SANTA CLARA VALLEY
HABITAT AGENCY

February 8, 2022

Attn: Valley Water
Todd Sexauer, Senior Environmental Planner
Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118

Via e-mail: TSexauer@valleywater.org

RE: Pacheco Reservoir Expansion Project (PREP) Draft EIR/EIS Comments

To Whom it May Concern,

The Santa Clara Valley Habitat Agency (Habitat Agency) respectfully submits the attached comments on the Draft EIR/EIS for the Pacheco Reservoir Expansion Project (DEIR). The Habitat Agency has reviewed the DEIR, including all technical reports and appendices. Although the Project is not covered by the Habitat Plan, it occurs within the Habitat Plan Permit Area and will result in significant impacts to biological resources as discussed in the DEIR and in the following comments. The Project also has the potential to directly conflict with the goals and objectives of the Habitat Plan. The Habitat Agency appreciates Valley Water's efforts to engage during early design and preparation of the DEIR. Indeed, many resource impacts were provided thoughtful consideration and discussion in the DEIR, including mitigation measures that were developed based on those early conversations. However, some resource impacts were not appropriately analyzed and/or lack sufficient mitigation to reduce impacts to the greatest extent feasible.

Please respond to the following comments.

1. **Balance of Wildlife and Habitat Needs**
   The Habitat Agency appreciates the DEIR focus on protection and enhancement of downstream habitat for South Central Coast steelhead. Identifying the best flow regime to benefit all downstream species and habitats was challenging during the many inter-agency meetings that were held throughout development of the DEIR. In the end, the proposed flow regime, with a heavy focus on fish benefits, represents a further departure from the natural hydrograph that, as stated in the DEIR will significantly affect downstream sycamore alluvial woodland (SAW) and would gradually convert existing SAW into willow riparian woodland. The Habitat Agency is concerned that the needs of fish 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 Habitat Agency understands and respects that fish are now an

important species in the system that are in dire need of protection. However, 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 SAW habitat on the Habitat Agency'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. Please consider extending the frequency or duration of dry back periods to occasionally replicate the natural pre-dam hydrograph. And the DEIR Chapter 3.5 references that an adaptive management plan would be prepared for flow operations – would the Habitat Agency and other regulatory agencies be able to provide input and review the adaptive management plan?

2. **Land Conservation Coordination with the Habitat Agency**

The project as proposed would impact the Habitat Agency's ability to implement the Habitat Plan Conservation Strategy. Specifically, the Plan requires a minimum 46,496 acres to be protected through conservation by the time the Plan expires in 2063. These minimum requirements must be met regardless of the acreage of impacts the Plan covers over the permit term, and they would go up if the Plan covers more impacts than were anticipated during Plan preparation. This requirement is met through direct land purchases or purchases of conservation easements over existing land that contains the land cover types needed for the Habitat Agency to meet compliance criteria. This means the Habitat Agency is perpetually on the market for suitable conservation land with the appropriate types of resources. In the past, private developers or speculators have complicated the negotiations with willing landowners. Worse, some property owners with whom the Habitat Agency had been negotiating in good faith simply elected to instead sell to a higher bidder. Given this highly competitive real estate market, the Habitat Agency is already at a disadvantage when it comes to negotiations for land acquisition. If Valley Water's need to mitigate for hundreds of acres of high value conservation land results in the introduction of a new competitor for the same dwindling resources, then the Conservation Strategy becomes increasingly difficult to implement. This would be a conflict with an existing habitat conservation plan and would result in a significant impact under CEQA.

Appropriate mitigation would require that Valley Water coordinate directly with the Habitat Agency at the time any conservation land within Santa Clara County is considered as mitigation for any of the Project impacts. The High Speed Rail Authority has agreed to this level of coordination with the Habitat Agency for their San Jose to Merced segment of new rail line. Like the PREP, the High Speed Rail project is not covered by the Plan but could conflict with the Habitat Plan by pursuing negotiations with land owners within the Habitat Plan area in the absence of coordination with the Habitat Agency. Similarly, the Santa Clara Valley Regional Conservation Investment Strategy is required to coordinate with the Habitat Agency whenever conservation land is identified within the Plan area to ensure 1) that the Habitat Agency 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 the Habitat Agency to implement the Conservation Strategy of the Habitat Plan.

3. **Loss of Downstream Sycamore Alluvial Woodland**
   The DEIR states that perennial water flow associated with the new proposed flow regime would result in 71 acres of impacts to SAW downstream from the new reservoir. 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. Please clarify how the impact is to be determined and at what timeline the mitigation measures would be implemented.

4. **Indirect Effects on the Pacheco Creek Reserve**
   The Pacheco Creek Reserve (PCR) is a 155-acre ribbon of land that includes a two-mile reach of Pacheco Creek and adjacent riparian and upland habitat. The PCR is approximately three miles downstream from the current Pacheco Dam and was acquired by the Habitat Agency several years ago for two important reasons. First, it includes numerous acres of existing rare Sycamore Alluvial Woodland (SAW) that the Agency is required to protect in conservation due to it being a vanishing resource in the Plan area. Second, it provides a unique and very rare opportunity to restore SAW by re-engaging the floodplain that was disconnected through past land uses and replanting within that floodplain. The Habitat Agency is required to restore a minimum of 14 acres of SAW within the first 40 years of Habitat Plan implementation. With a resource this scarce, the opportunities to restore it are even more scarce. Therefore, the PCR is vitally important to ultimate success of the Habitat Plan. For several years, the Habitat Agency has been developing plans to restore a significant portion of the PCR with a focus on restoration of SAW. Resources, including staff time and grant and Habitat Agency funding and Valley Water Safe Clean Water grant funding have been expended in the past three years, and the completed project is anticipated to cost over $2,500,000. Proposed mitigation for the loss of SAW on other properties downstream from the dam via purchase of out-of-county conservation may be sufficient as those properties are not existing mitigation or conservation sites. However, the PCR is both conservation and mitigation for cumulative impacts to SAW within the Habitat Plan area. If existing or future restored SAW is impacted on the PCR, there is no proposed compensation for the Habitat Agency's potential loss of the habitat (i.e., the Habitat Agency will then be protecting fewer acres of SAW), and the significant cost of the proposed restoration project at the PCR would not be compensated. Please explain how the PCR, above and beyond all other downstream properties, will be compensated for the significant loss of time, resources and habitat if existing and proposed SAW is impacted within its boundaries.

5. **Sycamore Alluvial Woodland Impacts Must be Mitigated Outside of Santa Clara County**
   Mitigation Measure BI-2c requires compensatory mitigation for SAW impacts through Valley Water's purchase and protection of existing SAW. Page 3.5-315 states "Because sycamore alluvial woodlands have limited distribution in Santa Clara County, acquisition of mitigation sites will <u>focus</u> in areas outside the SCVHP boundaries to prevent a reduction in the availability of areas suitable for mitigation for use by the SCVHA….). This mitigation measure requires two important revisions. First, the word "focus" underlined above for emphasis, must be changed to

"occur" to signify that this is more than an attempt to acquire lands outside the Plan area but a commitment that no land within the Plan area will become SAW mitigation for the Project. Second, the Habitat Plan is currently undergoing a major amendment that may increase the Plan area to include more of the County than is currently covered. Therefore, the mitigation measure should state that no land within Santa Clara County (as opposed to the Plan area) will become mitigation for the Project.

6. **Wildlife Movement Across Pacheco Creek**

   The Pacheco Creek Bridge at the downstream end of the 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. Through most of the year, only one or two sections are inundated, allowing wildlife movement to occur through the dry sections. However, during complete inundation, the water reaches across all sections and up to the rip rap armoring at the base of the bridge abutments. 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. It is unclear if the proposed perennial flow regime would exasperate this condition by introducing flows beyond the winter and early spring that may restrict wildlife movement beneath the Pacheco Creek bridge. We are 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 project.

7. **Bullfrog Control Downstream of the PREP**

   Under the proposed new flow regime (perennial, increased flow) where drybacks only occur during "dry and critical water years" there will be negative impacts on CRLF where ponds and slow-flow areas may not dry out annually by the end of September, thus allowing bullfrog tadpoles to mature (they need two years to mature). While bullfrogs are currently in the system, their reproduction and competitive/predatory influence on CRLF is held in check by most ponds drying up and stream flow stopping in late fall.

8. **Construction Impacts**

   The DEIR states that beginning in the summer of the second year of construction and for approximately five years seasonal inflow would no longer be stored behind the existing north fork dam for summer releases and the system would revert to its unimpaired condition. Therefore, the depth to groundwater would likely increase from existing conditions during the summer and fall, which could result in impacts to existing wetland and riparian habitats and aquatic organisms. Following construction, conditions would then change to the flow operations conditions. The shift from existing, to construction period, to post-construction flow operations could also impact habitats and organisms. It is unclear if these potential impacts have been determined.

9. **Additional Studies and Reports**

   Please find attached Pacheco Pass Mountain Lion Study, prepared by Pathways for Wildlife in May 2020. On May 1, 2020, the California Fish and Game Commission published a notice of findings to designate the southern California/Central Coast population of the mountain lion as a candidate species under the California Endangered Species Act. Page 3-16 of the DEIR Biological Resources Appendix references an earlier study by Pathways that was a 2019 Hazards Assessment. The 2020 Study is more current and germane to wildlife movement impacts related to higher creek flows and perennial water.

   Also provided is an observation of California red-legged frog within one mile downstream of the Pacheco Dam. This observation was in June 2021.

We look forward to having our comments addressed in the Final EIR and welcome any engagement on behalf of Valley Water to ensure that its responses to our comments are sufficiently vetted and provide adequate mitigation for project impacts in the eyes of the Habitat Agency. Thank you.

Sincerely,

Edmund Sullivan,
Executive Officer

Attachments

A – Pathways for Wildlife 2020 Pacheco Pass Mountain Lion Study
B – California red legged frog observation documentation

SR-152 Pacheco Pass Permeability & Pacheco Creek Wildlife Connectivity Study: Mountain lion Report 2018-2020

June 2020

PREPARED BY PATHWAYS FOR WILDLIFE FOR THE SANTA CLARA VALLEY HABITAT AGENCY.

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PREPARED BY PATHWAYS FOR WILDLIFE FOR THE SANTA CLARA VALLEY HABITAT AGENCY.

1.0 EXECUTIVE SUMMARY

SR-152 Pacheco Pass bisects a critical wildlife linkage of regional significance as identified by the Santa Clara Valley Habitat Agency (SCVHA), California Department of Fish & Wildlife (CDFW), and the Bay Area Critical Linkages Project (BACL). Pathways for Wildlife, in collaboration with the Santa Clara Valley Habitat Agency, conducted the Wildlife Permeability and Hazards across SR-152 Pacheco Pass Project 2018-2019, which was funded by the California Department of Fish and Wildlife (CDFW) Local Assistant Grant (LAG) and the Habitat Agency. Currently the second phase of the study, the SR-152 Pacheco Creek Permeability and Wildlife Connectivity Study, is being conducted by Pathways for Wildlife for the Santa Clara Valley Habitat Agency.

The Santa Clara Valley Habitat Conservation Plan/Natural Community Conservation Plan (NCCP) recognizes the importance of landscape linkages, and specifically identifies Pacheco Pass on SR-152 as a focal area in the Biological Goals and Objectives, Reserve System design, and long-term monitoring. These projects address the barrier at SR-152 Pacheco Pass, which is listed on CDFW's 2020 Wildlife Movement Barrier Priorities in Region 3. SR-152 Pacheco Pass also bisects the Diablo Range-Inner Coast Linkage as identified by the Bay Area Critical Linkages Project.

The purpose of the Wildlife Permeability and Hazards across SR-152 Pacheco Pass Project 2018-2019 was to identify bridges and culverts that wildlife are using to cross under SR-152 within the study area, and to make wildlife connectivity enhancement recommendations that would improve existing highway infrastructure for wildlife safe passage. The project involved 1) monitoring three bridges and two 5-foot-tall dual box culverts for wildlife passage, and 2)

conducting routine roadkill surveys along SR-152 Pacheco Pass within the study area for a twelve-month monitoring period from August 1, 2018 to July 31, 2019.

The second phase of the study, the SR-152 Pacheco Creek Permeability and Wildlife Connectivity Study, currently underway includes monitoring and documenting wildlife presence and movement along the Pacheco Creek and the newly protected Cireulo Pond habitat, which is now part of the Habitat Agency's Pacheco Creek Reserve. The Pacheco Creek Reserve and Pacheco Creek runs adjacent to State Route 152. One of the goals is to identify important wildlife pathways in the study area beyond the underpasses, along Pacheco Creek and Ciraulo Pond and the surrounding habitats.

Pathways for Wildlife will also install and monitor the effectiveness of a Critter Crossing Shelving Unit that will be installed at the Pacheco Culvert on the Pacheco Creek Reserve. The Pacheco Creek Underpass and Cedar Creek Underpass will be continued to be monitored for wildlife passage under the highway and to compare results from the *SR-152 Wildlife Permeability Study* to determine if there are differences in species detections. These studies help support the implementation of the Santa Clara Valley Habitat Plan's biological goals and objectives related to landscape connectivity in the SR-152 Pacheco Creek focal area.

The objective of this report is to detail the data collected on mountain lions from August 2018 to May 2020. As a candidate for listing under the California Endangered Species Act, mountain lions in the Central Coast will require additional considerations and mitigation to adequately mitigate proposed development project impacts on this species, which is vulnerable to population declines due to reduced genetic diversity as a result of habitat fragmentation (Gustafson et al. 2018). A new paper recently published on mountain lion genetics has revealed that the Central Coast population, which includes the counties of Santa Cruz and Santa Clara, and has low genetic diversity and effective genetic population size (Ne15-16) (Gustafson et al. 2018).

It is important to provide connectivity between the Santa Cruz Mountains and within the Diablo Range to facilitate gene flow for mountain lions and other species to keep the greater metapopulations intact and healthy, which is one of the main objectives of this study.

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). Another goal of the study is to further develop wildlife connectivity enhancement recommendations for species such as mountain lions.

2.0 INTRODUCTION AND STUDY AREA

The SR-152 Pacheco Pass study area includes a 13 mile stretch of the highway beginning at Casa de Fruta on the west side of Pacheco Pass to the South Fork of Pacheco Creek on the east side of the Pass (Figure 1). SR-152 is built upon a south facing hillslope with the upland and lowland habitats on either side of SR-152 consisting of primarily undeveloped lands with a few rural residential parcels and cattle grazing operations. The upland habitat consists almost entirely of oak woodland savanna, while the lowlands consist of the Pacheco Creek riparian corridor.

The Santa Clara Valley Habitat Conservation Plan/Natural Community Conservation Plan (NCCP) recognizes the importance of landscape linkages, and specifically identifies Pacheco Pass on SR-152 as a focal area in the Biological Goals and Objectives, Reserve System design, and long-term monitoring (Santa Clara Valley Habitat Plan 2012) (Figure 1). The study area includes two linkages, Linkage 15 and Linkage 17 (Figure 1).

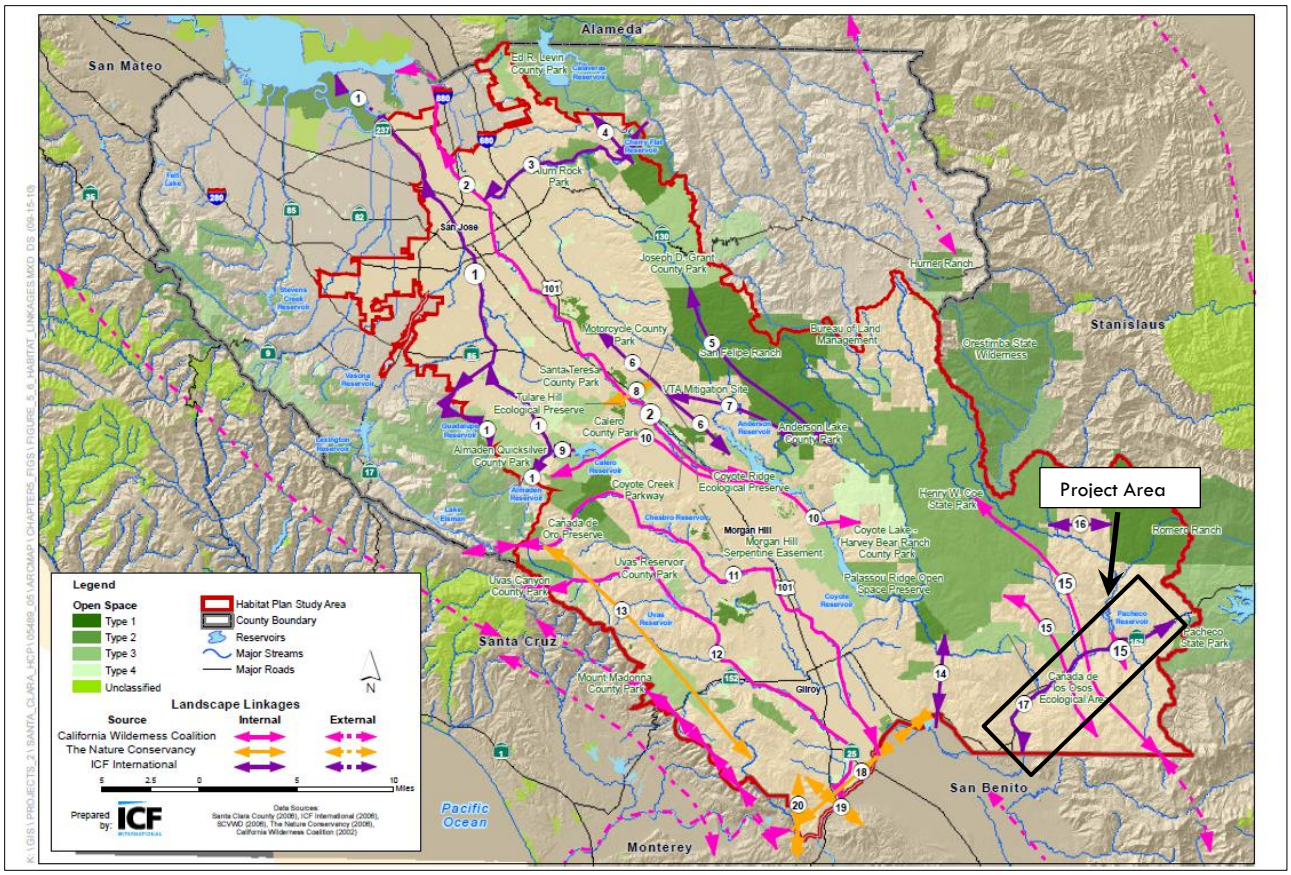

Figure 1. The Santa Clara Valley Habitat Conservation Plan Landscape Linkages.

This project addresses the barrier at SR-152 Pacheco Pass, which is listed on CDFW's 2020 Wildlife Movement Barrier Priorities in Region 3 (CDFW BIOS website: Figure 2). This dataset represents barriers to terrestrial wildlife movement in California that are high priority for remediation, as identified by the California Department of Fish and Wildlife (CDFW) in March 2020. CDFW divides the state into six administrative Regions. CDFW staff in each Region identified linear segments of infrastructure that currently present barriers to wildlife populations in their jurisdiction. In doing so, the Regions used all available empirical information in their possession, including existing connectivity and road crossing studies, collared-animal movement data, roadkill observations, and professional expertise. The dataset represents the ten highest priority barriers identified in each region.

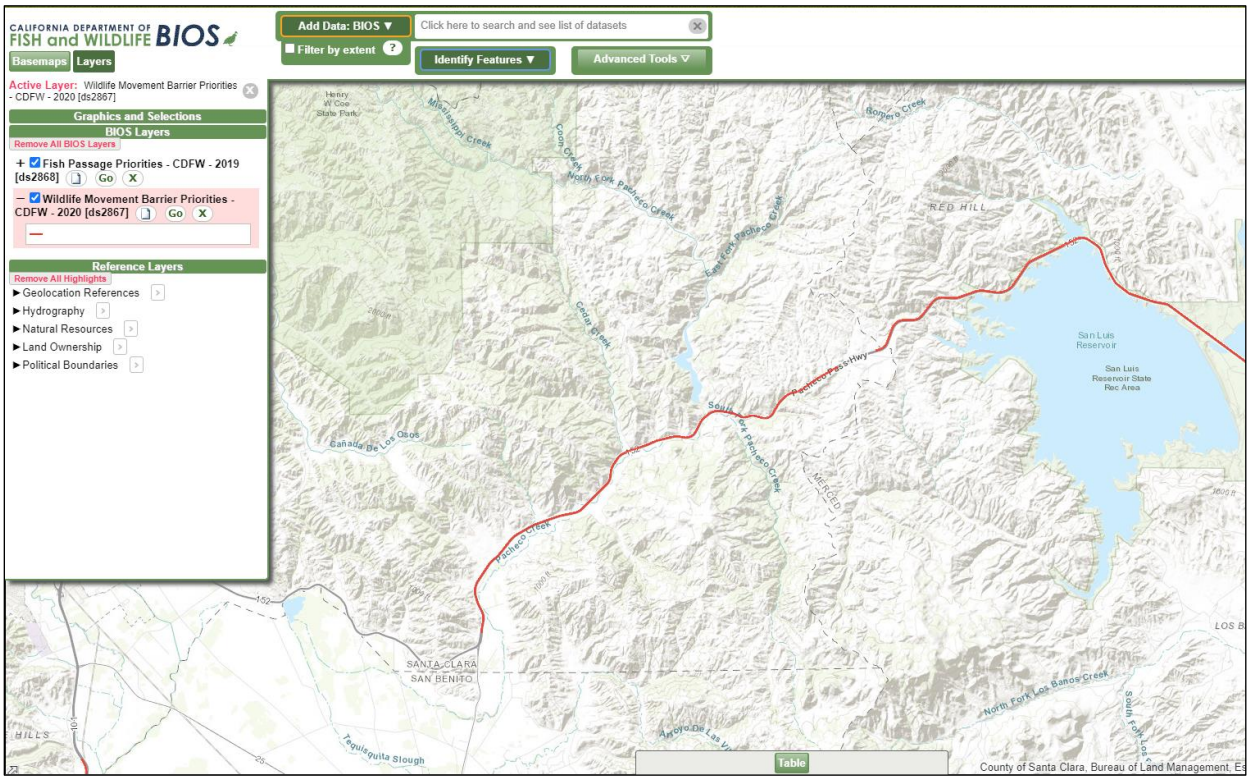

Figure 2. CDFW's 2020 Wildlife Movement Barrier Priorities list from DFW's BIOS website, SR-152 Pacheco Pass.

SR-152 has been identified as a wildlife movement barrier priority for large carnivores, meso-carnivores, and Tule elk (Figure 3). These species have also been recorded hit on SR-152 throughout the study, including mountain lion.

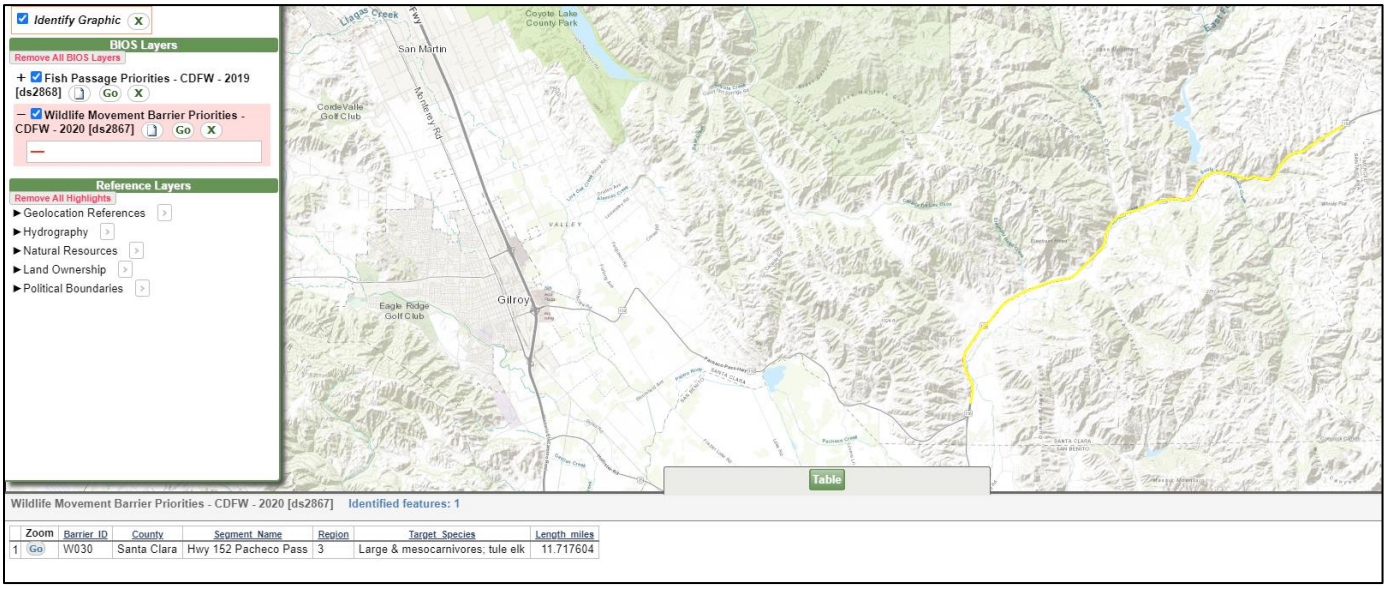

Figure 3. CDFW's 2020 Wildlife Movement Barrier Priorities list of target species for the SR-152 Pacheco Pass.

SR-152 Pacheco Pass also bisects one of the Bay Area Critical Linkages, the Diablo Range to the Inner Coast Linkage (Figure 4). The Bay Area Critical Linkage project was a comprehensive modeling effort to identify important habitat linkages that connect large landscape features such as mountain ranges (Penrod et al. 2012).

The project area is also identified as a priority for connectivity by the California State Wildlife Action Plan (CDFW 2015) and the draft Santa Clara County Regional Conservation Investment Strategy.

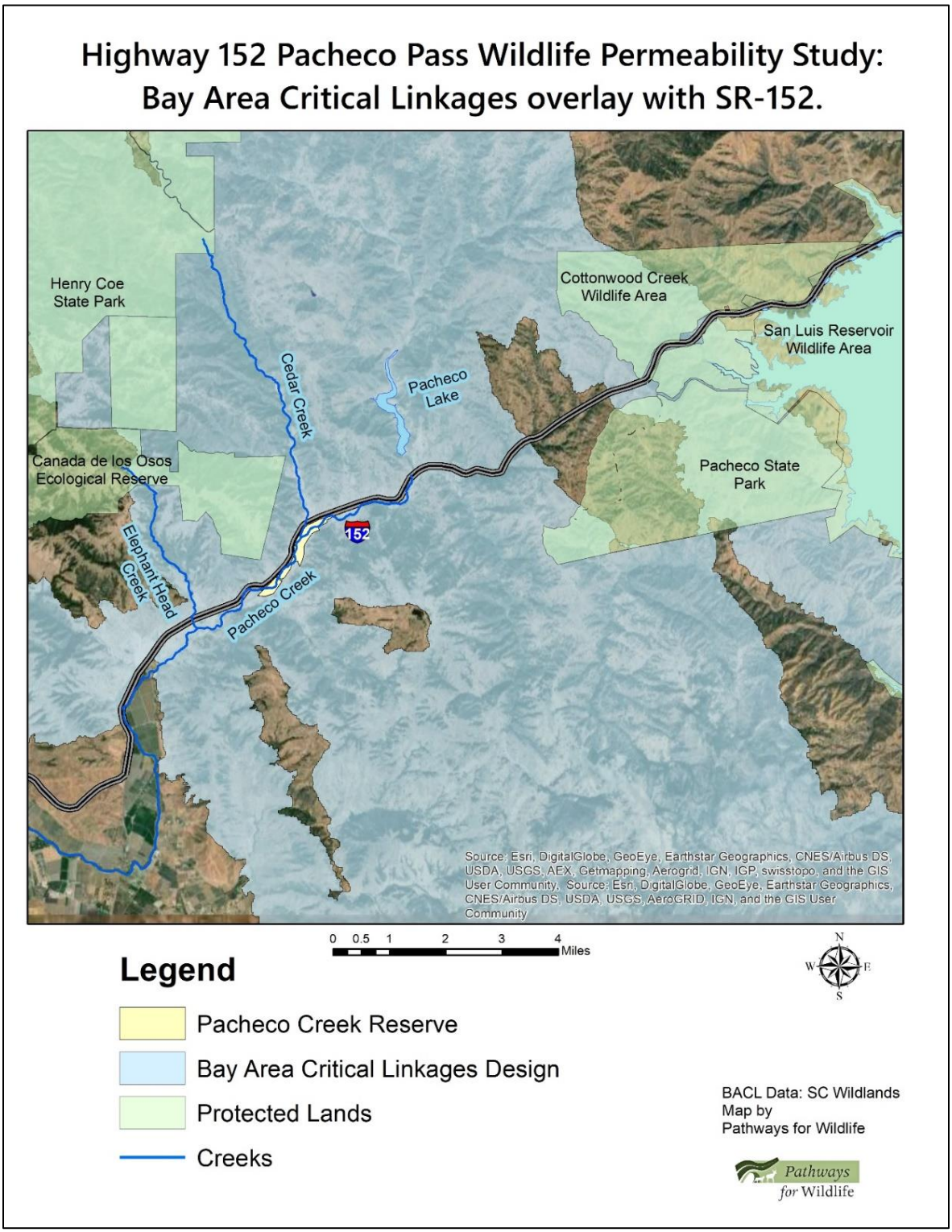

Figure 4. Bay Area Critical Linkage Design: Diablo Range to the Inner Coast Linkage.

2.1 Study Area

The SR-152 Pacheco Pass study area includes a 13 mile stretch of the highway beginning at Casa de Fruta on the west side of Pacheco Pass to the South Fork of Pacheco Creek on the east side of the Pass (Figure 4). SR-152 is built upon a south facing hillslope with the upland and lowland habitats on either side of SR-152 consisting of primarily undeveloped lands with a few rural residential parcels and cattle grazing operations. The upland habitat consists almost entirely of oak woodland savanna, while the lowlands consist of the Pacheco Creek riparian corridor.

There are several protected lands on both sides of the highway. On the north side and upslope from the highway, protected lands include Henry Coe State Park and the Cañada de los Osos Ecological Reserve (Figure 4). On the south and downslope side of the highway, protected lands include the Habitat Agency's Pacheco Creek Reserve, which is a 158-acre reserve (Figure 4).

Pacheco Creek is perennial, making it important habitat for wildlife. The creek provides year-round resources such as water, food, and vegetation cover. The study area also provides a significant amount of climate change resilience, which is important as the upland habitats become hotter and drier (Kostyack, John, et al. 2011). The Pacheco Creek riparian corridor provides habitat for numerous sensitive and special-status wildlife species. Documented species occurrences include: Tule elk (*Cervus canadensis nannodes*), yellow-legged frogs (*Rana boylii*), California red-legged frogs (*Rana draytonii*), western pond turtles (*Emys* marmorata) California tiger salamanders (*Ambystoma californiense*), and bald eagles (*Haliaeetus leucocephalus*). Spawning South Central Coast steelhead (*Oncorhynchus mykiss*) also migrate through the Pacheco Creek Reserve property.

3.0 PROJECT NEED & REGIONAL MOUNTAIN LION GENETIC STATUS

The Southern California/Central Coast ESU is comprised of six genetically distinct mountain lion populations: Central Coast North (CC-N, which includes mountain lions in the Santa Cruz Mountains and Santa Clara County), Central Coast Central (CC-C), Central Coast South (CC-S, which includes mountain lions in the Santa Monica Mountains), San Gabriel/San Bernardino Mountains (SGSB), Santa Ana Mountains (SAM), and Eastern Peninsular Range (EPR) (Figure 1) (Gustafson et al. 2018). Most of these populations appear to be struggling with low genetic

diversity and effective population sizes, which puts them at increased risk of extinction (Ernest et al. 2014; Riley et al. 2014; Vickers et al. 2015; Benson et al. 2016a; Gustafson et al. 2018; 10 Benson et al. 2019). The populations struggling the most include the SAM, CC-S, SGSB, and **CC-N** populations. The CC-N mountain lion population occurs mostly within the counties of Alameda, Contra Costa, San Mateo, Santa Clara, and Santa Cruz (Figure 5).

While the Central Coast mountain lions face a multitude of threats, the greatest challenges stem from habitat loss and fragmentation and the consequent impact on their genetic health. Most of the populations comprising the ESU have low genetic diversity and effective population sizes, which puts them at increased risk of extinction (Ernest et al. 2003; Ernest et al. 2014; Riley et al. 2014; Vickers et al. 2015; Benson et al. 2016; Gustafson et al. 2018; Benson et al. 2019). The populations most at risk are the SAM, CC-S, SGSB, and CC-N populations.

Although minimum viable effective population size has been found to vary depending on the species (Frankham 1995; Traill et al. 2010), general conservation management practice over the past few decades has followed a 50/500 rule, under which an effective population size of 50 is assumed sufficient to prevent inbreeding depression in the short term (over the duration of five generations) and an effective population size of 500 is sufficient to retain evolutionary potential in perpetuity (Traill et al. 2010; Frankham et al. 2014). **The Central Coast North (CC-N) population, which includes Santa Clara County, has an effective population size of 16.6 (Table 1).** Both the Central Coast North (**CC-N**) and Central Coast Central (CC-C) mountain lion populations are genetically compromised and face significant risk of extinction in both the short- and long-term (Table 1). Five of the six populations have effective population sizes well below 50 (from lowest to highest: CC-S, SGSB, SAM, **CC-N**, EPR), and one population (CC-C) is just barely above that threshold at Ne = 56.6 (Table 1) (Gustafson et al. 2018).

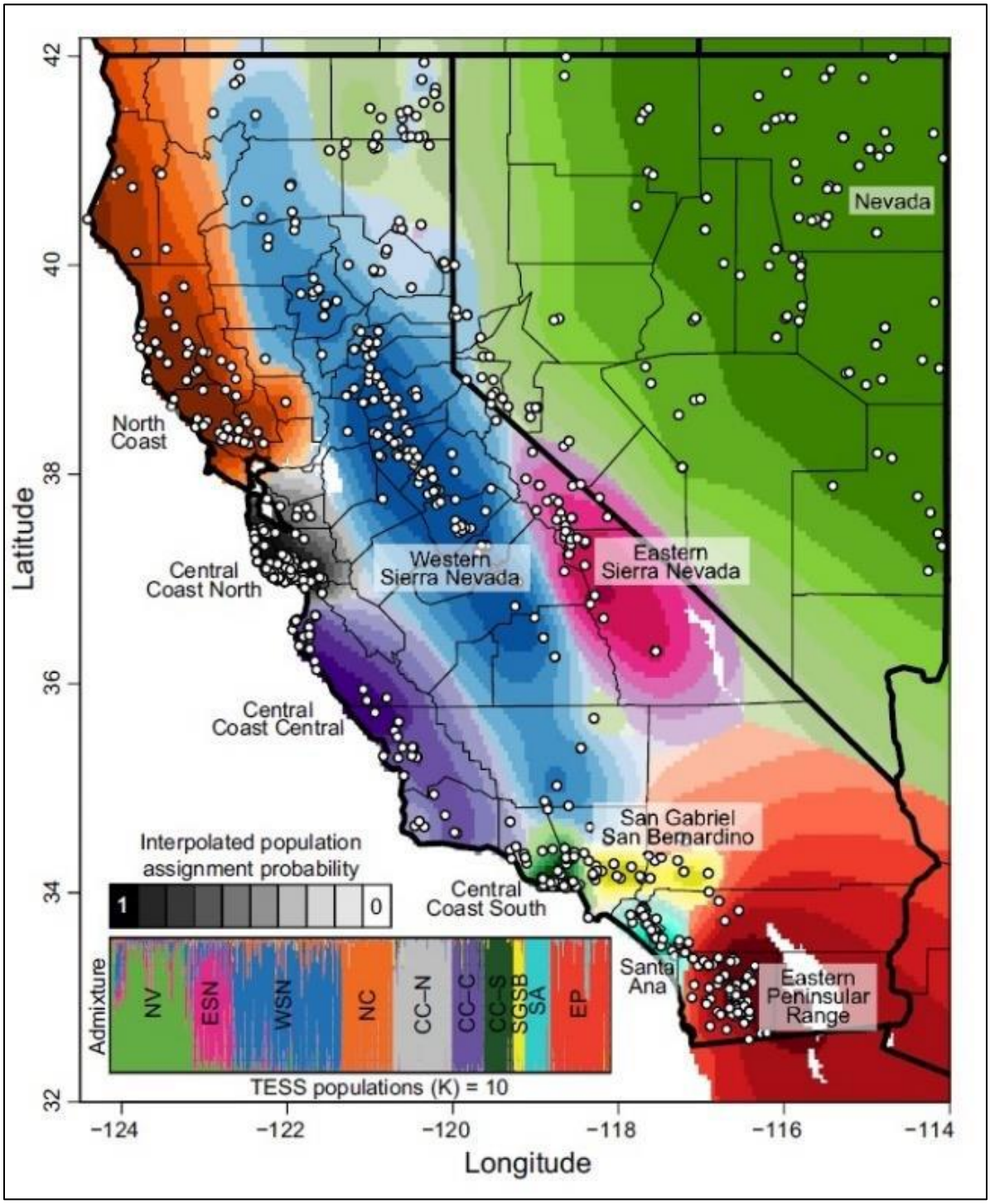

Figure 5. Map of genetically distinct mountain lion populations in California. The Central Coast North (CC-N), Central Coast Central (CC-C), Central Coast South (CC-S), San Gabriel/San Bernardino (SGSB), Santa Ana Mountains (SAM), and Eastern Peninsular Range (EPR) mountain lion populations should be considered an evolutionarily significant unit (ESU). Each color represents a genetically distinct mountain lion population. White dots are individual animals sampled. Source: Gustafson et al. (2018).

Population	Effective Population Size (N_e)	Estimated Total (Adult) Population (N)[1]
Central Coast North (CC-N) (Santa Cruz & Santa Clara County)	16.6	33-66
Central Coast Central (CC-C)	56.6	113-226

Table 1. Effective population size from Gustafson et al. (2018) and estimated total adult population of Central Coast Mountain Lion Populations. 1Calculations are based on the estimated ratio of effective to total adult population size (Ne/N) of Florida panthers being 0.25 to 0.5 (Ballou et al. 1989). This ratio was used in the USFWS Florida Panther Recovery Plan (USFWS 2008).

Although low effective population sizes standing alone are cause for conservation concern for Southern California and Central Coast mountain lion populations, there are other human-caused factors that further limit their long-term persistence such as habitat loss and fragmentation due to roads and development, which have led to varying levels of isolation and high mortality rates.

The Pacheco Creek linkage is a critical bottleneck within the larger regional Diablo Range-Inner Coast Linkage (Figure 1 and 2). This linkage is facilitating mountain lion movement between the Central Coast North (CC-N) and Central Coast Central (CC-C) mountain lion populations. Facilitating mountain lion movement across SR-152 is critical along with protecting adjacent habitats next to SR-152 along with supporting conservation efforts to restore habitats such as the Pacheco Creek Watershed.

4.0 PROJECT GOALS

The overall project goals are to help support the implementation of the wildlife connectivity strategies outlined in the Santa Clara Valley Habitat Plan by improving wildlife crossings

along SR-152. To achieve this goal, we developed wildlife connectivity enhancement recommendations to improve wildlife permeability across the highway.

These recommendations were developed by data results from monitoring wildlife use of existing crossing structures within the study area: three bridges and two dual box culverts, which were monitored with remote cameras. Roadkill surveys were also conducted to identify locations in which animals were attempting to cross the highway and were hit by vehicles.

The second phase of the study currently underway includes:

1. Implementing the wildlife connectivity enhancement recommendations from the Wildlife Permeability and Hazards across SR-152 Pacheco Pass Project 2018-2019.

2. Monitoring and documenting wildlife presence and movement along the Pacheco Creek and the newly protected Ciraulo Pond habitat, which is now part of the Habitat Agency's Pacheco Creek Reserve (Figure 4). The Pacheco Creek Reserve and Pacheco Creek runs adjacent to State Route 152. One of the goals is to identify important wildlife pathways in the study area beyond the underpasses, along Pacheco Creek and CirauloPond and the surrounding habitats.

5.0 MONITORING SITES

5.1 Monitoring Sites & Current Study Objectives

From August 1, 2018 to July 31, 2019, a twelve-month monitoring period, three bridges and two dual box culverts where selected for monitoring within the study area (Figure 6). The three bridges included a bridge by the fire station, the Pacheco Creek bridge at the Pacheco Creek Reserve, and the Cedar Creek Bridge (Figure 6). The two dual box culverts included the Elephant Head Creek culvert and the Pacheco Creek Reserve culvert (Figure 6). Three additional bridges in the study area were not monitored due to access issues. These bridges may be monitored in future project phases.

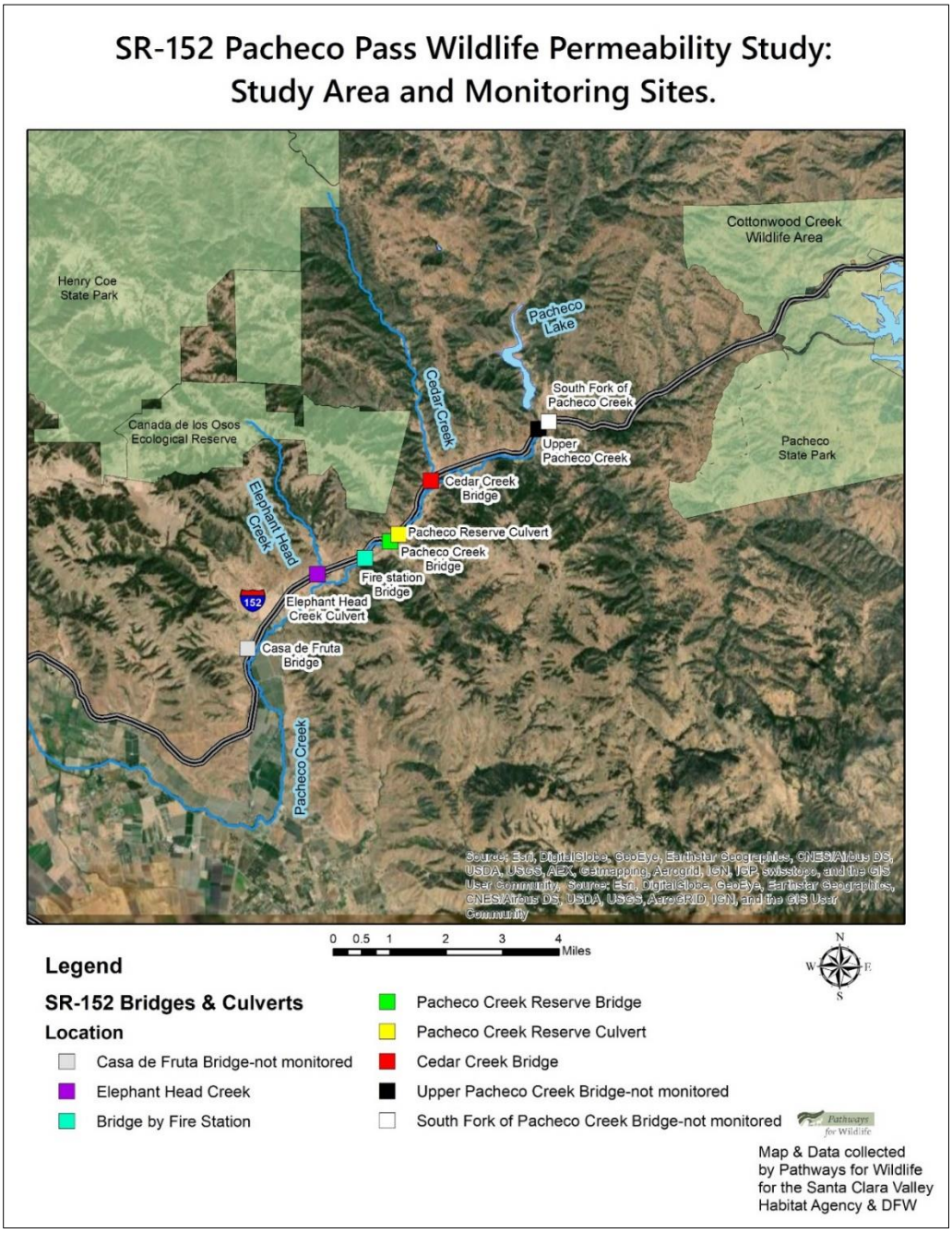

Figure 6. SR-152 Pacheco Pass study area and monitoring sites.

Currently, the second phase of the study, the SR-152 Pacheco Creek Permeability and Wildlife Connectivity Study, involves determining the relationship between HCP's Linkage 15 and Linkage 17 for terrestrial species (Figure 1). We are currently identifying; (1) high- use pathways and routes that multiple species are traveling along; (2) thehabitats wildlife are utilizing to move along the Pacheco Creek and CirauloPond study area and; (3) the habitats wildlife are utilizing to move to and from the Pacheco Creek and Cedar Creek underpasses.

6.0 CAMERA MONITORING-MOUTAIN LION DATA RESULTS

From August 2018 to May2020, there have been 7 records of a mountain lion recorded traveling within the Pacheco Creek Reserve at three camera sites (Figure 7 & Table 2).

Figure 7. Mountain lion traveling into the Pacheco Creek watershed at the Pacheco Creek Reserve on 9-1-2018.

Study Site & Number of Mountain lion Records	Mountain lion
SR-152 Pacheco Creek Reserve Bridge	1
Trail to the Pacheco Bridge	5
Pacheco Reserve Main Road to Pacheco Creek	1
Grand Total	7

Table 2. Total Detections of Mountain lion by Site.

The two camera sites in which mountain lions were recorded are located between Pacheco Creek and SR-152 (Figure 8). 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.

Figure 8. Mountain lion detections from the Pacheco Creek Reserve from 2018-2020.

Out of the three bridges and two culverts that have been monitored on SR-152 (Figure 6), there has been only one mountain lion documented using the 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 (Figure 9). This is important data in documenting a mountain lion having traveled under a SR-152 bridge as they have also been recorded hit on the highway.

Figure 9. Mountain lion recorded heading south from the Pacheco Creek Reserve Bridge.

7.0 WILDLIFE-VEHICLE COLLISION DATA

There are three known records of mountain lions having been recorded hit on the highway. DFW reported a mountain lion hit on SR-152 by the Elephant Head Creek culvert in September 2012 (Martha Shcauss pers comm.) (Figure 10) A mountain lion skeleton was also found hit along SR-152 north of the Cedar Creek bridge (data contributed by Lindsay Vivian, Caltrans District 4) (Figure 10). A young female mountain lion was hit is on SR-152 by Bells Station on 4-15-2020 (Figure 11, data contributed by Terris Kasteen CDFW).

Figure 11. Mountain lion hit, 1 year old female at SR-152 and Bell Stations on 4-15-2020.

8.0 DISCUSSION

In Figure 12, the map illustrates the locations in which mountain lions have been recorded traveling within the Pacheco Creek Reserve. The map also includes the locations in which mountain lions have been recorded hit on SR-152. It is important to note that multiple individual mountain lions have been recorded traveling through this linkage. These results indicate that this linkage is facilitating mountain lion movement with the Central Coast North mountain lion population. This is important data given that the **Central Coast North (CC-N) population, which includes Santa Clara County, has an effective population size of 16.6 (Table 1).** Both the Central Coast North (CC-N) and Central Coast Central (CC-C) mountain lion populations are genetically compromised. Facilitating genetic flow therefore is a high priority for maintaining and increasing the health of our regional mountain lion populations.

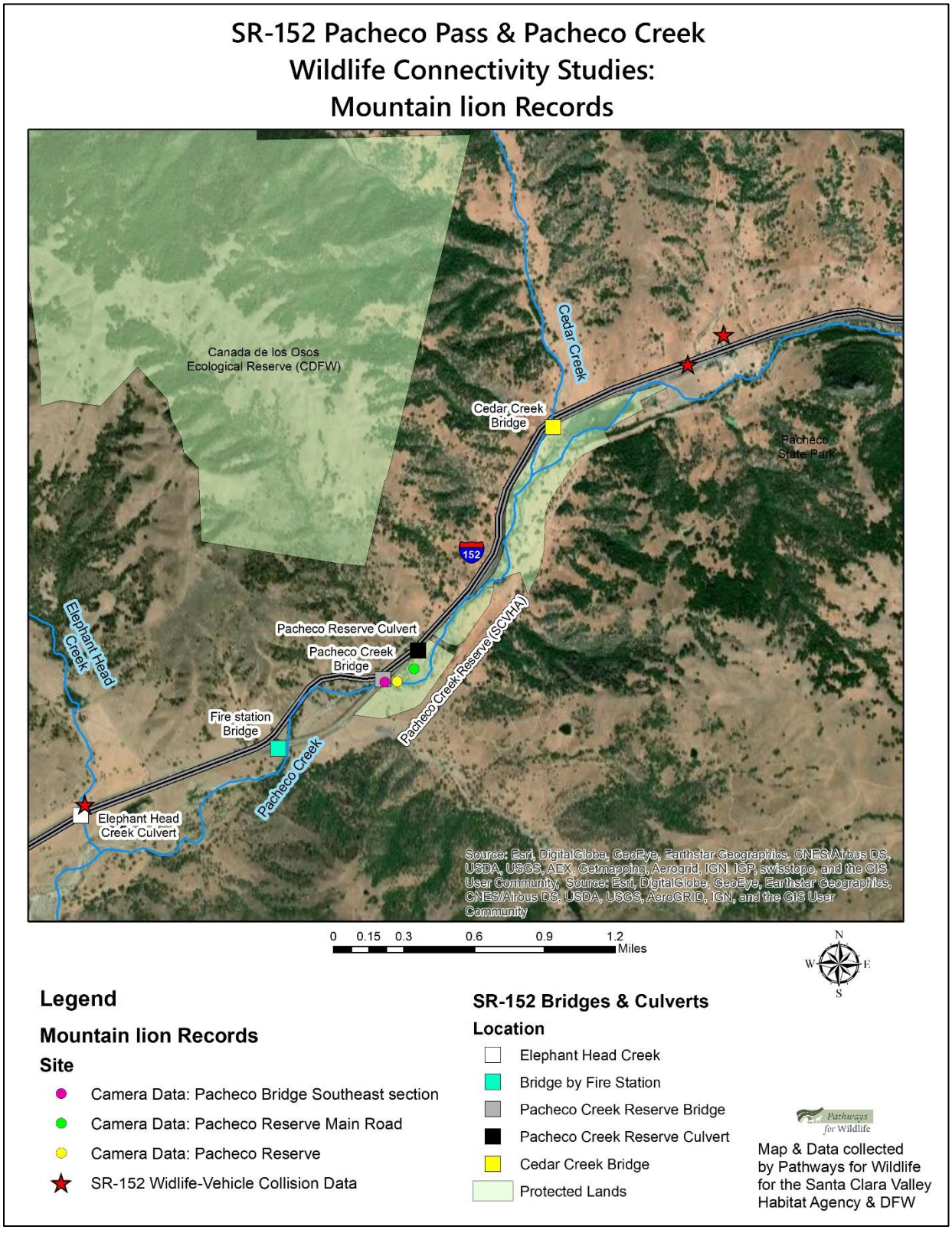

Figure 12. Mountain lion locations recorded for the SR-152 Pacheco Pass & Pacheco Creek studies.

9.0 LITERATURE CITED

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Center for Biological Diversity and the Mountain Lion Foundation (June 25, 2019).

Wilmers, Christopher C., et al. "Scale dependent behavioral responses to human development by a large predator, the puma." *PLoS One* 8.4 (2013): e60590.

CNDDB Online Field Survey Form Report

California Natural Diversity Database
Department of Fish and Wildlife
1416 9th Street, Suite 1266
Sacramento, CA 95814
Fax: 916.324.0475
cnddb@wildlife.ca.gov
www.dfg.ca.gov/biogeodata/cnddb/

This data has been reported to the CNDDB, but may not have been evaluated by the CNDDB staff

Source code xxxx
Quad code 3712113
Occ. no. _____
EO index no. _____
Map index no. _____

Scientific name: *Rana draytonii*

Common name: California red-legged frog

Date of field work (mm-dd-yyyy): 06-18-2021

Comment about field work date(s): observed at 4:45pm on the bank of a shallow pond while servicing a trail camera

OBSERVER INFORMATION

Observer: Ahiga Snyder

Affiliation: Pathways for Wildlife

Address: 19130 Laurel Drive, Los Gatos, CA 95033

Email: ahiga@pfwildlife.com

Phone: (408) 891-9935

Other observers:

DETERMINATION

Keyed in:

Compared w/ specimen at:

Compared w/ image in:

By another person: Julie King

Other: photograph and video

Identification explanation:

Identification confidence: Very confident

Species found: Yes **If not found, why not?**

Level of survey effort:

Total number of individuals: 1

Collection? No **Collection number:**

Museum/Herbarium:

ANIMAL INFORMATION

How was the detection made? Seen

Number detected in each age class:

adults	juveniles	larvae	egg mass	unknown
1				

Age class comment:

Site use description:

What was the observed behavior? Sitting still on the bank of an annual pond/pool

Describe any evidence of reproduction:

SITE INFORMATION

Habitat description: riparian with willows, cottonwoods, cattails, rather steep canyon after ponded water

Slope: Land owner/manager: Caltrans right of way

Aspect:

Site condition + population viability:

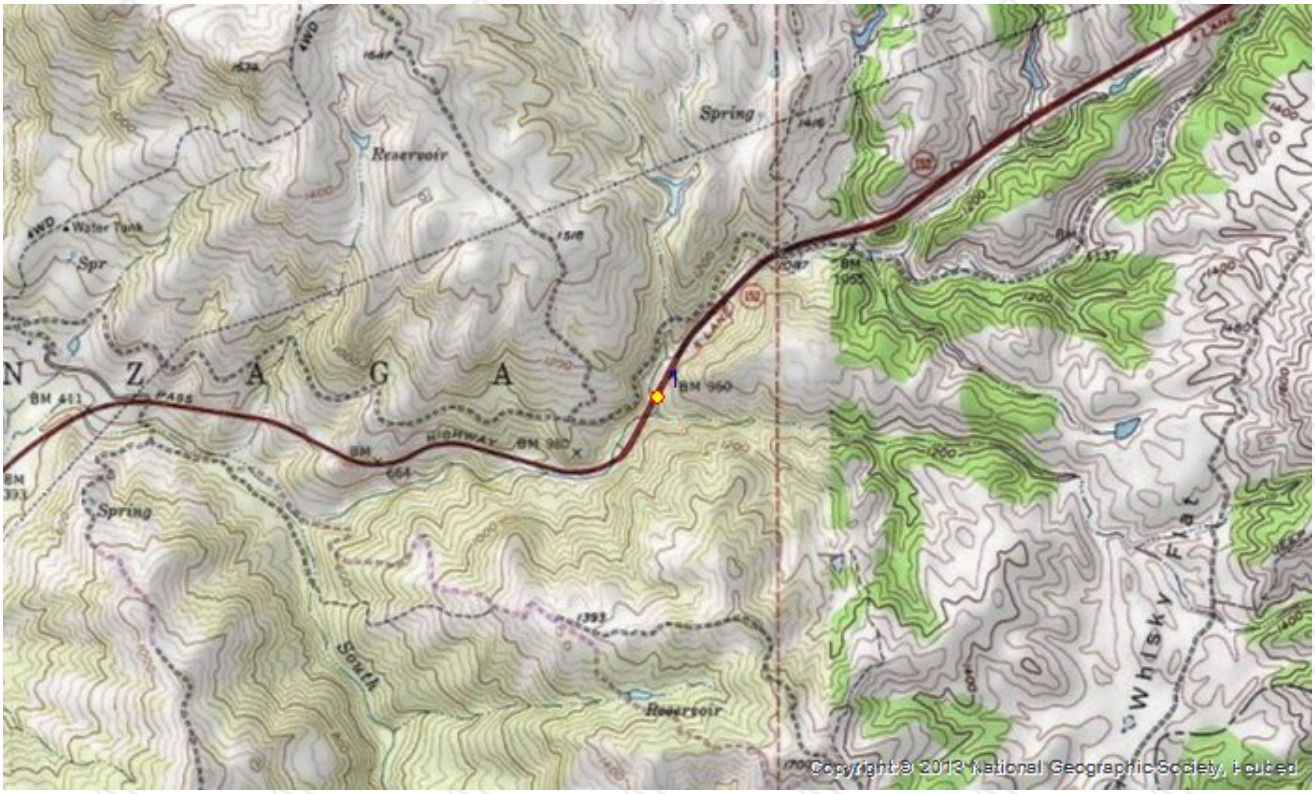
Immediate & surrounding land use: cattle grazing

Visible disturbances: periodic people accessing the culvert to spray paint graffiti.

Threats:

General comments: 3 western pond turtles also routinely observed at this site

MAP INFORMATION



ID	County	24K Quadrangle	Elev. (ft)	Latitude NAD83	Longitude NAD83	UTM E NAD83	UTM N NAD83	UTM Zone
1	Santa Clara	Pacheco Peak	927	37.04733	-121.258882	654828	4101540	10
	Public Land Survey	**Feature Comment**						
	M T10S R06E 24	Pool on east side of 12' cement arch culvert.						

The mapped feature is accurate within: 5 m

Source of mapped feature: GPS

Mapping notes:

Location/directions comments: East side of SR-152 at Caltrans culvert/mile marker 32.3. Pool holds several feet of water until drying in Sept.

Attachment(s): culvert 32.3 view from within eastbound opening facing south_A.S..jpg; culvert 32.3 westbound opening.jpg; CRLF_06.18.2021_A.S..jpg