLE

On reserve lands whose primary conservation values include valley elderberry longhorn beetle conservation, agricultural and other activities that would potentially result in take of valley elderberry longhorn beetle will not occur within a 100-foot buffer around elderberry shrubs, thereby avoiding take. Management activities which would not result in take of valley elderberry longhorn beetle (e.g., hand weeding, planting native plants) may occur within the 100-foot buffer. If existing, ongoing activities (e.g., agricultural activities, such as a farming road) encroach within 100 feet of elderberry shrubs on reserve land, the valley elderberry longhorn beetle habitat within 100 feet of such activities will not count toward the habitat protection commitment for this species. The Conservancy will coordinate with the wildlife agencies if elderberry shrubs are present within the reserve system on or near cultivated lands to develop additional protection measures as needed to maintain the conservation values of the easement and comply with the Yolo HCP/NCCP.

CALIFORNIA TIGER SALAMANDER

Reserve system activities will avoid harming, harassing, injuring, or killing California tiger salamanders. If California tiger salamanders are present in a pond or other water feature on a site enrolled in the reserve system, the management plan for the site will specify water management measures intended to reduce the potential establishment of predatory non-native species and will restrict pond maintenance activities, and limit ground disturbing activities to the dry season to minimize the potential for harming California tiger salamanders that may be actively moving through uplands. In the event that a salamander needs to be moved out of harm's way to avoid injuring or killing individuals, a qualified biologist will relocate the salamander to nearby habitat. The Conservancy will coordinate with the wildlife agencies where California tiger salamanders may be present within the reserve system, to develop additional protection measures as needed to maintain the conservation values of the easement and comply with the Yolo HCP/NCCP.

GIANT GARTER SNAKE

Canal and ditch maintenance on cultivated lands typically involves removal of vegetation, debris, and sediment from water conveyance channels. To minimize effects on giant garter snake, these activities within giant garter snake habitat will be limited to the giant garter snake's active season (May 1 to October 1) when possible. To minimize the take of giant garter snake, farmers and land managers on lands in the reserve system will limit maintenance of conveyance structures located within giant garter snake habitat to clearing one side along at least 80% of the linear distance of the channels during each maintenance year (e.g., the left bank of a canal is maintained in the first year and the right bank in the second year). In the event that a giant garter snake needs to be moved out of harm's way to avoid injuring or killing individuals, a qualified biologist will relocate the giant garter snake to nearby habitat.

For channel maintenance activities conducted within giant garter snake habitat, farmers on cultivated land within giant garter snake habitat in the reserve system will place removed material at least 200 feet from permanent aquatic habitat. For portions of channels that do not have previously used spoil disposal sites and the area has been checked by a qualified biologist to confirm that giant garter snakes are not in harm's way, removed materials may be placed along channels in areas that are at least 200 feet from permanent aquatic habitat and where materials will not re-enter the canal because of stormwater run-off. The Conservancy will coordinate with the wildlife agencies where giant garter snakes may be present within the reserve system on or near cultivated lands, to develop additional protection measures as needed to maintain the conservation values of the easement and comply with the Yolo HCP/NCCP.

WESTERN POND TURTLE

Western pond turtles may occur within canals and ditches in the reserve system. To minimize the take of western pond turtle, farmers and land managers on lands in the reserve system will limit maintenance of conveyance structures located within western pond turtle habitat to clearing one side along at least 80% of

the linear distance of the channels during each maintenance year (e.g., the left bank of a canal is maintained in the first year and the right bank in the second year).

For channel maintenance activities conducted within western pond turtle habitat, farmers and land managers within western pond turtle habitat in the reserve system will place removed material at least 200 feet from permanent aquatic habitat. For portions of channels that do not have previously used spoil disposal sites and the area has been checked by a qualified biologist to confirm that western pond turtles are not in harm's way, removed materials may be placed along channels in areas that are at least 200 feet from permanent aquatic habitat and where materials will not re-enter the canal because of stormwater runoff. In the event that a western pond turtle needs to be moved out of harm's way to avoid injuring or killing individuals, a qualified biologist will relocate the western pond turtle to nearby habitat. The Conservancy will coordinate with the wildlife agencies where western pond turtles may be present within the reserve system on or near cultivated lands, to develop additional protection measures as needed to maintain the conservation values of the easement and comply with the Yolo HCP/NCCP.

SWAINSON'S HAWK AND WHITE-TAILED KITE

Swainson's hawk and white-tailed kite prey species can be considered agricultural pests and rodenticides are sometimes used as part of general agricultural operations to control pest populations. Rodenticides both reduce available food resources and can directly harm individual Swainson's hawks and white-tailed kites that ingest prey that have been poisoned by rodenticides. The use of rodenticides is prohibited on all lands in the reserve system, including cultivated lands, to avoid effects to Swainson's hawk and white-tailed kite.

The removal or cutting of trees on lands in the reserve system is prohibited except as reasonably necessary and/or prudent for (1) fire breaks, (2) prevention or treatment of disease; or (3) removing vegetation and debris which poses a health and safety hazard or a threat to standard agricultural operations including, but not limited to, downed trees or limbs. In cases where the cutting or removal of a tree is deemed necessary because of one of the reasons mentioned above, the removal of the tree shall not occur during the Swainson's hawk or white-tailed kite nesting season (February 1 through October 1) to avoid disturbance during the breeding season. No standing tree shall be removed until it has been verified that the tree is not an active Swainson's hawk or white-tailed kite nest tree. The Conservancy will coordinate with the wildlife agencies where Swainson's hawks or white-tailed kites are present within the reserve system on or near cultivated lands, to develop additional protection measures as needed to maintain the conservation values of the easement and comply with the Yolo HCP/NCCP.

WESTERN BURROWING OWL

Farmers and land managers on lands in the reserve system will avoid disturbing burrows occupied by western burrowing owls. The Conservancy will coordinate with the wildlife agencies if burrowing owls are found on actively farmed lands within the reserve system to develop additional protection measures as needed to maintain the conservation values of the easement and comply with the Yolo HCP/NCCP.

TRICOLORED BLACKBIRD

Tricolored blackbirds can nest in triticale and other types of grain crops, although this has not been documented in Yolo County. In the rare event that tricolored blackbirds nest in cultivated lands within the reserve system, the farmer will delay harvesting the crop and other agricultural practices a sufficient distance from the active nest to avoid harming, harassing, injuring, or killing individuals until the tricolored blackbirds have finished nesting (i.e., fledglings are capable of acquiring food on their own). A qualified biologist will confirm the distance in which harvesting can occur and the time at which tricolored blackbirds have finished nesting (and therefore when the remaining harvest may occur). The Conservancy will coordinate with the wildlife agencies if tricolored blackbirds are found within the reserve system on or near actively farmed lands, to develop additional protection measures as needed to maintain the conservation values of the easement and comply with the Yolo HCP/NCCP.