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Subject: Comments on the Draft Environmental Impact Report (DEIR) for Santa Clara Valley Water District's (Valley Water) Pacheco Reservoir Expansion Project in Santa Clara County, California

Dear Todd Sexauer:

We, the Sacramento Fish and Wildlife Office of the U.S. Fish and Wildlife Service (Service), are writing to you regarding Valley Water's DEIR for the proposed Pacheco Reservoir Expansion Project (proposed project) in southeastern Santa Clara County, California. At issue are the proposed project's effects on the federally listed as threatened California red-legged frog (*Rana draytonii*) and its designated critical habitat, threatened Central Distinct Population Segment of the California tiger salamander (Central California tiger salamander) (*Ambystoma californiense*), endangered San Joaquin kit fox (*Vulpes macrotis mutica*), endangered least Bell's vireo (*Vireo bellii pusillus*), endangered California condor (*Gymnogyps californianus*), threatened Bay checkerspot butterfly (*Euphydryas editha bayensis*), endangered Santa Clara Valley dudleya (*Dudleya setchellii*), endangered Metcalf Canyon jewelflower (*Streptanthus albidus* ssp. *albidus*), endangered Tiburon paintbrush (*Castilleja affinis* ssp. *neglecta*), endangered Coyote ceanothus (*Ceanothus ferrisiae*), the Federal candidate monarch butterfly (*Danaus plexippus*), the federally proposed threatened Central Coast Distinct Population Segment of the foothill yellow-legged frog (Central Coast foothill yellow-legged frog) (*Rana boylei*), and the federally petitioned southwestern pond turtle (*Actinemys pallida*). This response is provided under the authority of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.) (Act), and in accordance with the implementing regulations pertaining to interagency cooperation (50 CFR 402). The Service is also providing comments under the California Environmental Quality Act.

The proposed project includes construction and operation of a new dam and expanded reservoir, water conveyance facilities, and related miscellaneous infrastructure (e.g., access improvements and roads, electrical transmission lines), and decommissioning of the existing North Fork Dam. The new dam and expanded reservoir would be located on North Fork Pacheco Creek, upstream from the existing North Fork Dam, and would inundate the upstream portion of the existing Pacheco Reservoir.

Special-Status Amphibians and Aquatic Reptiles

The DEIR states on p. ES-1:

Water would be collected in the expanded reservoir during the winter months from local watershed runoff and, as available, through Central Valley Project (CVP) supplies from San Luis Reservoir via the Pacheco Conduit.

The use of imported water from San Luis Reservoir to fill the expanded Pacheco Reservoir will result in an increase in invasive species (e.g., American bullfrog, non-native crayfish, non-native fish, red-eared sliders, etc.) in Pacheco Creek that threaten the California red-legged frog, Central Coast foothill yellow-legged frog, southwestern pond turtle, steelhead, and other native aquatic species. Imported water may also introduce or exacerbate the prevalence of amphibian diseases (e.g., chytrid fungus, ranavirus), or introduce more virulent strains of amphibian diseases, which could spread further into the Pacheco watershed by infected amphibians and threaten the California red-legged frog, Central Coast foothill yellow-legged frog, and Central California tiger salamander. Imported water may also introduce invasive New Zealand mudsnails which would degrade aquatic habitat in Pacheco Creek for California red-legged frog, Central Coast foothill yellow-legged frog, southwestern pond turtle, steelhead, and other native aquatic species. Imported water may also spread the pathogens that lead to shell disease in southwestern pond turtles. Imported water may also spread the plant pathogen *Phytophthora* and the fungus that causes anthracnose which would kill the rare sycamore alluvial woodland along Pacheco Creek downstream of Pacheco Dam along with other sensitive riparian vegetation.

The DEIR states on p. 2-44:

PAMM BI-8 Wildlife Exclusion Fencing. . . . Fences will be of material that will not entrap reptiles and amphibians. Exclusion fencing will be regularly maintained and monitored until the start of and throughout construction.

California red-legged frogs and Central California tiger salamanders have been found dead or desiccated outside of wildlife exclusion fencing. Valley Water should install coverboards every 50 feet along the inside and outside of wildlife exclusion fencing to give California red-legged frogs and Central California tiger salamanders a place to shelter until they can safely navigate their way around the work area. To prevent California red-legged frogs and Central California tiger salamanders from trying to penetrate the fencing and injuring themselves in the process, the exclusion fencing should be made of an opaque material that California red-legged frogs and Central California tiger salamanders cannot see through.

The DEIR mentions on p. 2-46 under mitigation measure PAMM BI-13 that “Aquatic Invasive Species Management” will be implemented. However, this measure does not address the invasive American bullfrog which is the most significant threat to the California red-legged frog, Central California tiger salamander, Central Coast foothill yellow-legged frog, and southwestern pond turtle. Expansion of the reservoir and year-round flows in Pacheco Creek may result in an increase in invasive bullfrogs in the Pacheco watershed that would prey upon the California red-legged frog, Central California tiger salamander, Central Coast foothill yellow-legged frog, and southwestern pond turtle. Bullfrogs also compete for resources with native amphibians and aquatic reptiles and may also become a vector for amphibian diseases in the Pacheco watershed (Service 2021). Thus, Valley Water should implement an ongoing bullfrog control plan along Pacheco Creek and Pacheco Reservoir.

The DEIR states on p. 3.5-88:

Under the Proposed Project the new flow regime (perennial, increased flow) would prevent American bullfrogs from breeding within the creek as the volume and velocity of flow would be too high for egg mass survival.

The Service disagrees that the proposed perennial flow regime will prevent American bullfrogs from breeding in the stream. Instead, the Service believes that the proposed perennial flow regime will increase the abundance of American bullfrogs and other invasive species (e.g., non-native crayfish and non-native fish) compared to existing conditions. Under the proposed new flow regime where drybacks only occur during “dry and critical water years”, there will be adverse effects on the California red-legged frog where ponds and slow-flow areas may not dry out annually by the end of September, thus allowing bullfrog tadpoles to mature (bullfrog tadpoles need two years to mature). While bullfrogs are currently in the system, their reproduction and competitive/predatory influence on the California red-legged frog is held in check by most ponds drying up and streamflow stopping in late fall. A recent study of 110 California red-legged frog and Central California tiger salamander breeding ponds in Santa Clara, Alameda, and Contra Costa counties in 2013-2019 found consistently strong, negative effects of invasive fish and bullfrogs on both the occurrence and density of California red-legged frog and Central California tiger salamander larvae (McDevitt-Galles *et al.* 2020). McDevitt-Galles *et al.* (2020) concluded that drought may enhance the California red-legged frog’s and Central California tiger salamander’s breeding activity by reducing habitat availability for invasive species through periodic drying of more permanent ponds. Therefore, any increase in bullfrog breeding within the Pacheco Creek watershed would adversely affect the California red-legged frog and Central California tiger salamander as well as the southwestern pond turtle and Central Coast foothill yellow-legged frog.

Valley Water should monitor to ensure that bullfrog breeding is in fact prevented by the proposed project flow regime in Pacheco Creek despite the increase in year-round flows in Pacheco Creek which would support the bullfrog and other invasive species. An increase in groundwater levels due to year-round flows in Pacheco Creek may also make some of the ponds along Pacheco Creek perennial which would increase breeding habitat for bullfrogs, non-native crayfish, and non-native tiger salamanders. Enlarging the Pacheco Reservoir would create a lot of new breeding habitat for bullfrogs and non-native crayfish in the Pacheco watershed. As stated previously, Valley Water should implement a long-term bullfrog monitoring and non-native crayfish control program throughout the proposed project area including the expanded reservoir footprint and areas along Pacheco Creek downstream of the dam.

The DEIR states on p. 3.5-88 regarding compensatory mitigation for habitat loss for the California red-legged frog and Central California tiger salamander:

Mitigation Measure BI-8b will require compensatory mitigation at a 2:1 ratio which equates to approximately 3,400 acres of habitat (or as determined by the appropriate regulatory agencies as achieving equivalent or greater mitigation).

The proposed 2:1 compensatory mitigation ratio for the permanent loss of high-quality habitat for the California red-legged frog and Central California tiger salamander is inadequate and significantly below the compensatory mitigation requirements in other programmatic biological opinions for these species. For example, the *Programmatic Biological Opinion for Issuance of Permits under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act*,

including Authorizations Under 22 Nationwide Permits, for Projects that May Affect the Threatened California Red-Legged Frog in Nine San Francisco Bay Area Counties, California requires a 3:1 compensation ratio for the permanent loss of habitat for the California red-legged frog (Service 2014a). The *Programmatic Biological Opinion for Issuance of Permits under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act, including Authorizations Under 22 Nationwide Permits, for Projects that May Affect the Threatened Central California Tiger Salamander in Alameda, Contra Costa, San Mateo, Santa Clara, and Solano Counties, California* requires a 3:1 compensation ratio for the permanent loss of habitat for the Central California tiger salamander (Service 2014b). The *Programmatic Biological Opinion for U.S. Army Corps of Engineers Permitted Projects Utilizing the East Alameda County Conservation Strategy that May Affect Federally Listed Species in East Alameda County, California* requires a compensation ratio starting at 3:1 for the permanent loss of California red-legged frog habitat within its designated critical habitat (such as the proposed project) and a compensation ratio starting from 2.5:1 to 4:1 for the permanent loss of Central California tiger salamander habitat (Service 2012); compensation ratios increase in this programmatic biological opinion for permanent impacts to high quality habitat for the California red-legged frog and Central California tiger salamander such as occurs within the proposed project footprint. Additionally, due to the large amount of critical habitat for the California red-legged frog that would be permanently lost by the proposed project, the Service believes that impacts to California red-legged frog critical habitat should be compensated through the preservation and management of California red-legged frog critical habitat.

The DEIR states on p. 3.5-92:

Downstream flows (including baseflow and pulse flows) associated with the new dam and expanded reservoir would have a beneficial impact on foothill yellow-legged frog and their aquatic habitat.

However, cold water temperatures maintained for steelhead in Pacheco Creek downstream of the dam in spring and summer could have an adverse effect on the Central Coast foothill yellow-legged frog making the stream not suitable for Central Coast foothill yellow-legged frogs. Cold-water releases from reservoirs negatively affect foothill yellow-legged frog fitness by lowering stream water temperature below the optimal range for breeding, growth, and development (Service 2021). Studies found foothill yellow-legged frogs were absent when temperatures were below 55 degrees Fahrenheit, but the number of foothill yellow-legged frogs increased significantly with increasing temperatures. Tadpole thermal preference in foothill yellow-legged frogs was found to be 61.7-72.0 degrees Fahrenheit (California Department of Fish and Wildlife [CDFW] 2019, <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=174663&inline>, p. 17; Kupferberg *et al.* 2011a). Populations of foothill yellow-legged frogs in coastal rainfall-driven systems, such as the Central Coast foothill yellow-legged frog, were constrained to locations where the average water temperature over the warmest 30 days ranged from 60.3 to 71.6 degrees Fahrenheit (Catenazzi and Kupferberg 2017), while the optimal water temperature range was 65.8 to 71.6 degrees Fahrenheit (Service 2021, Catenazzi and Kupferberg 2017). Average water temperatures over the warmest 30 days below 62.6 to 65.8 degrees Fahrenheit appear to limit the relative abundance of Central Coast foothill yellow-legged frogs (Kupferberg *et al.* 2011a). Therefore, colder water temperatures would likely adversely affect the Central Coast foothill yellow-legged frog.

Pulse flows conducted in the spring may adversely affect the Central Coast foothill yellow-legged frog by scouring egg masses and washing tadpoles downstream if the frogs have begun

oviposition (Service 2021, Kupferberg *et al.* 2009a, Kupferberg *et al.* 2009c, Kupferberg *et al.* 2011b). In addition, the cessation of a pulse flow, characterized by a rapid decline in stream flow, can cause egg mass desiccation and/or tadpole stranding (Service 2021, Kupferberg *et al.* 2012, Kupferberg *et al.* 2009b, Kupferberg 1996, Ashton *et al.* 1997, Kupferberg *et al.* 2009b). Cold-water releases and pulse flows may also adversely affect the Central Coast foothill yellow-legged frog by negatively affecting the availability of algal food for tadpoles and invertebrate prey for juveniles and adults (Service 2021).

Dams can also reduce the quality and quantity of foothill yellow-legged frog breeding habitat downstream by decreasing the intensity and frequency of downstream winter flow events that are important for maintaining aquatic habitat complexity/geomorphic heterogeneity (Service 2021, GANDA 2018). Strong winter flow events that are typical in breeding areas during winter help maintain and/or create foothill yellow-legged frog breeding habitat by widening and diversifying channel morphology, improving rocky substrate conditions, removing sediment, and increasing sunlight by limiting vegetation encroachment (Service 2021, GANDA 2018, Lind *et al.* 1996, Lind *et al.* 2016, Power *et al.* 2016). A proposed project flow regime that included winter pulse flows could assist in maintaining aquatic habitat complexity/geomorphic heterogeneity for Central Coast foothill yellow-legged frogs downstream provided the pulse flows were high enough to mobilize geomorphic processes. However, spring pulse flows, cold-water releases, and invasive species would degrade the suitability of habitat downstream for Central Coast foothill yellow-legged frogs.

Valley Water should monitor the effects of the proposed project flow regime on the Central Coast foothill yellow-legged frog and provide appropriate habitat compensation for effects to Central Coast foothill yellow-legged frogs downstream of the dam if the proposed flow regime and water temperatures are not able to support the Central Coast foothill yellow-legged frog.

Dams, reservoirs, and hydrologically altered rivers can be barriers to foothill yellow-legged frog connectivity (Service 2021, Peek 2010, Peek 2012, Peek *et al.* 2021). Therefore, the proposed enlarged dam and reservoir expansion could reduce Central Coast foothill yellow-legged frog connectivity between its breeding and overwintering habitat within a subpopulation and reduce connectivity between subpopulations. A lack of connectivity between subpopulations would reduce gene flow and hinder the ability of the Central Coast foothill yellow-legged frog to recolonize sites once they are extirpated by stochastic or catastrophic events.

On December 28, 2021, the Service proposed to list the Central Coast Distinct Population Segment of the foothill yellow-legged frog as threatened (<https://www.regulations.gov/document/FWS-R8-ES-2021-0108-0001>); therefore, the DEIR should update the Federal listing status of the Central Coast foothill yellow-legged frog.

The DEIR states on p. 3.5-92:

Further with American bullfrogs and other invasive wildlife species already present in high abundances in/near areas adjacent to Pacheco Creek, the more permanent creek flows would not result in a significant increase in non-native wildlife species in comparison to the existing conditions given the creek would continue to provide the same amount and type of habitat as under the current condition (i.e., Pacheco Creek and the surrounding vicinity dispersal and non-breeding habitat). Therefore, there would be no impact on foothill yellow-legged frog associated with operations.

As stated previously, the expanded Pacheco Reservoir would significantly increase breeding habitat for bullfrogs and non-native crayfish in the Pacheco watershed resulting in adverse effects to California red-legged frogs, Central California tiger salamanders, Central Coast foothill yellow-legged frogs, and southwestern pond turtles beyond the proposed project footprint and throughout the Pacheco watershed.

The DEIR states on p. 3.5-113:

The new expanded reservoir under the Proposed Project would not have an increased impact compared to existing conditions because the expanded reservoir would typically be full during winter and early spring, with water surface variability occurring throughout the year depending on seasonal climatic conditions (as illustrated in Table 3.17-5 [Recreation])). Aquatic and semi-aquatic species such as western pond turtle may utilize the expanded reservoir to their advantage for dispersal (e.g., swimming to unoccupied areas within the Project study area).

The seasonally widely fluctuating water levels in the expanded reservoir could create a population sink for southwestern pond turtles that may attempt to nest in the expanded reservoir footprint when it is dry in May-August only for their nests to be flooded over the winter when the reservoir fills again.

San Joaquin Kit Fox

The DEIR states on p. 3.5-40:

There are no CNDDDB [California Natural Diversity Database] occurrences within the last 20 years documented within 5 miles of the Project study area. The last known CNDDDB occurrences are historical records from 1975, one located approximately 2 miles southeast of the Project study area and one located approximately 4.5 miles west of the Project study area. Therefore, San Joaquin kit fox has a low potential to occur within the Project study area.

This is incorrect because there is a CNDDDB occurrence of the San Joaquin kit fox in the project study area from August 2002 at Henry W. Coe State Park only 1.1 miles southwest of Pacheco Dam and 0.3 mile north of Pacheco Creek (CNDDDB occurrence number 45, CDFW 2021).

The DEIR states on p. 3.5-109:

The long-term, short-term, and temporary construction impacts associated with the implementation of the Proposed Project on potential dispersal habitat for San Joaquin kit fox would total approximately 131 acres and include 68 acres of long-term impacts (e.g., construction footprints of the new dam and associated facilities, new access roads, expanded reservoir, transmission line, interchange area); approximately 61 acres of short-term impacts (e.g., staging areas), which include 56 acres that would be restored/reclaimed within the existing inundation pool; and two acres of temporary impacts associated with activities within temporary construction easements (i.e., areas that would experience construction-related disturbances for a year or less).

Valley Water should include in the proposed project habitat compensation for the permanent loss of habitat for the San Joaquin kit fox consistent with the Santa Clara Valley Habitat Plan (ICF International 2012). Valley Water should also conduct pre-construction surveys for the San

Joaquin kit fox and maintain buffers around active San Joaquin kit fox dens consistent with the Santa Clara Valley Habitat Plan (ICF International 2012, pp. 6-71 – 6-73, <https://scv-habitatagency.org/DocumentCenter/View/128/Chapter-6-Conditions-on-Covered-Activities-and-Application-Process>).

The DEIR states on p. 3.5-113:

The expanded reservoir would also provide a larger water source for animals during the dry months and increase the prey base for many species in the surrounding area.

The San Joaquin kit fox is adapted to arid conditions which gives it an advantage over its primary competitor the non-native red fox. An increase in water availability within the Pacheco Creek watershed could give a competitive advantage to the non-native red fox allowing the non-native red fox to displace the San Joaquin kit fox from the Pacheco Creek watershed.

Least Bell's Vireo

The DEIR states on p. 3.5-97:

Potential habitat for least Bell's vireo is limited to low-quality foraging habitat within the downstream area along Pacheco Creek approximately 5 miles downstream from the Kaiser Aetna Road and SR [State Route] 152 intersection. No impacts on least Bell's vireo would occur as a result of construction activities associated with the Proposed Project. Indirect impacts associated with the changes in downstream flows (including baseflow and pulse flows) would result in beneficial impacts on the habitat quality for least Bell's vireo in the downstream area because the riparian vegetation communities along Pacheco Creek would continue to shift towards a more mixed riparian vegetation community that would be denser and more stratified (i.e., consist of a variety of riparian tree species at multiple maturity levels, including understory vegetation) than the existing condition as described under Impact Bio-1. Therefore, the Proposed Project would have a beneficial impact on habitat for least Bell's vireo in the downstream area along Pacheco Creek.

However, the DEIR states on p. 3.5-98 regarding impacts to suitable habitat for the yellow warbler and yellow breasted chat within the proposed expanded reservoir footprint:

These include impacts in the upstream area on woody riparian habitats that provide nesting and foraging habitat for species such as yellow warbler and yellow breasted chat.

Valley Water should clarify why the proposed project would impact riparian habitat for yellow warbler and yellow breasted chat upstream within the proposed expanded reservoir footprint but not riparian habitat for the least Bell's vireo.

Listed Serpentine-Endemic Invertebrates and Plants

The DEIR states on p. ES-38:

Air Quality. The Proposed Project and Alternatives A through D, in combination with the effects of other past, present, and reasonably foreseeable future projects, would result in cumulatively considerable air pollutant emissions impacts during construction and resultant inconsistency with air quality plans during the construction period.

Table 3.4-9 in the DEIR states that the Bay Area Air Quality Management District thresholds for emissions of nitrogen oxides will be exceeded during all eight years of construction with 72-222 pounds of nitrogen oxides emitted per day during construction even with mitigation measures. Construction-related emissions of nitrogen oxides will result in an increase in atmospheric nitrogen deposition in the Santa Clara Valley which could threaten serpentine-endemic listed and rare species including the Bay checkerspot butterfly, Metcalf Canyon jewelflower, Santa Clara Valley dudleya, Tiburon paintbrush, and Coyote ceanothus by facilitating the spread of invasive plant species into serpentine habitats that are naturally nitrogen-limited. Therefore, Valley Water should minimize the effects of atmospheric nitrogen deposition from proposed project construction-related emissions on the Bay checkerspot butterfly, Metcalf Canyon jewelflower, Santa Clara Valley dudleya, Tiburon paintbrush, Coyote ceanothus, and other Santa Clara Valley Habitat Plan-covered serpentine endemic species by making voluntary payments of nitrogen deposition fees to the Santa Clara Valley Habitat Agency (SCVHA) to fund the management of invasive plant species in habitat for these serpentine-endemic species (<https://scv-habitatagency.org/341/Nitrogen-Deposition-Only-Application>). Valley Water should avoid the effects of atmospheric nitrogen deposition on listed and rare serpentine-endemic species by using only electric vehicles, which would also reduce the emissions of greenhouse gases that contribute to climate change.

Monarch Butterfly

The DEIR states on p. 3.5-152:

PAMM WQ-5 – Use Seeding and Other Measures for Erosion Control, Weed Suppression, and Site Improvement: Disturbed areas will be seeded with native seed consistent with Valley Water and other agency requirements and/or have other erosion control and weed suppression measures applied as soon as construction activities have been completed at the respective locations within the project area.

Valley Water should incorporate native milkweed (*Asclepias* species) and native nectar plants for the monarch butterfly in the seed mix for restoring disturbed areas as long as those areas would not be disturbed by subsequent actions. Due to the effects of climate change on the monarch butterfly (resulting in monarchs leaving their overwintering sites before most milkweed and nectar plants are available), the Service recommends planting insecticide-free, early-emerging milkweed species (e.g., *Asclepias vestita*, *A. californica*, *A. eriocarpa*, *A. cordifolia*, *A. erosa*) and flowering plants that are available to monarchs from January-April, as appropriate for the project location (https://xerces.org/sites/default/files/publications/18-003_02_Monarch-Nectar-Plant-Lists-FS_web%20-%20Jessa%20Kay%20Cruz.pdf; <https://www.xerces.org/milkweed/milkweed-seed-finder>). Based on Calscape (<https://calscape.org/about.php>), the early-emerging milkweed species within the range of the proposed project area are *Asclepias vestita* and *A. californica* while *A. eriocarpa* is known to occur near the proposed project area in western Merced County.

The DEIR states on p. 3.5-84:

The expanded reservoir behind the new hardfill dam, ancillary facilities, permanent and temporary access roads, and other various construction areas could result in direct impacts on monarch butterfly and its habitat including the removal/disturbance of up to 6,650 individual host plants over approximately 20 acres (i.e., 83 percent of the total plants in the Project study area) of grassland, woodland, and shrub habitat where host

plant populations are located. These direct impacts would be significant given the number of host plants that would be removed in comparison to the plants that would remain in the Project study area.

In addition to loss of host plants for the monarch butterfly, the proposed project will result in the direct loss of nectar plants for the monarch butterfly throughout the proposed project footprint and indirect loss of nectar plants through the spread of invasive plant species. Thus Valley Water should propose compensatory mitigation for the loss of foraging and migration habitat for the monarch butterfly in addition to the loss of breeding habitat. Mitigation lands preserved and managed for the California red-legged frog, Central California tiger salamander, southwestern pond turtle, and Central Coast foothill yellow-legged frog could also be preserved, managed, and enhanced to provide breeding, foraging, and dispersal habitat for monarch butterflies.

Valley Water should flag milkweed larval host plants (*Asclepias* species) for avoidance. Any milkweed plants that cannot be avoided should be removed between November 1 and March 15 when monarchs are likely away from the proposed project site. To the extent feasible, Valley Water should conduct management activities such as mowing, burning, and grazing in monarch butterfly breeding and migratory habitat between November 1 and March 15 when monarchs are likely away from the proposed project site. Each year and site are different, so when possible, Valley Water should consider surveying milkweed plants for the early life stages of monarchs prior to removing, burning, mowing, grazing, or applying pesticides.

Valley Water should avoid the use of pesticides when monarchs may be present (March 16 – October 31) when feasible. Screen all classes of pesticides for pollinator risk to avoid harmful applications, including biological pesticides such as *Bacillus thuringiensis* (<https://www2.ipm.ucanr.edu/bee precaution/>). Avoid the use of neonicotinoids or other systemic insecticides, including coated seeds, any time of the year in monarch habitat due to their ecosystem persistence, systemic nature, and toxicity. Consider non-chemical weed control techniques, when feasible (<https://www.cal-ipc.org/resources/library/publications/non-chem/>). Avoid herbicide application on blooming flowers. Apply herbicides during young plant phases, when plants are more responsive to treatment, and when monarchs and other pollinators are less likely to be nectaring on the plants. Whenever possible, use targeted application herbicide methods, avoid large-scale broadcast applications, and take precautions to limit off-site movement of herbicides (e.g., drift from wind and discharge from surface water flows).

Valley Water should report milkweed and monarch observations from all life stages, including breeding butterflies, to the Monarch Milkweed Mapper (<https://www.monarchmilkweedmapper.org/>) or via the project portal in the iNaturalist smartphone app (<https://www.inaturalist.org/projects/western-monarch-milkweed-mapper>). To minimize the spread of the pathogen *Ophryocystis elektroscirrha*, Valley Water should remove any non-native tropical milkweed (*Asclepias curassavica*) that is detected and replace it with native milkweed and nectar plants appropriate for the location.

Terrestrial Wildlife Dispersal and Migration Corridors

The DEIR states on p. 3.5-114:

Downstream flows in Pacheco Creek (including baseflow and pulse flows) associated with the new dam and expanded reservoir would have no impacts on terrestrial wildlife dispersal or migration, because dam releases under normal operations would be contained

within the primary stream channel and not increase the amount of wetted area within the floodplain of Pacheco Creek. Although surface flows would be perennial (i.e., continuous) downstream from the new dam under normal operations, these flows would not limit wildlife movement through culverts or SR 152 under crossings as the water levels would be confined to the primary channel of the creek. In addition, the creek would still be crossable by wildlife species, since flows would remain within the existing primary channel (i.e., water depths and velocities would not change significantly) and would not hinder the ability for wildlife to continue to utilize and access the culverts and bridge under crossings. In addition to baseflows, pulse flows would not exceed the capacity of the existing primary channel and would be similar to peak flows during winter months under the current conditions; therefore, there are no impacts on wildlife dispersal and migration corridors associated with operations.

The Service disagrees that the operation of the expanded reservoir would not impact terrestrial wildlife dispersal or migration across Pacheco Creek downstream. Increasing flows in Pacheco Creek downstream of the dam to year-round will disrupt migration and dispersal of mammals, reptiles, and some amphibian species. Recent studies funded by SCVHA along SR 152 near Pacheco Pass in the project area demonstrated that under current conditions vehicle strikes of terrestrial wildlife increased along the highway when the underpasses and culverts along Pacheco Creek under SR 152 were flooded during seasonal winter high flows leaving terrestrial wildlife with no options but to cross the highway (Pathways for Wildlife and SCVHA 2020a, <https://scv-habitatagency.org/DocumentCenter/View/1415/Wildlife-Perm-and-Hazards-across-Hwy152>). The proposed project will increase perennial flows year-round along a stream that was historically intermittent. The proposed project perennial flows may impede the safe passage of terrestrial wildlife underneath SR 152 near stream crossings within the study area when the underpasses and culverts are flooded which may result in the injury or killing of special-status terrestrial species including the San Joaquin kit fox, the State candidate Southern California/Central Coast mountain lion Evolutionarily Significant Unit (*Puma concolor*), American badger, and other special-status mammals, amphibians, and reptiles.

Pathways for Wildlife and SCVHA (2020b, p. 4) monitored three bridges and two 5-foot-tall dual box culverts for wildlife passage at SCVHA's Pacheco Creek Reserve located approximately 3 miles downstream from the current Pacheco Dam:

From August 2018 to May 2020, a total of 7 mountain lion detections have been recorded. There have been 6 records of a mountain lion recorded traveling within the Pacheco Creek Reserve at two camera sites. Both these sites are located between Pacheco Creek and SR-152. The mountain lion detections were of individual adult lions that were heading both in and out of the Pacheco Creek bed and utilizing various habitats within the reserve.

There has been only one mountain lion documented using a SR-152 bridge to cross under the highway to date. This bridge is at the Pacheco Creek Reserve bridge. The mountain lion was recorded on 6/27/2019, heading south into the Pacheco Creek Reserve.

This is an important finding as three mountain lions have been recorded hit on SR-152 between 2012-2020 (contributed data by Caltrans and CDFW).

According to SCVHA, the Pacheco Creek Bridge at the downstream end of the SCVHA's Pacheco Creek Reserve consists of a bridge platform suspended by two walled sections within

the creek, resulting in three gaps through which wildlife can pass safely under the highway and move up and down the creek corridor (SCVHA 2022). Through most of the year, only one or two sections are inundated, allowing wildlife movement to occur through the dry sections (SCVHA 2022). However, during complete inundation, the water reaches across all sections and up to the rip rap armoring at the base of the bridge abutments (SCVHA 2022). Under these conditions, high flows under the bridge and throughout Pacheco Creek will prevent many mammal species traveling with young of the year in late spring/early summer from successfully crossing the creek channel (SCVHA 2022). It is unclear if the proposed perennial flow regime in Pacheco Creek would exacerbate this condition by introducing flows beyond the winter and early spring that may restrict wildlife movement beneath the Pacheco Creek Bridge. Therefore, the Service is concerned that higher and more frequent base flows could reduce the permeability of wildlife to cross Pacheco Creek at this specific location and other reaches downstream of the proposed project.

Thus Valley Water should minimize vehicle strikes of terrestrial wildlife by improving terrestrial wildlife crossings along SR 152 (e.g., <https://www.usgs.gov/center-news/animal-crossing-new-research-guides-efforts-protect-california-s-amphibians-and-reptiles>; <https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/bmp-guide-rev-4-16-2021-a11y.pdf>). Valley Water should improve terrestrial wildlife passage in the study area by cleaning out culverts that block wildlife safe passage under roads and installing shelves in underpasses that provide a dry pathway for wildlife when the underpasses are flooded. Valley Water should implement the wildlife connectivity enhancement recommendations from Pathways for Wildlife (2020).

The DEIR should also consider the cumulative effects of other projects in and near the project study area on terrestrial wildlife dispersal and migration corridors such as the San Jose-Merced High Speed Rail Project and any proposed modifications to SR 152 that would impede wildlife dispersal.

Growth Inducing Effects

The DEIR states on p. ES-1:

The proposed facilities and expanded reservoir would be operated by Valley Water to increase water supply reliability and system operational flexibility, help meet municipal and industrial (M&I) and agricultural water demands during drought periods. . . .

Valley Water should evaluate whether the increase in water reliability would result in any growth inducing effects (e.g. urbanization) or changes in the types of agricultural crops produced within the water service area that could affect the suitability of agricultural lands for federally listed and other special status species within the water service area. For example, a recent study by Gauffre et al. (2021) found the negative effects on newts of intensification of agriculture resulting in altered newt genetic diversity and gene flow by reducing the density and dispersal of newts. California red-legged frogs, Central California tiger salamanders, and other native amphibians could similarly be adversely affected by intensification of agriculture within the water service area. Special-status birds (e.g. western burrowing owl, Swainson's hawk, tricolored blackbird) could also be adversely affected by changes in agricultural uses within the water service area.

Transmission Lines Effects on Migratory Birds

The DEIR states on p. ES-8:

To provide power to the dam and water conveyance facilities, a new 70 kilovolt (kV)/4.16 kV electrical substation and 4.1 miles of new, single overhead 70 kV transmission line would be constructed.

The 4.1 miles of new overhead transmission line may result in the injury or mortality of the bald eagle, golden eagle, California condor, least Bell's vireo, tricolored blackbird, and other migratory birds. The transmission line should include Avian Power Line Interaction Committee guidelines for minimizing the potential for injury or mortality of migratory birds. Valley Water should consult with the Service's Migratory Bird Division to determine whether a permit is needed under the Bald and Golden Eagle Protection Act for the effects of the transmission line, construction disturbance, and loss of habitat on bald and golden eagles.

Central California Sycamore Alluvial Woodland

The DEIR states on p. 3.5-67:

Implementation of Mitigation Measure BI-2c would compensate for construction-related direct adverse impacts through the preservation, enhancement, and/or restoration of sycamore alluvial woodlands at already protected lands or at new mitigation sites at a minimum 2:1 ratio or as agreed to by CDFW. New mitigation sites would be protected in perpetuity through the recordation of conservation easements to reduce impacts on these resources.

The Service considers Central California sycamore alluvial woodland to be a unique and irreplaceable habitat type. Due to the rarity of Central California sycamore alluvial woodlands (~2,000 acres), the very old age of the trees and minimal seedling recruitment, the length of time required to restore sycamore alluvial woodland, and the uncertainties in the ability to successfully restore sycamore alluvial woodland, the Service believes that the proposed 2:1 mitigation ratio is inadequate to mitigate the effects. The 2:1 mitigation ratio is also significantly less than the 4:1 mitigation ratio required in the Santa Clara Valley Habitat Plan (ICF International 2012, p. 5-110, <https://scv-habitatagency.org/DocumentCenter/View/127/Chapter-5-Conservation-Strategy>).

The DEIR states on p. 3.5-70:

However, despite these measures, 71 acres (Table 3.5-7) of sycamore alluvial woodlands from creek mile 0 to creek mile 7 would be expected to shift to other riparian vegetation community types at a faster rate and to a greater degree than baseline conditions or the No Project Alternative. These impacts would be significant. . . . Implementation of Mitigation Measure BI-2c would compensate for indirect adverse impacts on the 71 acres of sycamore alluvial woodlands that occur from creek mile 0 to creek mile 7 from the Proposed Project operations through preservation, enhancement, and/or restoration at new mitigation sites or other already protected lands at a minimum 1:1 ratio or as agreed to by CDFW. New mitigation sites would be protected in perpetuity through the recordation of conservation easements. With implementation of Mitigation Measure BI-

2c, impacts on sycamore alluvial woodlands would be reduced to a less-than-significant level. Therefore, this impact would be less than significant with mitigation.

It is unclear how the impacts will be determined or when they would occur. It is also unclear when the proposed mitigation for those impacts would be required. The proposed 1:1 mitigation ratio for indirect effects of an altered flow regime on 71 acres of sycamore alluvial woodland is not adequate due to its rarity, the length of time required to restore sycamore alluvial woodland, and the uncertainties in the ability to successfully restore sycamore alluvial woodland. As stated above, the Santa Clara Valley Habitat Plan requires a 4:1 mitigation ratio for impacts to sycamore alluvial woodland. Additionally, there would be lost restoration/creation opportunities for sycamore alluvial woodland along Pacheco Creek downstream of Pacheco Dam if the appropriate flow regime is not provided. This would conflict with the Santa Clara Valley Habitat Plan's requirement for SCVHA to restore/create sycamore alluvial woodland habitat and result in the loss of sycamore alluvial woodland restoration/creation credits that would not be available to SCVHA. Valley Water should also explain how impacts to SCVHA's Pacheco Creek Reserve will be compensated and would not conflict with the Santa Clara Valley Habitat Plan.

The DEIR states on p. 3.5-114:

The Proposed Project could potentially limit the areas available for the SCVHA to preserve/restore California sycamore alluvial woodlands given the impacts identified in Impact Bio-2 and the limited amounts of California sycamore alluvial woodlands present in the SCVHP [Santa Clara Valley Habitat Plan] boundaries and available as described in Action LAND-R3. . . . Potential indirect impacts of the flows associated with the Proposed Project along Pacheco Creek could occur on portions of the Pacheco Creek Reserve which is managed by the SCVHA. The impacts described above pose a potential conflict between the Proposed Project and the SCVHP given the amounts of California sycamore alluvial woodland the SCVHP would need to preserve, if all impacts described occur within the plan boundaries (Santa Clara County et al. 2012), and the mitigation need the Proposed Project would have given the rarity of the vegetation community in the SCVHP boundaries.

Thus, the DEIR states here that there would be a potential conflict with the Santa Clara Valley Habitat Plan due to lost restoration opportunities for sycamore alluvial woodland within the permit area.

The DEIR states on p. 3.5-115:

. . . introduction or spread of *Phytophthora* via infected restoration plantings; introduction or spread of contaminated soil from equipment and over-application of water for dust control.

As commented previously, the proposed project could also result in the spread of the plant pathogen *Phytophthora* or the fungus that causes anthracnose into sycamore alluvial woodlands along Pacheco Creek downstream if the water imported from San Luis Reservoir is contaminated with *Phytophthora* or the fungus that causes anthracnose and then released downstream.

The DEIR states on p. 3.5-70:

These operational changes would need to be taken into consideration when implementing and designing sycamore alluvial woodland restoration projects on certain segments of Pacheco Creek or may require changes to management actions in existing conservation areas to better accommodate perennial flows within the primary stream channel.

As stated previously, operational changes due to the expanded Pacheco Reservoir will affect SCVHA's ability to restore sycamore alluvial woodland along their Pacheco Creek Preserve and adjacent lands if the appropriate hydrologic regime for sycamore alluvial woodland is not provided. This would conflict with the Santa Clara Valley Habitat Plan's goal of restoring sycamore alluvial woodland within the permit area if the hydrologic regime along Pacheco Creek were not able to support sycamore alluvial woodland, and SCVHA were not able sycamore alluvial woodland restoration/creation credits. Additionally, this would impact sycamore alluvial woodland already preserved by SCVHA at their Pacheco Creek Preserve.

The Service participated in the many interagency meetings that were held throughout development of the DEIR and realizes that identifying the best flow regime to benefit all downstream species and habitats is challenging. While the Service understands the needs to protect and enhance habitat for the threatened South Central Coast steelhead, the proposed flow regime, with a heavy focus on steelhead benefits, represents a further departure from the natural hydrograph that, as stated in the DEIR, will significantly affect downstream sycamore alluvial woodland and would gradually convert existing sycamore alluvial woodland into willow riparian woodland. The Service is concerned that the needs of steelhead in the watershed is not being appropriately balanced with the needs of other biological resources that are critical to the ecosystems downstream from Pacheco Reservoir. The proposed operational flow regime would significantly alter downstream habitats, and this is an impact that could be lessened or avoided if more frequent dry back periods could be enforced. The dry back period is too short and too infrequent to prevent willows from encroaching into existing or future restored sycamore alluvial woodland habitat on SCVHA's Pacheco Creek Reserve. In addition, the DEIR is unclear on conditions under which drybacks would occur, and there are statements in the Executive Summary that differ from the DEIR Chapter 3.5 about their frequency. Please clarify the conditions under which drybacks would occur, such as in dry and critical years, and how those year types will be defined. The Service supports a more natural flow regime consistent with the natural and historical pre-dam conditions of Pacheco Creek that resulted in more intermittent flows and more frequent drybacks that supported the sycamore alluvial woodland. Thus, the Service recommends more frequent drybacks of Pacheco Creek during both dry and critical water years to slow the conversion of the rare sycamore alluvial woodland to willow riparian habitat. Additionally, more frequent drybacks of Pacheco Creek would reduce the abundance of invasive species like bullfrogs, non-native crayfish, and non-native fish that threaten California red-legged frogs, Central Coast foothill yellow-legged frogs, Central California tiger salamanders, and southwestern pond turtles. More frequent drybacks and intermittent flows would also reduce the effects on terrestrial wildlife passage caused by the proposed perennial flow regime.

The proposed project will also threaten sycamore alluvial woodlands downstream by reducing the highest flood flows that are important for the geomorphic processes necessary for maintaining sycamore alluvial woodland habitat downstream.

The flows analysis in the DEIR was conducted based on the location of the new dam at the existing location of the North Fork Dam instead of the proposed project's alternative site which relocates the dam 1.8 miles further upstream. Therefore, the flows analysis should be re-evaluated based on the proposed location of the new dam 1.8 miles further upstream.

Tricolored Blackbird

The DEIR states on p. 3-12 in the Appendix in Exhibit E of Attachment A:

The SCVHA also identified an active tricolored blackbird breeding colony at Ciraulo pond in 2021, adjacent to Pacheco Creek, a recently acquired conservation property just upstream from the Pacheco Creek Preserve (Terry, Personal Communication, 2021). Ciraulo pond provides a small amount of suitable habitat for tricolored blackbird nesting given that the fresh emergent vegetation present in the pond is fragmented and small in size. The pond dries out frequently during dry and critical water years (i.e., during times of drought) as well as in summer and fall months when reservoir releases cease. Following cessation of reservoir releases in summer 2020, Ciraulo Pond was dry, groundwater levels declined (SCVHA 2020), and subsequent tricolored blackbird nesting in 2021 occurred during severe drought conditions. Vegetative structure comprising suitable nesting substrate for tricolored blackbird is expected to be present during a variety of conditions, from severe drought to wet years.

Valley Water should evaluate and monitor whether the proposed project flow regime would have any effect on the hydrology or hydroperiod of the Ciraulo pond and the quality of the emergent freshwater marsh potentially making it no longer suitable for tricolored blackbird breeding, or whether any changes in hydrology would hinder the ability of SCVHA to restore/enhance breeding habitat for tricolored blackbird in Ciraulo pond.

Coordinating with Santa Clara Valley Habitat Agency on Land Acquisitions

Valley Water should avoid conflicts with the Santa Clara Valley Habitat Plan by coordinating directly with SCVHA at the time any conservation land within Santa Clara County is considered as mitigation for the proposed project to ensure that it does not hinder the ability of SCVHA to meet the conservation requirements for the Santa Clara Valley Habitat Plan. The California High-Speed Rail Authority has agreed to this level of coordination with SCVHA for mitigating the effects of the San Jose-Merced High-Speed Rail Project (SCVHA 2022). Similarly, the Santa Clara Valley Regional Conservation Investment Strategy is required to coordinate with SCVHA whenever conservation land is identified within the Santa Clara Valley Habitat Plan area to ensure (1) that SCVHA is not already in negotiations with the landowner and, (2) that the loss of the land to another entity would not reduce the ability of SCVHA to implement the Conservation Strategy of the Santa Clara Valley Habitat Plan (SCVHA 2022).

If you have any questions regarding this letter, please contact Joseph Terry, Senior Biologist (joseph_terry@fws.gov) or at (916) 943-6721 or myself, Coast Bay Division Supervisor (ryan_olah@fws.gov), at (916) 414-6623.

Sincerely,

Ryan Olah
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ec:

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