ENVIRONMENTAL ASSESSMENT

FOR DAM SAFETY INTERIM RISK REDUCTION MEASURES AND RESERVOIR DRAWDOWN AND OPERATIONS PLAN

Anderson Dam Hydroelectric Project - FERC Project No. 5737-007

California

Federal Energy Regulatory Commission
Office of Energy Projects
Division of Hydropower Administration and Compliance
888 First Street, NE
Washington, D.C. 20426

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ACRONYMS AND ABBREVIATIONS

ac-ft	Acre-feet
ADSRP	Anderson Dam Seismic Retrofit Project
ADTP	Anderson Dam Tunnel Project
Advisory Council	Advisory Council on Historic Preservation
AFM	Anderson Force Main
AIS	Aquatic Invasive Species
AMM	Avoidance and Minimization Measure
APE	Area of Potential Effects
BAAQMD	Bay Area Air Quality Management District
BGEPA	Bald and Golden Eagle Protection Act
BMPs	best management practices
°C	degrees Celsius
CalFire	California Department of Forestry and Fire Protection
California DFW	California Department of Fish and Wildlife
California SHPO	California State Historic Preservation Officer
CalTrout	California Trout
CCC	Central California Coast
CEQ	Council on Environmental Quality
cfs	cubic feet per second
Commission or FERC	Federal Energy Regulatory Commission
Corps	U.S. Army Corps of Engineers
County Parks	Santa Clara County Parks and Recreation Department
CRLF	California red-legged frog
deadpool	reservoir elevation 488 feet

CWA	Clean Water Act
CWMZ	Cold Water Management Zone
CVP	Cross Valley Pipeline
D2SI	the Commission's Division of Dam Safety and Inspections
DO	dissolved oxygen
DPS	Distinct Population Segment
EA	Environmental Assessment
eDNA	environmental DNA
EFH	essential fish habitat
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
ºF	degrees Fahrenheit
FAHCE agreement	Fisheries and Aquatic Habitat Cooperative Effort Agreement
FOCP	FERC Order Compliance Project
FPA	Federal Power Act
ft	feet
FWS	U.S. Fish and Wildlife Service
HDMP	Wetland and Riparian Habitat Dryback Monitoring Plan
IRRM	Interim Risk Reduction Measures
mcy	million cubic yards
MW	megawatts
µg/L	micrograms/Liter
mg/L	milligrams/Liter
MRL	method reporting limit

MSA	Magnuson-Stevens Fishery Conservation and Management Act
MTBM	micro tunnel boring machine
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
National Register	National Register of Historic Places
NTUs	Nephelometric Turbidity Units
Open Space Authority	Santa Clara Valley Open Space Authority
PA	Programmatic Agreement
PFMP	Pacific Coast Salmon Fishery Management Plan
PCBs	polychlorinated biphenyl compounds
PM2.5	particulate matter with aerodynamic diameter of 2.5 micrometers or less
PM10	particulate matter with aerodynamic diameter of 10 micrometers or less
PPMP	Phytophthora Pathogen Management Plan
Reclamation	U.S. Bureau of Reclamation
TSS	total suspended solids
TWG	Fisheries Technical Work Group
SCVHA	Santa Clara Valley Habitat Agency
SCVHP	Santa Clara Valley Habitat Plan
SCVWCD	Santa Clara Valley Water Conservation District
sDPS	Southern Distinct Population Segment
supplemental EA	Supplemental Environmental Assessment
Vaki	computer-based fish counter
Valley Water or exemptee	Santa Clara Valley Water District
Water Board	California State Water Resources Control Board

EXECUTIVE SUMMARY

Background

The Anderson Dam Project is located on Coyote Creek in Santa Clara County, California. The project is classified as having a high hazard potential because in the event of a dam failure, the populated areas downstream including Morgan Hill and San Jose, California, will be inundated. In 2008, and the years following, several analyses conducted by the Santa Clara Valley Water District (Valley Water) concluded that Anderson Dam could experience significant deformations in the event of a major earthquake, which in turn could result in an uncontrolled release of reservoir water. As a result of this information, Anderson Reservoir was restricted to a maximum elevation of 602.3 feet in 2011 and to 592.3 feet in 2017, and Valley Water began developing the Anderson Dam Seismic Retrofit Project, which includes rebuilding the entire dam and outlet structure. On September 5, 2019, Commission staff asked Valley Water to assess the hydrologic and seismic risk associated with Anderson Dam and to provide a report with proposed additional risk reduction measures. On November 1, 2019, Valley Water submitted its response which informed the Commission, for the first time, that an earthquake with a frequency of 100 years could cause damage to the existing spillway and outlet works, which will prevent normal operation of the reservoir.

On February 20, 2020, the Commission's Director of the Division of Dam Safety and Inspections required Valley Water to implement interim risk reduction measures (IRRM) until the larger seismic retrofit of the dam is completed. Per the requirements of the February 20, 2020 dam safety IRRM directives, Valley Water is required to: (1) immediately maintain the project reservoir no higher than elevation 565 ft, and take all appropriate measures to maintain and quickly lower the reservoir to elevation 565 ft if the reservoir rises in the event of significant inflow; (2) to begin further lowering the reservoir to elevation 488 ft (deadpool) no later than October 1, 2020 and once elevation 488 ft is reached, take all appropriate measures to maintain and quickly lower the reservoir to deadpool in the event of significant inflow; and (3) file plans and specifications to construct its proposed low-level outlet. The purpose of these directives is to more reliably and quickly draw down the reservoir after an earthquake and/or during significant precipitation events.

Proposed Action

On July 27, 2020, Valley Water filed a Reservoir Drawdown and Operations Plan, which is the subject of this Environmental Assessment. Under the plan, Valley Water proposes to draw down the reservoir beginning no later than October 1, 2020, construct and operate a low-level outlet to comply with the February 20, 2020 IRRM directives, and implement certain mitigation measures. These mitigation measures include reservoir bank and rim stability improvements, existing intake structure modifications, creek

channel and bank erosion control modifications, imported water releases and a Cross Valley Pipeline (CVP) Extension, Coyote percolation dam replacement, Coyote Creek flood management measures, steelhead and fish avoidance and minimization measures, and implementation of specific best management practices.

Environmental Analysis

Commission staff are making best efforts to assess the proposed actions presented in the Reservoir Drawdown and Operations Plan in the short time frame before the October 1, 2020 drawdown. As we previously outlined in a letter dated April 30, 2020, Commission staff informed the Council on Environmental Quality (CEQ) that it needed to conduct an expedited review under CEQ's regulations to consider the environmental effects and minimization and mitigation measures associated with the implementation of IRRM. In this EA, Commission staff only analyzed the effects of Valley Water's drawdown of Anderson Reservoir to deadpool elevation 488 ft beginning October 1, 2020 using the existing outlet works, existing intake structure modifications, reservoir rim stability improvements, CVP extension, steelhead and fish avoidance and minimization measures, and other associated mitigation measures. Due to the need for additional information, the following proposed actions will be addressed in a supplemental EA where Commission staff will analyze Valley Water's proposal to: construct the new outlet works and low-level outlet tunnel, creek channel and bank erosion measures, Coyote percolation dam replacement, Coyote Creek flood management measures, and reopening of the historical Coyote Creek channel.

The EA reviews effects to: geology and soils; water quantity and quality; aquatic resources; wildlife and terrestrial resources; threatened and endangered species and essential fish habitat; recreation; land use; cultural resources; aesthetics; transportation; and air quality. We considered not only the implementation of a reservoir drawdown, but also the period of time that drawdown could last, potentially until the Anderson Dam Seismic Retrofit Project is completed in 2030 based on Valley Water's projections. The following is a brief overview of the effects to each resource.

Geology and Soils

The effects of the reservoir drawdown on geologic and soil resources will be moderate and adverse prior to implantation of slope stabilization measures and repairs. Falling water levels may activate existing and create new landslides, possibly damaging Valley Water's facilities and neighboring public and private properties. In order to minimize the likelihood of inducing landslides through its actions, Valley Water intends to limit releases to 100 cubic feet per second (cfs) more than inflow, equating to an approximate reservoir drawdown rate between 5 and 12 inches per day depending upon reservoir elevation. Valley Water is proposing to conduct geotechnical investigations to determine the presence of landslides, initiate monitoring efforts to identify active

movement, and as mentioned above, correct any damage to private or public property, and stabilize active slides. Additionally, with the reservoir at deadpool, approximately 1,100 acres of ground surface will be exposed to sediment transport. Valley Water proposes to seed unconsolidated material exposed during the drawdown to reduce the amount of material transported by stormwater.

Water Quantity

Water quantity will be adversely affected during the drawdown, though this will be partially mitigated by an inter-basin transfer mentioned below. To achieve deadpool, discharges will be limited to 100 cfs greater than inflow, leading to a net decrease in storage of approximately 200 ac-ft per day. Valley Water expects the reservoir to reach its deadpool elevation at some point between mid-December 2020 and the end of April 2021. Once at deadpool and the reservoir rim is stabilized, the project will generally operate in a run-of-river mode, though will briefly store water when inflow exceeds the discharge capacity of the project.

Because inflow will equal outflow much of the time, discharges from the project will be much less in the summer and will be moderately higher in the winter, compared to pre-drawdown conditions. To help offset this difference, particularly during the summer, Valley Water intends to release imported water from the Coyote Discharge Line. In order to comply with its groundwater recharge responsibilities, and to limit warm water releases (discussed in *Water Quality* below) the exemptee also intends to install an extension on the CVP, which will discharge imported water into Coyote Creek just below the Ogier Ponds.

Water Quality and Aquatic Resources

During the duration of the drawdown, water quality in Anderson Reservoir will be temporarily diminished due to the loss of the Anderson Reservoir coldwater pool and because of increases in total suspended solids (TSS) from stormwater runoff. Water with elevated levels of TSS and/or elevated temperatures discharged from Anderson Reservoir will likely temporarily adversely affect water quality and beneficial uses in downstream Coyote Creek. Valley Water is proposing to extend the CVP to downstream of Ogier Pond to minimize the release of warm water into the Coldwater Management Zone (CWMZ) below Anderson Dam, and to chill imported water before discharging it into Coyote Creek at the upstream end of the CWMZ to mitigate for the downstream effects.

The drawdown of Anderson Reservoir will result in diminished aquatic habitat in the reservoir. During active drawdown the risk of fish stranding will decrease through implementation of a Fish Rescue and Relocation Plan. Rainbow trout and other native fish that spawn in tributaries to Anderson Reservoir will likely experience decreased connectivity between reservoir and tributary habitats when the reservoir is at deadpool,

but the majority of fish in the reservoir are not likely to experience adverse effects as a result of the drawdown or the reservoir rim stability improvements. Downstream of the dam, most species will likely experience minor adverse effects from the expected temperature increase. However, Pacific lamprey ammocoetes and Chinook salmon are expected to experience moderate adverse effects due to increased temperature and the effects of sedimentation on their habitats (the Central California Coast Distinct Population Segment Steelhead (*Oncorhynchus mykiss*) is discussed below in *Threatened an Endangered Species*). The effect should be minimized through the release of chilled water, implementation of the proposed monitoring activities, and through the Fish Rescue and Relocation Plan.

Due to the effects on water quality, and subsequently to aquatic resources, Commission staff recommend that Valley Water develop and implement a Water Temperature Monitoring Plan and a Sedimentation and Turbidity Monitoring Plan, which will allow assessment of the aquatic habitat conditions in Coyote Creek, identify trends, and provide information for future actions.

Wildlife and Terrestrial Resources

The prolonged drawdown of the reservoir will cause plants and wildlife to adapt to the changing conditions and will not create adverse conditions for most species as a sizable water source will still remain at deadpool conditions. Valley Water's plan to augment releases from Anderson Dam with imported water through the extension to the CVP will assist groundwater recharge and mitigate impacts to downstream riparian habitat and wetlands. Reservoir rim stability improvements will result in disturbance to grassland habitat and coast live oak forest and woodland. Effects on grassland habitat will be largely temporary, however, the loss of some coast live oak forest and woodland habitat will be permanent.

The action area currently contains several invasive species and pathogens that degrade habitat quality for native plants and animals. Valley Water proposes a number of best management practices to address these concerns. Together with recommended measures discussed in the EA, and measures under the Santa Clara Valley Habitat Plan, invasive species concerns will be minimized.

Commission staff recommend Valley Water continue to implement conditions of the Santa Clara Valley Habitat Plan to benefit a number of plant and wildlife species. Of note, Commission staff recommend that Valley Water develop a Phytophthora Pathogen Management Plan, a Wetland and Riparian Habitat Dryback Monitoring Plan, an Amphibian Disease Monitoring Plan, Invasive Species Plan, and a plan to monitor for impacts to western pond turtles. Commission staff also recommend restoration surveys for and plantings of native plants, including native milkweed larval host plants and nectar plants for the monarch butterfly.

Threatened an Endangered Species

Federally-listed species that may occur in the proposed project boundary include Central California Coast Distinct Population Segment Steelhead (*Oncorhynchus mykiss*), California tiger salamander (*Ambystoma californiense*), California red-legged frog (*Rana draytonii*), and Coyote Ceanothus (*Ceanothus ferrisiae*). FWS and NMFS each provided recommended measures under the emergency consultation framework of the Endangered Species Act to protect listed species and critical habitat (discussed below).

The proposed action is likely to adversely affect the Coyote ceanothus, California tiger salamander, and California red-legged frog. Compliance with the Santa Clara Valley Habitat Plan will offset the project's impacts on these species, including a Phytophthora Pathogen Management Plan and a Wetland and Riparian Habitat Dryback Monitoring Plan. Commission staff also recommend Valley Water prepare invasive species monitoring and control plans, and a plan to monitor for amphibian diseases.

Commission staff concludes that the drawdown may affect and is likely to adversely affect steelhead. The drawdown of Anderson Reservoir, and the interim operations prior to the CVP extension and operation of chillers, will likely affect juvenile *O. mykiss* during summer and fall months due to diminished water quality, increased potential for dryback, and increased sedimentation. The anticipated water quality issues may affect, and are likely to adversely affect *O. mykiss* juveniles. Sedimentation will likely adversely affect early life stages, particularly if there are sequential storm events. The physical and biological features of critical habitat that will likely be adversely affected are water quality and quantity and floodplain connectivity of the rearing habitat. The adverse effects will be minimized through implementation of the Fish Rescue and Relocation Plan, the use of chillers, identification of suitable temperature thresholds, fisheries monitoring, and water temperature and sediment monitoring through various plans discussed in the EA.

Recreation

During the drawdown, public access to the majority of recreation facilities at Anderson Lake County Park will be closed thus resulting in moderate adverse impacts. These impacts will be partially mitigated through the provision of a temporary access point. Since the parking lot at the Anderson Lake boat launch provides the only public access to the trails in the Rosendin Park area, which will remain open during the drawdown, Commission staff recommend Valley Water develop a temporary parking lot and access trail to the trails in the Rosendin Park area.

Commission staff also recommend Valley Water provide advance notice of limited access or closure of recreation facilities. Information regarding alternative locations to pursue outdoor recreation must be provided for all user groups, including but not limited

to: anglers; motorized boaters; non-motorized boaters; hikers; wildlife watchers; and picnickers.

Land Use and Aesthetics

Individuals participating in outdoor recreation activities within Anderson Lake County Park and visitors to Coyote Creek County Park who travel up to the dam crest will be adversely impacted by the reservoir being lowered to deadpool for an extended time period. Residents of Holiday Lake Estates as well as residents whose homes are accessed via East Dunne Avenue (a county designated scenic road) beyond Anderson Lake will also be impacted by the lowered reservoir, as well as visitors using the portions of Anderson Lake County Park, which will remain open during construction, and those travelling to Henry W. Coe State Park via East Dunne Avenue. Due to the long time period that the reservoir is expected to be maintained at deadpool frequent park visitors and nearby residents will be moderately adversely impacted.

Due to the ongoing threat of wildfires in the area, Commission staff recommend Valley Water provide notice to CalFire of the drawdown, general bathymetry data, and if needed, implement measures for safe helicopter access to reservoir waters for combating wildfires during the drawdown.

Valley Water has developed reservoir bank and stability improvement measures to be used in the event of additional slope failures caused by reducing the reservoir to deadpool. In order to mitigate long term aesthetic impacts associated with repairs of any landslides, Commission staff recommend Valley Water take steps to ensure reservoir bank and stability improvement measures blend with the surrounding environment by using local stone or other materials, native plants for revegetation or vegetative screening, or natural tones for painted surfaces.

Cultural Resources

The effects of the proposed action to cultural resources and historic properties cannot be fully determined. Therefore, the Commission has entered into a Programmatic Agreement to clarify the framework to address any potential adverse effects on historic properties and cultural resources due to the reservoir drawdown and construction of the low-level outlet, where surveys and other investigations are outstanding.

Transportation and Air Quality

If landslide stabilization measures are needed, there will be an increase in traffic, including construction equipment on roads near the reservoir. The exemptee intends to access the slides primarily from the staging areas by constructing temporary access roads as necessary. Construction of the CVP extension will generally follow an existing road, allowing access directly from the roadway. These vehicles will interfere with typical

traffic patterns, causing brief delays and impeding the traffic that typically travels through the development, resulting in moderate adverse impacts. To mitigate for this, Valley Water's plan to establish specific staging areas and develop temporary access routes from these locations to the specific work site will simplify the altered traffic pattern, minimize the extent of the disturbance, and institute well-defined routes for the construction traffic on existing roads that local residents will be made aware of. Air quality impacts will be moderate for brief periods, but will be negligible over the long term and emissions from the proposed activities will be minor.

Conclusion

In our effects analysis, we considered not only the implementation of a reservoir drawdown, but also the period of time that drawdown could last, potentially until the Anderson Dam Seismic Retrofit Project is completed in 2030 based on Valley Water's projections. A sustained reservoir drawdown has the potential to create adverse effects, and Commission staff recommend requiring Valley Water to implement the measures mentioned above, as discussed in more detail in the EA, to mitigate the adverse effects associated with a sustained reservoir drawdown.

Commission staff will continue reviewing Valley Water's plans regarding the construction and operation of a low level outlet and tunnel as well as downstream mitigation measures and will issue a supplemental EA on those aspects of Valley Water's Reservoir Drawdown and Operations Plan. Beginning the reservoir drawdown to deadpool will reduce dam safety risk and must be implemented. On the basis of our independent analysis, we find that approval, in part, of the proposed Reservoir Drawdown and Operations Plan, regarding Valley Water's plans for the reservoir drawdown, reservoir rim stability measures, and construction of the CVP extension, and associated mitigation measures as recommended by staff, will not constitute a major federal action significantly affecting the quality of the human environment.

ENVIRONMENTAL ASSESSMENT
Federal Energy Regulatory Commission
Office of Energy Projects
Division of Hydropower Administration and Compliance
Washington, DC

Anderson Dam Hydroelectric Project
FERC No. 5737-007

1.0 INTRODUCTION

1.1 Filing

Filing type:	Reservoir Drawdown and Operations Plan
Date Filed:	July 27, 2020
Applicant's Name:	Santa Clara Valley Water District (Valley Water)
Waterbody:	Coyote Creek
County and State:	Santa Clara County, California
Federal Lands:	None

1.2 Purpose of Action

1.2.1 Background

The Federal Energy Regulatory Commission (Commission) issued an exemption to Santa Clara Valley Water District on August 24, 1984.[1] The Anderson Dam Project is located on Coyote Creek in Santa Clara County, California and is composed of: a 240-foot-high, 1,385-foot-long dam; a reservoir with a maximum surface area of 1,240 acres and storage capacity of 89,278 acre-feet (ac-ft) at a spillway elevation of 627.8 feet (ft);[2] a 54-inch diameter, 2,800-foot-long penstock; a powerhouse with a total installed capacity of 800 kilowatts; and a 100-foot-long transmission line connecting the project to the electrical grid. The project is classified as having a high hazard potential because in

[1] *Santa Clara Valley Irrigation District*, 28 FERC ¶ 62,276 (1984). On July 29, 2019, Valley Water filed clarifying information noting Santa Clara Valley Water District as the exemptee and provided updated project contacts.

[2] All elevations throughout this document are given in North American Vertical Datum 1988.

the event of a dam failure, the populated areas downstream including Morgan Hill and San Jose, California, will be inundated.[3]

A preliminary analysis, conducted in 2008 by Valley Water, showed that Anderson Dam could experience significant deformations in the event of a major earthquake, which in turn could result in an uncontrolled release of reservoir water.[4] To reduce the risk associated with a failure of the dam, Valley Water stated it will maintain the reservoir at elevation 617.2 ft.[5] In 2009, the California Division of Safety of Dams required an additional reservoir restriction to elevation 607.2 ft. In January 2011, Valley Water prepared and submitted a seismic stability report which found that the dam may be subject to even larger deformation resulting from an earthquake. Further, according to the report, until a retrofit of the dam is complete, the level of risk cannot be decreased because the current capacity of the outlet structure at the project is not capable of preventing the reservoir from rising rapidly during periods of heavy precipitation. In June 2011, Valley Water proposed, and the Commission agreed, to again lower and maintain the reservoir at elevation 602.3 ft.[6] In June 2012, Commission staff approved a Board of Consultants to evaluate plans for a full Anderson Dam Seismic Retrofit Project (ADSRP), which includes rebuilding the entire dam and outlet structure. In 2017, Valley Water proposed a further elevation restriction of about 10 ft, with the new maximum elevation of 592.9 ft. The ADSRP is projected to start in early 2024 and would be completed in 2030.[7]

1.2.2 Nature of the Emergency

On September 5, 2019, Commission staff asked Valley Water to assess the hydrologic and seismic risk associated with Anderson Dam and to provide a report with proposed additional risk reduction measures. On November 1, 2019, Valley Water

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[3] The Commission defines high hazard as "any dam whose failure, in the judgment of the Commission or its authorized representative, might endanger human life or cause significant property damage, or which meets the criteria for high hazard potential as defined by the Corps of Engineers in 33 [C.F.R.] part 222." 18 C.F.R. § 12.31(b) (2020).

[4] Valley Water's January 5, 2009 letter to the Commission's San Francisco Regional Engineer.

[5] *Id.*

[6] Commission San Francisco Regional Engineer June 22, 2011 letter to Santa Clara Valley Water District.

[7] Valley Water's September 16, 2020 Monthly Status Report filed with the Commission.

submitted its response and included a report of the results evaluating its existing risk reduction measures and informing the Commission, for the first time, that an earthquake event with a frequency of 100 years could cause damage to the existing spillway and outlet works, which will prevent normal operation of the reservoir.[8] However, Valley Water did not propose any additional interim risk reduction measures. On December 17, 2019, Commission staff requested additional risk reduction measures, as the information in Valley Water's November 1, 2019 filing presented a previously unknown increased risk of a catastrophic failure at the project.[9] On December 31, 2019, Valley Water indicated it will not be proposing additional interim risk reduction measures as lowering the reservoir could risk damage to the outlet structure during an earthquake, impact the environment, and limit access to water supply for Valley Water.[10] In response, Commission staff, on January 14, 2020, again requested additional interim risk reduction measures because of the concern that an earthquake could occur with elevated reservoir levels, especially levels above the current seismic stability restriction level.[11] With limited outlet capacity at the project, the only way to reduce the risk of failure from an earthquake is to ensure the reservoir is as low as possible. On January 29, 2020, Valley Water proposed the construction of a new low-level outlet to allow it to safely and more rapidly draw down the reservoir, if needed, after an earthquake.[12] Valley Water is preparing plans and specifications for the Anderson Dam Tunnel Project (ADTP), which consists of constructing a new outlet works through the right abutment of the dam. This outlet works will be used later during construction of the ADSRP to dewater the reservoir and divert flows around the dam construction area. On February 20, 2020, the Commission's Director of the Division of Dam Safety and Inspections (D2SI) required Valley Water to implement interim risk reduction measures (IRRM) until the larger seismic retrofit of the dam is completed.

1.2.3 Purpose and Need for Action

Per the requirements of the February 20, 2020 dam safety IRRM directives, Valley Water is required to: (1) immediately maintain the project reservoir no higher than elevation 565 ft, and take all appropriate measures to maintain and quickly lower the reservoir to elevation 565 ft if the reservoir rises in the event of significant inflow; (2) to

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[8] Valley Water's October 11, 2019 Board of Consultants Evaluation of Project Design Update.

[9] Commission staff December 17, 2019 Request for Additional Risk Reduction Measures.

[10] Valley Water's December 31, 2019 Response to Commission staff data request.

[11] Commission staff January 14, 2020 Request for additional information.

[12] Valley Water January 28, 2020 Response to Commission staff data request.

begin further lowering the reservoir to elevation 488 ft (deadpool) no later than October 1, 2020 and once elevation 488 ft is reached, take all appropriate measures to maintain and quickly lower the reservoir to deadpool in the event of significant inflow; and (3) to construct the proposed low-level outlet. The purpose of these directives is to more reliably and quickly draw down the reservoir after an earthquake and/or during significant precipitation events. Valley Water proposes, through its Reservoir Drawdown and Operations Plan, to drawdown the reservoir beginning no later than October 1, 2020, implement certain mitigation measures, and construct and operate a low-level outlet to comply with the February 20, 2020 IRRM directives. Valley Water refers to the actions proposed in its Reservoir Drawdown and Operations Plan as the FERC Order Compliance Project (FOCP).

This environmental assessment (EA) is being prepared to satisfy the Commission's responsibilities under the National Environmental Policy Act (NEPA).[13] In this EA, Commission staff examine the environmental effects of implementing the dam safety IRRM, the actions proposed in Valley Water's FOCP, and the action alternatives. As discussed below, the no-action alternative is not a viable alternative given the seismic event dam safety risk. The staff alternative is presented including recommended measures to mitigate adverse effects to the environment. This EA will be supplemented prior to issuing authorization to start construction on the ADTP.

1.3 Statutory and Regulatory Requirements

The IRRM and Valley Water's proposed Reservoir Drawdown and Operations Plan are subject to the applicable statutes described below.

1.3.1 Federal Power Act

The Commission is authorized to exempt from the licensing requirements of Part I of the Federal Power Act (FPA) small hydropower projects with an installed capacity of less than 10 megawatts (MW) or less that use an existing dam for the generation of electricity.[14] An exempted project however is still subject to the Commission's dam

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[13] On July 16, 2020, the Council on Environmental Quality issued a final rule, *Update to the Regulations Implementing the Procedural Provisions of the National Environmental Policy Act* (Final Rule, 85 Fed. Reg. 43,304), which was effective as of September 14, 2020; however, the NEPA review of this project was in process at that time and was prepared pursuant to the 1978 regulations.

[14] *See* Sections 405 and 408 of the Public Utility Regulatory Policies Act of 1978, 16 U.S.C. §§ 2705; 2708 (2018); amended by the Hydropower Regulatory Efficiency Act of 2013, Pub. L. No. 113-23, 127 Stat. 493 (2013) (amending, *inter alia*, section 405 to

safety regulations when the project's dam "is more than 33 feet in height above streambed . . . impounds more than 2,000 acre-feet of water, or has a significant or high hazard potential."[15] When an exemption is considered high hazard, the Commission includes an article requiring compliance with Part 12 of the Commission's Rules and Regulations, which govern the safety of water power projects and project works.[16]

The Commission issued an exemption to Valley Water for the Anderson Dam Project, and because the project satisfied the requirements for including the Part 12 dam safety regulations, included Article 6, that reserved the authority to regulate safety aspects of the project under Part 12 of the Commission's Rules and Regulations.[17] The order further requires that "[f]or the purposes of applying these provisions of 18 C.F.R. Part 12, the exempted project is deemed to be a licensed project development and the owner of the exempted project is deemed to be a licensee."[18]

On February 20, 2020, the Director of D2SI determined that Valley Water must reduce the elevation of Anderson Reservoir to reduce the risk to public safety and the large population downstream of Anderson Dam.[19] This directive, issued pursuant to Part 12 of the Commission's regulations, requires Valley Water to drawdown the reservoir to deadpool beginning no later than October 1, 2020, and to construct and operate a new low-level outlet. On July 27, 2020, Valley Water filed with the Commission its plan for how it plans to comply with the February 20 Directive.

1.3.2 Clean Water Act

Under section 401(a) of the Clean Water Act (CWA),[20] the Commission may not authorize construction or operation of a hydroelectric project that may result in a

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define "small hydroelectric power projects" as having an installed capacity that does not exceed 10 megawatts).

[15] 18 C.F.R. § 4.106(h) (2020).

[16] 18 C.F.R. pt 12. (2020).

[17] Exemption Order, 28 FERC at 63,493.

[18] Exemption Order, 28 FERC at 63,493.

[19] February 20 Directive at 1-2.

[20] 33 U.S.C. § 1341(a) (2018).

discharge into the navigable waters of the United States unless the state water quality certifying agency either has issued water quality certification for the project or has waived certification. Section 401(d) of the CWA[21] provides that the certification shall become a condition of any federal license that authorizes construction or operation of the project.

Valley Water's proposal to dewater the reservoir to elevation 488 ft does not constitute a new discharge from the project, as drawdown will be accomplished by releasing water through the existing reservoir outlet. The exemption for the project does not require any minimum or maximum discharge rates, therefore the drawdown of the reservoir will not amend or exceed any currently allowable discharge rates.

Valley Water's proposed ADTP, as well as their proposed avoidance and minimization measures, does require certification from the California State Water Resources Control Board (Water Board). On August 14, 2020, Valley Water applied to the Water Board for a section 401 water quality certification for the ADTP, as well as their proposed avoidance and minimization measures. To date, the Water Board has not issued certification, and per *Section 2.3.2 Measures Not Analyzed in this EA*, we will not discuss the ADTP in this EA.

1.3.3 Endangered Species Act

Section 7 of the Endangered Species Act (ESA) requires federal agencies to ensure that their actions are not likely to jeopardize the continued existence of federally-listed threatened or endangered species or result in the destruction or adverse modification of the critical habitat of such species.[22] By letter dated May 22, 2018, the Commission designated Valley Water as its non-federal representative to conduct informal consultation with the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (FWS) pursuant to section 7 of the ESA. Several federally listed species are known to use or could potentially be affected by the proposed project, including: California tiger salamander, California red-legged frog (CRLF), Coyote Ceanothus, and the Central California Coast (CCC) distinct population segment (DPS) of steelhead.

Following the February 20, 2020 requirement to implement the IRRM, Commission staff issued a letter on March 16, 2020 seeking concurrence from NMFS and FWS on the use of emergency consultation procedures under section 7 of the ESA[23] as

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[21] 33 U.S.C. § 1341(d) (2018).

[22] 16 U.S.C. § 1536 (2018).

[23] 50 C.F.R. § 402.05 (2020).

the dam safety directive does not allow sufficient time to complete standard formal consultation.

FWS and NMFS acknowledged use of the emergency consultation procedures in letters filed March 17 and March 24, 2020, respectively. FWS and NMFS indicated they will continue to provide technical assistance and will provide conservation recommendations for minimizing adverse effects to federally listed species and critical habitat. On August 24, 2020, and revised on September 16, 2020, FWS filed conservation recommendations with the Commission. NMFS filed conservation recommendations on August 14, 2020 pertaining to fish rescue and relocation activities, and additional recommendations for other aspects of the FOCP were filed with the Commission on September 1, 2020.

1.3.4 Magnuson-Stevens Fishery Conservation and Management Act

Federal agencies are required to consult with NMFS on actions which may adversely affect essential fish habitat (EFH)[24] pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA).[25] To streamline requirements and avoid duplication, EFH consultations are typically combined with existing environmental review procedures (e.g., NEPA and ESA). Valley Water's proposal has the potential to affect EFH downstream of the dam for various life stages of fish species managed with the Pacific Coast Salmon Fishery Management Plan.

In the March 16, 2020 letter, Commission staff also sought concurrence from NMFS on the use of emergency consultation procedures under section 305(b)(2) of the MSA for EFH.[26] The March 24, 2020 letter from NMFS acknowledged the use of emergency consultation procedures and that it will provide recommendations to minimize the effects of the action on EFH. On September 15, 2020, NMFS staff filed a letter with the Commission providing recommended measures for EFH.

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[24] 50 C.F.R. § 600 (2020).

[25] 16 U.S.C. 1801 (2018).

[26] 50 C.F.R. § 600.920 (2020).

1.3.5 National Historic Preservation Act

Section 106 of the National Historic Preservation Act (NHPA),[27] and its implementing regulations,[28] requires that every federal agency "take into account" how each of its undertakings could affect historic properties. Historic properties are districts, sites, buildings, structures, traditional cultural properties, and objects significant in American history, architecture, engineering, and culture that are eligible for inclusion in the National Register of Historic Places (National Register).

Following the February 20, 2020 requirement to implement the IRRM, Commission staff issued a letter on March 20, 2020 to the California State Historic Preservation Officer (California SHPO) and the Advisory Council on Historic Preservation (Advisory Council) stating the undertaking to draw down the reservoir and construct a low-level outlet has the potential to adversely affect cultural resources. Therefore, we requested formal concurrence that expedited review, pursuant to 36 C.F.R. § 800.14(b)(1), to develop a Programmatic Agreement (PA) for the undertaking. On March 31, 2020, the Advisory Council declined to participate in the consultation process pursuant to 36 C.F.R. § 800.6(a)(1)(iii). On April 16, 2020, the California SHPO agreed that pursuant to 36 C.F.R. § 800.14(b)(1)(ii) that the PA is the appropriate means for the Commission to comply with 36 C.F.R. 800. In addition, pursuant to 36 C.F.R. § 800.3(g), the California SHPO agreed expedited consultation is appropriate.

1.4 Public Review and Comment

1.4.1 Public Notice of Reservoir Drawdown and Operation Plan

On July 31, 2020, Commission staff issued a public notice of the exemptee's Reservoir Drawdown and Operations Plan. In response to the public notice, 13 responses were received. The Water Board and California Trout (CalTrout) filed separate comments and Motions to Intervene in the proceeding. The following individuals or organizations filed comments: Rich Constantine, Mayor, City of Morgan Hill; Jeffrey Hare; Sergio Jimenez, Councilmember, San Jose; Donald Lieberman; Peter Marshall; Raul Peralez, Councilmember, City of San Jose; Edward Ruder; Ted Smith; Rene Spring, Council Member, City of Morgan Hill; the Santa Clara Valley Open Space Authority (Open Space Authority); Jean-Marie White; and Paula Rasmussen. Commission staff considered all comments when preparing this EA.

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[27] 54 U.S.C. §§ 306108 et seq. (2018). The National Historic Preservation Act was recodified in Title 54 in December 2014.

[28] 36 C.F.R. Part 800 (2020).

Most of the comments filed indicated support for the proposal because it will help Silicon Valley and the San Jose areas from the dewatering impacts of dam failure while protecting environment and wildlife. Mr. Smith said he supports some of the risk reduction measures; specifically, the effort to build a new outlet tunnel to allow the drawdown of the Anderson Dam in a timely manner. Mr. Smith; however, raised concerns about the proposed efforts by Valley Water to condemn and acquire several properties along the creek and elevate said properties. He said these efforts are unnecessary because the Open Space Authority made a deal to procure 937 acres, and these properties will be left undeveloped and will provide natural flood protection to downtown San Jose. In addition, he said the current effort to drawdown Anderson Reservoir in order to construct the new outlet tunnel will, upon completion, provide substantial protection against future overtopping of the Anderson spillway. Therefore, given these measures, Mr. Smith believes that it must not be necessary for Valley Water to acquire properties along Coyote Creek. Mr. Ruder also said he objects strenuously to Valley Water's proposal to elevate or acquire property because it is an expensive and invasive mitigation for a very infrequent flooding event. In addition, he indicated that other reasonable alternatives have not been sufficiently considered. Moreover, Mr. Ruder stated that the maximum outflow from the dam outlet will be significantly below the level of the property that Valley Water proposes to acquire in its proposal. The Open Space Authority said they had concerns regarding the effects that the seismic retrofit project will have on the surrounding landscape and downstream areas. In addition, Open Space Authority said it hoped that the Commission, Valley Water and stakeholders work to ensure: (1) sufficient groundwater recharge in the Coyote Valley aquifer and support and restore groundwater dependent ecosystems (2) adequate flow and flow regimes in Coyote Creek for salmonids or other ecological needs; (3) adequate water storage and recharge infrastructure to effectively address ecological needs and future droughts; and (4) flexibility within negotiated permits and agreements to ensure Valley Water can adequately steward the groundwater basin and ecological needs Comments concerning the ADTP and downstream mitigation measures will be addressed in the supplemental EA once Commission staff gathers further information regarding these measures.

Ms. Rasmussen raised concerns about draining Anderson Reservoir because California Department of Forestry and Fire Protection (CalFire) uses reservoir waters to protect homes and extinguish fires caused by recent and ongoing wildfires adjacent to the reservoir and throughout the state. In addition, she said the seismic shift of emptying of the reservoir increases damage to wildlife and structures making the whole area dangerous. Ms. Rasmussen's comments are addressed in *Section 3.3.8 Land Use*.

CalTrout expressed concern about the cumulative effects to salmon and steelhead due to the duration of the FOCP and associated impacts to fisheries and habitat in Coyote Creek, and how this may interfere with Valley Water's ability to achieve the long-term

restoration objectives for Coyote Creek that it committed to in the Fisheries and Aquatic Habitat Cooperative Effort Agreement (FAHCE Agreement). CalTrout requested that Commission staff require NMFS's conservation recommendations filed on August 14, 2020, and further requested that Commission staff require habitat restoration and mitigation measures to minimize the negative and cumulative effects of the FOCP before completion of the ADSRP. We address CalTrout's comments, NMFS recommendations, and specific habitat restoration and mitigation measures in *Section 3.3.6 Threatened and Endangered Species*.

1.4.2 Public Notice of EA

Concurrently with the issuance of this EA, Commission staff will issue a public notice for a 30-day comment period on the EA. Comments received through the public comment period will be analyzed and incorporated into the supplemental EA Commission staff will prepare once additional information for the ADTP is received and prior to any authorization to construct the proposed tunnel and outlet works.

2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 No-Action Alternative

The February 20, 2020 dam safety directives require the implementation of the IRRM. Valley Water's Reservoir Drawdown and Operations Plan describes how it will implement these IRRM requirements, and constitutes the federal action in this proceeding.

Commission staff define the existing conditions at the project as the baseline for comparison with Valley Water's proposed reservoir dewatering plan (proposed alternative) and staff recommended alternative. The elevation of the reservoir is currently at or below the restricted 565 ft elevation, and the required drawdown of the reservoir and construction of the low-level outlet have not yet been initiated. Under the no-action alternative, the dam will remain a public safety risk if a seismic event were to occur at the project. The no-action alternative would be to keep the reservoir at the current elevation and not perform any further action at the project. The no-action is not a viable alternative given the risk to public safety should a seismic event occur at the project and is removed from further consideration.

2.2 Existing Project Management

2.2.1 Existing Project Operation

Valley Water operates Anderson Reservoir for water supply, groundwater recharge, power generation, aquatic habitat, and incidental flood control. Due to the climate in the project area, with warm dry summers and cooler wet winters, Valley Water stores available inflow from November through March and draws on the reservoir in the

summer to provide water for municipal and habitat enhancement purposes. As a result, the reservoir elevation typically ranges from 556 ft in the autumn to 582 ft in the spring. However, variations in rainfall patterns during floods or droughts may cause the reservoir to rise beyond the spillway crest elevation of 627.8 ft, or alternatively require the exemptee to import water from the U.S. Bureau of Reclamation's (Reclamation) Central Valley Project in the winter and spring to augment low natural inflow or make up for storage deficits.

The exemptee delivers water to treatment plants through conduits at the dam and releases water into Coyote Creek below the dam to recharge groundwater, prevent land subsidence, and enhance aquatic habitat.[29] The exemptee releases approximately twice as much into the creek in the summer as it does in the winter, about 60 and 30 cubic feet per second (cfs), respectively, to account for higher rates of seepage into the ground and losses to evapotranspiration.

2.2.2 Existing Environmental Measures

Standard Article 2 of the exemption requires compliance with any terms and conditions that Federal or State fish and wildlife agencies have determined appropriate to prevent loss of, or damage to, fish and wildlife resources. The terms and conditions referred to in Article 2 are contained in any letters of comment by these agencies filed with the Commission during the application process. The terms and conditions provided during the application process for the exemption included no specific long-term conditions.[30]

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[29] In a confined aquifer the hydrostatic pressure of the groundwater holds open pore spaces and supports the earth above it. If water is drawn out faster than it is replenished, the pressure falls leading to a loss of porosity, permanently reducing the capacity of the aquifer and causing the overlying land surface to subside.

[30] By letter dated August 18, 1982, California Department of Fish and Game (what is now California Department of Fish and Wildlife) required that Valley Water install a detention basin below the turbine outlet to help regulate flow releases to Coyote Creek, and inform the agency of any proposed channel modifications or flow alterations and develop appropriate streambed alteration agreements. By letter dated November 8, 1983, the FWS required Valley Water to perform surveys for species listed as candidates for inclusion under the ESA at the time of the application for exemption, and to report findings to the agency. By letter dated August 9, 1984, the Resources Agencies of California (what is now the California Natural Resources Agency, a parent agency that includes California Department of Fish and Wildlife) required certain project construction requirements.

Valley Water developed a habitat conservation plan called the Santa Clara Valley Habitat Plan (SCVHP) to provide a streamlined approach to state and federal permitting for public and private projects in Santa Clara County, including at Anderson Dam.[31] The SCVHP is a joint habitat conservation plan and natural communities conservation plan developed to serve as the basis for the issuance of incidental take permits and authorizations pursuant to Section 10 of the ESA and the California Natural Community Conservation Planning Act. Valley Water is required to implement SCVHP conditions to avoid, minimize, and mitigate impacts of covered activities on the species and habitats protected by the plan. The Santa Clara Valley Habitat Agency (SCVHA) leads the implementation of the SCVHP.[32]

Valley Water is also a party to the FAHCE Agreement.[33] While this agreement is not ratified,[34] Valley Water is implementing some of the measures discussed in the agreement. The goals of the FAHCE Agreement are to improve aquatic spawning and rearing habitat and fish passage for migration to and from the watersheds of the Coyote and Stevens creeks and Guadalupe River. Actions discussed in the FAHCE Agreement include: modifications to reservoir operations to provide instream flows, restoration measures to improve habitat conditions and provide fish passage, and monitoring and adaptive management.

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[31] The SCVHP is a regional plan to protect endangered species and natural resources while allowing for future development in Santa Clara County. The goals are to: help private and public entities plan and conduct projects and activities in ways that lessen impacts on natural resources, including specific threatened and endangered species; identifies regional lands—called reserves—to be preserved or restored to benefit those species; and describes how reserves will be managed and monitored to ensure that they benefit those species.

[32] *See* Santa Clara Valley Habitat Agency, About Us, https://scv-habitatagency.org/27/About-Us.

[33] Separate from the Commission's licensing actions, in 2003, a group of signatories entered into the FAHCE agreement including: Valley Water, FWS, NMFS, the California Department of Fish and Wildlife, the Guadalupe-Coyote Resource Conservation District, Trout Unlimited, the Pacific Coast Federation of Fishermen's Associations, and CalTrout. To date, this agreement has not been ratified, and it has not been filed with the Commission for its approval.

[34] Valley Water states that it initialed the FAHCE Agreement in 2003 and is in the planning stage. https://www.valleywater.org/project-updates/creek-river-projects/fahce-fish-and-aquatic-habitat-collaborative-effort (accessed September 2020).

2.3 Applicant's Proposal

2.3.1 Proposed Reservoir Dewatering and Operations Plan

Valley Water states the purpose of the FOCP is to comply with the February 20, 2020 directive requiring implementation of IRRMs to protect the public from the risk of dam failure due to seismic activity, and to develop and implement avoidance and minimization measures (AMMs).

Valley Water's FOCP consists of the following actions proposed in the Reservoir Drawdown and Operations Plan filed with the Commission on July 27, 2020 (Figure 1):

1. *Reservoir Drawdown to Deadpool.* Drawdown of Anderson Reservoir to deadpool elevation 488 ft beginning October 1, 2020 using the existing outlet works. Implement wet and dry weather reservoir operation and management measures to maintain deadpool via the existing outlet and to augment surface water for groundwater recharge and in-stream environmental flows within Coyote Creek until Anderson Dam tunnel is operational (see item 3).

2. *Anderson Dam Tunnel Construction.* Construct a new outlet system that includes a new low-level outlet tunnel, 8-foot-diameter lake tap, outlet structure, and discharge channel. Reopen the original Coyote Creek channel (northern channel) downstream of the existing dam (see item 4(b) below). The new outlet system, collectively called the ADTP, will be constructed at the base of Anderson Dam, through the right (looking downstream) abutment, along the southern side.

3. *Anderson Dam Tunnel Operation and Maintenance.* Operate and maintain the existing outlet and the Anderson Dam tunnel after construction of the ADTP by maintaining elevation 488 ft (or a higher reservoir elevation if authorized by the Commission), and provide surface water augmentation for groundwater recharge and environmental in-stream flows within Coyote Creek until seismic deficiencies can be fully mitigated at Anderson Dam (i.e., ADSRP).

4. *Avoidance and Minimization Measures.* Implementation of measures to secure alternative water supplies and minimize environmental effects, including:

    a. *Bank and Rim Stability Improvements*. Geotechnical investigations and installation of monitoring devices for areas of known landslides along Anderson Reservoir rim to address potential impacts of reservoir drawdown. If additional measures are determined necessary, Valley Water will include the installation of necessary structural improvements to protect against potential landslides and/or make repairs if damage occurs.

b. *Existing Intake Structure Modifications*. Geotechnical investigations and installation of monitoring devices near the intake structure to address potential geotechnical impacts of dewatering on the existing outlet structure. If additional measures are determined necessary, Valley Water will include the installation of necessary structural improvements to reinforce the existing Anderson Dam intake structure and/or make repairs if damage occurs.

c. *Creek Channel and Bank Erosion Control Modifications.* Modify the channel to avoid erosion impacts within Coyote Creek that are anticipated as a result of the combined flow releases through the existing Anderson Dam outlet and the new ADTP, once constructed.

d. *Imported Water Releases and Cross Valley Pipeline Extension.* Imported water releases to Coyote Creek via the Coyote Discharge Line immediately downstream of Anderson Dam, at the top of Coyote Creek cold water management zone (CWMZ), as it currently does, throughout the FOCP, to protect against potential risks to groundwater recharge and water supply reliability for the Coyote Valley and South San Jose. Secondarily, construct a new spur off the Cross Valley Pipeline (CVP) that will convey imported water releases downstream of the County of Santa Clara-owned Ogier Ponds. Once the pipeline extension is operational, release chilled imported water into Coyote Creek at the top of the cold water management zone, and release additional imported water downstream of Ogier Ponds to maintain the full groundwater recharge program, while reducing impacts to aquatic wildlife in the CWMZ. Install chillers near the turnout for the Coyote Discharge Line so that up to 10 cfs can be cooled prior to releasing it to the CWMZ.

e. *Coyote Percolation Dam Replacement*. Replace the existing flashboard dam at the downstream Coyote Percolation Pond with an inflatable bladder dam that can be deflated (lowered) to allow flows in excess of 800 cfs to pass safely.[35] The existing dam is not designed to withstand flows greater than 800 cfs and removing the structure altogether will substantially impair groundwater recharge in a sensitive groundwater basin. The bladder dam will facilitate passing the higher flows that are likely to occur after construction and during operation of the ADTP.

f. *Coyote Creek Flood Management Measures*. Acquire or elevate up to ten structures on nine parcels, construct up to six spans of off-stream floodwalls, and construct a levee to reduce flood risks arising from higher maximum

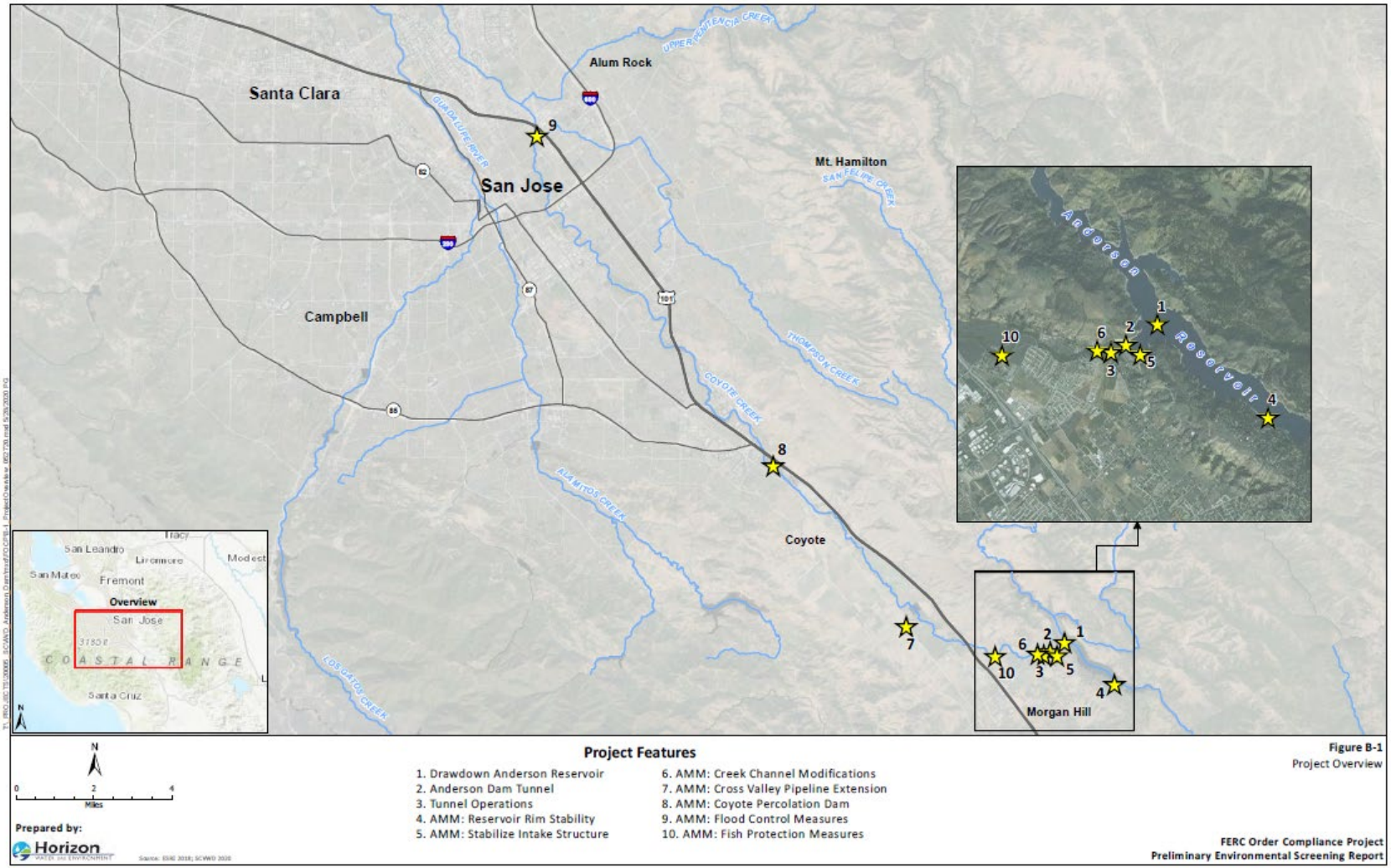
[35] The Coyote Percolation Dam is not part of the Anderson Dam Project as defined in the exemption and is 11 miles downstream of the Project.

Anderson Dam tunnel flows combined with outflows from the existing outlet and Coyote Creek inflows resulting from storm events.

g. *Steelhead and Fish Avoidance and Minimization Measures.* In addition to the releases of water to Coyote Creek described above (d), implement fish avoidance measures including: spring pulse flows; Coyote Creek fish rescue and relocation; Anderson Reservoir fish rescue and relocation; install a fish trap, also known as a fyke trap; maintain normal operation of Coyote Reservoir; augment streamflow downstream of Anderson Dam; re-open a historical Coyote Creek channel; cold water management zone monitoring; and water quality monitoring.

h. *Implementation of Additional Project-specific Avoidance and Minimization Measures.* Implement project specific best management practices (BMPs) and other environmental protection measures to protect water quality and biological resources, including SCVHP measures to protect ESA-listed species.

Figure 1: Location of proposed FOCP actions.



2.3.2 Measures Not Analyzed in this EA

Due to the need for additional information for the ADTP, measures and comments that relate to the construction of the new outlet system (low-level outlet tunnel) and corresponding mitigation measures listed below will be addressed in a supplemental EA where Commission staff will analyze Valley Water's proposal to construct these measures:

- Creek Channel and Bank Erosion Measures
- Coyote Percolation Dam Replacement
- Coyote Creek Flood Management Measures
- Reopening of the historical Coyote Creek Channel

Since the supplemental EA will include an effects analysis of these measures, we also defer analysis of certain conservation recommendations provided by NMFS for the measures above. Specifically, in its August 31, 2020 conservation recommendations provided under the emergency consultation procedures of section 7 of the ESA (see *Section 1.3.3 Endangered Species Act*), NMFS recommended that Valley Water:

- establish a formal process to facilitate the design and operation of weirs at the ADTP outlet structure;
- develop a plan to conduct fish monitoring activities in the historical Coyote Creek Channel (north channel);
- establish a formal process to facilitate the design and operation of the proposed Coyote Percolation Pond Dam bladder dam; and
- develop additional compensatory mitigation for impacts of sediment and ADTP construction (e.g., gravel augmentation and large-scale channel and floodplain restoration).

Valley Water filed a response to NMFS's conservation recommendation on September 11, 2020, which indicates it will continue to collaborate with NMFS regarding these measures. NMFS filed additional comments regarding Valley Water's July 31, 2020 effects analysis on September 17, 2020, which, in part, reiterated NMFS's concerns about fish stranding in the historical Coyote Creek Channel and fish passage at the Coyote Percolation Pond dam following replacement of the flashboard dam with a bladder dam. Commission staff recognize NMFS's concerns and anticipate that Valley Water's ongoing consultation with the resource agencies during ADTP will result in additional information about the design and operation of these measures and the potential impact to ESA-listed species which will help inform the analysis in the supplemental EA. These details will also inform what potential mitigation and restoration measures may be undertaken.

2.4 Staff Alternative with Recommended Measures

As discussed below in *Section 3.0 Environmental Analysis*, the staff alternative includes Valley Water's proposed measures in its Reservoir Drawdown and Operations Plan and considers the conservation recommendations provided by the resource agencies. Commission Staff's recommended conditions are discussed in *Section 4.1 Staff Recommended Measures*.

3.0 ENVIRONMENTAL ANALYSIS[36]

In this section, we present: (1) a general description of the project vicinity; (2) an explanation of the scope of our cumulative effects analysis; and (3) our analysis of Valley Water's dewatering plan and other recommended environmental measures. Sections are organized by resource area. Under each resource area, current conditions are first described. The existing condition is the baseline against which the environmental effects of the proposed action and alternatives are compared, including an assessment of the effects of proposed mitigation, protection, and enhancement measures, and any potential cumulative effects of the proposed action and alternatives. Commission staff conclusions and recommended measures are discussed in *Section 4.0 Conclusions*.

3.1 General Description of the River Basin

Anderson Reservoir, created by Anderson Dam which was constructed in 1950, is located within the Coyote Creek Watershed, the largest watershed in the Santa Clara Basin, encompassing an area of over 320 square miles. Coyote Creek originates on the slopes of Mount Sizer near Henry Coe State Park and flows generally south and west to Santa Clara Valley. Before it reaches Anderson and Coyote reservoirs, the creek turns northward, flowing through the two reservoirs and then the Santa Clara Valley before it enters the southern San Francisco Estuary near Dixon Landing Road and Mud Slough. The main stem of Coyote Creek is approximately 42 miles long, and the creek has approximately 10 primary tributaries. The entire City of Milpitas and portions of San Jose and Morgan Hill lie within the watershed boundaries, with the remaining area consisting of unincorporated lands within Santa Clara County.

The Anderson Dam watershed is approximately 195 square miles and includes Coyote Dam (constructed in 1936) and Reservoir, located upstream of Anderson

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[36] Unless otherwise indicated, our information is taken from: Valley Water's May 29, 2020 filing of an environmental screening document (Horizon Water and Environment 2020); July 27, 2020 filing with the Commission of its Reservoir Drawdown and Operations Plan (Valley Water 2020a); and the July 28, 2020 filing containing responses to comments it received on these documents.

Reservoir on upper Coyote Creek. Anderson Reservoir is primarily a water supply storage facility, functions to reduce flood potential, and provides environmental and recreational benefits. Contributing watersheds to Anderson Dam and Reservoir include: Coyote Reservoir (through the Coyote Dam outlet); the 75-square-mile sub-basin from Las Animas Creek; and other small streams, such as Packwood Creek, which drain directly into Anderson Reservoir.

Anderson Reservoir

Anderson Reservoir is the largest of Valley Water's ten reservoirs and provides a greater water storage capacity than the rest of the nine reservoirs combined. The reservoir also provides emergency backup water supply for Valley Water and incidental flood protection for Santa Clara Valley and the cities of San Jose and Morgan Hill. Water stored in Anderson Reservoir comes from within the watershed and from Reclamation's San Felipe Division of the Central Valley Project – specifically, the San Luis Reservoir. Imported Central Valley Project water stored in San Luis Reservoir can be transferred and stored in the Anderson Reservoir via the Santa Clara Conduit. Water from San Luis Reservoir may also be discharged directly to Coyote Creek at the Santa Clara County outlet, located near the Anderson Dam Hydroelectric Facility, which is approximately 1,300 ft downstream of Anderson Dam. Flow releases to Coyote Creek are highly regulated by the releases from Anderson Dam, San Luis Reservoir, and the hydroelectric plant.

The Anderson Force Main (AFM) is a bi-directional 12-inch pipeline allowing imported San Luis Reservoir water to be gravity fed or pumped into the Anderson Reservoir. The AFM also allows for discharge of Anderson Reservoir or San Luis Reservoir water to Coyote Creek. Additionally, the AFM may be utilized to deliver water from the Reservoir to either the Anderson Hydroelectric Facility (which then discharges to Coyote Creek) or to water treatment plants via the CVP. Water released into Coyote Creek recharges the Santa Clara Valley Groundwater Basin through filling a series of percolation ponds located downstream.

Anderson Dam is located approximately 24 river miles upstream of where Coyote Creek enters South San Francisco Bay. From Anderson Dam, a full Anderson Reservoir will extend more than 3 miles northwest up the Las Animas Creek (or northern) arm of the reservoir, and nearly 4 miles southeast up the mainstem of Coyote Creek toward Coyote Dam and Reservoir (the Coyote Creek or southern arm of the reservoir). Of the approximately 195 square miles of drainage area upstream of Anderson Dam, approximately 62 square miles drain into the northern arm of the reservoir and 133 square miles drain into the southern arm. Flow into the northern arm from the Las Animas Creek watershed is uncontrolled; flow into the southern arm is mostly controlled by operations at Coyote Dam and Reservoir, approximately 1.5 miles upstream of the upper

extent of the southern arm of Anderson Reservoir at full pool on mainstem Coyote Creek. The headwaters upstream of Anderson Reservoir begin on the steep slopes of the Diablo Range above elevation 3,600 ft (elevation 3,322 ft for the northern arm and 3,640 ft for the southern arm).

The 1,400-foot-long, 40-foot-wide, and 240-foot-high Anderson Dam has a spillway with a crest elevation of 627.8 ft. When full, Anderson Reservoir has a capacity of roughly 90,000 acre feet (ac-ft). The combined inflow to Anderson Reservoir from northern tributaries and from Coyote Reservoir to the south varies based on time of year and water year type. In normal water years, monthly inflow to Anderson Reservoir ranges from 4 ac-ft in the late summer to 2,460 ac-ft in the late winter. In wet water years, monthly inflow ranges from 13 ac-ft in the late summer to 11,070 ac-ft in the late winter. In dry water years, monthly inflow ranges from 0 ac-ft in the summer to 224 ac-ft in the spring.

Coyote Creek

Coyote Creek originates in the Diablo Range and flows downstream through the Santa Clara Valley floor for approximately 42 miles to South San Francisco Bay. Coyote Creek receives inflows from several tributaries downstream of Anderson Dam, the largest of which is Upper Penitencia Creek. Presently, almost half of the tributaries connected with Coyote Creek are engineered channels, however, historically Coyote Creek watershed drainage network was naturally characterized by discontinuous stream channels that facilitated groundwater infiltration on the valley floor (Grossinger et al. 2006).

Surrounding Lands

Anderson Lake County Park is a 4,275-acre park that encompasses Anderson Reservoir. For this reason, lands surrounding the project are largely used by recreationists. Other land uses around the reservoir include lands owned by Open Space Authority, private lands, agricultural and grazing lands, and single-family rural residences.

The parcel located immediately downstream of the dam (where the dam's existing outlet structure is located) is designated for agricultural use. However, the area itself does not include land currently in active grazing or agricultural production. A large portion of the area downstream of the dam is undeveloped open space, interspersed with trails and picnic tables. Coyote Creek, downstream of the dam, is lined with trees and its banks are in a relatively natural state.

Regional Topography

Santa Clara County's major topographic features include the Baylands, the Santa Clara Valley, the Diablo Range to the east, and the Santa Cruz Mountains to the west. The Santa Clara Valley is oriented north–south and surrounded by rolling hills. Elevations within the Project area range from 300 ft to 700 ft above mean sea level. The City of Morgan Hill and Anderson Reservoir are located in the southern part of Santa Clara Valley, which is relatively rural in comparison to the highly urbanized northern portion of the valley. Morgan Hill is characterized by semi-rural areas with residential and agricultural uses, residential neighborhoods, commercial areas, and roadway corridors where residential and non-residential uses are mixed.

The majority of Morgan Hill lies within a valley characterized by a relatively flat topography that transitions to steep slopes along the western and eastern foothills. San Jose is characterized by an urban environment adjacent to large open spaces, and in proximity to a wide variety of natural settings, including the Baylands, redwood forests, the Pacific Ocean, the Santa Cruz mountains, and the Monterey Bay area.

Regional Climate

The project is located in the Santa Clara Valley Subregion of the San Francisco Bay Area Air Basin. The Santa Clara Valley Subregion is bounded by the San Francisco Bay to the north and by mountains to the east, south, and west. Temperatures are warm on summer days and cool on summer nights, and winter temperatures are fairly mild. At the northern end of the valley, mean maximum temperatures are in the low 80s degrees Fahrenheit (ºF) during the summer and the high 50s during the winter, and mean minimum temperatures range from the high 50s in the summer to the low 40s in the winter. Further inland, where the moderating effect of the Bay is not as strong, temperature extremes are greater. For example, in San Martin, located 5 miles south of the project site and 27 miles south of the San Jose Airport, temperatures can be more than 10ºF warmer on summer afternoons and more than 10ºF cooler on winter nights relative to the airport.

Average annual precipitation in the region is just under 22 inches per year, with most rainfall occurring between the months of November and March.

Anderson Reservoir water temperatures averaged between 10 and 24 degrees Celsius (°C). Water temperatures deeper in the reservoir are cool; below 14 meters in depth, temperatures were generally less than 18°C year-round. Even during the warm summer months, this cold water pool provides a source of water with suitable temperatures for salmonids that Valley Water can manage for downstream release. Anderson Reservoir water temperatures become stratified during the summer and early fall; surface temperatures reached as high as 24°C, while deeper water remained around

11 to 12°C. The reservoir is mixed and more uniform in temperature in the winter and early spring; temperatures recorded in winter and early spring are around 10 to 14°C, and there is little change in temperature as depth increases.

3.2 Scope of Cumulative Effects Analysis

According to the Council on Environmental Quality's regulations for implementing NEPA (40 C.F.R., section 1508.7), a cumulative effect is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time, including hydropower and other land and water development activities.

Based on our review in this EA, we have identified resources, including water quality, aquatic resources, and terrestrial resources, that will be cumulatively affected by the IRRM and Valley Water's proposed Reservoir Drawdown and Operations Plan. The ADSRP is a reasonably foreseeable action which will begin after the construction and operation of the ADTP and is included in our cumulative effects analysis. The reservoir drawdown is expected to last for years, with a full reservoir not expected until after the ADSRP is completed in 2030. We discuss the effects of a sustained reservoir drawdown in the individual resource areas below, and summarize here what these effects are, in addition to other cumulative effects.

The reservoir drawn down under the FOCP, potentially until the completion of the ADSRP in 2030, has the potential to cumulatively impact water quality within the reservoir and downstream of Anderson Dam. Drawdown of the reservoir will cause elimination of the reservoir's coldwater pool and will expose unstable soils to erosion resulting in an increase in suspended sediment downstream of the dam. If the reservoir is maintained at 488 ft until the completion of the ADSRP, the elimination of the coldwater pool, and exposure of sediments will continue until the reservoir is refilled post ADSRP. As described in *Section 3.3.3.2 Environmental Effect on Water Quality*, imported water from the CVP will be used to supplement local flow and will be released, as it currently does, downstream of Anderson Reservoir from the Coyote Discharge Line, to support groundwater recharge, and aquatic habitat. However, with the lack of coldwater releases from Anderson Reservoir and more reliance on warmer imported water, there is a potential for an increase in water temperature in the CWMZ downstream of the dam. To mitigate for this, Valley Water plans to extend the CVP to downstream of Ogier Ponds. This will allow Valley Water to release lower amounts of the warmer imported water into the CWMZ. Valley Water also proposes to reduce the temperature of this lower flow by electric chillers, and then release it into the CWMZ below the dam to benefit aquatic resources. The extension of the CVP and implementation of chillers is likely to offset the

cumulative impact on water temperature, of a prolonged drawdown until after completion of the ADSRP.

The duration of the reservoir drawdown until completion of the ADSRP will cumulatively impact native fisheries populations and aquatic habitat in Coyote Creek and Anderson Reservoir. In particular, anadromous fish in Coyote Creek will be cumulatively affected as spawning and rearing areas and success over multiple years become inhabitable or unsuitable habitats and will result in a lower starting point for future returning populations. If not appropriately mitigated, multiple year classes will likely be weakened or lost, which could result in extirpation of those species from Coyote Creek. Additionally, there will likely be cumulative impacts from a shift in fish populations to favor non-native species, which may be better able to exploit the warmer temperatures anticipated to occur in Anderson Reservoir and Coyote Creek due to loss of the reservoir coldwater pool and increased use of imported water.

3.2.1 Geographic Scope

The geographic scope of Valley Water's FOCP includes the entire project area including: Anderson Reservoir and shoreline up to the maximum operating elevation of 627.8 ft; areas of previous instability around Anderson Reservoir which will be prone to landslides; portions of Anderson County Park including the boat launch, a segment of the Lakeview Trail, and lands around Anderson Dam; portions of Coyote Creek County Park including the Live Oak Day Use Area, the Serpentine Trail and segments of the Coyote Creek Trail in proximity to Ogier Ponds and Coyote Percolation Pond; Segments of the City of San Jose's Coyote Creek Trail; Coyote Creek downstream of Anderson Dam to the water temperature logger near N. McCarthy Blvd; Upper Penitencia Creek below Cherry Flat dam to the confluence with Coyote Creek; CVP Pipeline extension's outlet to Coyote Creek; Coyote Percolation Dam; floodwall, berm, and levee development areas; and impacted parcels along segments of South 17th Street, East William Street, and Arroyo Way in the City of San Jose which are slated for acquisition or elevation of structures. Additionally, staging (Anderson Dam 1-3, Slide Mitigation Area, Coyote Percolation Dam) and disposal areas (Anderson Dam) will be included in the analysis.

3.2.2 Temporal Scope

Valley Water is required to begin lowering the Anderson Dam reservoir no later than October 1, 2020. The reservoir will be lowered to elevation 488 ft (deadpool) and will remain at that level through the construction of the ADTP and until the low-level outlet works are operational. Valley Water will be providing a complete amendment application of its exemption with plans and specifications for the ADSRP. This

application is currently expected to be filed in January of 2022.[37] As part of the retrofit work, the reservoir will need to be at deadpool in order for the dam retrofit construction to take place. This EA will analyze the effects of the reservoir drawdown for the IRRM and the exemptee's plans described in the Reservoir Drawdown and Operations Plan. For the purposes of this EA, we assume the reservoir will be maintained at or near deadpool (i.e., the worst case scenario) until the ADSRP is completed, which will be in 2030.[38] We therefore discuss the effects a sustained reservoir drawdown will have on resources in our environmental analysis. This EA will be supplemented after the Commission receives additional information for the construction and operation of the low level outlet and tunnel (ADTP). Commission staff will complete a NEPA analysis for the ADSRP once that amendment application is filed and the complete understanding of Valley Water's proposed actions are determined.

3.3 Proposed Action and Action Alternatives

In this section, we discuss the effect of the IRRM on environmental resources, as Valley Water proposes to implement through its Reservoir Drawdown and Operations Plan. For each resource, we first describe the affected environment, which is the existing condition and baseline against which we measure effects. We then discuss and analyze site-specific environmental effects and any cumulative environmental issues.

3.3.1 Geologic and Soil Resources

3.3.1.1 Affected Environment

Anderson Dam and Reservoir are located within the Coast Range province of California, at the southeast margin of the Santa Clara Valley, a southward extension of the depression inundated by seawater to form the San Francisco Bay. The Santa Cruz Mountains, bounding the valley on the southwest, travel north and west relative to the Diablo Range, bounding the valley on the northeast. The apparent motion between these two ranges is causing the intervening Santa Clara Valley to fall in relation to the surrounding mountains. The project is also located in a seismically active zone and the dam was constructed on conditionally active fault traces capable of seismogenic or

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[37] Valley Water's monthly progress report filed with the Commission on Sept 16, 2020.

[38] Valley Water's monthly progress report filed with the Commission on September 16, 2020. In a July 28, 2020 filing, Valley Water proposes to operate the reservoir up to an elevation of 543 ft from October 1 through the last day of February; between 543 and 562 ft from March 1 through March 31; and up to 562 ft between April 1 and September 30, following the completion of the new tunnel. However, this proposal is still under review by the Commission's D2SI staff.

sympathetic offsets. The principal faults in the region include the northwest trending, right lateral, strike-slip San Andreas, Hayward, and Calaveras faults. These faults divide the valley and mountain ranges into several distinct northwest to southeast trending blocks.

Anderson Reservoir is within the Coyote and Silver Creek blocks and fills the canyon drained by Coyote Creek. The rock units in the Coyote block consist of Jurassic Coast Range ophiolite, overlain by Cretaceous and Tertiary strata. In the northernmost part of the block, the Tertiary sequence consists of Eocene mudstone, middle Miocene Claremont formation, and middle to upper Miocene Briones formation. In the east-central part of the block, in contrast, the sequence is composed of lower to middle Miocene Temblor sandstone overlain by Claremont formation. The Coyote Creek block pinches out to the north where steeply east dipping faults converge with steep west dipping reverse faults. A large, northwest-trending, very steeply northeast-dipping linear ridge of silica-carbonate rock is present upstream of the right abutment and spillway. Steeply dipping stream and alluvial fan gravel deposits of the Miocene-Pliocene Silver Creek gravels occur in the eastern sections of the Project area while the Silver Creek block is exposed northeast of the southern Santa Clara Valley. In the Silver Creek block, Pliocene Silver Creek gravels are faulted between serpentinite and Franciscan mélange. Structurally interleaved between the basement rocks are tightly folded Jurassic through Tertiary strata, including the Pliocene Silver Creek gravels over which the basement rocks were thrust along the Silver Creek thrust. In addition to its structural style, the Silver Creek block contrasts with surrounding blocks in its Tertiary stratigraphy. The locally exposed Miocene rocks in the block are quite different from the Miocene sections in the adjacent Alum Rock, Coyote, and New Almaden blocks, being composed of mica-rich sandstone and 9.3 to 10.5-million-year-old andesite and basalt instead of fossiliferous quartz-lithic sandstone, siliceous shale, and polymictic conglomerate. The large volume of Pliocene volcanic rocks is also unique to the Silver Creek block. The Pliocene-Pleistocene–age Santa Clara formation lies directly upon the eroded surface of the Franciscan complex within the foundation of Anderson dam and underlies most of the reservoir area. The Santa Clara formation consists of poorly sorted conglomerate, sandstone, siltstone, and claystone formed by prehistoric streams. The age of these deposits ranges from approximately 1.5 million years to 10,000 years old, representing the late Tertiary period to the Pleistocene epoch. The boundary between the underlying Franciscan complex and the Santa Clara formation is an unconformity representing a missing gap of millions of years in the geologic record.

Soils at the project site are composed primarily of Garretson loam, Gilroy clay loam, Inks stony clay loam, and Montara rocky clay loam. These soils are shallow, with bedrock encountered at depths of approximately 1 to 3 ft, are well drained, and are produced by the weathering of greenstone, basalt, and sandstone at the site. Anderson Dam itself is comprised of disturbed materials sourced from nearby quarries but native soils are present adjacent to the dam.

Located at the southeastern edge of the Santa Clara valley near the Diablo mountain range, the project is within an area of steep unconsolidated gravel slopes prone to landslides. Slides at the dam and around and within the reservoir have been recorded in the California Department of Conservation's landslide inventory. Five major slides have occurred during past drawdown events along the southern arm of the reservoir, near the Holiday Lake Estates development and along East Dunne Avenue. Areas above the intake structure at the dam are also prone to landslides.

3.3.1.2 Environmental Effects

Reservoir Drawdown

During the drawdown itself, receding water levels would leave behind unstable saturated soils and/or sediments on steep slopes. Of particular concern are areas that have historically experienced slides as noted above. Slides in these locations have the potential to damage roads and private structures. In order to minimize the likelihood of inducing landslides through its actions, Valley Water intends to limit releases to 100 cfs more than inflow, equating to an approximate reservoir drawdown rate of between 5 and 12 inches per day depending upon reservoir elevation. Prior to and during the drawdown, the exemptee also intends to monitor movement by conducting geotechnical borings and site inspections as well as by installing survey monuments, satellite reflectors, piezometers, and inclinometers. Valley Water proposes to reduce the rate or cease the drawdown if damage to private property becomes evident. Based on its examination of landslide areas and review of any property damage, the exemptee proposes to implement several protection and mitigation measures. In order to correct any damage to private or public property, Valley Water states that it has investigated several options including filling cracks in driveways, replacing concrete slabs and structures, regrading yards, and repaving roads. To limit movement of potential or active slides, the exemptee would regrade and buttress the slide by reinforcing its toe, construct engineered retaining walls near the top of the slide to prevent damage to properties above the area, and install anchors and drains to hold the material in place and direct water away from the compromised area. This work would require the use of heavy equipment such as bulldozers and excavators within the reservoir rim and would require the construction of access roads.

At the reservoir deadpool elevation of 488 ft, approximately 1,100 acres of ground surface will be exposed. This area includes 1.5 million cubic yards of sediment that has been deposited within tributary stream channels. Valley Water intends to seed the exposed reservoir bed, though the success of vegetative growth will be highly dependent upon the amount of rainfall received and resultant rise and fall of the reservoir surface. Although vegetation will likely prevent sediment transport as a result of overland flow,

the tributaries will likely produce incised channels through the deposited material. Due to the large amount of sediment and potentially high flows, the exemptee does not propose any control measures for material carried by the tributaries. As such, the sediment will be transported to the remaining reservoir by streamflow, particularly during the rainy season from November through March. The sediment consisting of large course material will settle within the reservoir below elevation 488 ft, while finer sediment will remain suspended and will be carried through the outlet works into Coyote Creek below the dam.

The effects of the reservoir drawdown on geologic and soil resources would be short-term, moderate, and adverse. Falling water levels may activate existing landslides and create new landslides, possibly damaging Valley Water's facilities and neighboring public and private properties. The exemptee acknowledges this potential danger through its geotechnical investigations to determine the presence of landslides and is initiating monitoring efforts to identify active movement. Furthermore, Valley Water's proposed protection and mitigation measures, such as restricting the drawdown rate to limit slope instability and stabilizing potential or active slides, will help reduce the harm caused by landslides to a minor level tolerable to adjacent property owners. If landslides do cause damage to uphill properties, the temporary effects will be significant, preventing access to or use of certain facilities and structures, though the exemptee's proposal to make repairs will result in negligible long term impacts. However, the exemptee's proposal to slow or cease the drawdown if property damage becomes evident is inconsistent with the dam safety directive and may be disallowed by the Commission's D2SI. As such, the drawdown would possibly lead to more extensive damage than initially expected by the exemptee in the short term, and would then require a greater amount of repair work, but similarly would result in little to no impact following the conclusion of the drawdown and after the repairs have been completed.

The exemptee's efforts to seed unconsolidated material exposed during the drawdown will likely reduce the amount of material transported by stormwater. However, material within the reactivated stream channels will be subject to fluvial processes, leading to erosion within the exposed reservoir bed and sedimentation within the lower elevations of the reservoir and downstream, where deposition of fine materials impairs aquatic habitat and groundwater recharge.

3.3.2 Water Quantity

3.3.2.1 Affected Environment

Above the project, the Coyote Creek watershed is undeveloped and is largely wilderness. Below the dam however, land adjacent to the creek is used for residences, parks, and agriculture. As the creek nears the San Francisco Bay, it passes the cities of

San Jose and Milpitas, where the area is highly urbanized and segments of the creek and many of its tributaries are confined to engineered channels. The dam is located at stream mile 41 and receives water from 133 square miles of the Coyote Creek drainage, which enters through the southern arm of the reservoir. An additional 62 square miles of drainage area provides flow into the reservoir through Las Animas Creek, a tributary which enters through the northern arm. Las Animas Creek is uncontrolled, though Coyote Dam located on Coyote Creek approximately 1.5 miles upstream of Anderson Reservoir is used to regulate approximately 90 percent of Coyote Creek flow which enters Anderson Reservoir.

At its full pool elevation of 627.8 ft, Anderson Reservoir has a surface area of 1,253 acres, a maximum depth of approximately 178 feet, and a maximum gross storage capacity of 89,278 ac-ft. However, in 2017, as directed by the California Division of Safety of Dams, Valley Water was required to maintain the maximum reservoir elevation to 592 ft, equating to a maximum storage capacity of 51,766 ac-ft. Furthermore, since February 2020, as required by the Commission's D2SI, the exemptee has maintained the reservoir elevation below 565 ft, limiting the total storage capacity to 31,694 ac-ft. As part of its water supply program, Valley Water strives to maintain 20,000 ac-ft in reserve within the reservoir in case of emergencies such as pipeline disruptions, failure of pumping equipment, and prolonged drought.

Inflow into the project through natural streams is highly variable and depends upon the season and water year type. Table 1 shows estimated inflow into Anderson Reservoir through unregulated tributaries as well as through releases from Coyote Reservoir for water year type and season.

Water is also imported into the reservoir through the bi-directional AFM. This water is delivered through the Santa Clara Conduit from Reclamation's San Luis Reservoir, part of the Central Valley Project. Imported water comprises about 40 percent of Valley Water's water supply.

Table 1: Estimated inflow in cfs into Anderson Reservoir for summer and winter, and water year type.

Water Year Type	Summer	Winter
Dry	0.23	5.27
Average	2.02	101.00
Wet	9.77	604.04

Water leaves Anderson Reservoir through several methods. When the reservoir elevation reaches 627.8 ft, water passes over the uncontrolled spillway into the dewatered historic north channel of Coyote Creek below the dam; however, this is an infrequent event and occurs on average only every 9 years. Additionally, approximately 5.8 cfs equivalent is lost through evaporation. When wildfires occur in the area, bucket equipped helicopters have also historically drawn water from the reservoir to aid in fire control efforts. More typically, water passes through the existing 42-inch-diameter conduit by entering one of three inlets installed at different elevations on the reservoir bottom, the lowest of which is at an elevation of 488 ft. Once water enters this conduit, it can be passed through the project turbines and discharged into a southern channel that meets the original creek channel 1,200 ft downstream. Water can also be directed into the AFM for delivery to drinking water treatment facilities. The maximum discharge through the existing conduit is 500 cfs when the reservoir is at full pool. This naturally decreases as the reservoir is drawn down and head at the intakes falls, and the maximum discharge when the reservoir surface is at the lowermost intake is approximately 295 cfs.

Through an agreement with the California Department of Fish and Wildlife (California DFW), Valley Water is required to ensure that 2.5 cfs passes the Edenvale streamgage located on Coyote Creek approximately 15.4 miles downstream of Anderson Dam. To ensure this, 30 to 60 cfs of flow is typically required in Coyote Creek just below the dam, with the higher amounts required in summer and lower amounts in winter. This water is supplied by a combination of discharges from the dam and/or through discharges from the Coyote Discharge Line which draws water from the Santa Clara Conduit and drains into Coyote Creek approximately 0.25 mile below the dam. The Coyote Discharge Line has a maximum capacity of 75 cfs. The difference in flow at the dam and at the streamgage is primarily due to evaporation and loss to groundwater. Santa Clara County and the exemptee both operate facilities on Coyote Creek to enhance groundwater recharge for the benefit of residential, municipal, and industrial users, and to prevent land subsidence at the northern end of the Santa Clara Valley. These facilities consist of the Ogier ponds, located 3.9 miles below Anderson Dam, owned and operated by the County of Santa Clara, and the Coyote Percolation Pond also known as Metcalf Pond, located an additional 7.3 miles down Coyote Creek, owned and operated by Valley Water. The Coyote Percolation Pond dam consists of a concrete sill with 8-foot-high steel plate flashboards. This facility has a maximum safe capacity of approximately 800 cfs, and prior to flows reaching that level, the exemptee must drain the pond if possible, remove the flashboards, and reinstall them once flows have receded.

3.3.2.2 Environmental Effects

The February 20, 2020 letter issued by the Commission's D2SI requires Valley Water to begin lowering the reservoir to its deadpool elevation of 488 ft by October 1, 2020. Initially, before the exemptee has stabilized the reservoir rim as previously

discussed, discharges to reach the deadpool elevation will be limited to 100 cfs greater than inflow, leading to a net decrease in storage of approximately 200 ac-ft per day. During the beginning of the drawdown, water levels will fall at a rate of approximately 5 to 6 inches per day, with daily decreases approaching 12 inches per day as the reservoir approaches deadpool. Because much of the initial drawdown will take place during the rainy season, and because the capacity of the existing outlet is directly related to reservoir elevation, it is possible that for periods of time, inflow will be greater than 100 cfs less than the capacity of the outlet at the given reservoir elevation, slowing, ceasing, or even reversing the drawdown. As a result of the unknown nature of inflow during the initial drawdown, the exemptee expects the reservoir to reach its deadpool elevation at some point between mid-December 2020 and the end of April 2021. Once the reservoir surface reaches an elevation of 488 ft, the reservoir will have a surface area of 150 acres, a capacity of 2,820 ac-ft, and a maximum depth of approximately 38 ft.

Once landslide risks at the reservoir rim have been satisfactorily reduced, Valley Water will generally keep the existing outlet fully open. Consequently, the project will operate in a run-of-river mode, instantaneously discharging inflow as long as inflow is below 295 cfs, the capacity of the outlet at the deadpool elevation. Once inflow rises past that amount, the reservoir will begin to store water and the elevation will rise. The magnitude and duration of the higher reservoir elevations will be determined by inflow, and such events will be very unlikely outside the wet season from November through March. During some high flow events, the exemptee states it may partially or fully close the existing outlet if conditions downstream indicate a significant flood risk. Discharges from the upstream Coyote Dam could also be reduced to limit inflow into Anderson Reservoir during floods. Not accounting for adjustments made to the existing outlet during a high reservoir event, discharges from the Anderson Dam will remain elevated, and will decline gradually in conjunction with reservoir elevation. Once the reservoir returns to deadpool, the project will resume run-of-river operation.

Because inflow will equal outflow much of the time, discharges from the project will be significantly less in the summer and will likely be moderately higher in the winter, compared to pre-drawdown conditions. To help offset this difference, particularly during the summer, Valley Water intends to release water imported from the Central Valley Project and released through the Coyote Discharge Line. The flow rate from this line will be determined based on time of year, hydrology at the time, water temperature, and amount of discharge from Anderson Dam. As such, flow from the Coyote Discharge Line will range from 0 to 60 cfs. In order to comply with its groundwater recharge responsibilities, the exemptee also intends to install an extension on the CVP, which will discharge into Coyote Creek just below the Ogier Ponds. Valley Water expects to release approximately 20 cfs in the winter and 30 cfs in the summer through this extension, on average.

Although Valley Water will be unable to use water within the deadpool to make releases, other users could make use of the available storage. For example, the reservoir will still be available to CalFire, which has historically used the project to fill helicopter buckets to combat wildfires in the area. To further ensure CalFire's continued use of the drawn down reservoir, we are recommending that Valley Water consult with CalFire as described further in Section 3.3.8.2 *Environmental Effects* on *Land Use.* Additionally, despite the significantly reduced capacity of the reservoir, potential water withdrawals made under emergency situations for wildfire control efforts will be comparable to the amount of water lost to evaporation and will have a negligible impact on project operation.

Water quantity would be moderately adversely affected during the drawdown. Valley Water uses the reservoir to store excess flow in the winter and draw water out of the reservoir in the summer, when it otherwise would not be available. Though as a result of the restricted reservoir elevation, the exemptee would be required to keep the reservoir at deadpool and would be unable to make use of any of the usable storage capacity to maintain existing levels of flow in Coyote Creek in the summer (see Sections *3.3.3 Water Quality, 3.3.4 Aquatic Resources,* and *3.3.6 Threatened and Endangered Species*).. However, Valley Water's plan to offset this by importing water from the Central Valley Project would minimize this moderate effect. The impact caused by the loss of storage would also be subject to natural variability in the hydrologic cycle, being diminished during years with ample rainfall and abundant water supply, and exacerbated during droughts, when imported allotments are reduced.[39]

3.3.3 Water Quality

3.3.3.1 Affected Environment

The Coyote Creek Watershed encompasses over 320 miles. Anderson Dam impounds Coyote Creek, with 195 square miles of the Coyote Creek Watershed above the dam. The upstream reaches of Coyote Creek and the watershed that feeds Anderson Dam are largely undeveloped. Downstream of Anderson Dam, Coyote Creek flows north-northwest through many highly developed areas in Santa Clara County, including portions of Morgan Hill, San Jose, and Milpitas, before reaching San Francisco Bay. The reach of Coyote Creek between Anderson Dam and the bay is approximately 37.5 miles, much of which flows through suburban and urban San Jose and is heavily altered by development.

Flows in Coyote Creek downstream of the reservoir are heavily influenced by releases from Anderson Reservoir. Valley Water releases imported water to Coyote

[39] The U.S. Drought Monitor indicates the project area is currently in a moderate drought, which is expected to persist through at least December 31, 2020.

Creek via the Coyote Discharge Line to recharge groundwater supply in the Santa Clara Groundwater Subbasin via instream infiltration through Coyote Creek and the Coyote Percolation Pond system. Downstream of Anderson Dam, Coyote Creek receives inflows from several tributaries, the largest of which is Upper Penitencia Creek. Almost half of the tributaries connected with Coyote Creek are in engineered channels, however historically Coyote Creek watershed was characterized by discontinuous stream channels that facilitates groundwater infiltration on the valley floor. The four-mile reach between Anderson Dam and the upstream end of Ogier Ponds is designated as the Cold Water Management Zone (CWMZ).

Operation of Anderson Reservoir is used for multiple purposes, including water supply, groundwater recharge, flood control, power generation, downstream aquatic habitat, and recreation. Incidentally, the reservoir also provides releases to the Coyote Creek's CWMZ when the creek might otherwise be seasonally dry. As presented in the Water Quality Control Plan for the San Francisco Bay Basin (SFBRWQCB, 2017), Coyote Creek, Anderson Reservoir, and the Santa Clara Valley Groundwater Basin/Santa Clara Subbasin have designated beneficial uses for surface waterbodies and groundwater basins. These beneficial uses are presented in Table 2 below.

Table 2: Designated Beneficial Uses for Surface Waterbodies and Groundwater Basins Within the Proposed Project Area (adopted from SFBRWQCB, 2017).

	Designation		
Beneficial Use Code	Coyote Creek	Anderson Reservoir	Santa Clara Valley Groundwater Basin, Santa Clara Subbasin
Agricultural Supply			E
Municipal and Domestic Supply		E	E
Freshwater Replenishment			
Groundwater Recharge	E	E	
Industrial Service Supply			E
Industrial Process Supply			E
Commercial and Sport Fishing	E	E	

Beneficial Use Code	Designation		
	Coyote Creek	Anderson Reservoir	Santa Clara Valley Groundwater Basin, Santa Clara Subbasin
Shellfish Harvesting			
Cold Freshwater Habitat	E	E	
Estuarine Habitat			
Marine Habitat			
Fish Migration	E		
Preservation of Rare and Endangered Species	E		
Fish Spawning	E	E	
Warm Freshwater Habitat	E	E	
Wildlife Habitat	E	E	
Contact Water Recreation	E	E	
Noncontact Water Recreation	E	E	
Navigation			

E: Indicates beneficial use exists in the water body.

Under the CWA section 303(d), water quality in Coyote Creek is identified as impaired for toxicity, while Anderson Reservoir is listed as impaired for mercury and polychlorinated biphenyl compounds (PCBs). Mercury and PCBs have been found in fish caught from Anderson Reservoir, such that the Office of Environment Health and Hazards Assessment has issued an advisory against eating fish caught from Anderson Reservoir. Groundwater quality in the major producing aquifers within the Santa Clara Valley Groundwater Basin/Santa Clara Subbasin is generally good and suitable for most uses and drinking water standards are met at public supply wells without the use of treatment methods.

Water Temperature

Valley Water has collected water quality profile data in Anderson Reservoir near Anderson Dam since 2001, including continuous water temperature profile data in 2019 (Valley Water 2019a, URS unpublished data). In summary, Anderson Reservoir water temperatures average between 10 and 24°C. Water temperatures deeper in the reservoir are cooler. Below 14 meters in depth, temperatures were generally less than 18°C year-round. Anderson Reservoir water temperatures become stratified, beginning in April until October/November. During this time, surface temperatures reached as high as 24°C, while deeper water remained around 11 to 12°C. Reservoir water temperatures are more uniform in the winter and early spring measuring around 10 to 14°C, with little change in temperature as depth increased.

To understand spatial and seasonal temperature patterns and trends in Coyote Creek from upstream of Anderson Reservoir and downstream of Anderson Dam to San Francisco Bay (including the tidally influenced reach), existing temperature data were grouped into the following seven reaches and averaged by month.

- Reach A: several miles of intermittent and perennial reaches of Coyote Creek above Coyote Reservoir.
- Reach B: 1.5 mile reach between Coyote Dam and Anderson Reservoir.
- Reach C (part of the CWMZ): a 0.2 mile reach from Anderson Dam outlet to the Coyote Discharge Line input.
- Reach D (part of the CWMZ): a 3.7 mile reach from the Coyote Discharge Line input to the inlet of Ogier Ponds.
- Reach E: a 4.7 mile reach from the outlet of Ogier Ponds to the inlet of the Coyote Percolation Pond.
- Reach F: a 14.9 mile reach from the outlet of the Coyote Percolation Pond to the confluence with Upper Penitencia Creek.
- Reach G: the final 16.7 miles to the San Francisco Bay.

Valley Water maintained temperature loggers at numerous locations on Coyote Creek, both upstream and downstream of Anderson Reservoir, between 2000 and 2012 (Valley Water, unpublished data). In 2019, Valley Water redeployed temperature loggers in Coyote Creek downstream from Anderson Dam and has been collecting data since May 2019. Temperature loggers were also deployed both upstream and downstream of Anderson Reservoir in 2019 and continues to collect temperature data. The San Francisco Bay Regional Water Quality Control Board has also been collecting water temperature data in Coyote Creek downstream of Anderson Dam since 2019. The period

of deployment for each temperature logger varied widely, with some loggers deployed for as little as 2 months and others deployed for several years. Aggregating the data into seven reaches provided a more complete period of record for each reach. The reaches from Anderson Dam to the Coyote Percolation Ponds have more datapoints than the other reaches.

Valley Water evaluated the data available for the seven reaches. Table 3 below summarizes the data to allow for visual comparison of trends from upstream to downstream and across months at individual locations; the green shading indicates cool temperatures and red shading indicates warmer temperatures. As seen in the table, there is a pattern of seasonally warmer temperatures that occur throughout the watershed around the summer months.

Table 3: Average Water Temperatures (°C) in Coyote Creek Watershed, 2000 – 2020.

	Reach A: Above Coyote Reservoir	Reach B: Between Coyote Dam and Anderson Reservoir	Reach C: CWMZ - Upstream of CVP Outfall	Reach D: CWMZ - Downstream of CVP Outfall	Reach E: Between Ogier Ponds and Metcalf Ponds	Reach F: Metcalf Ponds to Upper Penitencia Creek Confluence	Reach G: Upper Penitencia Creek to San Francisco Bay
January	8.5	9.0	11.0	11.0	10.9	10.4	11.1
February	10.1	9.9	10.6	10.8	12.2	12.0	11.8
March	12.1	11.4	10.8	11.2	14.3	13.7	13.5
April	13.6	13.6	11.5	12.3	16.1	15.8	15.1
May	17.7	16.5	12.1	13.7	18.6	18.4	18.3
June	19.4	19.2	12.5	14.7	20.5	20.8	20.9
July	20.2	21.3	13.5	16.4	21.9	21.9	21.1
August	20.0	21.4	14.5	16.7	21.5	21.7	21.2
September	17.6	20.2	15.9	17.2	20.2	19.9	19.9
October	12.6	17.0	14.8	15.8	17.4	16.8	17.1
November		13.8	14.2	14.4	14.2	13.6	13.7
December	9.1	10.0	12.5	12.3	11.0	11.2	11.6

Sources: Valley Water, unpublished data; Regional Water Quality Control Board, unpublished data; URS, unpublished data.

Water temperatures below Anderson Dam are driven by the volume of imported water used and the elevation of the reservoir cold-water pool in relation to the inlet port being used for releases. From late spring through early fall, water is released from the deep, coldwater pool in Anderson Reservoir for groundwater recharge, which also helps

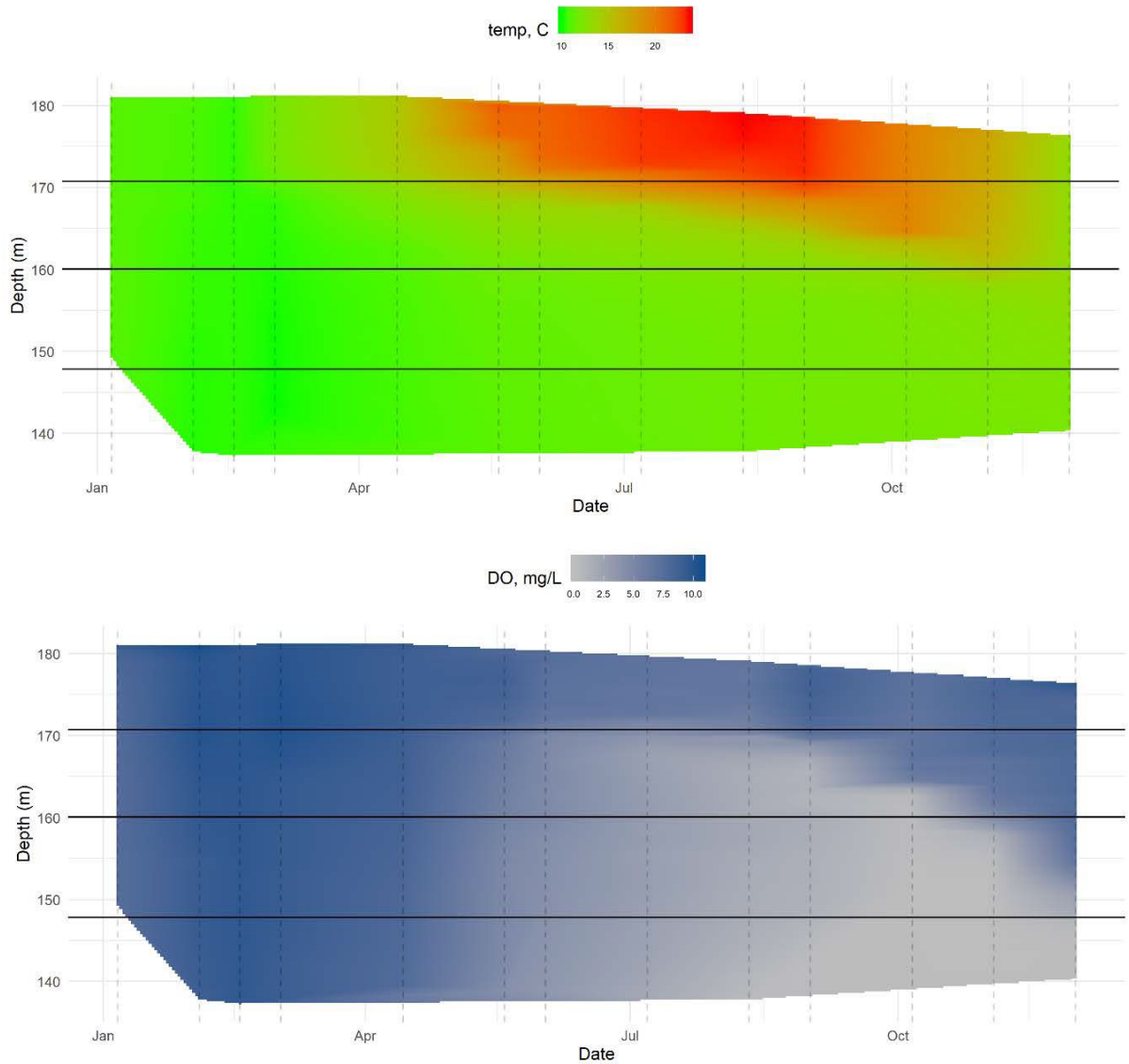
to maintain cooler water temperatures in the CWMZ downstream of the dam. Water from the Anderson Reservoir cold pool is 3.1 to 5.3°C, or an average of 4.3°C, cooler than flows above the watershed. Due to coldwater releases from Anderson Reservoir, average spring and summer water temperatures in the CWMZ upstream of the CVP outfall typically range from about 12 to 16°C, and are generally cooler than those recorded upstream of Anderson Reservoir and Coyote Reservoir.

Immediately downstream of the CWMZ, water flows through the Ogier Ponds; farther downstream, water flows through the Coyote Percolation Ponds. These ponds slow the flow of water and spread water over a large surface area, which results in warming. Average temperatures downstream of the CWMZ were up to 6.2°C warmer than the CWMZ during summer months. Farther downstream, past the confluence with Lower Silver Creek and Upper Penitencia Creek, summer water temperatures varied by up to 0.8°C from the reach upstream due to groundwater emergence and inflow from these tributaries. During the winter, average water temperatures throughout Coyote Creek ranged from 9.0 to 12.3°C and temperatures above Anderson Reservoir were generally 1.7 to 2°C cooler than downstream of Anderson Dam.

Dissolved Oxygen

When stratification in Anderson Reservoir begins in early spring, dissolved oxygen (DO) is depleted in the reservoir as the water warms and DO is used by bacteria. Anderson Reservoir has three portals, at elevations 563 ft, 528 ft, and 488 ft (shown as horizontal lines in Figure 2), that release water to Coyote Creek and/or send water to treatment plants via the AFM. The middle and lower portals (528 ft and 488 ft) generally release anoxic water from June-October, with some years having a DO concentration of less than 2 milligrams per liter (mg/L) at the depth of the upper portal (563 ft). The average elevation where anoxic conditions begin during stratification is 525 ft (depth of middle portal). Stratification and oxygen depletion vary with many factors such as water storage capacity, outlet portal used, outlet discharge rate, water residence time, and climate.

Figure 2: Temperature and Dissolved Oxygen Profiles in Anderson Reservoir (Source: Valley Water 2019 unpublished data).



<u>Sediment</u>

Anderson Reservoir retains all coarse sediment that enters the reservoir from upstream sources. Some fine sediment is passed through the reservoir, however, the reservoir is considered to have a buffering effect on runoff-induced increases in suspended sediment that will otherwise be transferred directly to downstream reaches of Coyote Creek. During storm-related runoff events, highly turbid water entering Anderson Reservoir mixes with a large volume of stored water, thereby diluting the suspended sediment concentrations before flow is passed downstream of Anderson Dam.

The amount of fine sediment reaching the reservoir's outlet varies depending on particle size and density, amount and rate of inflow, distance traveled through the reservoir, and reservoir release operations. Suspended sediment transported during large storms may reach the outlet at a higher concentration than during smaller storms. Although some of the suspended sediment settles from the water column in Anderson Reservoir, the reservoir can prevent some of the turbid water from moving quickly through the system and may prolong the release of mildly turbid water to Coyote Creek downstream of Anderson Dam for weeks following a storm.

Sediment mapping and characterization, based on geotechnical borings drilled in the reservoir near the dam and a comparison of historical topography with the latest available bathymetry, show an average of about 8 to 20 ft of accumulated fine sediment in the former stream channels of Anderson Reservoir, and 1 to 6 ft on the former terraces adjacent to those historical channels. This accumulation reflects decades of sediment trapping in the reservoir. Most of the accumulated sediments consist of cohesive fines described as medium to highly plastic clays. Preliminary estimates indicate that the volume of accumulated sediment in Anderson Reservoir is 2.9 million cubic yards. The volumes of accumulated sediment above the new restricted level (488 ft) in the northern and southern arms of Anderson Reservoir are approximately 1,011,000 and 532,000 cubic yards, respectively (Valley Water, 2020a, page 2-11).

Since Anderson Dam and the upstream Coyote Dam block sediment transport from the upper watershed, Coyote Creek immediately downstream from Anderson Dam is sediment-limited. Suspended sediment and turbidity measurements have been collected only sporadically in Coyote Creek downstream of Anderson Dam. Turbidity point measurements collected in 2007 and 2008 between Montague Expressway and Anderson Dam ranged from 2 to 35 Nephelometric Turbidity Units (NTUs) (Moore et al. 2008a, Moore et al. 2008b). Seventeen turbidity measurements in Coyote Creek downstream from Anderson Dam collected in March 2019, when flows ranged from 430 to 610 cfs, ranged from 32 to 55 NTUs (HDR 2019). Suspended sediment samples collected at 17 sampling sites in Coyote Creek downstream from Anderson Dam from December 2019 to March 2020 ranged from 0 to 111 mg/L (Light, Air, and Space Construction, unpublished data). The range of typical suspended sediment concentrations and the effects of seasons, storm events, and location in the watershed on sedimentation are largely unknown.

Perchlorate

Perchlorate is the common name for a family of salts that includes ammonium perchlorate, potassium perchlorate, and sodium perchlorate. While it can be naturally occurring, the great majority of perchlorate is manmade. Of the domestically produced high grade perchlorate, 90 percent is manufactured for use in the defense and aerospace

industries, primarily in the form of ammonium perchlorate (EPA, 2014). Perchlorate can disrupt the normal function of the thyroid gland in both children and adults.

United Technology Corporation previously utilized property southeast of San Jose, where it operated a solid rocket motor research and development facility beginning in 1959. Ammonium perchlorate was used extensively at the United Technology facility as the oxidizing agent in solid rocket fuel. The presence of perchlorate in soil and groundwater at the site has long been known. Perchlorate is completely soluble in water and does not bind to soils and is therefore mobile. Three seasonal creeks (Shingle Creek, Mixer Creek, and Las Animas Creek) flow through the most heavily developed portions of the facility, and a fourth (San Felipe Creek) passes along the easternmost portion of the property. These streams merge near the southeastern boundary of the site, and the combined flow (Las Animas Creek) flows southeastward into Anderson Reservoir.

There is concern that perchlorate will enter creeks through groundwater discharge and stormwater runoff, particularly during the wet winter months. While perchlorate is routinely detected in surface water at on-site creek sampling locations, perchlorate is detected infrequently at off-site locations, and perchlorate has never been detected in Anderson Reservoir (CRWQCB, 2004).

3.3.3.2 Environmental Effects

<u>Water Temperature</u>

During the initial dewatering (beginning and continuing through fall of 2020), existing reservoir releases will provide flow augmentation for purposes of meeting both recharge requirements and providing in-stream environmental flows. As the reservoir water level is drawn down, water in Anderson Reservoir will warm more quickly from sunlight due to the reduced water depth and surface area. This results in a reduction or elimination of the reservoir's coldwater pool. Streamflow in Coyote Creek through the drawdown period will result in elevated water temperatures in the summer and fall relative to the existing condition for two reasons. First, summer releases from Anderson Reservoir are typically made through one of the submerged inlets to the existing outlet, which draw cooler water from deeper in the reservoir. Once the reservoir is drawn down to elevation 488 ft, all releases will be from the surface of the reservoir, which is expected to have a higher water temperature due to warming of the surface (488 ft is the elevation of the lowest inlet to the dam's outlet works). Secondly, summer flow during construction and operation of the new tunnel will rely more on releases of imported water, relative to the existing condition. Valley Water will use imported water to supplement local flow, which will be released, as it currently does, downstream of Anderson Reservoir from the Coyote Discharge Line, to support groundwater recharge and aquatic habitat. The amount of flow released from the Coyote Creek Discharge Line will depend on the time of year, the temperature of flow, the amount of native water

available, and hydrology at the time of release. Based on estimates generated from temperature records from 1999 to 2019, the average temperature of imported water that is be discharged to Coyote Creek downstream of Anderson Dam reaches nearly 18°C before the end of June and exceeds 20°C from July through October (Valley Water, unpublished data). Under the proposed action, the anticipated daily maximum temperatures of imported water that will be discharged downstream of Anderson Dam, depending on water year type and ambient temperatures, is estimated to be 24°C to 26°C from July through October (Stillwater Sciences, 2020).

Operational flow guidance (rule curves) will be employed to guide and direct how flows are discharged from the reservoir. When available, the higher-temperature water released to the creek from the Coyote Discharge Line will be unsuitable for steelhead occupying the CWMZ, but beneficial for other native fish and maintenance of riparian and wetland habitat. Alteration of creek flows and the lack of a reliable reservoir coldwater pool from which to draw will impact steelhead and their habitat, particularly through the recognized CWMZ of Coyote Creek that extends about 4.5 miles from the base of the dam to the upper end of the Ogier Ponds. Therefore, Valley Water plans to release imported water further downstream via the CVP extension to minimize impacts to groundwater recharge and warm water habitat downstream, and to release lower flows of warm imported water into the CWMZ.

Prior to implementation of the CVP extension to downstream of Ogier Ponds, the large volume of imported water that will need to be released into the CWMZ will make it impractical to reduce water temperatures to near existing conditions. The average temperature of imported water exceeds 20°C from July through October. Therefore, when the reservoir is drawn down and before the CVP extension is constructed, an increase of temperature in the CWMZ is expected. Once the new CVP extension is operational (anticipated by July 2021) and imported water can be released downstream of the Ogier Ponds, the volume of imported water released into the CWMZ in Coyote Creek can be reduced. At that time and in coordination with NMFS and California DFW, Valley Water proposes to use electric chillers (discussed below) to reduce the temperature of imported water to 16°C or less prior to releasing the imported water into the CWMZ in Coyote Creek.

Valley Water is proposing to chill imported water before discharging it into Coyote Creek at the upstream end of the CWMZ. Valley Water proposes to cool up to 10 cfs of the imported water by 7ºC in an effort to maintain water temperatures in a range suitable for steelhead. Water flowing through the Coyote Discharge Line will pass through three parallel chillers. Estimates show that water temperature in the CWMZ will be maintained at approximately 16ºC with 10 cfs of chilled CVP water, approximately 19ºC with 7 cfs of chilled CVP water, and approximately 21ºC with 5 only cfs of chilled

CVP water, with the pipeline extension in place.[40] With the proposed use of the CVP extension to carry larger volumes of imported water for release downstream of the CWMZ along with implementation of chillers for imported water released at the upstream end of the CWMZ, it is likely that temperatures will average 16ºC at the base of Anderson Dam, and consequently, the 18ºC target at the end of the CWMZ (for flow entering Ogier Ponds) will likely be attainable during the summer. The blend ratio of chilled imported water and Anderson Reservoir water released at the upstream end of the CWMZ can be adjusted on hotter or cooler days. Therefore, conditions in the CWMZ can be maintained in the suitable range for steelhead during the construction period without a cold-water pool in Anderson Reservoir, if the pipeline extension is put in place and chillers are installed on the Coyote Discharge Line.

In summary, with a larger amount of imported water needed and without Anderson Reservoir's cool water pool to mix with imported water releases, water temperatures will increase. Valley Water is proposing an extension to the CVP so that imported water is released downstream of Ogier Ponds for groundwater recharge, rather than in the CWMZ downstream of the dam from the Coyote Discharge Line. Prior to implementation of the Cross Valley Pipeline extension, the large volume of imported water that will need to be released into the CWMZ will make it impractical to reduce water temperatures to near existing conditions. However, once the new pipeline extension is operational and imported water can be released downstream of Ogier Ponds, the volume of warm imported water released into the CWMZ will be reduced.

To date, construction of the CVP extension is scheduled to be completed by August 2021. Until the new CVP extension and the chillers are in place (2021 or 2022), a temporary adverse impact to water temperature is expected. This could affect salmonid life stages and other aquatic organisms, as well as beneficial uses of Coyote Creek downstream of Anderson Dam. Once project construction is completed and Anderson Reservoir resumes normal operating procedures, water temperature is anticipated to return to pre-drawdown condition.

Dissolved Oxygen

Within Anderson Reservoir, the decrease in reservoir elevation and the loss of the coldwater pool will subsequently cause increase in water temperature and therefore a decrease in DO in the low flow summer and fall. During the drawdown of Anderson Reservoir, when water will be released through the lower and middle ports, it is expected that water will be hypoxic during the summer. However, Valley Water has observed

[40] The method by which Valley Water calculated these estimates is reported in Appendix E: CVP Extension and Chillers Temperature Analysis, within the Final Reservoir Drawdown and Operations Plan filed July 27, 2020.

from water quality spot checks in Coyote Creek that DO is not usually limited in moving water because the release of the water and instream flow reoxygenates the water within Coyote Creek. DO impacts will be anticipated if Coyote Creek were to dryback to warm isolated pools, which will occur if sufficient releases of imported water are not implemented to offset the unavailability of stored water within the drawdown reservoir. Therefore, Valley Water proposes to augment dry-season streamflow in Coyote Creek by releasing imported water to maintain flows for water supply, groundwater recharge, subsidence minimization, and habitat conditions such as DO and temperature. No adverse impacts to DO is anticipated.

Valley Water is also proposing to monitor water temperatures and DO in the CWMZ and coldwater pool in Anderson Reservoir in Summer 2020, Summer 2021, and through construction of the new outlet tunnel. If conditions become unsuitable, then fish rescue operations will be initiated, in consultation with the Fisheries Technical Workgroup (TWG).[41]

Sediment

Drawdown of the reservoir from its current elevation of no higher than 565 ft to 488 ft (deadpool) will expose currently inundated soils lacking vegetation. These soils will become susceptible to erosion, and thereby likely increasing the levels of total suspended solids (TSS) (e.g., fine sediments) in the reservoir water column. The estimated volume of sediment in the Los Animas Creek and Coyote Creek channels above elevation 488 ft is approximately 1 million cubic yards (mcy) and 0.5 mcy, respectively. The drawdown process will mobilize and transport some of this sediment and water with elevated TSS will likely be subsequently discharged to Coyote Creek, downstream of Anderson Dam. Additionally, storms and precipitation that occur during or following reservoir drawdown could mobilize the sediment, ultimately leading to temporary adverse water quality effects downstream.

The reservoir drawdown will occur gradually at a rate of up to and no greater than 100 cfs above reservoir inflow rates. This gradual drawdown will minimize the potential for landslides and instability around the wet rim of the reservoir and will also serve to minimize potential for erosion and mobilization of fine sediments during the drawdown process. Nevertheless, there will be temporary adverse effects to downstream surface water quality. Maintenance of the reservoir at deadpool and the exposure of unstable

[41] Members of the Anderson Dam Fisheries Technical Workgroup include Valley Water, California Department of Fish and Wildlife, and National Marine Fisheries Service.

soils to erosion throughout a prolonged period will also result in temporary adverse water quality effects.

Valley Water conducted sediment transport modeling for Anderson Reservoir and Coyote Creek.[42] Two scenarios were simulated: the reservoir maintained at elevation 488 ft with the existing outlet structure, and the reservoir maintained at elevation 488 ft with the existing outlet plus the new outlet tunnel with diversion limited to 2,000 cfs. The study concluded that due to the limited capacity of the existing and proposed outlets, any significant storm event will cause an increase in the water surface elevation that will inundate erodible sediments. Concentrations in the reservoir will then decrease due to settling. Most erosion occurs at the beginning of the storm events when the flows are high but before the reservoir water level rises high enough to inundate the erodible sediments in the north and south arms. The concentration in the reservoir then decreases as the sediment settles in the reservoir. Small and medium storms can cause larger sediment concentrations since the reservoir fills less than during larger storms.

The model also concluded that sediment releases from the reservoir deposited roughly 6 to 16 percent of the suspended sediments in the 4-mile length of Coyote Creek, between Anderson Dam and Ogier Ponds. Most of the deposition, ranging from 17 to 46 percent of the suspended sediment load released from the reservoir, will occur in Ogier and Metcalf Ponds. By the time Coyote Creek reaches Highway 237 at Milpitas, between 40 and 80 percent of the suspended sediment releases from the reservoir will be deposited.

Sediment movement associated with the drawdown and new outlet tunnel construction is primarily a function of erosion of exposed sediment by inflows to the reservoir as the reservoir is lowered, or during high flow events while the reservoir is lowered. Although coarse sediment will settle in the reservoir, not all fine sediment will settle before passing downstream of the Anderson Dam. Due to the flow rates and volumes involved, it is not practical to construct a large enough settling pond to capture all the sediment that will be entrained in the flows occurring during drawdown or during the winters when the reservoir is to be maintained at elevation 488 ft, or such other approved post-tunnel-construction reservoir elevation. Dredging the 1.5 million cubic yards of sediment exposed above elevation 488 ft will also require more space than is available downstream of the dam for settling ponds, or some other location to dispose of the dredged sediment. During these periods, suspended sediment that does not settle at

[42] The Anderson Dam Tunnel Project Sediment Transport Modeling Report is contained with Appendix F of Valley Water's Final Reservoir Drawdown and Operations Plan filed July 27, 2020.

Anderson Reservoir's deadpool elevation will pass through the existing outlet or proposed Anderson Dam tunnel.

Groundwater

Discharges during reservoir drawdown will be released through the existing outlet works at the Anderson Dam. The reduced water level in the reservoir following drawdown and the reduced flows in Coyote Creek after drawdown have the potential to limit groundwater recharge of the Santa Clara Subbasin, which will be mitigated by Valley Water increasing its imported water, but those flows will not result in any groundwater quality effects. While some of the fine sediment within the reservoir that could potentially be released to Coyote Creek may be contaminated with mercury (given the existing impairment to Anderson Reservoir), mercury typically remains closely adsorbed to sediment particles and will not likely be mobile such that it could move to groundwater. Further, no construction equipment or hazardous materials use will be needed during the drawdown process. As a result, there will be limited potential new pollutant sources introduced to the project area, which could spill and leach through soil to groundwater, during reservoir drawdown.

Perchlorate

After discussion with the Water Board and San Francisco Bay and Central Coast Regional Boards, Valley Water filed its water quality data in a letter dated April 17, 2020, regarding perchlorate sampling in Anderson Reservoir and downstream (Valley Water, 2020d). Valley Water noted that perchlorate has never been detected in the reservoir, based on 695 sample results from the reservoir since 1997. These results are non-detect at a Method Reporting Limit (MRL) of 4 micrograms per liter (µg/L). This MRL is identical to the State Board Division of Drinking Water's Detection Limit for Purposes of Reporting, and is below the state drinking water standard of 6 µg/L. Also, sampling at the AFM, which is used to deliver water to water treatment plants, resulted in non-detect at the MRL of 4 µg/L. Valley Water also presented reservoir temperature and DO data to show that winter and spring inflows from tributaries (including any aqueous potential contaminants) will occur while the reservoir is not stratified, and therefore will not be concentrated within the cool bottom layers of the reservoir. These inflows, including any aqueous potential contaminants, will be diluted to a degree that results in perchlorate concentrations that are below the MRL.

After review of Valley Water's April 17, 2020 letter and attached information, the Water Board stated that they agree that a stagnate, deep pool of perchlorate-laden water is unlikely to persist, and that sampling of the sediment/bottom soil pore water for perchlorate is unnecessary. However, the Water Board requested additional sampling of Anderson Reservoir water for perchlorate to assure that the potential presence of perchlorate in the reservoir is assessed. The Water Board stated that California is

considering adopting a lower drinking water standard for perchlorate to 2 µg/L, from the current standard of 6 µg/L. This lower standard is less than the reporting limit in the existing data set in Valley Water's April 17 filing. Therefore, the Water Board requested additional water samples at three locations within the reservoir: (1) the Anderson Dam near the inlet to the force main; (2) Packwood Cove; and (3) near the Las Animas Creek in the north arm of the reservoir.

Valley Water completed perchlorate sampling in Anderson Reservoir on May 27, 2020, for purposes of source water assessment to support the not-yet-adopted Water Board drinking water regulations. At each location, Valley Water collected discrete samples from the surface, middle, and bottom of the reservoir. The samples were analyzed by an independent, state-accredited laboratory using EPA Method 314.0. According to their report, all sample results were non-detect at the proposed reporting limit of 2 ug/L, and there were no j-flag results[43] which indicates no detection of perchlorate above the method detection limit of 0.29 ug/L (Eurofins Eaton Analytical, 2020 and Valley Water, 2020e). Commission staff reviewed this data and conclude that these recent sampling results, along with the previous 20 years of sampling data, indicate that the reservoir drawdown will not violate any applicable perchlorate water quality standards.

Summary

Overall, the drawdown of Anderson Reservoir will cause some short-term adverse effects to the CWMZ downstream of Anderson Dam, and to the beneficial uses of water in Anderson Reservoir. Water quality in Anderson Reservoir will diminish due to the loss of the coldwater pool and because of increases in TSS from stormwater runoff. Water with elevated levels of TSS and/or elevated temperatures discharged from Anderson Reservoir will temporarily adversely affect water quality and beneficial uses downstream Coyote Creek. Discharges of poor-quality water to Coyote Creek will temporarily adversely affect habitat for rare or endangered species, such as steelhead, Chinook salmon, and other species that are known to occur in Coyote Creek.

The effects described above will be temporary, lasting for the duration of the reservoir drawdown period (approximately October 2020 to January 2021) and the subsequent period when the reservoir will remain at deadpool. Once the reservoir is returned to its current elevation or higher, and normal operating conditions are restored, water quality is anticipated to return to its current level (baseline) and no further adverse effects are expected. Until the CVP extension and the chillers are in place, the effects described above, in particular, the discharge of water with elevated TSS and temperature

[43] J-flag results indicate that the reported result is an estimate because the value is less than the minimum calibration level, but greater than the detection limit.

to Coyote Creek during the drawdown, is considered a temporary adverse effect to water quality.

Valley Water is working with the resource agencies to identify temperature and flow targets for the CWMZ, as well as adaptive management strategies. Temperature, DO, flows, and fisheries sampling will continue in the CWMZ throughout the duration of FOCP and adaptive management will be used to identify adverse habitat conditions that warrant further measures, such as subsequent fish rescues.

As referenced in *Section 3.3.6 Threatened and Endangered Species and Essential Fish Habitat* below, NMFS filed several conservation recommendations under the emergency procedures of the ESA,[44] by letters dated August 14 and 31, 2020. One of those recommendations was for Valley Water to implement continuous water temperature logging at the 10 permanent monitoring locations on Coyote Creek downstream of Anderson Dam.[45] NMFS also recommended that additional temperature loggers be installed in Coyote Creek: (a) above the new imported water turnout of the CVP extension; (b) below the new imported water turnout of the CVP Extension; and (c) upstream of the Coyote Percolation Pond. NMFS requested operation of the temperature loggers to begin in February 2021, and continue through the completion of the ADSRP, and that daily average, maximum, and minimum temperatures at each station be reported monthly to NMFS beginning in February 2021. Valley Water, in a letter filed with the Commission on August 25, 2020, agreed to this monitoring plan. Valley Water stated that 4 of the permanent stations are located above the Coyote Percolation Pond, and it has agreed to install two new temperature loggers once the new turnout is installed: one logger above and one logger below the new imported water turnout near Ogier Ponds. Commission staff agree that this temperature monitoring should be implemented, and become a requirement of any approval of the Reservoir Drawdown and Operations Plan. So that Commission staff and the resource agencies are apprised of the details of this water temperature monitoring, including monitoring methods, data collection and data reporting procedures, Valley Water should be required to file a Water Temperature Monitoring Plan with the Commission for approval. The Plan should detail the monitoring locations, monitoring methods, data collection methods, and reporting timeframes. The Plan should be developed in consultation with the NMFS, FWS, and California DFW.

Also under the emergency procedures of the ESA, as outlined in *Section 3.3.6 Threatened and Endangered Species and Essential Fish Habitat* below, NMFS

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[44] The conservation recommendations filed by NMFS are not mandatory conditions resulting from a Biological Opinion.

[45] These 10 permanent monitoring locations are part of the FAHCE Agreement.

recommended the development of two plans regarding sedimentation. The first is for Valley Water to develop and implement a plan to minimize the discharge of sediment and sediment laden water from Anderson Reservoir. NMFS requested the plan to include actions to minimize suspended sediment conveyance, and efficacy monitoring and reporting to inform adaptive management. NMFS requested the plan to be provided to NMFS for review in October 2020. As stated above, Valley Water has determined that there are no feasible methods to further minimize sediment movement from the drawdown, other than their already proposed gradual drawdown. It has determined that it is not practical to construct settling ponds, or to conduct dredging. In their recommendation, NMFS did not propose any particular method to minimize discharge. Additionally, considering that the drawdown will begin by October 1, 2020, there is insufficient time to develop and implement such a plan prior to, or during, the beginning stages of the drawdown. Therefore, Commission staff do not recommend including this requirement as any approval of the Reservoir Drawdown and Operations Plan. However, in their letter filed September 11, 2020, Valley Water stated that it is willing to collaborate with the TWG to explore options to manage sediment release.

Secondly, NMFS recommended Valley Water develop and implement a suspended sediment monitoring and reporting plan to continuously monitor suspended sediment discharges from Anderson Reservoir, and to monitor the effect of the discharges on Coyote Creek downstream of the dam. NMFS requested the plan include: baseline characterizations; continuous suspended sediment monitoring; water quality sampling; provision of real-time data; quantification of grain size and mass loads of sediment transported; selection of monitoring sites to assess effects to spawning gravel quality, egg incubation, juvenile rearing and fish migration; and application of monitoring results to inform adaptive management. In their letter filed September 11, 2020, Valley Water stated it is willing to collaborate with the TWG to add sediment monitoring downstream of Anderson Dam, and already have plans to collect data on spawning and rearing habitat quality downstream. However, it will need 4-6 months to develop a sediment monitoring plan. Commission staff agree that this plan will be beneficial in determining the extent that the sedimentation is affecting aquatic habitat in Coyote Creek. Commission staff further agree that this plan should be developed and implemented, and become a requirement of any approval of the Reservoir Drawdown and Operations Plan.

3.3.4 Aquatic Resources

3.3.4.1 Affected Environment

Valley Water's proposed action has the potential to affect aquatic resources and habitat in Anderson Reservoir, Coyote Creek downstream of Anderson Dam, and Upper Penitencia Creek. In Anderson Reservoir, Sacramento hitch (*Lavinia exilicauda exilicauda*) are the only special-status fish, and are listed as California DFW Species of

Special Concern. Special-status (i.e., state- or federally listed or California DFW Species of Special Concern) fishes known to occupy Coyote Creek downstream of Anderson Reservoir include steelhead *Oncorhynchus mykiss* (CCC DPS federally listed as threatened under the ESA), Central Valley fall-run chinook salmon (*Oncorhynchus tshawytscha*) (Species of Special Concern California DFW), and Pacific lamprey (*Entosphenus tridentatus*) (Species of Special Concern). Additional discussion regarding steelhead is in *Section 3.3.6—Threatened and Endangered Species* below.

Anderson Reservoir

Fish Species

Anderson Reservoir supports an assemblage of native and non-native species. Native species include Sacramento sucker, Sacramento pikeminnow, hitch, and prickly sculpin, and adfluvial rainbow trout *O. mykiss*; non-native warm water species found in Anderson Reservoir include: black bass (e.g., largemouth, small mouth, redeye and spotted bass), sunfish, catfish, common carp, golden shiner, threadfin shad, and inland silverside (Leidy 2007, CDFW 2020, Valley Water, unpublished data). In sampling conducted in 2017 and 2019, Valley Water noted that non-native, warm water centrarchids (including largemouth bass, bluegill, and black crappie) were abundant and commonly found throughout the water column, though there was considerable variability in species detection and abundance between the two sampling years (Table 4; Valley Water 2020). The majority of native and non-native fish species in the reservoir are adapted to warm water conditions, and persist through periods of warm water and low DO that occur seasonally in the reservoir (see *Section 3.3.3 Water Quality*). Some of these species may seek out tributaries during spawning (e.g., Sacramento hitch, Sacramento sucker, and Sacramento Pikeminnow) or construct nests in shallow waters in the reservoir (e.g. Prickly sculpin) (Moyle 2002).

Non-anadromous adfluvial (lake-migrant) O. mykiss occur in the upper Coyote Creek watershed and in Anderson Reservoir. Only the anadromous form of the species receives protection under ESA (NMFS 2006a) (see Section 3.3.6 Threatened and Endangered Species). Generally, for O. mykiss populations above dams, access to a reservoir can support an adfluvial life history, which allows retention of the genetic variants and migratory behavior associated with anadromy in freshwater (Leitwein et al 2017). Based on field studies, literature review, angler reports, and information provided by Valley Water, Packwood Creek (a tributary to Anderson Reservoir) supports O. mykiss and likely supports an adfluvial run, and the reach of Coyote Creek between Anderson and Coyote Reservoirs is likely occupied by O. mykiss (NMFS 2019, Leidy et al 2005). O. mykiss in Anderson Reservoir exhibiting an adfluvial life history utilize the reservoirs as feeding and rearing habitat, and migrate upriver into tributaries to spawn. Spawning generally occurs from January to June depending on the climate (usually when daily water temperatures exceed 6-7°C).

Table 4: Fish captures in Anderson Reservoir, 2017 and 2019 (Valley Water 2020).

2017 Fish Captures Anderson Reservoir (July 26, 2017)										
Station	Duration (minutes)	Largemouth bass	Bluegill	Black crappie	Threadfin shad	Inland silverside	Sacramento sucker	Tule perch	Prickly Sculpin	White Catfish
1	15	10	4	0	0	5	1	0	0	0
2	15	15	1	0	12	34	1	0	0	0
3	15	14	9	0	1	25	4	0	0	0
4	15	19	4	0	3	13	2	0	0	0
Total		58	18	0	15	77	8	0	0	0
CPUE		0.97	0.3	0	0.27	1.28	0.13	0	0	0
2019 Fish Captures Anderson Reservoir (June 19, 2019)										
Station	Duration (minutes)	Largemouth bass	Bluegill	Black crappie	Threadfin shad	Inland silverside	Sacramento Sucker	Tule perch	Prickly Sculpin	White Catfish
1	15	23	10	31	7	21	1	1	0	0
2	15	80	1	22	0	37	1	3	5	0
3	15	21	4	3	0	4	0	0	0	1
4	15	22	2	4	1	8	1	0	1	0
Total		146	17	60	8	70	3	4	6	1
CPUE		2.43	0.28	1	0.13	1.17	0.05	0.07	0.1	0.02

Note:
CPUE = catch per unit effort

Due to their preferences for cold water temperatures, DO, food, and cover, *O. mykiss* are usually in the top one-third of the water column and are rarely found below the thermocline even when conditions in the hypolimnion are optimal, and rarely found near the bottom of deep reservoirs (DTA 2004). Spawning beds (redds) are typically constructed where the streambed is composed of gravelly substrate, usually in riffles or pool tails (Moyle 2002). Young *O. mykiss* prefer the fluvial or shallow water rearing habitats, or shallow portions of the reservoirs near the shore where cover is abundant (DTA 2004). During the summer when conditions in the reservoir become generally unsuitable, *O. mykiss* are unlikely to use the reservoir (Horizon Water and Environment 2020).

Sacramento hitch are listed by California DFW as a California Fish Species of Special Concern (CSSC)[46] and are present in Anderson Reservoir. In streams, hitch are generally found in pools or runs among aquatic vegetation, and tend to stay in fairly limited areas. Hitch are tolerant of warm waters, though they are usually most abundant in the wild in waters cooler than 25°C in summer. Spawning occurs in February and ends as late as July over gravel riffles or on vegetation in streams tributary to lakes, rivers, possibly following spring precipitation events when flows increase (Moyle 2002). When floodplains are available, hitch will use them for rearing although juveniles can become stranded once floodwaters recede (Moyle et al. 2007). Sacramento hitch and Sacramento blackfish often hybridize when cohabitating in ponds and reservoirs, although hybrids are apparently sterile (Moyle and Massingill 1981). Hitch populations are fragmented today, making them susceptible to a combination of anthropogenic stressors, and their populations are also affected by competition with and predation by non-native fishes. Hitch populations in favorable habitats with adequate cover can persist in the face of alien predators although they may disappear when stressed by other factors, such as high temperatures and pollution which make them more vulnerable to predation (Moyle et al 2015).

Habitat

Under normal operation, Anderson Reservoir provides extensive deep-water aquatic habitat year-round (Horizon Water and Environment 2020) (Table 3 and Figure 2 in *Section 3.3.3 Water Quality*). There are three main sources of inflow that provide water to Anderson Reservoir: Upper Coyote Creek, which is regulated by releases from Coyote Reservoir and receives input from Otis Canyon Creek downstream of Coyote Reservoir, flows into the southern arm of Anderson Reservoir; and Las Animas Creek and Packwood Creek which flow into the northern arm. Due to recent drawdown conditions, the exposed shoreline rim is rocky, steeply sloped, and sparsely vegetated. There are no substantial amounts of emergent vegetation or submerged aquatic vegetation (riparian cover does not currently extend into the reservoir), and no well-developed vegetated wetlands are present where tributary streams enter the drawn-down reservoir bed (Valley Water 2020).

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[46] CSSC are defined as those species, subspecies, Evolutionary Significant Unit, or Distinct Population Segment of native fish that currently satisfy one or more of the following (not necessarily mutually exclusive) criteria: (a) are known to spawn in California's inland waters; (b) are not already listed under either federal or state endangered species acts (or both); (c) are experiencing, or formerly experienced, population declines or range retractions that, if continued, could qualify them for listing as threatened or endangered status; and (d) have naturally small populations exhibiting high susceptibility to risk from stressors that, if realized, could lead to declines that will qualify them for listing as threatened or endangered. (California DFW).

Coyote Creek

Fish Species

Several native and non-native fish species are known to occur in Coyote Creek downstream of Anderson Dam during all or part of their life cycle (Table 5). Native fish in the CWMZ reach (from the base of Anderson Dam to Ogier Ponds) include: *O. mykiss*, Sacramento sucker, prickly sculpin, threespine stickleback, and Sacramento hitch. In the reach between Ogier Ponds and Highway 237, native fish include: steelhead, Pacific lamprey, Central Valley fall run chinook salmon, Sacramento sucker, prickly sculpin, threespine stickleback, tule perch, Sacramento hitch, and California roach. Various non-native fish are also found in Coyote Creek downstream of Anderson Dam (Table 5). Several estuarine fish species also have been reported to occur in the lowermost reaches of Coyote Creek (e.g., in lower Coyote Slough) in the zone influenced by brackish or saline conditions (e.g., starry flounder, longfin smelt) (Valley Water 2020 California DFW permit application). Most of the non-native fishes are summer spawners, preferring warm (>24 °C) quiet water, while almost all of California's native stream fishes (resident and anadromous) spawn in streams during periods of high flow, typically in February through April (Moyle 2002).

The fish species of primary management concern in the Coyote Creek downstream of Anderson Dam are *O. mykiss*, Pacific lamprey, Central Valley fall run Chinook salmon, Sacramento hitch, and Sacramento Blackfish. Additional discussion regarding ESA-listed species is provided in *Section 3.3.6 – Threatened and Endangered Species*.

Table 5: Fish found in Coyote Creek CWMZ and from Ogier Ponds to Highway 237 by family.

Common Name	Origin	Status	CWMZ	Ogier Ponds to Highway 237	Trophic Guild	Tolerance
Petromyzontidae (lamprey)						
Pacific lamprey	Native	CSSC		X	Det	I
Salmonidae (salmon and trout)						
O. mykiss, CCC DPS	Native	FT	X	X	Invert	I
Chinook salmon, CV fall run	Native	CSSC, FT		X	Invert	I

Common Name	Origin	Status	CWMZ	Ogier Ponds to Highway 237	Trophic Guild	Tolerance
Cyprinidae (minnows)						
Sacramento Hitch	Native	CSSC	X	X	Plank	M
California roach	Native			X	Omn	M
Sacramento blackfish	Native			X	Plank	M
Sacramento pikeminnow	Native			X	Inv/Pisc	M
Common carp	Non-native		X	X	Omn	T
Goldfish	Non-native			X	Omn	T
Red shiner	Non-native			X	Omn	T
Golden shiner	Non-native			X	Plank	T
Fathead Minnow	Non-native			X	Detr	T
Catostomidae (suckers)						
Sacramento sucker	Native		X	X	Omn	M
Embiotocidae (surfperch)						
Tule perch	Native			X	Inv	I
Poeciliidae (livebearers)						
Western mosquitofish	Non-native			X	Inv	T
Atherinidae (silversides)						
Inland silverside	Non-native			X	Plank	M
Centrarchidae (sunfish)						
Largemouth bass	Non-native		X	X	Pisc	T
Spotted bass	Non-native		X		Pisc	M
Green sunfish	Non-native		X		Inv	T
Pumpkinseed	Non-native			X	Inv	T
Bluegill	Non-native			X	Inv	T
White crappie	Non-native			X	Inv/Pisc	T

Common Name	Origin	Status	CWMZ	Ogier Ponds to Highway 237	Trophic Guild	Tolerance
Cottidae (sculpin)						
Prickly sculpin	Native		X	X	Inv	M
Fundulidae (killifish)						
Rainwater killifish	Non-native			X	Inv	T
Gasterosteidae (stickleback)						
Threespine stickleback	Native		X	X	Inv	M
Gobiidae (goby)						
Yellowfin goby	Non-native			X	Inv/Pisc	T

Based on Valley Water 2020a, Moyle 2002, May and Brown 2002. Origin: Native or Non-native. Status: FT=Federally Threatened; CSSC= California Species of Special Concern. Trophic guild: Det=detritivore; Inv=invertivore; Inv/Pisc=combination invertivore and piscivore; Pisc=piscivore; and Plank=planktivore. Tolerance to environmental degradation: I=intolerant; M=moderately tolerant; T=tolerant.

Pacific lamprey are listed by California DFW as CSSC, and though in decline throughout their range in California, they are considered locally common in the lower stream reaches of Coyote Creek and Upper Penitencia Creek, and the watershed supports one of the largest populations of Pacific lamprey in the San Francisco Bay Area (Leidy 2007, Smith 2013). Pacific lamprey have been documented to be present in the lower reaches of Coyote Creek (from approximately Highway 237 to Highway 280) and in Upper Penitencia Creek (up to and occasionally in Alum Rock Park) (Leidy 1999, Stillwater Sciences 2006, Leidy 2007, Moore et al. 2008a, Moore et al. 2008b). The timing of the adult Pacific lamprey migration to freshwater spawning habitat is usually between March and June but may occur as early as January and February (Moyle 2002). Adult Pacific lamprey do not migrate to natal streams, but likely identify suitable rivers for spawning and subsequent rearing based on flow patterns and the presence of ammocoete pheromones in the offshore river plume (reviewed in Moser et al. 2015). Pacific lamprey require cold, clear water for spawning, incubation, and rearing, with spawning occurring around temperatures of 12-18°C (Moyle et al 2015), and survival of young lamprey, called ammocoetes, sharply declining in temperatures >22°C (Meeuwig et al 2005). Adults typically construct their nests in a low-gradient riffle (runs or glides) and spend less than a week in the spawning area (Moyle 2002, Moyle et al 2015). Ammocoetes reside in soft sediments in freshwater for 5-7 years before metamorphosing

to the adult form and migrating to the ocean during high-flow events in winter and spring (Moyle et al 2015).

Central Valley Fall Run Chinook Salmon are listed by California DFW as a CSSC and are listed by NMFS as a Species of Concern (NMFS 2004).[47] However, Coyote Creek is not included in the areas designated by NMFS (NMFS 1999) and California DFW (Moyle 2015). Freshwater Essential Fish Habitat (EFH) for fall-run Chinook is addressed in *Section 3.3.6—Threatened and Endangered Species*. Hatchery stray Chinook salmon have been observed in the Coyote Watershed since the mid-1980's and are likely to occur seasonally in Coyote Creek; available data indicates that Chinook salmon in Santa Clara County are of hatchery origin (Valley Water 2020a). When they use Coyote Creek, adult Chinook salmon appear to spawn mostly in the lower reaches of Coyote Creek and Upper Penitencia Creek, although individuals have been found as far upstream as Metcalf Dam on Coyote Creek (Stillwater Sciences 2006, Smith 1998), and two adult Chinook salmon were recorded by a computer-based fish counter (Vaki) camera and fish counter in the Coyote Percolation Pond fish ladder in December 2018 and January 2019 (Valley Water 2020c). Chinook salmon use coarse material to construct their spawning beds (redds), using a mixture of large gravel and small cobble. Peak spawning time is typically in October to November, but can continue through December and into January, and juveniles have a short freshwater residency (1-7 months) before out-migrating to the ocean during the winter and spring months (Moyle et al 2015).

Sacramento hitch are listed by California DFW as a CSSC and are known to occur in Coyote Creek. In streams, hitch are generally found in pools or runs among aquatic vegetation, and tend to stay in fairly limited areas. Hitch are tolerant of warm waters, though they are usually most abundant in the wild in waters cooler than 25°C in summer. Spawning occurs February and end as late as July over gravel riffles or on vegetation in streams tributary to lakes, rivers, possibly following spring precipitation events when flows increase (Moyle 2002). When floodplains are available, hitch will use them for rearing although juveniles can become stranded once floodwaters recede (Moyle et al. 2007). Sacramento hitch and Sacramento blackfish often hybridize when cohabitating in ponds and reservoirs, although hybrids are apparently sterile (Moyle and Massingill 1981). Hitch populations are fragmented today, making them susceptible to a combination of anthropogenic stressors, and their populations are also affected by competition with and predation by non-native fishes. Hitch populations in favorable habitats with adequate cover can persist in the face of alien predators although they may

[47] A species of concern is a species about which NMFS has some concerns regarding status and threats, but for which insufficient information is available to indicate a need to list the species.

disappear when stressed by other factors, such as high temperatures and pollution, which make them more vulnerable to predation (Moyle et al 2015).

Sacramento blackfish, though not a species of special concern, are of management interest. Sacramento blackfish are planktivorous fish that prefer warm turbid waters in small to large streams, in the range of 22-28°C (Moyle 2002). Spawning generally occurs in the spring but may happen anytime between March and July when water temperatures are in the range of 12-24°C and occurs in shallow water with dense aquatic vegetation or rocks that the eggs will cling to until hatching (Wang 1986).

Habitat

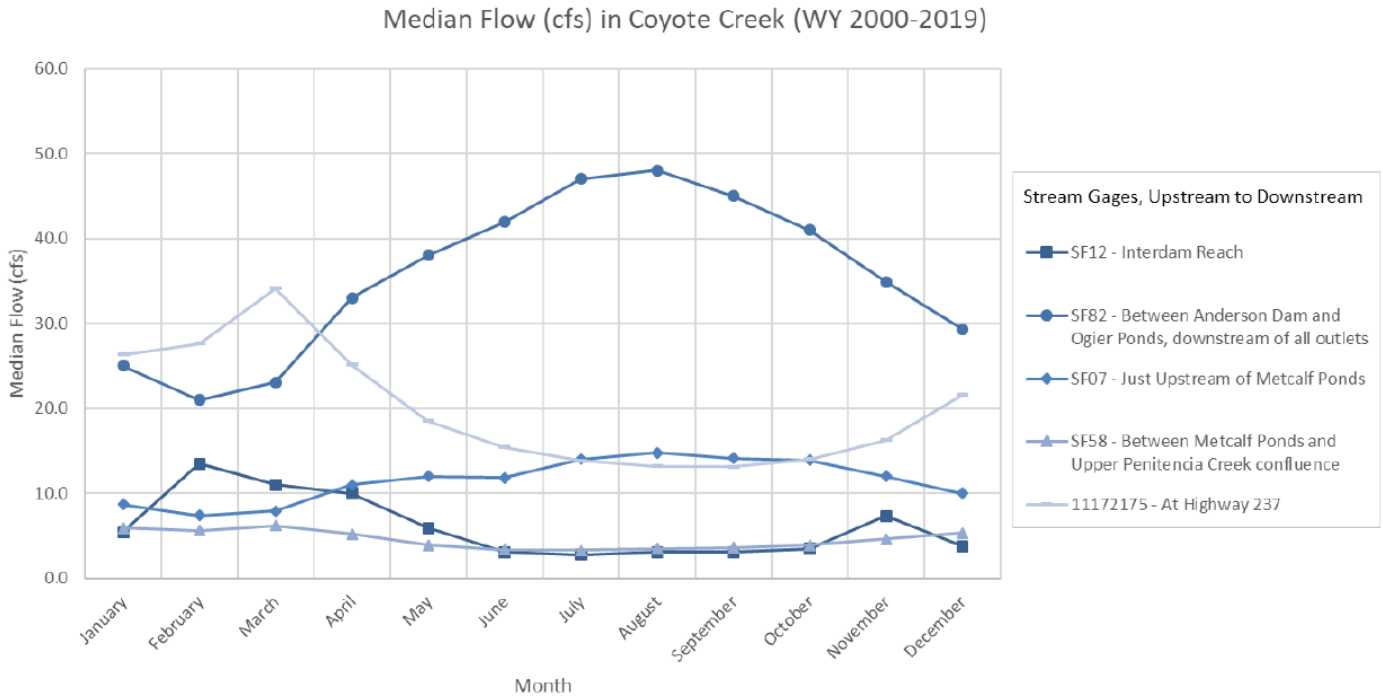
For the purposes of this assessment, Coyote Creek downstream of Anderson Dam is delineated into four reaches relevant to the special-status species. From upstream to downstream, the reaches are: (1) the Cold Water Management Zone (CWMZ) from the base of Anderson Dam to Ogier Ponds; (2) from the downstream end of Ogier Ponds to the upstream end of the Coyote Percolation Ponds (also called Metcalf Pond); (3) from the upstream end of the Coyote Percolation Ponds to the Highway 237 Bridge; and (4) the tidally influenced reach from the Highway 237 Bridge to the outlet of Coyote Creek into Alviso Slough (Valley Water 2020a). The tidally influenced reach is outside of the Project Area and is not discussed further.

Pool habitats are the most common habitat unit in Coyote Creek and riffles are less frequent (Entrix 2000). Ogier Ponds do not provide cold water habitat, therefore the effective CWMZ is from the base of Anderson Dam to the upstream end of Ogier Ponds. The effective CWMZ reach contains steelhead spawning and rearing habitat that is relatively abundant and high-quality in comparison to other portions of Coyote Creek downstream from Anderson Dam (Entrix 2000, Buchan and Randall 2003) and generally 3-6°C colder than downstream reaches due to coldwater releases from Anderson Reservoir (Valley Water 2020a). Both Ogier Ponds complex and Metcalf Pond act as a thermal and a predatory barrier to migratory and native fish by increasing temperatures and providing deep-water habitat favored by non-native predatory fishes (Buchan and Randall 2003). The onstream impoundments can affect fish behavior and physiology in the migration corridor by altering water temperature, dissolved gas concentrations, and other physiochemical conditions both upstream and downstream from the ponds (Valley Water 2018b). While Metcalf Pond can be periodically and temporarily drained to remove predatory non-native fish, it is not feasible to significantly reduce the predators in Ogier Ponds without a significant and extended reduction of streamflow (Smith 2018).

Due to regulated flows from Anderson Dam, Coyote Creek is mostly perennial and generally has higher summer flows and lower winter flows than will occur naturally (Figure 3) (Valley Water 2020a). While *O. mykiss* are present in the reach downstream of Metcalf Pond, this reach likely serves as a migration corridor as there is limited

spawning and rearing habitat and poor water quality (Entrix 2000, Buchan and Randall 2003, Leidy et al. 2005).

Figure 3: Monthly Median of Daily Flow (cfs) Recorded in Coyote Creek at Five Stream Gages, Water Year 2000 through 2019 (Valley Water 2020a)



The confluence with Upper Penitencia Creek increases streamflow to the mainstem, and provides highly oxygenated water that has lower levels of turbidity and nutrients; fish and macroinvertebrate communities there can take advantage of aquatic habitat in Upper Penitencia Creek, including food resources, spawning habitat, and refuge for native cyprinids from non-native predators (Buchan and Randall 2003).

On Coyote Creek, a low-flow crossing at Singleton Road and Ogier Ponds complex are the most significant fish passage impediments within the range of anadromy (Valley Water 2020a). Passage at the City of San Jose-owned Singleton Road low flow crossing is difficult except during periods of sustained high storm flows due to the perched culverts and concrete apron, although high flow conditions through the culvert can also create velocities that limit passage (Leicester and Smith 2014, Smith 2018). The Ogier Ponds complex supports abundant predatory largemouth bass and increases water temperatures downstream of the ponds (Valley Water 2018b).

The Coyote Percolation Dam has a pool and weir fish ladder built in 1999, which allows passage for salmonids but may not be suitable for successful upstream migration of other native fishes, such as cyprinids and sculpins (Buchan & Randall 2003). The pool

and weir fish ladder consists of 11 pools and 1 turning pool, which have a 1-foot maximum differential between the pools. The Percolation Pond is managed and the water level is not constant. Therefore, to conform the water surface elevation in the fishway to the pond impoundment at an acceptable step height and maintain a maximum of one foot of water flowing over the pools, the three uppermost pools are separated by adjustable weirs which are adjusted daily as necessary. Most of the time during the migration season (September 16 to May 31) flow is approximately 50 cfs, and the minimum pool volume for each pool is designed to allow a minimum of 2 cfs up to 15 cfs (30 percent of the occurring flow) to enter the fishway, and excess flows beyond 15 cfs and up to 50 cfs will be diverted to the radial gates structure (CH2M Hill 1998). Existing information indicates that upstream and downstream passage is possible through a combination of fish ladder and radial gates for flows up to 800 cfs, and that high flows greater than 800 cfs will overtop the dam (Valley Water unpublished memo). Valley Water must remove and re-install flashboard prior to and following large storm events (Valley Water 2020a). During the non-migration period (June l to September 15), the fish pools will be blocked by raising the uppermost wooden weir and flow releases occur through the radial gates.

The Vaki is installed at the apex of the turn near the downstream end of the fish ladder to detect passage through the facility during the salmonid migration season, September 16-May 31 (Stillwater Sciences 2020a). The Vaki provides information on the occurrence, timing, and direction of adult fish migration. While it does not continuously record, it employs a scanner plates and a digital camera which are triggered to capture videos and silhouette images of fish when they swim through the counter and breaks the plane of infrared light. The Vaki can allow for detections of *O. mykiss* as well as other anadromous fish (Pacific lamprey and Chinook salmon). There are occasional outages at the Vaki counter due to power loss or maintenance issues such as debris accumulation. Valley Water's 2018-2019 Vaki data report indicated that high flows and turbid water caused by precipitation events contributed to the inability to identify many fish that passed through the fishway; for fish definitively identified, Ictalurids (e.g. catfishes) and Cyprinids (e.g., minnows) were the most common (Valley Water 2020c). Valley Water also identified three species of anadromous fish (Pacific lamprey, Chinook salmon, and *O. mykiss*) in the Vaki data, though less frequently (Valley Water 2020c).

3.3.4.2 Environmental Effects

Aquatic resources in the project area have the potential to be affected through high and low flows and flow changes, reservoir drawdown, habitat alterations, sedimentation, and water quality changes associated with the FOCP.

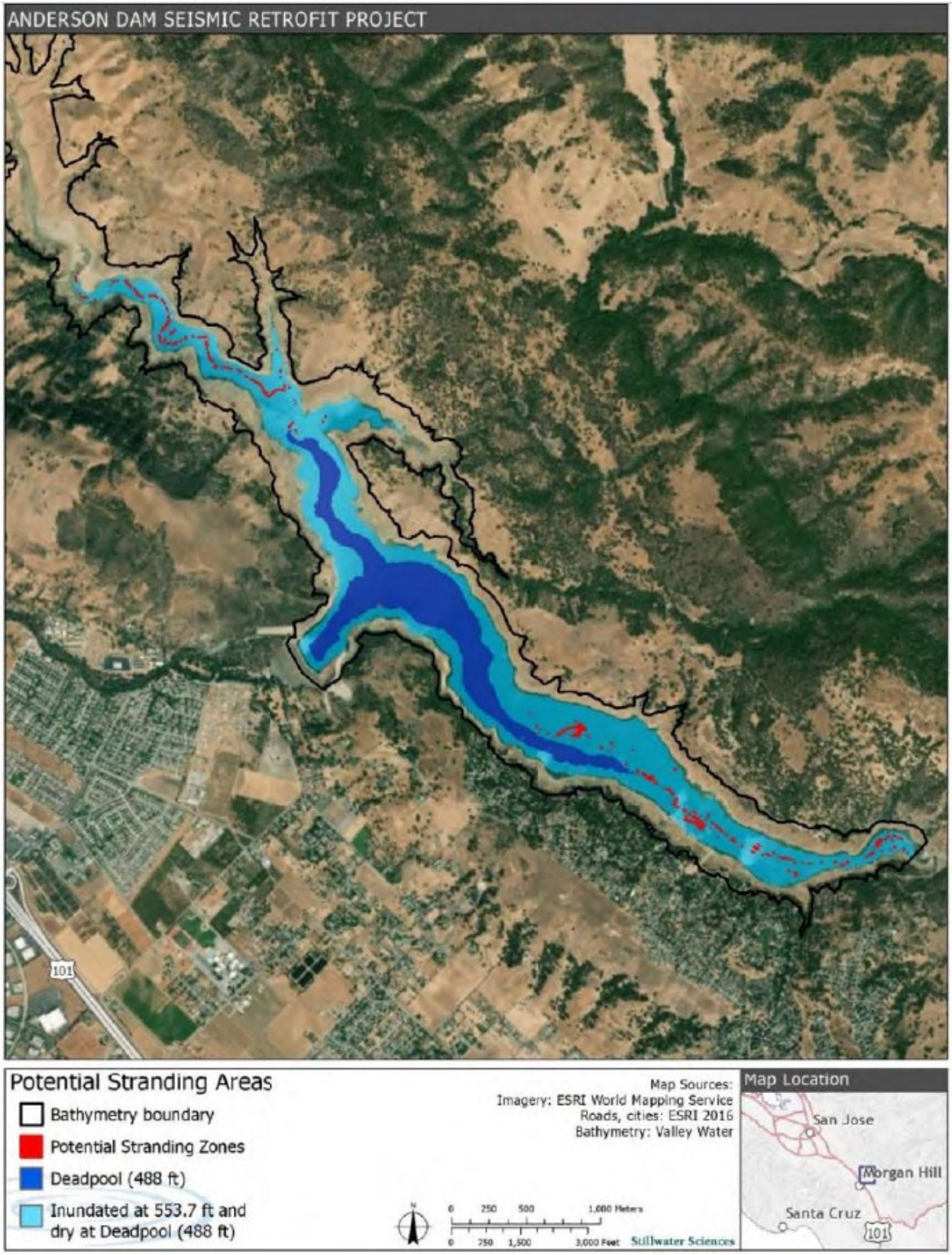
Anderson Reservoir

Under the Proposed Action, at the required elevation of 488 ft, the reservoir will be reduced to 2,850 ac-ft of aquatic habitat, for an approximately 95 percent decrease in aquatic habitat, and a maximum depth of 35 ft (Horizon Water and Environment 2020; Valley Water 2020a). Reduction in water surface elevation to deadpool is anticipated to result in a substantial reduction in aquatic habitat suitability and area during summer for the period of construction, resulting in potentially substantial adverse effects on aquatic habitat. The drawdown will result in a loss of a coldwater pool within Anderson Reservoir, with a consequent effect of increased water temperatures and reduced DO during summer and fall periods when precipitation is low. The majority of fish in the reservoir are suited to warm water and are expected to survive increased temperatures in the lowered reservoir and utilize the extensive deep-water habitat (Valley Water unpublished).

The reservoir drawdown will occur gradually, approximately 200 ac-ft per day in the absence of significant precipitation (Valley Water 2020a). In general, the faster the rate of decline in water surface elevation, the more likely fish are to be stranded (Halleraker et al. 2003, Bell et al. 2008). Rapid dewatering may induce stranding of native fish and non-native game fish species important to local anglers (Valley Water 2020a), as well as stranding of early-life stages of fish which are commonly found in shallow waters and have reduced swimming capability (Modde et al 1997, Nagrodski et al 2012). In order to minimize potential effects to fish residing in the reservoir, Valley Water is proposing to conduct fish rescue and relocation efforts during the drawdown, focusing on areas identified from the 2011 bathymetry data as having a high probability of stranding (Figure 4).

As the water recedes and becomes more confined in the steeper, narrower sections of the reservoir, stranding locations are expected to occur in shallow water with some connection to the reservoir, likely around vegetation and cobble substrate where small fish seek cover as the water level recedes. Any pooled water locations that form during reservoir drawdown are not likely to be deep and, therefore, are expected to contain very limited numbers of large fish (>200 mm), if any (Bell et al. 2008). Valley Water biologists will use a beach seine to either push fish downstream and out of the stranding location or to capture fish from within the stranding area, making multiple sweeps with

Figure 4: Potential stranding locations in Anderson Reservoir during dewatering to deadpool, elevation 488 ft (Stillwater Sciences 2020b).



the seine as needed to adequately cover the stranding area (Stillwater Science 2020). All resident *O. mykiss* captured will be measured and temporarily held in an enclosed container with cold aerated water to reduce stress prior to release to the main body of the reservoir. Other species will be minimally processed and temporarily held in floating net pens prior to release into the main body of the Anderson River, and all captured Aquatic Invasive Species (AIS)[48] will be dispatched. Under guidance from California DFW, white sturgeon, striped bass and large (>300 mm) game fish (including black bass, sunfish, crappie, and catfish) captured in high abundance (>100 fish during any day) will be relocated.

Mostly older age classes (> age 1+) of *O. mykiss* are anticipated to occur in the reservoir environment at the time of dewatering based on the adfluvial life history. Adults and larger juveniles will be expected to be able to avoid stranding and move into deeper pools or the main body of the reservoir. Any fish stranded in isolated pools may experience stress and potential mortality in response to poor water quality in the pools (e.g., low DO and unsuitable temperatures) or increased risk of predation; the fish rescue and relocation effort is expected to minimize these risks, though some losses may still occur because of varying degrees of effectiveness of the collection methods and potential injury or mortality associated with capture, handling, and relocation of fish (Kelsch and Shields 1996).

Many of the warmwater fish in Anderson Reservoir spawn in the spring or summer, and timing of the drawdown over the winter is not expected to leave nests or early life stages exposed. Survival of eggs or juveniles hatched in fall will be more likely to be affected by the fall and winter drawdown as a result of stranding or loss of habitat. Adfluvial *O. mykiss* and other native fish (e.g., Sacramento hitch, Sacramento sucker, and Sacramento Pikeminnow) that may migrate into tributaries from the reservoir for spawning and rearing juveniles may experience altered connectivity between reservoir and tributary habitat, depending on tributary flows and season. Valley Water will operate Coyote Reservoir normally as long as water is available for release throughout drawdown of Anderson Reservoir and construction and operation of the ADTP, which will continue to benefit the native fish and wildlife, wetlands and riparian habitat within this inter-reservoir reach and provide flows into the southern arm of the reservoir.

Water quality in Anderson Reservoir will diminish due to the loss of the coldwater pool, and the drawdown will expose currently inundated soils lacking vegetation which are susceptible to erosion, thereby likely increasing the levels of total suspended solids (TSS) (e.g., fine sediments) in the reservoir water column. Valley Water will develop and implement plans and employ BMPs to minimize landslide risk and effects of erosion during this period. The loss of the coldwater pool will subsequently cause increase in

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[48] AIS are defined by California DFW, and included species are summarized at: https://wildlife.ca.gov/Conservation/Invasives/Species.

water temperature and therefore a decrease in DO in the low flow summer and fall. With the exception of *O. mykiss*, the fish in the reservoir are adapted to warm water conditions, and are likely to persist though periods of warm water and low DO that occur seasonally in the reservoir.

Maintenance of the deadpool elevation will result in a substantial reduction in aquatic habitat suitability and area during summer for the period of construction, resulting in a potentially substantial adverse effect on aquatic habitat. Under current conditions, access to riparian habitat is already limited, and this effect will persist and increase with further drawdown to 488 ft. Potential effects related to the lack of cover (e.g., emergent vegetation or submerged aquatic vegetation, riparian cover, or vegetated wetlands) may impair recruitment, as it can constrain fish spawning to less favorable areas, exposing eggs to increased predation or result in nest abandonment, and exposing juvenile fish to increased predation (Clark et al., 2008). The loss of the littoral habitat in the drawdown condition may also affect aspects of fish ecology, such as changes in food availability, altered feeding habits, changes in predator–prey relationships, loss of biodiversity, and increased internal nutrient loading (Zohary and Ostrovsky 2011).

Drawdown will occur through an unscreened intake which may result in entrainment. Some mortality may occur as a result of entrainment, especially for younger life stages. Due to their habitat preferences and the timing of the drawdown in the winter and fall, *O. mykiss* in the reservoir are not anticipated to be entrained (DTA 2004). Warmwater fishes are likely susceptible to entrainment and discharge from impoundments in winter seasons because they are less active (Layzer et al. 1989). Valley Water will install a fyke net downstream of the outlet in Coyote Creek from September 2020 and continuing through November 2020 (that is, just prior to and during draw down of Anderson Reservoir), to the extent possible when flows are 100 cfs or lower. Any *O. mykiss* entrained and caught in the fyke net will be held in aerated containers, enumerated, and measured prior to being relocated back into the main body of Anderson Reservoir. Other fish species will also be relocated back to the reservoir, minimizing introduction of reservoir fish to the downstream habitats, and all terrestrial and amphibian species captured will be returned to Coyote Creek downstream of the fyke net.

The proposed reservoir bank and rim stability improvements and landslide remediation activities are not expected to result in adverse effects on special-status fish species or their habitats, as these activities will be conducted outside of aquatic habitat following reservoir drawdown and Valley Water will implement several AMMs, BMPs, and SCVHP conditions (described in *Section 3.3.3 Water Quality* and *Section 3.3.6.3 Conservation Recommendations*) to further avoid and minimize potential Reservoir Bank and Rim Stability Improvements effects on aquatic habitat and special-status fish species.

In summary, based on the rate of drawdown and implementation of the reservoir Fish Rescue and Relocation Plan, reservoir drawdown will have a temporary adverse

effect to fish, primarily related to stress associated with isolation in pools with poor water quality or capture and handling stress. There will be adverse effects to habitat and water quality during drawdown and for the period of time water elevation is held at deadpool. This may result in altered fish behavior and reduced recruitment, however, this is not expected to have a significant impact to the non-special-status species in the reservoir as they are regionally common, widespread species, and many are adapted to or tolerant of warm water conditions.

Coyote Creek

Aquatic resources in the Coyote Creek have the potential to be affected through the loss of Anderson Reservoir's cold pool releases, which augment flows, keep the stream perennial in most reaches, and provide cooler temperature flows. During active drawdown, maintenance of the reservoir at deadpool, and construction of the ADTP, the above-described impacts to water quality will constitute direct impacts to downstream aquatic habitat, and there is expected to be an increase in suspended sediment associated with these activities. Additionally, the activities associated with the FOCP have the potential to displace fish, disrupt spawning behaviors, alter habitat in Coyote Creek.

Water Quality—Temperature and DO

Once Anderson Reservoir is drawn down, there will be no coldwater storage in Anderson Reservoir, and Coyote Creek is expected to be warmer than existing conditions during the dry summer months. Without Anderson Reservoir storage, the typical dry season releases will not be available, which is likely to result in dry back in the lower reaches of the CWMZ and the reaches of Coyote Creek from Ogier Ponds to between Montague Expressway and Berryessa Road and cause isolated pools which will have low water quality and increasing the potential for fish stranding. Valley Water proposes to release imported water to augment dry-season streamflow and use chillers to cool imported water, which will minimize the effects to aquatic resources resulting from the high temperatures and dry back in some reaches of Coyote Creek. Without the CVP extension and use of chillers, blends of imported water and Anderson Reservoir water at deadpool elevation are likely to result in temperatures of 22°C (in July-August) at the base of Anderson Dam and 24°C upstream of Ogier Ponds. The completion of the CVP extension, expected in summer 2021, will provide 5 to 30 cfs of imported water to Coyote Creek downstream of Ogier Ponds and will maintain dry season connectivity, assuming sufficient amounts of imported water are available for release. Prior to the extension, a sufficient volume of water to keep Coyote Creek wetted will be released through the existing Coyote Discharge Line. With the release of imported water at the existing Coyote Discharge Line and at the CVP extension, the potential for adverse effects on hydrology, therefore the likelihood of dryback in the summer, is low as long as water is available for release. Maintenance of stream connectivity is expected to maintain DO levels in Coyote Creek as the flowing water will help re-oxygenate the

water, will also maintain suitable aquatic habitat and riparian vegetation, and will help protect habitats that special-status fish species and other native aquatic species use in the CWMZ. Overall, fish in Coyote Creek are not likely to be stranded in isolated pools due to dry back during FOCP as long as sufficient imported water is available for release.

The temperature of imported water is predicted to be warm in the summer months, nearing or exceeding 18°C summer through early fall and sometimes reaching over 22°C (Valley Water 2020a). The electric chillers are scheduled to be operational by 2021 at the earliest and 2023 at the latest and will chill any imported water that is unsuitably warm to 18°C prior to release at the upstream end of the CWMZ. Assuming water is available for release, the imported water releases and use of chillers are expected to maintain temperatures in the CWMZ less than 22°C and will reduce or prevent summer dryback as described above. However, due to the warming that occurs in Ogier Pond and Coyote Percolation Pond and temperature of imported water released downstream of Ogier Pond from the CVP extension, reaches of Coyote Creek downstream of the CWMZ will continue to be subject to warm temperatures in the summer, even with the chillers operational.

Many of the fish residing in Coyote Creek, including hitch and Sacramento blackfish, are adapted to or tolerant of warm water conditions and may not be directly adversely affected by the warmer temperatures (salmonids have a lower tolerance to high temperatures and are discussed in *Section 3.3.6 Threatened and Endangered Species*). Fish are able to increase their tolerance of high temperatures, i.e., gain heat tolerance, and lose heat tolerance relatively slowly, and upper temperature tolerances of most North American fishes are well above ambient temperatures in their natural habitats (as reviewed in Beitinger et al 2000). In the short-term, fish may seek out thermal refugia under suboptimal temperature conditions, and fish moving between habitats in search of thermal refugia in the summer may be more susceptible to predation from non-native piscivores. Further, increased temperatures result in increased feeding and metabolic rates which can result in increased competition for resources. Over the long term, warming of aquatic habitats produce changes in fish species composition as warmwater adapted species spread to new areas and become established, and as coldwater species become displaced. Under the proposed action and based on the existing temperature conditions in Coyote Creek and the adaptability of many of the Coyote Creek fish to warm water conditions, fish acclimated or tolerant of warm water are likely to experience minor short-term adverse effects resulting from increased temperatures (e.g., loss of equilibrium, opercular flaring, death), but moderate long-term adverse effects are expected due to the potential for increased predation or competition.

Juvenile Chinook typically emerge from the gravel in December through March and rear in fresh water for 1-7 months, and under current temperature conditions in the

lower reaches where Chinook are present may be unsuitable for rearing and smoltification (>20°C and >19°C, respectively; Moyle et al 2015) by June (Table 3). With the loss of the cold pool and release of warm imported water through the CVP extension, this condition may be exacerbated, possibly elevating temperatures to a suboptimal range, which will have subsequent moderate adverse effects in reduced growth and survival. Further, if the period of unsuitable temperatures becomes longer, there will be an adverse effect to migration patterns, as adults may have to ascend streams later in the season and juveniles may have to leave earlier, decreasing the time for successful spawning and rearing.

Pacific lamprey ammocoetes reside in freshwater for several years, therefore dewatering and exposure to poor water quality will adversely affect multiple age classes of ammocoetes. If conditions in Coyote Creek cause mass mortalities of ammocoetes due to poor water quality, this can result in future reduced use of Coyote Creek by Pacific lamprey because adult Pacific lamprey likely identify suitable rivers for spawning and subsequent rearing based on flow patterns and the presence of ammocoete pheromones in the offshore river plume (reviewed in Moser et al. 2015). The effects of dry back in the summer is expected to be minimized throughout FOCP and is not expected to have an adverse effect to Pacific lamprey as long as imported water is available. However, current summer temperature conditions are already nearing a potentially lethal level for ammocoetes in the downstream reaches where lamprey are found (>22 °C; Meeuwig et al 2005) (Table 3) and this may be exacerbated with the loss of the cold pool and release of warm imported water. The water quality conditions in the summer will likely also adversely affect late season Adult Pacific lamprey migrants (typical spawning season March through June; Moyle 2002) and spawning success by reducing the suitability of potential spawning habitat. Therefore, the temperatures in Coyote Creek during the FOCP will have a moderate adverse effect on Pacific lamprey ammocoetes in Coyote Creek.

In preparation for the drawdown and loss of cold pool storage, in May 2020 Valley Water drained the Coyote Percolation Pond to displace non-native predatory fish and provided pulse flows to encourage outmigration of *O. mykiss* (see *Section 3.3.6 Threatened and Endangered Species*). In August 2020, Valley Water conducted the Fish Rescue and Relocation Plan in Coyote Creek. The fish rescue effort focused on the 4-mile reach of the effective CWMZ and was conducted at gradually decreasing stream flows to maximize fish capture and minimize risk of injury and stress. In consultation with the resource agencies, fish captured during the fish rescue and relocation were handled, and in future fish rescue operations will be handled, as follows:

- Any Pacific lamprey and Sacramento blackfish will be held separately from other species and relocated to wetted reaches of Coyote Creek downstream of the confluence with Upper Penitencia Creek;

- *O. mykiss* will be held separately from other species and relocated to specific sites in Upper Penitencia Creek (see *Section 3.3.6 Threatened and Endangered Species*);
- AIS will be dispatched; and
- All other fish will be relocated to the nearest critical pool habitat locations (Stillwater Sciences 2020b).

By implementing the Fish Rescue and Relocation Plan prior to the start of drawdown, Valley Water will likely minimize the anticipated adverse effects of poor water quality to those fish in the CWMZ. There may be stress associated with fish rescue, but this is to prevent lethal take from exposure to poor water quality and potential dewatering in the CWMZ. Further, by draining the Coyote Percolation Pond and dispatching AIS captured during the fish rescue effort, Valley Water displaced and reduced some of the non-native fish in Coyote Creek. Valley Water will monitor water quality in the CWMZ in the summers and will identify, in consultation with the resource agencies, thresholds for implementing the Fish Rescue and Relocation Plan during the FOCP based on real-time water quality data. The Fish Rescue and Relocation Plan, along with imported water and chilled water releases will minimize adverse effects to fish residing in the CWMZ.

Overall, under the FOCP, fish in the ponds and in reaches downstream of the CWMZ where warm water temperatures occur under the existing conditions will continue to experience warm summer temperatures. Fish that are adapted to or tolerant of high temperatures will be minimally affected. Chinook salmon and Pacific lamprey ammocoetes will be adversely affected by increased temperatures. The warm temperatures are likely to facilitate shifts in the fish community to favor non-native warmwater species over the long term, which will have long-term adverse effects to native fish in the CWMZ. Valley Water will monitor fish in the CWMZ, which will allow collection of information about any changes to the fish community during the FOCP. The information from that effort will inform whether future efforts are needed to help native fish recolonize or re-establish pre-disturbance population densities. Staff recommended mitigation measures include water quality monitoring in order to better understand stream conditions in Coyote Creek as described above in *Section 3.3.3 Water Quality*, and measures to control invasive species, described below in *Section 3.3.6 Threatened and Endangered Species and Essential Fish Habitat.*

Water Quality—Sediment & Turbidity

The proposed action will result in release of suspended sediments from the reservoir to Coyote Creek during the drawdown and while the reservoir is held at deadpool. Based on the sediment modeling (see *Section 3.3.3 Water Quality*), TSS released from the reservoir is expected to peak for a short duration during storm events, which will then flush downstream and settle over 3.5 days, with the majority of sediment

settling in Ogier Ponds and Coyote Percolation Pond. Elevated fine sediment loads can impact fish directly (e.g., by causing physical damage to organs or behavioral changes) or indirectly (by adversely influencing water quality), and the response may be short- or long-term depending on the magnitude and duration of suspended sediment exposure and the life stage at the time of exposure (Kemp et al 2011, Kjelland et al 2015). In general, large juveniles and adult fish can avoid the potential impacts of suspended sediments by seeking refugia or moving to unimpacted reaches to avoid adverse conditions, and some of the fish in Coyote Creek are tolerant of environmental degradation (Table 5). Due to the short duration of peak TSS, the expected time for sediments to flush or settle out, the temporary nature of the disturbance associated with storm events, and active avoidance behaviors, larger juvenile and adult fish in Coyote Creek are likely to experience short-term adverse effects in behavior or physiology as a result of the increased sediment. However, sedimentation can have moderate long-term adverse effects to the eggs, larval, and juvenile stages which have limited mobility to avoid the impacts of suspended sediment. This can result in reduced survival of rearing juveniles, reduced juvenile production, and reduced spawning success of adults.

Many of the fish in Coyote Creek have a spawning and juvenile rearing period in spring and summer months, and those early life stages will not be affected by the sedimentation expected during drawdown and winter storms. However, due to the prolonged freshwater residency of Pacific lamprey ammocoetes, the release of sediments containing toxins or contaminants can have a short-term and long-term effect to multiple generations. As noted above in *Section 3.3.3 Water Quality,* some of the fine sediment released to Coyote Creek from Anderson Reservoir is expected to be contaminated with mercury. In the short-term, Pacific lamprey ammocoetes residing in soft substrates may exhibit a behavioral avoidance response to contaminated sediment which makes them vulnerable to predation when they abandon previously occupied habitat. In the long term, due to their prolonged freshwater residency and feeding mode, toxins can bioaccumulate in the lamprey (Hass and Ichikawa 2007, and summarized in Clemens et al 2017). The increased sedimentation associated with FOCP and potential for contaminates in the sediment is likely to have a moderate adverse effect on Pacific lamprey ammocoetes.

The sediments that settle out in the CWMZ (approximately 6-16 percent of the suspended sediment), Ogier Ponds and Coyote Percolation Pond (between 17 to 46 percent), and further downstream (between 40 and 80 percent by the time Coyote Creek reaches Highway 237 at Milpitas) (Valley Water 2020a) are expected to have short- and long-term adverse effects to the aquatic habitat and local ecology. In the short-term, increased suspended sediment may result in turbidity that reduces feeding rates for piscivorous fish, but may be advantageous for some planktivorous fish, such as Sacramento blackfish by providing cover from piscivores while feeding (De Robertis et al. 2003). In the long-term, excess fine sediment can alter aquatic habitat by changing particle size composition of the stream bed, reducing pool depth, and causing changes in

channel morphology, which can result in further loss of limited riffle habitats available in Coyote Creek. The increased sediment suspension and deposition could affect primary producers in Coyote Creek as aquatic vegetation becomes limited through burial or reduced light penetration (as reviewed in Wood and Armitage 1997). Further, the increased sediment can adversely impact macroinvertebrates in Coyote Creek, which serve as the prey base for many fish (Table 5). As a result of increased sedimentation, macroinvertebrates may experience altered substrate suitability, which can result in increased macroinvertebrate drift (e.g., escape of macroinvertebrates from unsuitable benthic habitats). Further, sedimentation may directly affect macroinvertebrate respiration, either due to deposition of silt on respiration structures or decreased oxygen, as well as the ability for macroinvertebrates to filter feed (as reviewed in Wood and Armitage 1997).

The anticipated timeframe for drawdown and risk of winter storms indicate that the increased sedimentation associated with those events is most likely to coincide with emergence of fall run Chinook juveniles and upstream migration to spawning grounds for Pacific lamprey (Moyle 2002). Both species tend to occur in the downstream reaches of Coyote Creek, however, both species were observed at the Vaki counter at the Coyote Percolation Pond. Based on the sediment modeling and the length of the downstream reaches, moderate adverse effects to spawning habitat may occur. On spawning grounds, fine sediments can reduce or degrade spawning and rearing habitat, fill in interstitial spaces in the gravel or cause suffocation or entrapment of eggs and early life stages (as summarized in Jensen et al 2009), which can adversely affect the embeddedness and availability of gravels used by nest building species, including Pacific lamprey and Chinook salmon.

As noted above in *Section 3.3.3 Water Quality*, Valley Water is not able to filter, trap, or otherwise contain the fine sediment that will be released during the winter drawdown, and the fine sediments released during the FOCP is assumed to be above existing conditions. In summary, the increased sedimentation is likely to have a short-term direct effect to most fish in Coyote Creek. Pacific lamprey ammocoetes and spawning adults will be moderately affected by increased sedimentation due to long freshwater residency of ammocoetes and spawning habitat needs, and Chinook salmon adult spawning habitat may be moderately affected by increased sedimentation. There is also likely to be moderate long-term direct effects due to sediments altering aquatic habitat and production. To minimize effects to fish in the CWMZ, Valley Water enacted the Fish Rescue and Relocation Plan in August 2020 prior to drawdown as a means to relocate fish to suitable habitats. No specific monitoring to determine the amount of sediment released to Coyote Creek or the long-term effects to fish are proposed. Due to the anticipated adverse effects caused by the release of fine sediment, Valley Water is required to monitor sediment accumulation and turbidity in Coyote Creek. Commission staff's recommended mitigation measures include development of a Sediment and Turbidity Monitoring Plan, as described in *Section 3.3.3 Water Quality*, to measure the

amount of fine sediment in the streambed to determine suitability for salmon and steelhead spawning and rearing and identify trends in sediment supply and movement through a stream system.

Active construction in and near Coyote Creek have the potential to create localized increases in turbidity which could affect native fish in the area of construction. Valley Water will relocate fish from the construction area to reduce potential harm to fish during the dewatering associated with construction, and will submit a dewatering and fish rescue plan for NMFS and California DFW review and approval 20 calendar days prior to the localized dewatering activities. Valley Water will monitor turbidity in areas of active construction which will inform fish rescue and relocation efforts, and will implement suitable standard BMPs for working in creek environments to further avoid and minimize potential effects.

With these measures, the effects to fish in Coyote Creek during construction activities, installation of the cofferdams, and dewatering at construction sites are expected to be limited to temporary, localized increases in turbidity and suspended sediment, which are expected to dissipate and return to baseline levels shortly after cessation of activities. Overall, active adults and juveniles in the area following fish rescue and relocation efforts are likely capable of avoiding these disturbances with minimal risk of injury and potential indirect impacts to fish (e.g., through mobilization of sediments during construction) will be avoided and minimized via implementation of BMPs.

Flow Alteration

Once the reservoir is drawn down, releases from Anderson Reservoir will fluctuate according to precipitation and inflow from tributaries to the reservoir, which may provide a more natural hydrograph. The presence and operation of Coyote Dam upstream continue to influence flows into Anderson Reservoir from Coyote Creek. During the winter, flow releases from Anderson Reservoir will generally be of greater magnitude; the hydrograph will increase and decrease more rapidly and decrease between storm events. In summer and fall months, flows will be low and there will be potential for flows in Coyote Creek to dry back. As noted above, releases of imported water when available will minimize the risk of dryback during summer months. The higher flows in the winter and associated with precipitation events may provide help provide flow cues for migrating adult and emigrating juvenile anadromous fish in Coyote Creek. Overall, the adverse effects of dryback caused by low flow in the summer will be minimized with the use of imported water, and the higher flows during winter or following precipitation events will likely be beneficial for migratory fish.

Monitoring & Fish Rescue and Relocation Activities

Valley Water will monitor water quality and flows in the CWMZ and will monitor turbidity in areas of active construction within Coyote Creek. In consultation with the resource agencies, Valley Water will identify specific triggers to enact the Fish Rescue and Relocation Plan starting in future years. Though fish will experience some stress as a result of the capture and handling, this is expected to be a temporary effect and is not expected to rise to the level of lethal effects. Once released, relocated individuals will experience localized temporary overcrowding, but they are expected to disperse from the area of release. Fish capture and relocation will be conducted per the Fish Rescue and Relocation Plan and will avoid overstocking recipient waterbodies and ecosystems. The potential for adverse effects to habitat from the fish relocation activities is further reduced by utilizing existing roads and areas that have already undergone disturbance from prior project components, and the measures for relocation will be consistent with several AMMs, BMPs, and SCVHP conditions. The overall effect to fish is expected to be beneficial as it reduces exposure to poor water quality conditions. Further, Valley Water will document its fish capture and relocation efforts in annual technical memos for each year that fish rescue and relocation efforts are conducted, which will provide habitat and fish community information throughout the FOCP.

Overall, the drawdown of Anderson Reservoir will result in diminished aquatic habitat in the reservoir. During active drawdown the risk of stranding will be decreased through implementation of the Fish Rescue and Relocation Plan. Rainbow trout and other fish that spawn in tributaries to Anderson Reservoir may experience decreased connectivity between reservoir and tributary habitats during the period of time the reservoir is at deadpool. Many fish in the reservoir are adapted to warm water conditions and are locally abundant, and are not likely to experience adverse effects as a result of the drawdown or the reservoir rim stability improvements. During FOCP, as long as sufficient imported water is available for release, the fish in Coyote Creek are not likely to be stranded due to dry back. Based on the current conditions in Coyote Creek and the adaptability and tolerance of many of the Coyote Creek fish, the direct and indirect adverse effects from the expected temperature increase is expected to be minor for most species. However, Pacific lamprey ammocoetes and Chinook salmon are expected to experience moderate adverse effects due to increased temperature and the effects of sedimentation on their habitats. The effect may be minimized through the release of chilled water, implementation of the proposed monitoring activities and BMPs, and implementation of the Fish Rescue and Relocation Plan. Due to the anticipated adverse effects caused by the release of fine sediment, Valley Water should be required to monitor sediment accumulation and turbidity in Coyote Creek. Valley Water will monitor turbidity in areas of active construction, and Commission staff recommended mitigation measures include development of a Sediment and Turbidity Monitoring Plan and a Water Temperature Monitoring Plan (described in *Section 3.3.3 Water Quality*)

which will be expected to allow assessment of the aquatic habitat conditions in Coyote Creek, identify trends, and provide information for future actions.

3.3.5 Wildlife and Terrestrial Resources

3.3.5.1 Affected Environment

Existing Land Cover Types, Natural Communities, and Habitats

Based on dominant plant species, the FOCP footprint area supports the following land cover types, natural communities, and habitats: aquatic (e.g., Anderson Reservoir, perennial streams, and intermittent streams); California annual grassland; coast live oak woodland and forest; urban-suburban (i.e., developed); northern coastal scrub/ Diablan coastal scrub; mixed riparian woodland and forest; and foothill pine-oak woodland. A summary of land cover types, natural communities, and habitats within the FOCP footprint are shown in Table 6.

Table 6: Summary of Existing Land Cover Types, Natural Communities, and Habitats within the FOCP footprint and Landslide Remediation Areas

Land Cover Types, Natural Communities, and Habitats	Approximate Area (acres)
Aquatic (Reservoir, Perennial Stream, and Intermittent Stream)**	126.38
Urban-Suburban*	21.47
California Annual Grassland	33.31
Coast Live Oak Forest and Woodland	39.01
Northern Coastal Scrub/Diablan Coastal Scrub	3.81
Mixed Riparian Woodland and Forest	4.07
Foothill Pine-Oak Woodland	0.84
Project Footprint Total	**226.04**

* Urban-suburban lands include half an acre of reservoir occupied by a dock and boat launch as well as the reservoir's spillway, both of which are also considered jurisdictional waters.

** In this table, the area (acreage) of all streams is included in mixed riparian woodland and forest.

Aquatic Habitats

Aquatic habitats include Anderson Reservoir as well as reaches of perennial and intermittent streams. These features are discussed individually below.

Anderson Reservoir

Anderson Reservoir is a man-made feature created from the impoundment of Coyote Creek. The Reservoir is impounded by a compacted embankment dam made of earth and rock, which is approximately 240 ft high. Currently, the water level in Anderson Reservoir is in a drawdown stage and is well below the height of its original design elevation. The exposed shoreline rim is rocky, steeply sloped, and sparsely vegetated. No substantial amounts of emergent vegetation or submerged aquatic vegetation is present in or around Anderson Reservoir.

Common resident waterbirds that occur in and along the shoreline of Anderson Reservoir include the pied-billed grebe (*Podilymbus podiceps*), Canada goose (*Branta canadensis*), mallard (*Anas platyrhynchos*), American coot (*Fulica americana*), common merganser (*Mergus merganser*), and killdeer (*Charadrius vociferus*), among others. Numerous additional species, such as the northern shoveler (*Spatula clypeata*), lesser scaup (*Aythya affinis*), and bufflehead (*Bucephala clangula*), occur at Anderson Reservoir as nonbreeders, particularly from fall into spring. Shorebirds and wading birds such as the greater yellowlegs (*Tringa melanoleuca*), spotted sandpiper (*Actitis macularius*), great egret (*Ardea alba*), snowy egret (*Egretta thula*), and others forage at the edges of the reservoir during migration and winter.

Double-crested cormorants (*Phalacrocorax auritus*), American white pelicans (*Pelecanus erythrorhynchos*), ospreys (*Pandion haliaetus*), Forster's terns (*Sterna fosteri*), and Caspian terns (*Hydroprogne caspia*) forage for fish in Anderson Reservoir. In addition, two pairs of bald eagles (*Haliaeetus leucocephalus*) nest along the northwestern arm of Anderson Reservoir north of the project site and forage for fish in Anderson Reservoir.

Amphibian species that may breed in Anderson Reservoir include the western toad (*Anaxyrus boreas*), Sierran chorus frog (*Pseudacris sierra*), and non-native bullfrog (*Lithobates catesbeianus*). Western pond turtles (*Actinemys marmorata*) are also known to occur in Anderson Reservoir.

Perennial Stream

The perennial stream habitat includes Coyote Creek and an unnamed backwater tributary immediately at the base of the Anderson Dam face in the vicinity of the Toyon Picnic Area. In some areas, the perennial stream habitat supports narrow strips of perennial marsh vegetation, dominated by species such as cattails (*Typha latifolia*). However, within the FOCP footprint, these were not large enough to map. The perennial stream contained water at the time of the ADSRP delineation surveys and have a riparian woodland canopy (discussed separately in the mixed riparian woodland and forest section below).

The reach of Coyote Creek on the project site begins at the base of the dam face where water flows from several outlet pipes into a concrete-lined channel for

approximately 150 ft. Subsequently, the water flows into a native channel. Water flows quickly through the Coyote Creek reach even though the reach itself is gently sloped. Coyote Creek forks on the project site; the narrow southern arm of the reach continues flowing downstream while the northern arm forms a wide backwater pool.

Amphibians, such as the western toad, Sierran chorus frog, and bullfrog, are present in this creek. The native western pond turtle occurs in this reach of Coyote Creek, along with several species of non-native turtles that have been released locally from captivity, such as red-eared sliders (*Trachemys scripta*) and painted turtles (*Chrysemys picta*). Waterbirds such as the mallard, green heron (*Butorides virescens*), great egret, and belted kingfisher (*Megaceryle alcyon*) forage in these waters. Bats, including the Yuma bat (*Myotis yumanensis*) and big brown bat (*Eptesicus fuscus*), forage aerially on insects over these streams.

Intermittent Stream

Within the FOCP footprint, a small amount of intermittent stream habitat occurs within the unnamed tributary that links the Anderson Reservoir waters released through the spillway to Coyote Creek. Reservoir releases over the spillway typically provide the primary source of water for this aquatic feature, while groundwater provides supplemental flows during the wet season. In years where reservoir waters are not released, groundwater and precipitation events constitute the main water sources. The intermittent stream did not contain flowing water at the time of the initial (December 2013) ADSRP wetland delineation survey, unlike the perennial stream sections of the reaches. Within the FOCP footprint, the intermittent stream channel bed is excavated bedrock (associated with previous quarrying activities at Chert Hill) with little soil development, and water likely moves within a dispersed, finger-like network of smaller channels during low flow events. Only during reservoir releases is the entire channel filled with water. On the lowest tier, the intermittent stream reach is less disturbed and the intermittent channel structure closely resembles the perennial reaches of Coyote Creek. Here the intermittent channel is underlain by riverwash and a riparian forest canopy grows along the channel up to the top of bank.

Water in the channel supports the presence of invertebrates, which attract foraging avian insectivores such as flycatchers and swallows. Other birds, such as herons and egrets, may also forage along this channel as may common mammals, such as the raccoon (*Procyon lotor*). Aquatic insects and crayfish (*Pacifastacus* sp.) may persist within small pools in this habitat.

<u>Urban-Suburban</u>

The urban-suburban land cover type includes developed/artificial habitats such as access roads, parking lots, structures (including the dam spillway, residences, ranch buildings, and a barn), park facilities associated with Anderson Lake County Park, and landscaped areas. This land cover type also includes areas with a very low cover of ruderal species, similar to those occurring within the California annual grassland plant

community, growing on the rocky soils east of the dam crest. Several earthen or concrete-lined swales occur directly adjacent to the existing roads. Landscaped areas support a variety of non-native and native species including Peruvian pepper tree (*Schinus molle*), rosemary (*Rosmarinus officinalis*), and planted coast live oaks.

Developed habitats typically support a suite of relatively common wildlife species that are tolerant of human disturbance. Birds that nest within the oak woodland habitat at the picnic grounds include the Steller's jay (*Cyanocitta stelleri*), bushtit (*Psaltriparus minimus*), and Bewick's wren (*Thryomanes bewickii*). Other birds, such as the black phoebe (*Sayornis nigricans*) and house finch (*Haemorhous mexicanus*), may nest on buildings throughout the project site. Brown-headed cowbirds (*Molothrus ater*), Brewer's blackbirds (*Euphagus cyanocephalus*), and European starlings (*Sturnus vulgaris*) occur on and near ranches and residences on the site. Numerous burrows of California ground squirrels occur at the picnic grounds, and burrows of Botta's pocket gophers and California voles (*Microtus californicus*) occur on Anderson Dam and in open areas throughout the Project site. Common mammals such as the California mouse (*Peromyscus californicus*), striped skunk (*Mephitis mephitis*) and Virginia opossum (*Didelphis virginiana*) forage in developed areas. Reptiles such as the western fence lizard and Pacific gopher snake that inhabit adjacent grassland, scrub, and woodland areas will also forage in developed areas. Amphibians such as the western toad, Sierran chorus frog, and arboreal salamander may disperse and forage along drainage swales on the site during wet periods.

California Annual Grassland

California annual grassland is an herbaceous plant community that is typically dominated by non-native annual grasses. This vegetation type is found primarily on the downstream dam face as well as adjacent to roads and other disturbed areas surrounding the dam, and in several of the potential staging and stockpiling areas. In the landslide remediation area, California annual grassland is located on either side of East Dunne Avenue and within the landslide areas themselves. Within this plant community, a few swales occur in very broad low areas situated between two gentle hillslopes. Dominant species include non-native grasses such wild oats (*Avena fatua*), bromes (*Bromus* spp.), and Italian rye grass (*Festuca perennis*). Common non-native and native forbs include clovers (*Trifolium* spp.), filarees (*Erodium* spp.), Jersey cudweed (*Pseudognaphalium luteoalbum*), lupines (*Lupinus* spp.), yarrow (*Achillea millefolium*), and California poppy (*Eschscholzia californica*). Several noxious weeds are also common, including yellow star-thistle (*Centaurea solstitialis*), bull thistle (Cirsium *vulgare*), and milk thistle (*Silybum marianum*).

The California annual grasslands on the downstream face of Anderson Dam grow on compact, rocky soils and are bisected by graded access roads. In other areas of the project site, grasslands are located in disturbed areas surrounding roads and parking lots and in the ranchland area comprising Staging area 2.

Small mammals such as California ground squirrels (*Otospermophilus beecheyi*) and valley pocket gophers (*Thomomys bottae*) are often common residents of annual grasslands, but focused surveys for small mammal burrows on the face of Anderson Dam have detected very few burrows of these species (Valley Water 2010a, 2011c, 2012c, 2013). On the other hand, deer mice (*Peromyscus maniculatus*) were observed in rock crevices during these small mammal surveys and are likely common throughout this habitat. Grasslands located elsewhere on the project site (e.g., in ranchlands and interspersed with oak woodlands) support higher numbers of burrowing mammals compared to grasslands on the dam, likely due to the hard-packed soils on the dam face. Black-tailed deer (*Odocoileus hemionus*) are common browsers throughout the project site, and other large mammals, especially mammals that are active after dark (e.g., coyotes, *Canis latrans* and bobcats, *Lynx rufus*), occasionally forage in grasslands throughout the site.

Although vegetation on the dam face is too sparse to support ground-nesting grassland birds, areas with higher densities of grassland vegetation support common grassland-nesting bird species, such as the western meadowlark (*Sturnella neglecta*). Additional bird species that nest in nearby oak woodland, chaparral, or developed habitats and forage within grassland areas during the nesting season include lark sparrows (*Chondestes grammacus*), western bluebirds (*Sialia mexicana*), wild turkeys (*Meleagris gallopavo*), barn swallows (*Hirundo rustica*), violet-green swallows (*Tachycineta thalassina*), and cliff swallows (*Petrochelidon pyrrhonota*). Raptors such as red-tailed hawks (*Buteo jamaicensis*) and white-tailed kites (*Elanus leucurus*) which forage for small mammals within grassland habitats, are unlikely to forage in grasslands on the dam face due to the paucity of small mammals that occur there. However, they forage in grasslands located elsewhere on the project site (e.g., in ranchlands and grasslands interspersed with oak woodlands, such as in the landslide remediation areas) that support higher numbers of small burrowing mammals. Numerous additional avian species forage in grassland habitats on the project site during winter and migration.

Grassland habitat provides refugia for reptiles, with numerous large rocks to provide crevices for refuge and hunting. Several reptile species occur in the annual grassland habitats, including the western fence lizard (*Sceloporus occidentalis*), gopher snake (*Pituophis catenifer*), northern Pacific rattlesnake (*Crotalus oreganus*), and western terrestrial garter snake (*Thamnophis elegans*). Burrows of Botta's pocket gophers provide refuges for these reptile species, as well as for common amphibians such as the western toad and Sierran chorus frog.

Coast Live Oak Forest and Woodland

Coast live oak woodland and forest generally occurs on mesic (moderately moist), primarily north-facing slopes, and in areas with relatively deep, fertile soil. The majority of this habitat on the project site occurs on flat terrain along Coyote Creek directly north of Cochrane Road. In the landslide remediation area, coast live oak forest and woodland is mapped on the east side of the reservoir upslope of East Dunne Avenue and

surrounding some of the landslides. Coast live oak (*Quercus agrifolia*) is the dominant tree species. The majority of areas mapped as this habitat are woodlands with open canopies; however, several relatively small but dense patches support overlapping canopies and could be classified as forest. This habitat also includes occasional California bay (*Umbellularia californica*) and California sycamore (*Platanus racemosa*) trees. Common woody understory species include toyon (*Heteromeles arbutifolia*) and California blackberry (*Rubus ursinus*). The herbaceous community is similar to that of the California annual grassland community, but with a greater component of native forbs and grasses.

The coast live oak woodland and forest habitat on the project site is quite complex and diverse, and provides good cover, nesting opportunities, and a diversity of foraging opportunities for wildlife species. Valley oaks (*Quercus lobata*) and coast live oaks provide nesting and foraging opportunities for cavity-nesting birds such as western bluebirds, white-breasted nuthatches (*Sitta carolinensis*), Nuttall's woodpeckers (*Picoides nuttallii*), and oak titmice (*Baeolophus inornatus*). Raptors such as Cooper's hawks (*Accipiter cooperii*) and American kestrels (*Falco sparverius*) may nest in large oaks on the project site. Acorns provide food for a number of wildlife species, including acorn woodpeckers (*Melanerpes formicivorus*), California quail (*Callipepla californica*), and western scrub-jays (*Aphelocoma californica*). San Francisco dusky-footed woodrats (*Neotoma fuscipes annectens*) and other small rodents, especially those associated with adjacent scrub, grassland, and riparian habitats, occur in oak woodlands on the site. Coast live oak woodlands provide cover for bobcats and coyotes that may occasionally wander through the site. Several species of amphibians, such as the arboreal salamander (*Aneides lugubris*), can be found in oak woodlands, especially where moisture is retained under fallen wood and in crevices in oaks. Reptiles that occur here include the ringneck snake (*Diadophis punctatus*) and western skink (*Eumeces skiltonianus*).

Northern Coastal Scrub/Diablan Coastal Scrub

Northern coastal scrub/Diablan coastal scrub habitat generally occurs on dry, exposed slopes with shallow soils. This habitat type includes several different shrub communities that intergrade on the site. Within the FOCP footprint, this habitat is most extensive on the northwest of the dam face where it supports a diverse assemblage of native shrubs including California sagebrush (*Artemisia californica*), black sage (*Salvia mellifera*), and yerba santa (*Eriodictyon californicum*). California buckwheat (*Eriogonum fasciculatum*), sticky monkey flower (*Mimulus aurantiacus*), Coyote ceanothus, and bigberry manzanita (*Arctostaphylos glauca*) also occur in this habitat. In areas with dense shrub cover there is very little herbaceous community; however, occasional openings support a number of native grasses and forbs.

The northern coastal scrub/Diablan coastal scrub community within the FOCP footprint is limited in extent and bisected by roads and trails associated with Anderson Lake County Park. Wildlife use of this habitat is limited and is strongly influenced by species that occur in adjacent habitats. This scrub habitat provides nesting habitat for

birds such as the western scrub-jay, California towhee (*Pipilo crissalis*), spotted towhee (*Pipilo maculatus*), and Anna's hummingbird. Mammal species that use such scrub habitat include coyotes, California mice, and brush rabbits (*Sylvilagus bachmani*). Reptiles that occur here include gopher snakes, northern Pacific rattlesnakes, southern alligator lizards (*Elgaria multicarinata*), and western fence lizards.

Mixed Riparian Woodland and Forest

Mixed riparian woodland and forest habitat occurs along riparian corridors downstream of the Anderson Reservoir spillway and along Coyote Creek. This habitat includes a variety of riparian shrubs and trees including arroyo willow (*Salix lasiolepis*), California sycamore, bigleaf maple (*Acer macrophyllum*), and white alder (*Alnus rhombifolia*). These riparian tree species often co-occur with coast live oaks and this habitat sometimes intergrades with coast live oak woodland and forest. The understory is composed of mostly California blackberry and California wildrose (*Rosa californica*) along the banks.

The structural diversity of the mixed riparian woodland and forest habitat on the Project site supports a high diversity of animal species. Dense, native riparian forests provide habitat for relatively high densities of native nesting songbirds, such as the song sparrow (*Melospiza melodia*), Pacific-slope flycatcher (*Empidonax difficilis*), black-headed grosbeak (*Pheucticus melanocephalus*), warbling vireo (*Vireo gilvus*), chestnut-backed chickadee (*Poecile rufescens*), oak titmouse (*Baeolophus inornatus*), bushtit, house wren (*Troglodytes aedon*), American robin (*Turdus migratorius*), and dark-eyed junco (*Junco hyemalis*). During spring and fall migration, high densities of migrant songbirds forage in these habitats. Oak and sycamore trees also support cavity-nesting bird species such as woodpeckers and American kestrels. Several species of reptiles and amphibians occur in riparian habitats on the Project site. Leaf litter, downed tree branches, and fallen logs provide cover for the arboreal salamander, slender salamander (*Batrachoseps attenuatus*), western toad, and Pacific chorus frog. Several lizards may also occur here, including the western fence lizard, western skink, and southern alligator lizard. Small mammals, such as the ornate shrew (*Sorex ornatus*), California vole, and Audubon's cottontail (*Sylvilagus audubonii*) use these riparian habitats as well. Medium-sized mammals, such as the raccoon, striped skunk, and bobcat, also use this habitat.

Foothill Pine-Oak Woodland

Foothill pine-oak woodland generally occurs in drier areas with shallow soils and often intergrades with scrub and chaparral habitats. Within the FOCP footprint, this community is often found in areas that have been disturbed from excavation or landslides. The dominant tree species is foothill pine (*Pinus sabiniana*). In disturbed areas, the understory is often dominated by non-native, invasive species including pampas grass (*Cortaderia jubata*). In less disturbed areas the understory contains a higher proportion of native trees and shrubs, including coast live oak, coyote brush, and toyon. The herbaceous layer is generally similar to that in the California annual

grassland habitat, but is sometimes suppressed due to a buildup of pine needles and thatch.

Adjacent chaparral, coastal scrub, and annual grassland communities contribute to the species found in the small patches of foothill pine-oak woodland on the Project site. Common amphibians and reptiles such as the slender salamander, western fence lizard, gopher snake, southern alligator lizard, racer (*Coluber constrictor*), and common kingsnake (*Lampropeltis getula*) make use of downed tree branches under pine and oak trees in this habitat. Bird species commonly found in mixed pine-oak woodlands include the western bluebird, acorn woodpecker, northern flicker (*Colaptes auratus*), white-breasted nuthatch, and other cavity-nesting species. Raptors, such as red-tailed hawks, as well as predatory mammals, such as coyotes, forage on ground squirrels and other small mammals that are often present in mixed woodland habitats. Black-tailed deer browse the lower branches of the oaks.

Special-Status Plant and Animal Species

Special-status species include those listed or proposed for listing under the ESA and those having special designation through the California Endangered Species Act or otherwise designated by the State.

Special-Status Plants (Table 7)

Of these 16 plant species, three — Coyote ceanothus, smooth lessingia (*Lessingia micradenia* var. *glabrata*), and Hall's bush-mallow (*Malacothamnus hallii*) —have been detected within the FOCP footprint.

In addition, the landslide remediation area could potentially support big-scale balsamroot (*Balsamorhiza macrolepis*), Loma Prieta hoita (*Hoita strobilina*), Indian Valley bush-mallow (*Malacothamnus aboriginum*), arcuate bush-mallow (*Malacothamnus arcuatus*), Hall's bush-mallow, woodland woolythreads (*Monolopia gracilens*), and chaparral ragwort (*Senecio aphanactis*). Suitable habitat for these seven species is limited in this area by the degree of previous soil disturbance (either from landslides, or from repeated inundation and reservoir drawdown), and the degree to which these areas of disturbance have been colonized by non-native species, particularly dense covers of non-native grasses and forbs. However, focused surveys, conducted during seasons in which these species are detectable, would be necessary to determine whether they occur within the areas potentially affected by landslide remediation.

No suitable habitat for special-status plants is present in or along any waterbodies downstream from the dam that could be affected, directly or indirectly, by reservoir drawdown or tunnel operation.

Table 7: Special-Status Plant Species Considered for Potential Occurrence in the FOCP Area

Common Name	Regulatory Status	SCVHP-Covered Species	Detected within FOCP footprint
Big-scale balsamroot	CRPR 1B.2	No	No
Tiburon paintbrush	FE; ST; CRPR 1B.2	Yes	No
Coyote ceanothus	FE; CRPR 1B.1	Yes	Yes
Mt. Hamilton thistle	CRPR 1B.2	Yes	No
San Francisco collinsia	CRPR 1B.2	No	No
Santa Clara Valley dudleya	FE; CRPR 1B.1	Yes	No
Fragrant fritillary	CRPR 1B.2	Yes	No
Loma Prieta Hoita	CRPR 1B.1	Yes	No
Smooth lessingia	CRPR 1B.2	Yes	Yes
Indian Valley bush-mallow	CRPR 1B.2	No	No
Arcuate bush-mallow	CRPR 1B.2	No	No
Hall's bush-mallow	CRPR 1B.2	No	Yes
Woodland woolythreads	CRPR 1B.2	No	No
Chaparral ragwort	CRPR 1B.2	No	No
Metcalf Canyon jewel-flower	FE; CRPR 1B.1	Yes	No
Most beautiful jewel-flower	CRPR 1B.2	Yes	No

Key to Status Abbreviations: Federally Listed as Endangered (FE); State Listed as Threatened (ST); California Native Plant Society California Rare Plant Rank (CRPR):

CRPR 1B = Plants rare, threatened, or endangered in California and elsewhere
CRPR 1B.1 = seriously endangered in California
CRPR 1B.2 = fairly endangered in California

Special-Status Wildlife

Table 8 shows special-status animal species with the potential to occur in the project area.

Table 8: Special-Status Animal Species with Potential to Occur in the Project Area

Common Name	Regulatory Status	SCVHP-Covered Species	Likelihood of Occurrence in Project Area*
Bay checkerspot butterfly	FE	Yes	Unlikely
Central California Coast steelhead	FT	No	Likely
California tiger salamander	FT, ST	Yes	Known

Common Name	Regulatory Status	SCVHP-Covered Species	Likelihood of Occurrence in Project Area*
California red-legged frog	FT, CSSC	Yes	Likely
Foothill yellow-legged frog	CSSC, SC	Yes	Unlikely
Bald eagle	SE, SP	No	Known
Bank swallow	ST	No	Unlikely
Swainson's hawk	ST	No	Unlikely
Tricolored blackbird	ST	Yes	Unlikely
Mountain lion	SC	No	Likely
Western pond turtle	CSSC	Yes	Known
Coast horned lizard	CSSC	No	Unlikely
Northern harrier	CSSC	No	Unlikely
Long-eared owl	CSSC	No	Unlikely
Burrowing owl	CSSC	Yes	Unlikely
Vaux's swift	CSSC	No	Unlikely
Olive-sided flycatcher	CSSC	No	Unlikely
Loggerhead shrike	CSSC	No	Likely
Yellow warbler	CSSC	No	Likely
Yellow-breasted chat	CSSC	No	Unlikely
Grasshopper sparrow	CSSC	No	Unlikely
Pallid bat	CSSC	No	Known
Western red bat	CSSC	No	Likely
San Francisco dusky-footed woodrat	CSSC	No	Known
American badger	CSSC	No	Likely
Pacific lamprey	CSSC	No	Likely
Sacramento hitch	CSSC	No	Likely
Sacramento splittail	CSSC	No	Unlikely
American peregrine falcon	SP	No	Likely
Golden eagle	SP	No	Known
White-tailed kite	SP	No	Known
Ringtail	SP	No	Unlikely

* For bird Species of Special Concern, likelihood of occurrence in project area is restricted to temporal period during the life stage/season (e.g., breeding) for which the species is considered a Species of Special Concern.

Key to Status Abbreviations: Federally Listed as Endangered (FE); Federally Listed as Threatened (FT); Federal Candidate for Listing (FC); Federal Species of Concern (FSC); State Listed as Endangered (SE); State Listed as Threatened (ST); State Candidate for Listing (SC); State Fully Protected (SP); California Species of Special Concern (CSSC)

Six bird species that are considered California species of special concern occur on the FOCP site as nonbreeding transients, foragers, or migrants, but have never been recorded nesting on the FOCP site, and no suitable nesting habitat for these species is present on the FOCP site. These are the Vaux's swift (*Chaetura vauxi*), olive-sided flycatcher (*Contopus cooperi*), long-eared owl (*Asio otus*), northern harrier (*Circus cyaneus*), Bryant's savannah sparrow (*Passerculus sandwichensis alaudinus*), and grasshopper sparrow (*Ammodramus savannarum*). Because these species are only considered species of special concern when nesting, they are not "special-status species" when they occur as nonbreeding visitors to the FOCP site. Several bird species that are state listed, are state fully protected species, or are California species of special concern year-round (and consequently special-status species year-round) occasionally occur on the FOCP site as nonbreeding migrants, transients, or foragers, but they are not known or expected to breed, to occur regularly, or to occur in large numbers on the FOCP site. These include the bank swallow (*Riparia riparia*), Swainson's hawk (*Buteo swainsoni*), American peregrine falcon (*Falco peregrinus anatum*), tricolored blackbird, and burrowing owl (*Athene cunicularia*). Similarly, the mountain lion (*Puma concolor*), American badger (*Taxidea taxus*), ringtail, and western red bat (*Lasiurus blossevillii*) are mammals that may occasionally forage in or disperse through the FOCP site, but they are not expected to breed, to occur regularly, or to occur in large numbers on the FOCP site.

No serpentine grassland or chaparral/scrub is present in the FOCP footprint at the dam, or in the landslide remediation areas, and therefore no suitable habitat for the Bay checkerspot butterfly (*Euphydryas editha bayensis*) is present on the site. Furthermore, a survey for adults conducted on April 19, 2014 in the larger project area providing potential habitat for the species did not detect any individuals. Therefore, Bay checkerspot butterflies are not expected to occur in the FOCP area. The FOCP is also located outside of critical habitat for the Bay checkerspot butterfly. The monarch butterfly (*Danaus plexippus plexippus*) has the potential to be in the project area given the range of the species (FWS 2020), but Commission staff is unaware of dedicated surveys for this species in the FOCP locations. The monarch butterfly is petitioned for listing under the ESA and is further discussed in *Section 3.3.6 Threatened and Endangered Species and Essential Fish Habitat*.

The California tiger salamander occurs, likely in small numbers, in the FOCP area. Annual surveys, conducted on all burrows on the dam faces from 2010 to 2013 using a fiber-optic scope, did not detect tiger salamanders using burrows on the site (Valley Water 2010a, 2011c, 2012c, 2013). However, in 2001, a California tiger salamander was observed on the roadway between the top of the parking lot and Anderson Dam (Valley Water 2012a; CNDDB 2020) and in 2011, a California tiger salamander was observed in a weep hole in the floor of the dam spillway during a pre-work biological inspection (Valley Water 2012a). On March 4, 2016, an individual was found in a drain near the top of the boat ramp. California tiger salamanders have not been confirmed breeding on the FOCP site, and the SCVHP does not model breeding habitat for tiger salamanders within Anderson Reservoir. A known California tiger salamander breeding pond (Rosendin

Pond) is located approximately 1,100 ft southeast of the FOCP site boundary at Basalt Hill (CNDDB 2020). California tiger salamanders are known to disperse up to 1.3 miles from breeding locations (Orloff 2007), and thus the main FOCP footprint at the dam is located within potential dispersal distance for California tiger salamanders breeding in Rosendin Pond. The portions of the landslide remediation areas are also within 1.3 miles of potential breeding ponds. However, California tiger salamanders are not expected to be breeding in any waterbodies downstream from the dam that could be affected, directly or indirectly, by reservoir drawdown or tunnel operation (Valley Water, 2019c). California tiger salamanders could potentially occur on the FOCP site during seasonal movements to and from breeding areas, and they may use burrows of small mammals, such as California ground squirrels and Botta's pocket gophers, on the site as upland refugia.

CRLFs are not known to occur on the FOCP site. They are not known or expected to breed in Anderson Reservoir, and the SCVHP does not model suitable habitat for red-legged frogs within Anderson Reservoir. Critical habitat for red-legged frogs does not overlap with the FOCP site, but Unit STC-1 is located immediately northeast of Anderson Reservoir (FWS 2010). Suitable breeding habitat for red-legged frogs is present in Rosendin Pond, approximately 1,100 ft southeast of the FOCP boundary at Basalt Hill. Juvenile red-legged frogs have been observed at Rosendin Pond over several years (Horizon Water and Environment 2020 citing Steve Rottenborn, pers. obs.), indicating that CRLFs likely breed in this pond. CRLFs may also breed in and disperse from perennial ponds located below the dam spillway on the FOCP site, as well as in a small perennial pond located approximately 90 ft south of the FOCP site. The portions of the landslide remediation areas are also within dispersal distance of potential breeding ponds. Thus, CRLFs could potentially occur on the FOCP site as dispersants from these nearby breeding habitats. Should they occur on the site, CRLFs could also use small mammal burrows and crevices present throughout the FOCP site as refugia. However, because no individuals were found during burrow scoping surveys on the dam during four years of surveys (Valley Water 2010a, 2011c, 2012c, 2013), this species is expected to use such upland refugia infrequently and in low numbers. In waterbodies downstream from the dam that could be affected, directly or indirectly, by reservoir drawdown or tunnel operation, CRLFs are expected to occur rarely, and in very low numbers (Valley Water, 2019c). They have been recorded at Ogier Ponds (CNDDB 2020), but due to the abundance of bullfrogs and non-native fish in those ponds and in the mainstem of Coyote Creek below Anderson Dam and the likelihood of competition and predation, a viable breeding population of CRLF is not expected to occur in these areas.

Although foothill yellow-legged frogs have not been recorded in the FOCP footprint, or anywhere in Anderson Reservoir, the species is known to occur nearby. It has been recorded in Otis Creek, a tributary to the reach of Coyote Creek between Coyote Dam and Anderson Reservoir (Horizon Water and Environment 2020 citing D. Bell, pers. comm.). The species has also been reported in Packwood Creek, a direct tributary to the northern arm of Anderson Reservoir (Horizon Water and Environment 2020 citing R.

Hopkins, pers. comm.). However, baseline surveys performed upstream of Anderson Reservoir in Coyote Creek did not detect any individuals of the species (H. T. Harvey & Associates 2016). This reach, between the two reservoirs, is less likely to support a viable breeding population of foothill yellow-legged frogs due to the effects of bullfrog presence both in Anderson Reservoir and in reaches of Coyote Creek upstream of the reservoir (Kupferberg 1996, Adams et al. 2017), as well as the effects of the upstream Coyote Creek Dam (Kupferberg et al. 2012). A survey for the species conducted in April, May, and June 2019 downstream from Anderson Dam, focusing on areas providing the most suitable conditions for the species, also did not detect any individuals (Valley Water, 2019c). The SCVHP models portions of Coyote Creek below Anderson Reservoir as secondary habitat for the foothill yellow-legged frog. However, foothill yellow-legged frogs are no longer known to occur along Santa Clara County streams below major reservoirs, including Anderson Reservoir (Valley Water 1999). Therefore, this species is not expected to occur on the FOCP site or in Coyote Creek downstream from Anderson Dam.

Western pond turtles are known to occur in Anderson Reservoir (CNDDB 2020), and one was observed in a pond below the spillway (Horizon Water and Environment 2020 citing S. Rottenborn, pers. obs.). However, based on the lack of observations during numerous surveys around the dam (e.g., pre-activity surveys for geotechnical investigations performed for the ADSRP) since 2013, numbers within the reservoir near the FOCP footprint are low. This species is present in Coyote Creek below the dam, as individuals were observed in the reach immediately below the outfall, as well as in Ogier Ponds and several other Coyote Creek locations downstream to Metcalf Road, during focused surveys conducted in 2019 (Valley Water 2019c). Western pond turtles that occur within these aquatic habitats may occasionally disperse across upland portions of the FOCP site.

Bald eagles are known to nest in Santa Clara County in scattered locations, mostly associated with reservoirs (Horizon Water and Environment 2020, citing Bousman 2007b, Ventana Wildlife Society 2012). A single pair of bald eagles has nested on the northeastern shore of Anderson Reservoir most years since at least 2010, and in 2020, two active nests are present along the western shore of the northeastern arm of the reservoir. Intensive surveys, including helicopter surveys and ground-based surveys, detected no other bald eagle nests or territories within 1 mile of the larger project area or within 2 miles of potential blasting areas. The nesting bald eagles forage throughout the reservoir area, and additional nonbreeding bald eagles forage here as well, particularly during the nonbreeding season. Due to high levels of human disturbance on the FOCP site (e.g., roads, trails, residences, and Valley Water activities), bald eagles are unlikely to nest close to the FOCP footprint or the slide mitigation areas.

In the South Bay, golden eagles breed widely in the Diablo Range (Horizon Water and Environment 2020 citing Bousman 2007c). Nesting on the valley floor occurs more rarely, although a pair has nested on an electrical tower below Calero Reservoir for a

number of years, and another pair has recently nested in a residential backyard in western Morgan Hill (Horizon Water and Environment 2020 citing S. Rottenborn, pers. obs.). Intensive surveys, including helicopter surveys and ground-based surveys, conducted in late winter and spring 2019 have detected three pairs of golden eagles occupying territories that extend to within 1 mile of the larger project area and within 2 miles of potential blasting areas. However, as of May 5, 2020, no nests had been located within these areas. Although golden eagles forage widely in the FOCP vicinity, including in areas on the west side of the reservoir, the majority of activity by all three pairs present in 2020 is centered east of the reservoir, and golden eagles are unlikely to nest on or very close to the FOCP site due to high levels of human disturbance.

Loggerhead shrikes (*Lanius ludovicianus*) are known to nest in Coyote Valley and on Coyote Ridge where open grassland, ruderal, or agricultural habitat with scattered brush, chaparral, or trees providing perches and nesting sites are present (Horizon Water and Environment 2020 citing Bousman 2007d). Owing to the paucity of open grassland habitat and the complete lack of observations of this species during surveys conducted for the larger ADSRP, loggerhead shrikes are not expected to nest in the FOCP footprint near the dam. However, suitable nesting habitat is present near grassland areas within the slide mitigation areas on the east side of the reservoir, and along Coyote Creek downstream from the FOCP area (in areas that are potentially subject to effects from tunnel operation). Given this species' scarcity in the area, no more than one or two pairs will nest in areas where they could be affected by FOCP activities.

In Santa Clara County, yellow warblers (*Setophaga petechia*) have been recorded breeding in riparian habitat along a number of creeks, including Coyote Creek. Suitable nesting habitat for yellow warblers occurs in the riparian habitat along Coyote Creek on the FOCP site, and along Coyote Creek downstream from the FOCP area (in areas that are potentially subject to effects from tunnel operation). Yellow warblers are an abundant migrant throughout the FOCP region during the spring and fall.

White-tailed kites (*Elanus leucurus*) are fairly common residents in less-developed portions of the FOCP region where open grassland, ruderal, or agricultural habitats are present. During reconnaissance-level surveys for the FOCP, this species was observed at Anderson Lake County Park southeast of the FOCP site. Suitable nesting habitat is present around the dam within the FOCP footprint, near grassland areas within the slide mitigation areas on the east side of the reservoir, and along Coyote Creek downstream from the FOCP area (in areas that are potentially subject to effects from tunnel operation).

Since 1998, a bat biologist has been periodically monitoring a maternity colony of pallid bats located in a barn near the base of Anderson Dam. This barn has supported up to 80-85 females, which use the roost year-round (including as a maternity roost in spring and summer). Given the presence of these females, an equivalent number of males are likely present in the vicinity, producing a population estimate of up to 160-170 individuals associated with this roost since monitoring began. The most recent survey of

this barn, in September 2019, produced a count of 64 individuals exiting the barn (Valley Water 2019d). Since 1998, seven other pallid bat colonies in Santa Clara County have declined substantially; for example, in 2012, those other colonies collectively supported approximately 35 females, and in 2016, only one of those other colonies was active (supporting only three females). More recently, a colony of 10 to 15 individuals has been detected at the University of California's Blue Oak Ranch Reserve (Valley Water 2020a citing D. Johnston, personal observation), but the colony in the barn near Cochrane Road likely represents the largest and most stable colony of the species known in Santa Clara County, and apparently supports at least half of the known individuals in the county. Although the barn in which this roost occurs is located immediately outside the FOCP site, males associated with this roost are expected to roost in suitable hollows or crevices within mature trees on the proposed FOCP site.

The San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*) is known to occur throughout much of Santa Clara County, particularly in foothill/mountain areas and along creeks in less heavily urbanized portions of the valley floor (Valley Water 2010b). Surveys of Anderson Dam conducted by Valley Water in 2006 and 2009 detected one woodrat nest on the FOCP site (Valley Water 2012a). Small numbers of woodrat nests have been observed in oak woodland, scrub, and riparian habitats during reconnaissance-level surveys from 2012 to 2018, and woodrats were detected at rock outcrops on Basalt Hill during camera surveys for ringtails (Valley Water 2017). These surveys confirmed that woodrat nest densities/numbers at the site are very low. Woodrats could potentially nest in the slide mitigation areas, within coast live oak forest and woodland, and they nest in riparian habitat along Coyote Creek downstream from the FOCP, in areas that are potentially subject to effects from tunnel operation.

Wetlands

Some features in the FOCP footprint are expected to be regulated by the U.S. Army Corps of Engineers (Corps) as "waters of the U.S." and/or by the Water Board as "waters of the State" (Table 9). All of the regulated waters of the U.S./State found within the FOCP footprint are unvegetated "other waters," including Anderson Reservoir, Coyote Creek, and the intermittent streams (H. T. Harvey & Associates, 2018). Riparian habitats in the FOCP footprint are mapped as mixed riparian woodland and forest. These areas are located along Coyote Creek downstream of Anderson Reservoir.

Table 9: Jurisdictional Waters within the FOCP Footprint and Slide Remediation Areas*

Potential Jurisdictional Waters**	Approximate Area (acres)
Other Waters	
Reservoir	123.489
Perennial stream	2.805
Intermittent stream	0.088
Total of Jurisdictional Waters	**126.382**

* Acreages of jurisdictional waters are provided to the nearest 0.001 acre in accordance with SCVHP requirements.

** All features listed here are considered both waters of the U.S. and waters of the State.

Invasive Species and Pathogens

Non-native plants and animals that cause harm and, once established, spread quickly from their point of introduction are often called "invasive" species. Invasive species can threaten the diversity and abundance of native species. Invasive plant species, such as yellow star-thistle (*Centaurea solstitialis*), bull thistle (*Cirsium vulgare*), and milk thistle (*Silybum marianum*), are common in the project area. Several introduced invasive animal species, including the American bullfrog (*Lithobates catesbeianus*), feral house cat (*Felis felis*), red fox (*Vulpes vulpes*), and mosquitofish (*Gambusia affinis*), are also present.

Plant and animal pathogens, which can be spread by human activities, can also adversely affect native species and communities. Phytophthora species are microscopic Oomycetes (water molds). Almost all of the more than 120 Phytophthora species described to date are pathogenic to plants. Diseases caused by Phytophthora species include root rots, stem cankers, and fruit and leaf blight. Host ranges of Phytophthora species can be narrow or wide, but are mainly unknown for most California native plants. Several recent studies have addressed effects to native plants in the San Francisco Bay Area and northern California native habitats. In particular, a high number of Phytophthora species (over 40 Phytophthora species recovered from plants in 22 different host families) have been detected in nursery stock planted into habitat areas in restoration projects in California, including at Anderson Reservoir and vicinity (Phytosphere Research 2015a, 2015b, 2018). Primarily spread via contaminated soil and water (some species are aerially dispersed), Phytophthora pathogens can affect plants in a variety of habitats, from dry chaparral and woodland to mesic wetlands and riparian plant communities. Once introduced into native habitats, Phytophthora persists in soil and infected host roots. Once Phytophthora infestations expand beyond very limited areas, they are very difficult to impossible to eradicate (Swiecki and Bernhardt 2014).

Phytophthora is known to be present in some areas at Anderson Dam (Phytosphere Research 2018).

Other pathogens can adversely affect animals. For example, chytrid fungus is a water-borne fungus that can impair the health of amphibians. There are approximately 1,000 chytrid species, and *Batrachochytrium dendrobatidis* can infect the skin of amphibians (Longcore et al. 1999). Infected individuals may develop chytridiomycosis, a thickening of the skin that inhibits amphibians' ability to absorb water and electrolytes, eventually causing death (Voyles et al. 2009). Chytridiomycosis outbreaks have been linked to substantial declines in some amphibian populations (Berger et al. 1998, Fisher et al. 2009). Chytrid fungus may be spread by dispersal of infected by translocation of zoospores by other animals or humans (including equipment and machinery) among waterbodies.

3.3.5.2 Environmental Effects

Potential adverse effects on wildlife and terrestrial resources in the proposed FOCP area will occur primarily during mobilization and construction. Potential adverse effects may include direct and indirect effects on in-stream and upland habitats; effects on associated plant communities; effects on individuals of plant and wildlife species, and the habitats of and resources required by those species; and the potential degradation of water quality caused by releases of sediment or placement of fill or other construction materials (which may affect aquatic habitats and species, including invertebrates that provide food for animals).

Commission staff reviewed the analyses Valley Water performed of potential adverse effects on terrestrial and wildlife resources as discussed in its May 29, 2020 environmental screening report (Horizon Water and Environment 2020), Reservoir Drawdown and Operations Plan, and effects analysis for species covered under the SCVHP. Potential effects to threatened and endangered species are further analyzed in *Section 3.3.6 Threatened and Endangered Species and Essential Fish Habitat.*

The effects of initial drawdown of the reservoir to deadpool elevation and reservoir bank and rim stability improvements are discussed below. As we've said in *Section 2.3.2 Measures Not Analyzed in this EA,* the effects of the Anderson Dam tunnel construction and operation will be discussed in the supplemental EA. Commission staff also considered that the reservoir drawdown could extend until the completion of the ADSRP, which could be until 2030.

<u>Drawdown of the Reservoir</u>

Drawdown of the reservoir to the deadpool elevation of 488 ft will reduce the size of the reservoir. This will temporarily expose suitable substrate for colonization of areas below the reservoir rim by plants currently present around the edges of the reservoir. A change in the size of the reservoir will reduce the extent of habitat for some animals that use a larger reservoir for foraging on fish and waterfowl, but a smaller reservoir could

concentrate prey allowing for assisted foraging opportunities. A smaller reservoir will increase upland foraging habitat for many species including the pallid bat, San Francisco dusky-footed woodrat, western red bat, American badger, and mountain lion as these species are not closely associated with aquatic habitats.

Given the continued availability of a relatively large waterbody following drawdown and alternative food sources and foraging areas being nearby (e.g., fish and waterfowl at Ogier Ponds and other ponds in Coyote Valley; small mammals in grasslands surrounding the reservoir), the drawdown of the reservoir will cause wildlife to adapt to the changing conditions but the prolonged reservoir drawdown will likely not create adverse conditions for most species.

During the drawdown process, releases from Anderson Dam will be limited to rates 100 cfs above inflow rates to avoid causing substantial increases in flows downstream from the dam. Flow rates may be high enough to scour the creek's banks, destabilizing or washing away some riparian vegetation and mobilizing sediment, gravel, cobble, and debris that may then damage or bury smaller trees and shrubs. Although the short-term consequences of such effects will be a net loss of woody riparian habitat, such increased flows will also provide an opportunity for germination of riparian trees and shrubs allowing for more diverse-aged stands of riparian trees and shrubs in areas that currently support older, more even-aged stands. The resulting variable-aged stands will increase habitat diversity for wildlife species. As a result, the effect of increased flows on woody riparian vegetation is considered a beneficial effect. Coast live oak and woodland habitat does not occur within the rim of the reservoir and therefore will not be affected by lowering of the reservoir level.

An increase in flow rates in Coyote Creek downstream from the dam resulting from reservoir drawdown is not expected to result in injury or mortality of wildlife. Releases during reservoir drawdown could potentially increase turbidity in downstream reaches of the creek as a result of mobilization of sediment from the reservoir. Increased turbidity could adversely affect aquatic prey of some terrestrial species which could cause the animal to move to less turbid waters off-channel, such as Ogier Ponds.

No special-status bird species are expected to breed in the FOCP area or close enough to the FOCP area to be affected by FOCP activities while breeding, owing to a lack of suitable nesting habitat and the FOCP area's location outside the breeding range of some of these species. During migration and/or in winter, small numbers of birds may forage or roost in the FOCP area.

Some non-special-status waterfowl and amphibians may be reduced in abundance when the reservoir is drawn down to deadpool. However, all of the non-special-status species that could be potentially affected by reservoir drawdown are regionally common, widespread species. Therefore, potential adverse effects on any one species are considered minor. Aside from fish and other aquatic animals, the reservoir does not

provide an important nursery site for animals. Due to water level fluctuations, the reservoir likely does not serve as an important breeding area for most amphibians.

The proposed FOCP area currently contains several invasive plant species that degrade habitat quality for native plants and animals. Non-native and invasive plant species that are intolerant of very wet conditions have the potential to invade upland areas temporarily created by the dewatering, as these upland areas are unoccupied by competing native vegetation and thus susceptible to invasion. Similarly, invasive wildlife species are also present in the proposed FOCP area. Several invasive fish occur in Coyote Creek and Anderson Reservoir, and bullfrogs were found to be very common in Coyote Creek and in wetlands and ponds in and adjacent to the vicinity. If FOCP activities were to result in the spread of, or an increase in abundance of, invasive wildlife species, native animals could be adversely affected by increases in predation by or competition with these non-natives.

Bullfrogs may be adversely affected by dewatering, which could decrease the amount of bullfrog breeding and rearing habitat in the reservoir. Non-native mussel species are not believed to be present in Anderson Reservoir, so dewatering of the reservoir will not increase or decrease the potential for invasion by these species.

Drawdown of the reservoir to deadpool will not contribute to the spread of Phytophthora because of the lack of ground-disturbing activities and movement of equipment and personnel related to this element of the FOCP.

Waters of the U.S./State are present within Anderson Reservoir below the spillway elevation (i.e., the reservoir's ordinary high water mark), as well as in Coyote Creek downstream of the dam, the Coyote Creek backwater, and the historical north channel of Coyote Creek. As a result of the drawdown of the reservoir, the surface area of federally/State jurisdictional waters will be temporarily reduced, potentially until the completion of the ADSRP. Valley Water's plan to augment releases from Anderson Dam with imported water will assist groundwater recharge and mitigate impacts to wetlands, including to wetlands located outside of the FOCP footprint including the Laguna Seca wetlands located in southern Santa Clara County which receives some water through groundwater. Additionally, as discussed under *Section 3.3.6 Threatened and Endangered Species and Essential Fish Habitat* below, FWS recommended the development of a Wetland and Riparian Habitat Dryback Monitoring Plan (HDMP) to monitor impacts to wetlands caused by the FOCP. This plan will describe the areas to be monitored; the duration of monitoring; monitoring methods (which will include aerial photography, possibly using drones, as well as groundwater monitoring); and methods for determining whether impacts have occurred, and the extent of such impacts to riparian habitat along Coyote Creek and wetlands in Coyote Valley, as a result of FOCP-related dryback and changes to groundwater recharge (as opposed to natural drought conditions or typical Valley Water releases from Anderson Dam under drought conditions). If

dryback impacts that occur as a result of the FOCP cause the loss of wetland, pond, or riparian habitat, Valley Water would be required to mitigate for the habitat loss through the SCVHP based on the acreage of habitat lost.

Reservoir Bank and Rim Stability Improvements

Landslide remediation activities will result in effects to up to 26.0 acres of existing grassland habitat and 33.2 acres of coast live oak forest and woodland, as well as reservoir and urban-suburban land uses. Effects on grassland habitat will be largely temporary, as grassland will be restored within a year following completion of landslide remediation. However, effects on coast live oak forest and woodland will be permanent. These land cover types provide potential foraging habitat for a variety of animals, and these species could be impacted by landslide remediation activities. Activities related to stability improvements will not have direct or indirect effects on riparian habitats as these habitats do not occur in the vicinity of the landslides.

Direct or indirect effects on native species and communities from introduction or spread of invasive species as a result of project activities related to the reservoir rim landslide remediation area will be similar in nature to those related to reservoir drawdown and Anderson Dam tunnel construction. Ground-disturbing activities such as buttressing of slides, construction of walls to retain head scarps, and installation of anchors to retain slide masses has the potential to create conditions suitable for spreading of invasive plant species. In addition, bare upland soils left after construction of staging areas could encourage growth of weedy species and mulching or erosion control mixes could include and thus introduce invasive, non-native plant species.

Activities related to stability improvements will likely have effects on the spread of Phytophora by the movement of contaminated plant material, roots, or soil, through activities such as clearing and disposal of vegetation, movement of soil, and movement of personnel, materials and equipment required for the landslide remediation.

Implementation of Valley Water BMPs and compliance with SCVHP Conditions will reduce the potential for introduction or spread of Phytophthora pathogens into the project area and adjacent wildlands. However, in the absence of measures focused on minimizing the potential for spread of Phytophthora, this pathogen is likely to spread, given that it is already present on the dam and that high volumes of vegetation will be cleared and soil will be moved during project implementation. Given the sensitivity of serpentine plant communities, oak woodlands, wetlands, and other natural habitats to Phytophthora and the location of the project area to Coyote ceanothus, the spread of Phytophthora is a potential substantial adverse effect. Valley Water is required to implement a management plan under the SCVHP designed to minimize the potential for introduction or spread of Phytophthora, particularly given the presence of Coyote ceanothus in the area. This plan is described in more detail in *Section 3.3.6 Threatened and Endangered Species and Essential Fish Habitat*.

Approximately 101.3 acres of jurisdictional waters within the reservoir are located within potential effect areas related to stability improvements. The majority of effects from such remediation will be temporary, however. In addition, landslide remediation will ultimately have a beneficial effect on water quality in the reservoir by preventing further slumping of soil into the reservoir.

Stability improvements will not result in direct effects to eagle nest sites or nesting habitat. There are currently no nests of either species known from areas close to the landslide remediation areas, and it is unlikely that either species will establish a nest very close to those remediation areas given existing levels of human activity. As we've said, currently, the two 2020 bald eagle nests are located 2.3 and 3.4 miles from the nearest landslide remediation areas. The landslide remediation areas are located as close as 0.95 mile from the nearest golden eagle activity center. Given the distances between these nesting locations/activity centers and the landslide remediation area, we do not expect remediation activities to result in noise or other disturbance that will cause the abandonment of an active nest or a reduction in productivity. Only a very limited area of foraging habitat for golden eagles will be impacted by landslide remediation activities, and drawdown of the reservoir will provide a net increase (albeit temporary) in suitable foraging habitat for this species.

Current bald eagle nesting locations and golden eagle activity centers are far enough from proposed FOCP activities, and are buffered from such activities by ridges, that FOCP activities are not expected to cause abandonment of active nests or territories, or a reduction in productivity of nesting eagles. Although it is unlikely that eagles will nest close enough to FOCP activities that they could be disturbed by those activities, eagles may move their nest locations from year to year, and it is possible that a pair of bald or golden eagles may establish a nest close enough to FOCP activities that such activities might disturb the nesting eagles. In the event that adverse effects to an active nest or a territory are unavoidable (e.g., if adequate buffers from the nest cannot be maintained), Valley Water must obtain a Bald and Golden Eagle Protection Act (BGEPA) permit from the FWS and comply with permit conditions (which are expected to include compensatory mitigation if take of golden eagles is expected to occur). Compliance with the BGEPA will reduce substantial adverse effects to bald and golden eagles. Should a BGEPA permit be necessary, based on continued consultation with the FWS, Valley Water must apply for a permit and implement any mitigation measures as identified by the FWS in that permit.

Stability improvements could impact up to 26.0 acres of existing grassland habitat. Although this grassland is likely used as foraging habitat by golden eagles, the landslide remediation areas are not located within the rough territory boundaries mapped during 2020 breeding-season surveys. These effects will be minor and temporary, with remediation areas being revegetated and restored to pre-activity conditions within a year of effects. Given the limited extent of effects to potential foraging habitat and the distance between the effect areas and known eagle territories, landslide remediation

activities are not expected to result in substantial adverse effects on eagle foraging habitat or foraging success.

The effects to grassland habitat and coast live oak forest and woodland could affect the pallid bat as these areas provide both foraging and roosting habitat. Effects to grassland habitat will be largely temporary, as most of the grassland effect areas will be restored within one year following the completion of remediation activities. However, effects to coast live oak forest and woodland will be considered permanent, thus resulting in the long-term loss of some potential tree-roosting habitat for pallid bats.

Pallid bats will be more affected by construction associated with the ADTP. These effects will be discussed more thoroughly in the supplemental EA.

Valley Water proposes to implement BMPs in its Reservoir Drawdown and Operations Plan in addition to conditions from the SCVHP. These BMPs are more thoroughly discussed in its environmental screening document (Horizon Water and Environment 2020) and a listing of these BMPs for wildlife and terrestrial resources is included in Appendix A to this EA. These mitigation measures must be implemented to avoid and minimize potential adverse effects to wildlife and terrestrial resources.

3.3.6 Threatened and Endangered Species and Essential Fish Habitat

A number of federally-listed threatened and endangered species may occur in the project area. Table 10 provides a list of the federally-listed species that may occur in the proposed project boundary and those with identified critical habitats, compiled using information from the July 27, 2020 Final Reservoir Drawdown and Operations Plan and the August 3, 2020 Effects Analysis for Steelhead and the Biological Assessment for U.S. Fish and Wildlife Service-Regulated Listed Species.

Table 10: Federally-listed species that may occur in the project area and presence of critical habitat in the project area.

Common Name	Scientific Name	Federal Status
Fish		
Central California Coast (CCC) Distinct Population Segment (DPS) Steelhead	*Oncorhynchus mykiss*	Threatened; critical habitat present
Southern Distinct Population Segment (sDPS) Green sturgeon	*Acipenser medirostris*	Threatened

Common Name	Scientific Name	Federal Status
Amphibians		
California tiger salamander	*Ambystoma californiense*	Threatened
California red-legged frog	*Rana draytonii*	Threatened; critical habitat present
Plants		
Coyote Ceanothus	*Ceanothus ferrisiae*	Endangered

3.3.6.1 Affected Environment

As noted in the September 16, 2020 letter from FWS providing conservation recommendations, surveys conducted by Valley Water within the proposed project footprint did not detect any Bay checkerspot butterflies (*Euphydryas editha bayensis*, ESA-listed as threatened) or their larval host plants, the endangered Metcalf Canyon jewelflower (*Streptanthus albidus ssp. albidus*), endangered Santa Clara Valley dudleya (*Dudleya setchellii*), or endangered Tiburon paintbrush (*Castilleja affinis ssp. neglecta*). The proposed project is also located outside of critical habitat for the Bay checkerspot butterfly. The monarch butterfly (*Danaus plexippus plexippus*) is petitioned for listing under the ESA and may occur at the project given the range of the species (FWS 2020), but Commission staff is unaware of dedicated surveys for this butterfly in the action area.

<u>Coyote ceanothus</u>

Coyote ceanothus is known to occur only from the Morgan Hill, California area, and all locations are within a five-mile radius. The largest population occurs at the southeastern end of Coyote Ridge, which adjoins the ADTP component area, and most of the population occurs at that end of Coyote Ridge. A survey for Coyote ceanothus was conducted throughout the larger ADSRP site, including all portions of the ADTP footprint where this species might occur, from September 2013 through June 2014. All Coyote ceanothus individuals were mapped (Valley Water 2014b). A total of 7,542 Coyote ceanothus individuals were counted within the larger ADSRP area.

A total of 48 individuals were mapped within the ADTP and existing intake structure modifications components of the FOCP. Although Coyote ceanothus was found to be abundant in mixed serpentine chaparral north of the dam and spillway, outside the ADTP area, it is much less abundant in the northern coastal scrub/Diablan coastal scrub habitats south of the spillway and southeast of the dam. In these areas, Coyote ceanothus occurs intermixed with California sagebrush (*Artemisia californica*), black sage (*Salvia mellifera*), and other plants.

California tiger salamander

The California tiger salamander occurs, though likely in low numbers, in the footprint of FOCP activities. Annual surveys conducted on all burrows on the Anderson Dam faces from 2010 to 2013 using a fiber-optic scope and burrow excavation did not detect any tiger salamanders using burrows on the dam (Valley Water 2010, 2011b, 2012b, 2013). However, in 2001, a California tiger salamander was observed on the roadway between the top of the parking lot and Anderson Dam, and in 2011, a California tiger salamander was observed in a weep hole in the floor of the dam spillway during a pre-work biological inspection (Valley Water 2012a). On March 4, 2016, an individual was found in a drain near the top of the boat ramp during monitoring of geotechnical investigations for the ADSRP. Thus, California tiger salamanders are known to occur in the immediate vicinity of FOCP activities that will occur at Anderson Dam.

California tiger salamanders have not been confirmed breeding in the immediate vicinity of Anderson Dam, and SCVHP habitat modeling indicates that Anderson Reservoir does not provide breeding habitat for this species. A known California tiger salamander breeding pond (Rosendin Pond) is located 0.3 miles southeast of the top of the boat ramp at Anderson Dam (CNDDB 2020). California tiger salamanders are known to disperse up to 1.3 miles from breeding locations (Orloff 2007). All activities including: ADTP construction, operation, and maintenance at Anderson Dam; existing intake structure modifications; and creek channel and bank erosion control modifications, will occur within approximately 0.9 miles of Rosendin Pond and therefore are within potential dispersal distance for California tiger salamanders breeding in that pond. California tiger salamanders could potentially occur on the project site during seasonal movements to and from Rosendin Pond, and they may use burrows of small mammals, such as California ground squirrels (*Otospermophilus beecheyi*) and Botta's pocket gophers (*Thomomys bottae*), on the site as upland refugia. The likelihood of occurrence and number of individuals expected to occur in various portions of the FOCP site at Anderson Dam will likely decrease with increasing distance from Rosendin Pond, so that this species is less likely to occur on the northern portion of the dam and along Coyote Creek downstream from the dam (i.e., the areas where most ADTP and creek channel and cank erosion control modifications activities will occur). There is a greater potential for occurrence (and by more individuals) on the southern side of Anderson Dam, due to this area's proximity to Rosendin Pond.

There is a lower probability that California tiger salamanders occur at FOCP activity sites outside the immediate Anderson Dam area where the ADTP construction, operation, and maintenance; existing intake structure modifications; and creek channel and bank erosion control modifications will occur. These areas away from Anderson Dam are discussed as follows:

- Reservoir bank and rim stability improvements – It is possible that California tiger salamanders are present in low numbers on portions of the slide remediation areas

above the rim of the reservoir (i.e., on the east side of the reservoir), and the SCVHP maps habitat in those areas as potential nonbreeding habitat for the species. However, there are no ponds and no known breeding records very close to those slide remediation areas, so the frequency of occurrence and number of individuals expected to occur in the slide remediation areas is likely low. The reservoir itself is not considered suitable habitat for this species by the SCVHP.

- CVP extension – The majority of the new pipeline alignment runs through a rural residential area on the Coyote Valley floor. An intensive analysis of habitat suitability, areas of known and likely occurrence, and potential dispersal pathways of California tiger salamanders in and around Coyote Valley concluded that this species has a low probability of occurring in this rural residential area due to the absence of suitable breeding ponds in the immediate vicinity, paucity of refugia, and intensity of human activity (H. T. Harvey & Associates 2020). Although the grasslands and other habitats present at the east end of the pipeline and at the outfall are less disturbed, there is still a very low probability that California tiger salamanders occur in those areas. Ogier Ponds support very high populations of bullfrogs (*Lithobates catesbeiana*) and nonnative fish, including large game fish such as bass; predation by these nonnative animals is expected to preclude the presence of a viable breeding population of California tiger salamanders at Ogier Ponds. In April and May 2019, California tiger salamander larval surveys were conducted in selected off-channel ponds within the Ogier Ponds complex (i.e., ponds that were presumed to be more suitable for California tiger salamanders due to their lack of connectivity with fish populations in Coyote Creek); no individuals were detected (Valley Water 2019). Nevertheless, California tiger salamanders have been recorded (at least historically) breeding in ponds on the Coyote Creek Golf Course, approximately 0.7 miles from the proposed CVP Extension outfall, and the SCVHP maps habitats other than urban-suburban habitats on the Coyote Valley floor as potential nonbreeding habitat for the species.
- Fish protection measures – California tiger salamanders do not breed or otherwise regularly occur in streams with flow rates as high as those in Coyote Creek or Upper Penitencia Creek, and no individuals of this species are expected to be present in reaches of Coyote Creek where fish capture will occur or reaches of Upper Penitencia Creek where fish will be relocated.

No critical habitat for the California tiger salamander occurs within or immediately adjacent to the project site. The nearest critical habitat unit to an FOCP component is Unit 5 (the Poverty Ridge Unit), which is located approximately 0.2 miles east of the uppermost reaches of Upper Penitencia Creek where fish relocation may occur. Near Anderson Dam, the nearest California tiger salamander critical habitat unit (Unit 7, also known as the San Felipe Creek Unit) is located north of Morgan Hill more than 5.0 miles to the northwest of Anderson Dam.

California red-legged frog and critical habitat

CRLFs are not known or expected to breed in Anderson Reservoir, and the SCVHP does not model suitable habitat for CRLFs within Anderson Reservoir. Suitable breeding habitat for CRLFs is present in Rosendin Pond, 0.3 mile southeast of the top of the boat ramp at Anderson Dam. Juvenile CRLFs have been observed at Rosendin Pond over several years (Horizon Water and Environment 2020 citing Steve Rottenborn, pers. obs.), indicating that CRLFs likely breed in this pond. Thus, CRLFs could potentially occur in the Anderson Dam area as dispersants from Rosendin Pond.

At Anderson Dam itself, CRLFs have been observed in only one area – cattail-lined pools within the unlined portion of the spillway, downstream from the concrete spillway. The pools in the unlined spillway are unlikely to support a viable breeding population of red-legged frogs due to the abundance of nonnative bullfrogs and fish, which may prey on red-legged frog eggs or larvae.

No suitable breeding habitat for CRLFs is present within the footprint of FOCP activities that will occur at Anderson Dam, including ADTP construction, operation, and maintenance; existing intake structure modifications; and creek channel and bank erosion control modifications, and no red-legged frogs have been recorded there (the unlined spillway is outside the ADTP footprint). Nevertheless, individuals from nearby breeding populations are expected to occasionally disperse into or across the footprint of activities at Anderson Dam. For example, adult CRLFs may occasionally occur in Coyote Creek below Anderson Dam, including the main channel and backwater channel within the ADTP footprint. Adults are too large to be preyed on by the abundant bullfrogs and nonnative fish in the creek, though those predators are expected to preclude the presence of a viable breeding population of CRLFs in Coyote Creek downstream from Anderson Dam. CRLFs could also use small mammal burrows and crevices present in the ADTP area as refugia. However, no individuals were found during burrow scoping surveys on the dam during four years of surveys, and this species is expected to use such upland refugia infrequently and in low numbers. Rather, CRLFs at Anderson Dam are expected to cross upland habitats primarily during wet-season dispersal, and otherwise will occur in or very close to water.

The potential for CRLFs to occur at FOCP activity sites is discussed as follows:

- Reservoir bank and rim stability improvements – It is possible that CRLFs occasionally disperse across portions of the slide remediation areas above the rim of the reservoir (i.e., on the east side of the reservoir); the SCVHP maps habitat in those areas as potential dispersal habitat for the species, and those areas east of Anderson Reservoir are included in a large unit of designated critical habitat (FWS 2010). However, there are no ponds, and no known breeding records, very close to those slide remediation areas, so the frequency of occurrence and number of

individuals expected to occur in the slide remediation areas is likely low. The reservoir itself is not considered suitable habitat for this species by the SCVHP.

- CVP extension – The majority of the new pipeline alignment runs through a rural residential area on the Coyote Valley floor. Valley Water performed an analysis of habitat suitability, areas of known and likely occurrence, and potential dispersal pathways of CRLFs in and around Coyote Valley concluded that this species has a low probability of occurring in this rural residential area due to the absence of suitable breeding ponds in the immediate vicinity, paucity of refugia, and intensity of human activity (H. T. Harvey & Associates 2020). Although the grasslands and other habitats present at the east end of the pipeline and at the outfall are less disturbed, CRLFs are expected to occur in those areas very infrequently and in low numbers, if at all. At Ogier Ponds, at the east end of the CVP extension, CRLF larvae were found in one pond in April 2002, three adults and four juveniles were observed in October 2002, and two hatching egg masses and one fresh egg mass were seen in February 2003 (CNDDB 2020). Ogier Ponds support very high populations of bullfrogs and nonnative fish, including large game fish such as bass; predation by these nonnative animals on CRLFs eggs or larvae will likely preclude the presence of a viable breeding population of CRLFs at Ogier Ponds, and it is unknown whether the breeding observed in 2002 and 2003 still occurs. In April, May, and June 2019, both daytime and nighttime surveys for CRLFs were conducted in a number of locations along Coyote Creek from Anderson Dam downstream to Metcalf Road, including Ogier Ponds and Coyote Ranch pond, with negative results (Valley Water 2019). Although these surveys were not intended to be protocol-level surveys capable of demonstrating absence of the species, the negative results of these relatively intensive surveys indicate that CRLFs were present in very low numbers, if at all, at that time. Nevertheless, CRLFs are known to breed in ponds and wetlands near Kirby Canyon, east of Highway 101, and individuals could potentially disperse across Highway 101 through culverts. As a result, it is possible that an occasional red-legged frog could disperse to Coyote Creek in the vicinity of the CVP extension site, albeit infrequently. The SCVHP maps habitats other than urban-suburban habitats on the Coyote Valley floor as potential dispersal habitat for this species, and maps Coyote Creek as potential breeding habitat.

- Fish protection measures – As discussed above, several daytime and nighttime surveys of Coyote Creek in a number of locations between Anderson Dam and Metcalf Road in April, May, and June 2019 did not detect any CRLFs along this reach of Coyote Creek, including the areas in which fish capture will occur. Nevertheless, given the proximity of this reach to areas such as the unlined spillway where adult red-legged frogs were observed in June 2020, there is some potential for small numbers of individuals to occasionally occur in the fish capture reach. However, due to the abundance of non-native fish, it is unlikely that this reach could support a viable breeding population. In contrast, the reaches of

Upper Penitencia Creek where fish relocation will occur are known to support a breeding population of CRLFs. Both the capture reach and relocation reach are mapped by the SCVHP as potential breeding habitat.

CRLF critical habitat Unit STC-1 comprises a large area along the western edge of the Diablo Range (FWS 2010). In the Anderson Reservoir area, the western edge of this critical habitat unit follows the eastern shore of the reservoir. As a result, portions of the reservoir bank and rim stability improvement areas that extend upslope from the eastern shoreline of the reservoir are located within this critical habitat unit. In addition, Unit STC-1 includes most of the areas along Upper Penitencia Creek where steelhead relocation will occur.

Central California Coast DPS Steelhead and Critical Habitat

NMFS listed anadromous *O. mykiss* (steelhead) in the CCC Evolutionary Significant Unit as threatened in 1997 (NMFS 1997), issued a final listing determination for the CCC Distinct Population Segment in 2006 (NMFS 2006a), and designated critical habitat in 2005 (NMFS 2005). The Coyote Creek from the San Francisco Bay to Anderson Dam and its tributary Upper Penitencia Creek are designated critical habitat (NMFS 2005) (Figure 5). *O. mykiss* are observed in Coyote Creek downstream of Anderson Reservoir, although their abundance is likely very low (Leidy et al. 2005, NMFS 2016, Smith 2018a, Smith 2019, Valley Water 2019b, Valley Water 2020a; Table 11), and in Upper Penitencia Creek and its tributary, Arroyo Aguague, where the highest quality and most important spawning and rearing habitat resources remaining in the watershed are located (Valley Water 2003, Leidy et al. 2005, Stillwater Sciences 2006).

Figure 5: Critical Habitat for CCC DPS steelhead and sDPS green sturgeon in the Coyote Creek and Upper Penitencia Creek watersheds (Stillwater Sciences 2020a).

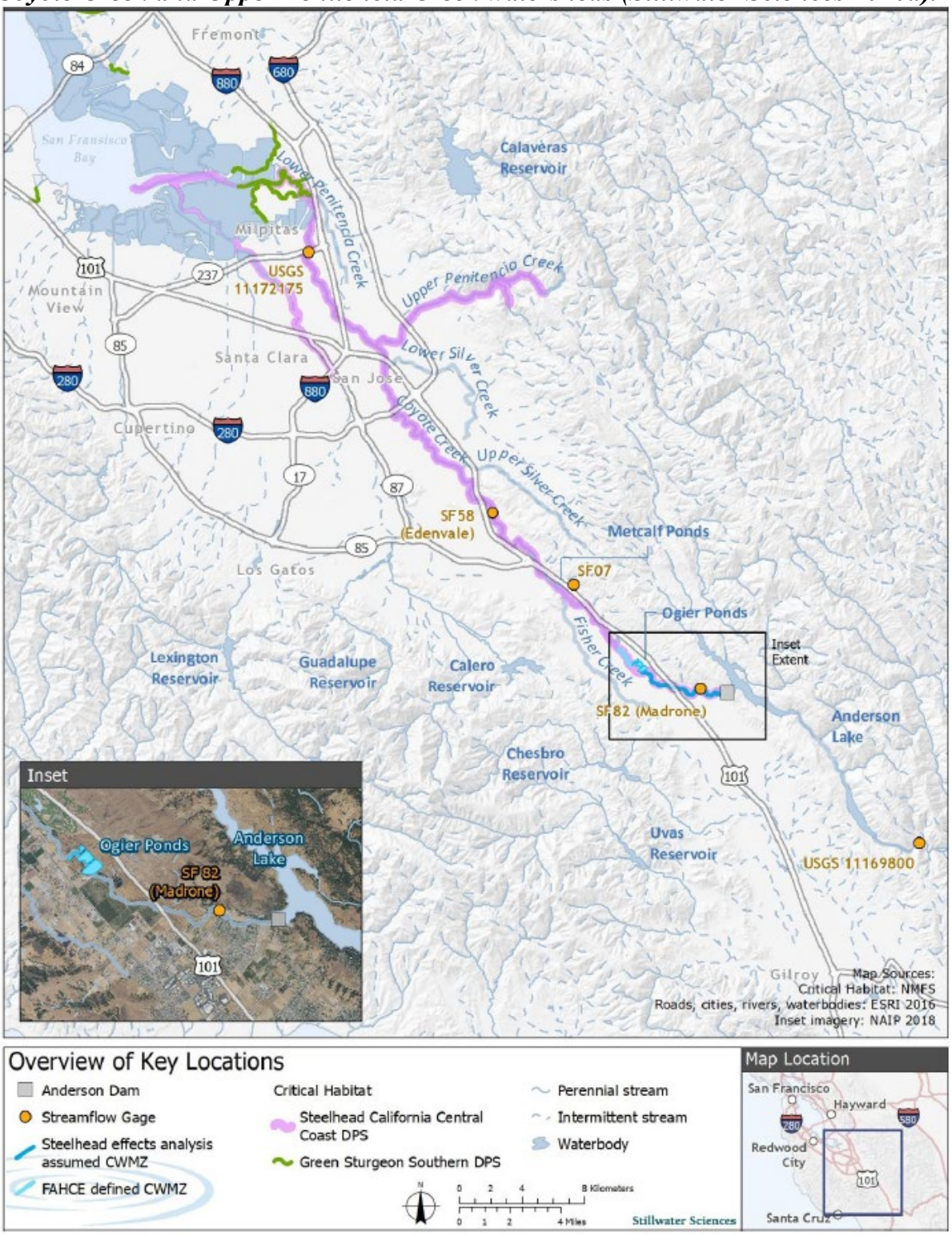


Table 11: O. mykiss surveyed in the mainstem of Coyote Creek from 2014 to 2019 (Stillwater Sciences 2020a)

Year	YOY *O. mykiss* captured	Age	Citation
2014	52	YOY	Leicester and Smith 2014
2015	1	yearling	Smith 2016
2016	0	NA	Smith 2016
2017	0	NA	Smith 2017
2018	2	juveniles	SCVWD 2019
*2019	3	YOY or 1+	Valley Water unpublished data

Steelhead in the Coyote Creek watershed are winter steelhead, meaning that adults immigrate in the winter and spring when flows are high and spawn shortly after arriving in spawning habitat. A life history periodicity table specific to the Coyote Creek, Guadalupe River, and Stevens Creek watersheds created by Valley Water as part of the FAHCE Agreement, shows immigration and spawning window typically extends from December through April, embryo incubation occurring from the start of spawning in December through May, and fry rearing from March through May (Table 12) (Valley Water 2020a). Juvenile steelhead typically rear for 1 to 2 years before smolting and outmigrating between February and May (Moyle 2002).

Table 12: Steelhead Life History Periodicity (Developed by Valley Water for FAHCE) Appx. D of Reservoir Drawdown and Operations Plan, p. 195

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Adult Immigration and Spawning	■	■	■	■								■
Embryo Incubation	■	■	■	■	■							■
Fry Rearing			■	■	■							
Juvenile Rearing	■	■	■	■	■	■	■	■	■	■	■	■
Juvenile Outmigration		■	■	■	■							

As noted in *Section 2.2.2 Existing Environmental Measures*, Valley Water is a party to the FAHCE Agreement, the goals of which are to restore and maintain a healthy steelhead trout and salmon population in the Coyote Creek watershed, by providing: (1) approximately five miles of spawning and rearing habitat below Anderson Dam and in Upper Penitencia Creek; and (2) adequate passage for adult steelhead trout and salmon to

reach suitable spawning and rearing habitat and for out-migration of juveniles.[49] In part and as relevant here, the FAHCE Agreement requires specific seasonal flow releases that support *O. mykiss* spawning and egg incubation, facilitate migration, and maintain water temperature not to exceed 18°C throughout as much of the CWMZ as available cold water supply allows. In addition, the FAHCE Agreement describes modified operation of Coyote Percolation Pond in order to provide a safe migration corridor for *O. mykiss* smolts. As defined in the FAHCE Agreement, the CWMZ is the reach from the outlets of Anderson Dam to approximately Golf Course Drive. For the purposes of this analysis, the CWMZ extends from the base of Anderson Dam to the upstream end of Ogier Ponds, e.g. the 4.5 mile "effective" CWMZ, due to the warming effect of Ogier Ponds. This reach contains *O. mykiss* spawning and rearing habitat that is relatively abundant and high-quality in comparison to other portions of Coyote Creek downstream from Anderson Dam (Entrix 2000, Buchan and Randall 2003), and *O. mykiss* spawning and rearing have been documented in this reach, albeit in low numbers (Leicester and Smith 2014, Smith 2019).

Downstream of the CWMZ in the reach extending from Ogier Ponds to the Coyote Percolation Ponds, there is also relatively abundant suitable spawning and rearing habitat compared to the downstream reaches, but water temperatures exceed the optimal temperature ranges for spawning, egg incubation, juvenile rearing, and smoltification; recent surveys have not documented *O. mykiss* in this reach (Entrix 2000, Buchan and Randall 2003). While *O. mykiss* are present in the reach downstream of Metcalf Ponds, this reach likely serves as a migration corridor as there is limited spawning and rearing habitat and poor water quality (Entrix 2000, Buchan and Randall 2003, Leidy et al. 2005). Upper Penitencia Creek and its tributary, Arroyo Aguague, contain the highest quality and most important remaining steelhead spawning and rearing habitat in the Coyote Creek watershed (Valley Water 2003, Leidy et al. 2005, Stillwater Sciences 2006), and steelhead have been documented up to the natural impassible waterfalls in each.

On Coyote Creek, a low-flow crossing at Singleton Road and the Ogier Ponds complex are the most significant fish passage impediments within the range of anadromy (Valley Water 2020a). Passage at the City of San Jose-owned Singleton Road low flow crossing is difficult except during periods of sustained high storm flows due to the perched culverts and concrete apron, although high flow conditions through the culvert can also create velocities that hinder passage (Leicester and Smith 2014, Smith 2018). *O. mykiss* smolts migrating downstream from the CWMZ must pass through the Ogier Pond complex, which is both a thermal and predatory barrier to safe migration due to the warming effects through the series of ponds and abundant predatory largemouth bass (Valley Water 2018b). The Coyote Percolation Dam has a pool and weir fish ladder built

[49] The FAHCE Agreement is not a condition of the exemption.

in 1999 (described in *Section 3.3.4.1 Aquatic Resources*), where a computer-based fish counter, Vaki, is installed at the apex of the turn near the downstream end of the fish ladder to detect passage through the facility during the salmonid migration season, September 16-May 31 (Stillwater Sciences 2020a). For the 2018-2019 monitoring period, no detections of *O. mykiss* in the adult size class (>350 mm) were recorded by the Vaki, although adult *O. mykiss* could have moved through undetected, and possibly 5 juvenile *O. mykiss* detections (≤350 mm), although confidence for those identifications were not high (Valley Water 2020c). An evaluation of the radial gates and the fish ladder is ongoing, and existing information indicates that upstream and downstream passage is possible through a combination of fish ladder and radial gates for flows up to 800 cfs (Table 13); the dam is rated to safely handle flows up to 800 cfs and Valley Water must remove and re-install flashboard prior to and following large storm events (Valley Water 2020a). *O. mykiss* access to Anderson Reservoir and its tributaries has been blocked at least since construction of Anderson Dam in 1950, or possibly by construction of other downstream barriers even prior to 1950 (Stillwater Sciences 2020b). Based on existing available literature and completed reconnaissance-level surveys, suitable habitat for anadromous *O. mykiss* appears to exist upstream of Anderson Reservoir and adfluvial *O. mykiss* are present in the reservoir, currently there is no passage above Anderson Dam though the feasibility for passage has been evaluated (HDR 2016).

Table 13: Passage conditions at Coyote Percolation Dam with flashboard dam (present operations) (Stillwater Sciences 2020a)

Flow (cfs)[1]	Winter up-migration[2]	Spring out-migration[3]	Remarks
Up to 50	Fish Ladder	Fish Ladder	Dam in and Radial gates closed
50 to 800	Fish Ladder/Radial gates	Fish Ladder/Radial gates	Dam in and Radial gates open
Above 800	Likely not passable. Fish unlikely to swim against high velocities in fishway, through radial gates and over dam apron	Over dam apron, through radial gates	Dam would be overtopped at high flows. Dam removal needed. Two weeks lead time necessary, Radial gates would be open

Notes:
[1] Measured at stream gauge 5082
[2] February through March
[3] April through May

The physical or biological features of critical habitat necessary for conservation of CCC steelhead in the Action Area comprise freshwater spawning and rearing sites with suitable water quality and quantity (suitable substrate for successful spawning and rearing locations containing ample floodplain connectivity to support juvenile growth), and migration corridors without obstructions which provide velocity refugia (so migrating fish arrive at either the ocean or the spawning grounds successfully and with the necessary energy stores for juvenile and adult life stages) (Stillwater Sciences 2020a).

Southern DPS North American Green Sturgeon and Critical Habitat

NMFS listed Southern Distinct Population Segment (sDPS) green sturgeon as threatened in 2006 (NMFS 2006b) and designated critical habitat in 2009 (NMFS 2009). Designated critical habitat for the sDPS of green sturgeon includes all tidally influenced areas of San Francisco Bay (including tributaries) up to the mean high-water elevation (NMFS 2009); this designation includes the lowermost, tidally influenced reaches of Coyote Creek (Figure 5). Green sturgeon have not been documented in Coyote Creek, and the designated critical habitat within the lowermost tidally influenced reaches of Coyote Creek is outside the action area.

Magnuson-Stevens Fishery Conservation and Management Act (MSA)--EFH

Valley Water's proposal has the potential to affect EFH downstream of the dam for various life stages of fish species managed in the Pacific Coast Salmon Fishery Management Plan (PFMP) by the Pacific Fishery Management Council (PFMC) (PFMC 2014). In part and as pertinent here, the PFMC designated EFH for Pacific coast salmon, wherein the freshwater EFH for Pacific salmon includes all those streams, lakes, ponds, wetlands, and other water bodies currently or historically accessible to salmon in California, except areas upstream of certain impassable manmade barriers (as identified by the PFMC 2014) and longstanding, naturally impassable barriers (i.e., natural waterfalls in existence for several hundred years) (PFMC 2014). Coyote Creek from San Francisco Bay to Anderson Dam is designated as EFH by the PFMP. As defined in the MSA, the term "essential fish habitat" means those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. For the purpose of interpreting this definition of EFH: ''waters'' include aquatic areas and their associated physical, chemical, and biological properties that are used by fish; ''substrate'' includes sediment, hard bottom, structures underlying the waters, and associated biological communities; ''necessary'' means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and ''spawning, breeding, feeding, or growth to maturity'' covers the species' full life cycle (50 CFR 600.10). Valley Water's FOCP includes areas designated as EFH for various life-history stages of steelhead and fall-run Chinook salmon in the Santa Clara Hydrologic Unit [2205], including migratory corridors, spawning habitat, and rearing habitat.

3.3.6.2 Environmental Effects

The Bay checkerspot butterfly, Metcalf Canyon jewelflower, Santa Clara Valley dudleya, and Tiburon paintbrush are not expected to be directly disturbed, injured, or killed by the proposed project given survey data finding none of these listed species in the FOCP area. Commission staff concludes that the FOCP will have no effect on the Bay checkerspot butterfly, Metcalf Canyon jewelflower, Santa Clara Valley dudleya, or

Tiburon paintbrush. Green sturgeon are not found within Coyote Creek and therefore are not in the action area, and their critical habitat is located within the downstream tidally influenced reaches, outside of the anticipated area of described effects. Commission staff concludes that the FOCP will have no effect on green sturgeon.

Coyote ceanothus, California tiger salamander, and California red-legged frog

Reservoir Drawdown

The drawdown of the reservoir will not result in direct or indirect effects on Coyote ceanothus plants because they do not occur in the reservoir area or immediate shoreline and will therefore, not be affected by its lowering.

The reservoir does not provide suitable habitat for the California tiger salamander or CRLF (ICF 2012), and therefore drawdown of the reservoir will not adversely affect these species or their habitats within the reservoir.

Reservoir Bank and Rim Stability Improvements

Based on the results of a May 2020 habitat assessment, Valley Water determined that the likelihood that Coyote Ceanothus plants occurring in the landslide remediation areas is low due to the absence of high-quality habitat. If this species were present, ground disturbing activities related to landslide remediation such as buttressing of the slides, construction of walls to retain head scarps, and installation of anchors to retain slide masses will likely adversely affect this species. Proposed activities may adversely affect these plants through direct disturbance, modification, or destruction of habitat, and may affect them indirectly through damage to underground root structures. In addition, equipment use, vehicular traffic, and worker foot traffic may result in the injury, mortality, altered growth or reduced seed set of individual plants.

During landslide remediation, effects on California tiger salamanders and CRLFs could occur as a result of earth-moving, equipment, and disturbance by personnel. For California tiger salamanders and CRLFs, effects will occur primarily in work areas above the reservoir rim.

Implementation of BMP BI-2 (Appendix A) during any of the FOCP components could result in the relocation of California tiger salamanders and CRLF from the proposed project area. If individuals are relocated to suitable habitat outside the project area, they may be subjected to physiological stress and face a greater risk of predation or may be subject to increased competition with individuals already present in the area to which they are relocated. However, the benefits of such relocation, in terms of avoiding direct injury or mortality, will outweigh any potential adverse effects.

Proposed Best Management Practices

Valley Water proposes in its environmental screening report to implement BMPs and avoidance and minimization measures (Appendix A). BMPs such as BI-10, BI-11, and BI-12 will minimize adverse effects on Coyote ceanothus by minimizing effects to vegetation and their roots, and by specifically avoiding and minimizing adverse effects in areas supporting rare plants and sensitive plant communities. BMP BI-2 specifically calls for relocation of native vertebrates, which will reduce adverse effects on the California tiger salamander and CRLF if any are detected in dewatering areas. BI-16 will avoid entrapment of these animals (e.g., in trenches), BI-17 will minimize attraction of these species' predators, and numerous other BMPs will minimize project effects on water quality and aquatic habitat for these species. BIO-2 will commit Valley Water to measures that will limit the potential for impacting amphibians through the spread of chytrid fungus.

The FOCP is likely to adversely affect Coyote ceanothus. Implementation of Valley Water BMPs and compliance with applicable SCVHP conditions will reduce adverse effects on Coyote ceanothus. Valley Water's compliance with the SCVHP will offset effects to this and other covered species through the preservation, restoration, and management of populations of applicable species. In addition, compensatory mitigation for the removal of the 36 Coyote ceanothus resulting from FOCP activities will be covered under Valley Water's mitigation program for the larger ADSRP's anticipated effects on Coyote ceanothus. Given the size of anticipated effects on Coyote ceanothus as part of the ADSRP, the SCVHP requires that Valley Water protect or create a new population of this species within five years of project effects. Recently, an occurrence of Coyote ceanothus on the Baird and Davidson properties, on the west side of Coyote Valley, was acquired and protected. The SCVHP also states that within the permit term, five populations must be created or protected. To meet the SCVHP's long-term requirements, Valley Water has begun establishing a new population of Coyote ceanothus on property it owns on Coyote Ridge, north of Anderson Dam. Valley Water's specific management activities for the long-term health of the population will also be described in a subsequent long-term management plan. With implementation of BMPs and compliance with SCVHP conditions, adverse effects of the FOCP on the Coyote ceanothus will be mitigated.

On August 24, 2020, and as clarified on September 16, 2020, FWS provided conservation recommendations for the Fish Rescue and Relocation Plan under the emergency consultation procedures of Section 7 of the ESA. One of these conservation recommendations is a monitoring plan to evaluate the effects of the relocation of O. mykiss to Upper Penitencia Creek on listed amphibian species, including sampling the water and swabbing the skin of relocated O. mykiss for amphibian pathogens. Should monitoring indicate that the fish relocation has introduced pathogens, FWS recommends that Valley Water develop and implement a disease control plan. This measure is

discussed more thoroughly below in *Section 3.3.6.3 Conservation Recommendations,* including our analysis of this recommended measure.

The FOCP is likely to adversely affect the Coyote ceanothus, California tiger salamander, and CRLF. However, the project will not jeopardize the continued existence of any of these species or result in adverse modification of designated critical habitat, and compliance with SCVHP conditions and implementation of BMPs will offset the project's impacts on these species.

Steelhead

Elements of the FOCP will result in poor water quality in the CWMZ and downstream reaches of Coyote Creek, as described above in *Section 3.3.2 Water Quantity* and *Section 3.3.3 Water Quality*, which will consequently have an effect on *O. mykiss* and its critical habitat in Coyote Creek. Migrating adult, early life stages, and rearing and migrating juvenile *O. mykiss* could be affected by increased water temperatures, low DO, flow alteration, and sedimentation during the FOCP. Until specific measures are in place which are expected to improve the habitat quality (in addition to other benefits), the FOCP will affect *O. mykiss* and critical habitat in Coyote Creek. Valley Water's primary measure proposed to minimize effects to the *O. mykiss* in the CWMZ is the fish rescue and relocation effort, and Valley Water will monitor water quality and habitat conditions in order to inform the need for future fish rescue efforts. Valley Water will also enact measures designed, in part or in full, to improve the habitat condition in Coyote Creek during the interim operations of Anderson Reservoir in order to maintain habitat quality suitable for juvenile *O. mykiss* in order to reduce the need to conduct fish rescue.

Many of the measures have been reviewed and discussed between Valley Water and the TWG members, and are still under review by those parties. In their conservation recommendations dated August 31, 2020, NMFS recommended that Valley Water form an operations work group which will ensure timely and dedicated collaborative efforts to support Valley Water's implementation of FOCP operations and minimize impacts to threatened CCC *O. mykiss* during the period of Anderson Reservoir drawdown. NMFS recommended that the operations work group meet monthly, or more frequently if warranted, for the purpose of reviewing current information regarding Coyote Creek conditions (i.e., flow, temperature, water quality), *O. mykiss* distribution, imported water operations, and Valley Water's operational forecasts. Information shared real-time by Valley Water will allow NMFS to provide guidance regarding the effects of operational decisions on steelhead, determine if avoidance and minimization measures for steelhead are performing as anticipated, and support FOCP's goal of minimizing environmental impacts. Valley Water responded to this recommendation on September 11, 2020, stating that this work group is duplicative of the existing TWG and other work groups. Commission staff find that the measures will promote adaptive management and ensure collaborative decision making in support of minimizing environmental effects to *O. mykiss* throughout implementation of the FOCP, and suggest that the interagency

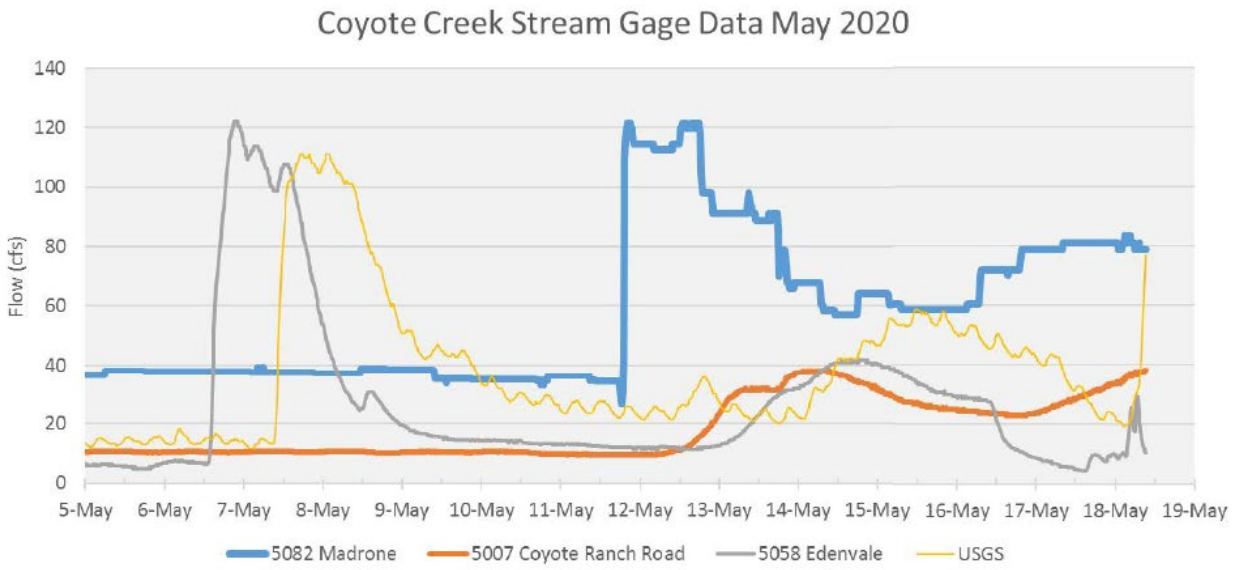
workgroup become a requirement of any approval of the Reservoir Drawdown and Operations Plan.

Pulse Flow and Fish Rescue and Relocation Plan

The Fish Rescue and Relocation Plan will be initiated prior to drawdown and will be reinitiated throughout FOCP, as deemed necessary based on the results of aquatic habitat monitoring and in consultation with the resource agencies or when the avoidance and minimization measures to improve habitat and water quality conditions and are unsuitable for *O. mykiss*. The Fish Rescue and Relocation Plan temporarily shifts management of salmonids in Coyote Creek away from the CWMZ while conditions there are unfavorable and prioritizes salmonid rearing in Upper Penitencia Creek (Stillwater Sciences 2020a).

The only life stage of *O. mykiss* expected to be in Coyote Creek at the start of the drawdown are juveniles. Two natural pulse flow events previously occurred in mid-March and early April 2020 which likely afforded multiple days of outmigration passage for steelhead smolts. To further encourage outmigration prior to the onset of poor habitat quality conditions expected to occur in September 2020, Valley Water provided a late-season pulse flow on May 11, 2020. The timing, magnitude, and duration of the pulse flows were determined in coordination with NMFS and California DFW through the Fisheries TWG in order to mimic a more natural hydrograph and reduce the risk of smolts stranding (Figure 6) (Stillwater Sciences 2020a; Valley Water Unpublished). Valley Water also drained Coyote Percolation Pond on May 6, 2020, as a measure to minimize predation risk to smolts by displacing predatory fish species in the pond. By draining the Coyote Percolation Pond prior to this pulse flow event, the 0.9-mile long artificial impoundment could be eliminated, and the channel restored to a free-flowing condition which will increase the survival of downstream migrating smolts. In a lotic environment, steelhead smolts can use streamflow to their advantage in their seaward migration, as they will not have to expend energy actively swimming through the pond. Additionally, restoring streamflow velocities will give steelhead an advantage over large predatory invasive fish, such as bass and catfish.

Figure 6: May 2020 pulse flow (Valley Water unpublished).



The pulse flow release likely had a beneficial effect on *O. mykiss* smolts that were present in the Coyote Creek at the time by promoting and facilitating safe downstream migration. The pulse flow was within the range of flows that naturally occurs in Coyote Creek, and was beneficial in promoting those physical or biological features that support the life-history needs of *O. mykiss*, specifically, a migratory corridor with velocity refugia. Therefore, the pulse flow did not destroy or adversely modify *O. mykiss* critical habitat in Coyote Creek.

In addition to the pulse flows to encourage out-migration, Valley Water enacted the Fish Rescue and Relocation Plan in the week of August 17, 2020, in order to relocate any smolts still in the CWMZ of Coyote Creek to suitable habitat in Upper Penitencia Creek. The fish rescue effort was scheduled prior to the expected loss of cold pool storage expected to occur in September 2020. The fish rescue focused on previously identified pool habitats in the approximately 4-mile section of the CWMZ of Coyote Creek. Fish rescue efforts used a multi-phased approach over gradually decreasing flow rates to maximize capture efficiency by concentrating fish in pools while keeping Coyote Creek wetted, in order to minimize handling, stranding, and environmental stress that could result from dewatering activities (Table 14). Water temperatures in the CWMZ are expected to increase as pool and off-channel habitat units become isolated which will adversely affect any *O. mykiss* stranded in pools. To address this, Valley Water monitored temperatures in the CWMZ and managed releases from Anderson Reservoir, to the extent possible, to limit the duration of time stream connectivity is lost and identify where temperature may become unsuitable.

Table 14: Flow schedule for phased fish rescue and relocation efforts (Stillwater Sciences 2020b).

Flow event	Method	Location	Details	Dates
Normal (40–60 cfs)	Recon	CWMZ	Identify CPHLs	2 days any time before July 27
Pulse Flow (120 cfs and 60 cfs)	Encourage outmigration	CWMZ		Approximately 8 days in mid-May
26 cfs (coincident with HCM)	Electrofishing	Priority backpack electrofish locations	Electrofish everything possible with 2 crews covering a total of up to 3 miles of stream	3 days. Week of August 24th
10 cfs	Primarily seine, backpack electrofishing if possible	CPHLs	2 crews Capture and relocate *O. mykiss*.	3 days. Starting immediately after the 20 cfs flows end.
Less than 10 cfs if possible and if needed	Seine	CPHLs	2 crews. Capture and relocate *O. mykiss*.	1 day. Starting immediately after the 10 cfs flows end.

The Fish Rescue and Relocation Plan establishes criteria to minimize stress associated with the capture, handling and holding, tagging, and transport of *O. mykiss*. Some losses may still occur with implementation of the Fish Rescue and Relocation Plan because of varying degrees of effectiveness of the collection methods and potential injury or mortality associated with capture, handling, and relocation of fish (Kelsch and Shields 1996, Reynolds 1996). However, overall, the adverse effects to *O. mykiss* will be reduced by the following measures: following NMFS's protocols for electrofishing; minimizing over-crowding in holding tanks and segregating by size to prevent predation; attaching lids holding containers to minimize stress and to prevent spilling or fish jumping out; monitoring and adjusting water quality in holding containers by providing ice and aeration; and adhering to a tagging protocol with considerations for fish size and water temperature. Valley Water will improve survival of the relocated *O. mykiss* by acclimating them to water temperature at the Upper Penitencia Creek release site and releasing the fish into pool habitats. When conditions are suitable and tagging is not expected to cause undue stress, Valley Water will mark a subset of *O. mykiss* (≥ 65 mm) with passive integrated transponder (PIT) tags. Information from the PIT tagged fish may inform future management of *O. mykiss* in Coyote Creek,[50] and the tagging process will allow for collection of genetic samples for future analysis which will have a beneficial effect to the CCC DPS *O. mykiss*.

[50] There is a PIT tag array on Upper Penitencia Creek at the Noble Diversion and downstream end of Coyote Creek (Valley Water unpublished).

The fish rescue conducted in August 2020 resulted in capture of 77 *O. mykiss*, 74 of which were relocated to Upper Penitencia Creek; 2 larger fish (>300 mm fork length) were released back into the CWMZ at NMFS's request, and 1 mortality related to electrofishing occurred (Valley Water, unpublished). Valley Water observed delayed mortality of three fish two days after release at one relocation site in Upper Penitencia Creek (Valley Water unpublished). There is no Incidental Take Statement associated with the emergency consultation procedures under Section 7 of the ESA (50 CFR 402.05) for Valley Water's FOCP.[51] However, Valley Water has estimated that fish rescue and relocation measures are expected to result in no more than 5 percent mortality of fish that are rescued and relocated (Stillwater Sciences 2020a); the mortalities associated with the 2020 fish rescue effort are within this expected level of take. Valley Water will document all *O. mykiss* captured and provide any mortalities to NMFS.

The 2020 fish rescue and relocation effort resulted in lethal take of 4 fish, due to electrofishing activities and latent mortality following release to Upper Penitencia Creek, within the level Valley Water anticipated to occur due to capture and handling. Overall, *O. mykiss* will experience short-term adverse effects related to capture and handling, however, the relocation measures are intended to protect fish from otherwise unsuitable habitat conditions by temporarily shifting management of salmonids in Coyote Creek away from the CWMZ and prioritizing salmonid rearing in Upper Penitencia Creek (Stillwater Sciences 2020a). The fish rescue and relocation will not destroy or adversely modify steelhead critical habitat in Coyote Creek.

Proposed CWMZ Monitoring & Future Fish Relocation Efforts

Valley Water will identify temperature and flow targets for the CWMZ, as well as adaptive management strategies, in consultation with the resource agencies. This will provide criteria for initiating fish rescue and relocation efforts throughout the FOCP. Additionally, ongoing monitoring and activities under the Proposed Action may result in adjustments to timing of the rescue and relocation effort. Future fish rescue and relocation efforts in the CWMZ will be informed in part by environmental DNA (eDNA) sampling, fisheries sampling, and ongoing monitoring of habitat conditions (e.g., water temperature, dissolved oxygen, and flow) in the CWMZ (Table 15).

[51] "Take" in Section 9 of the ESA is defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect; or to attempt to engage in any such conduct."

Table 15: Proposed habitat and fisheries monitoring in the CWMZ

CWMZ Monitoring	Timeframe
Migration flows	Spring 2021, spring 2022, and beyond through construction of ADTP and ADSRP
eDNA sampling	Spring and summer 2021 and through construction of ADTP and ADSRP
Water temperatures and dissolved oxygen (CWMZ and coldwater pool in Anderson Reservoir)	Summer 2020, Summer 2021, and through construction of ADTP and ADSRP
Species distribution and abundance	Fall 2020, Summer 2021, Summer 2022, and through construction of ADTP and ADSRP
Turbidity monitoring	During drawdown & in areas of active construction

Without Anderson Reservoir storage in spring 2021, natural precipitation events are anticipated to result in potential migration flows within the CWMZ sufficient to support migration of *O. mykiss* downstream and out of the CWMZ. Valley Water will monitor for these natural migration flows in the CWMZ using the stream gauge 5082 at Madrone (located at the upstream end of CWMZ) in spring 2021, spring 2022, and beyond through construction of ADTP and ADSRP.

Valley Water will also conduct fisheries monitoring to determine the potential for *O. mykiss* to re-enter the CWMZ and occur in Coyote Creek in Summer 2021, Summer 2022, and through construction of ADTP and ADSRP. The fisheries monitoring effort will include use of a fyke net, angler reports, Vaki data from the fishway at Coyote Percolation Pond, and may include electrofishing, spawning surveys, or other methods to determine presence and relative abundance.

Valley Water will conduct eDNA sampling in the CWMZ every 2 weeks in May through September 2021, when temperature conditions may be nearing stressful levels for *O. mykiss* in the CWMZ, in order to determine whether *O. mykiss* are present. This technique is non-invasive, and is intended to detect presence/absence of a species or changes in relative abundance and will reduce stress from capture and handling of sensitive species if it is determined that fish are not present or are in low abundance (Stillwater Sciences 2020b). If the results indicate *O. mykiss* have been excluded from the CWMZ, Valley Water states it will not undertake additional fish rescue and relocation efforts for the year. If the eDNA results exceed a pre-determined threshold and a substantial increase in *O. mykiss* abundance has occurred, Valley Water will initiate additional fish rescue and relocation efforts as described above. This sampling activity is

non-invasive and is not likely to adversely affect *O. mykiss* and will not result in the destruction or adverse modification of critical habitat.

Impacts to Upper Penitencia Creek

Upper Penitencia Creek and the downstream reach of Arroyo Aguague are the most appropriate receiving waters for *O. mykiss* rescued from Coyote Creek (Figure 7). The relocation of steelhead smolts to Upper Penitencia Creek could have a significant impact to the existing aquatic community and ecology in Upper Penitencia Creek, through increased competition with the existing *O. mykiss* juveniles, adverse interactions with CRLF, and adverse effects of introduction of aquatic pathogens and aquatic invasive species.

Valley Water conducted an analysis to estimate the available capacity for relocated *O. mykiss* by age class (age 0 and age 1–3) in 4 reaches of Upper Penitencia Creek by taking the difference between the second highest estimated abundance for surveys conducted 2007–2019 and the 2019 estimated abundance (Stillwater Sciences 2020b). Upper Penitencia Creek is expected to have a total capacity for approximately 889 age class 0, and 790 age class 1 or older. This is more capacity than what Valley Water expected to need, however, if more fish need relocation, Valley Water will release fish to those reaches with demonstrated capacity for additional *O. mykiss*. These measures ensure that the translocation of additional smolts into Upper Penitencia Creek will not adversely affect the *O. mykiss* population by increasing competition for prey resources and habitat (Riley et al 2009). Overall, the adverse effects to the existing O. mykiss population in Upper Penitencia Creek will be minimized due to: the high degree of relatedness of the Coyote Creek and Upper Penitencia Creek O. mykiss populations based on genetic analysis; equal habitat protections under ESA; the short distance between the sites; and available capacity in the Upper Penitencia Creek reaches. The relocation of fish to this site will not destroy or adversely modify critical habitat for O. mykiss in Upper Penitencia Creek.

Figure 7: Upper Penitencia Creek relocation reaches (Stillwater Sciences 2020b).

The relocated *O. mykiss* may affect the CRLF in Upper Penitencia Creek and possibly Arroyo Aguague by competing for the same prey resources, or juvenile *O. mykiss* could predate upon CRLF larvae. Valley Water will prioritize reaches in Upper Penitencia Creek as determined in consultation with the resource agencies, and the number of *O. mykiss* existing in the reach plus the relocated fish will be at a density below presumed carrying capacity and within the natural range of variation that has allowed populations of other sensitive species (such as CRLF) to persist (H. T. Harvey & Associates 2020). Additionally, Valley Water will follow decontamination procedures to minimize the potential for spread of aquatic pathogens and aquatic invasive species (including but not limited to: New Zealand mud snail, chytrid fungus, and ranavirus). Chytrid has previously been recorded in the upper watershed of Upper Penitencia Creek (Padgett-Flohr and Hopkins 2010) and may already be present in the proposed fish relocation areas. The release of the relocated *O. mykiss* is not likely to cause additional interactions between the species than will otherwise be naturally present and is not expected to have long-term, population-level impacts on CRLF. Valley Water has proposed to swab relocated steelhead to monitor for pathogens. Therefore, the relocation of *O. mykiss* to Upper Penitencia Creek may affect and is likely to adversely affect CRLF in Upper Penitencia Creek, but will not jeopardize the continued existence of any of these species or result in adverse modification of designated critical habitat.

NMFS Recommendations on Fish Rescue and Relocation

On August 14, 2020, NMFS provided conservation recommendations for the Fish Rescue and Relocation Plan under the emergency consultation procedures of Section 7 of the ESA,[52] summarized in *Section 3.3.6.3 Conservation Recommendations*. The recommended measures will provide for collection and reporting of information that will help inform future fish rescue and relocation efforts as well as provide a better understanding of *O. mykiss* use of Coyote Creek. Valley Water has committed to implement the measures pertaining to the fish rescue (Valley Water 2020f), as clarified in a letter dated August 24, 2020. Subsequently, Valley Water filed a letter with the Commission on September 25, 2020, to provide further resolution on some of the recommendations provided by NMFS.

NMFS recommended that Valley Water conduct the fish rescue and relocation efforts annually, through completion of ADSRP or unless otherwise directed by NMFS, and provided measures to minimize harm to *O. mykiss* that could occur during fish

[52] If incidental take is anticipated during the emergency response, NMFS and FWS can advise the action agency during the informal consultation phase of ways to minimize take. Emergency consultations may contain conservation recommendations to help protect listed species and their habitats in future emergency situations or initiate beneficial actions to conserve the species. These conservation recommendations are not mandatory conditions resulting from a Biological Opinion.

capture and relocation (e.g., using qualified biologists, separating fish by size class, avoiding PIT tagging activities in temperatures over 18°C, and determining habitat capacity in Upper Penitencia Creek annually). In their letter filed August 24, 2020, Valley Water confirmed that the handling measures proposed by NMFS are consistent with the existing Fish Rescue and Relocation Plan. Commission staff agree that the specific handling measures are important to include in the Fish Rescue and Relocation Plan. Additionally, Valley Water stated future fish rescue and relocation will be conducted based on the results of its eDNA fisheries sampling and Vaki data to confirm the presence of *O. mykiss* and the habitat conditions in Coyote Creek. That is, the fish rescue may be conducted annually if the presence of *O. mykiss* is confirmed by monitoring data and based on habitat conditions; if fish are not present or habitat conditions are suitable for *O. mykiss*, Valley Water will not initiate fish rescue efforts Commission staff expect that fisheries and habitat data collected by Valley Water is sufficient to appropriately inform the initiation of fish rescue efforts in future years, however, due to the significant planning necessary to enact the fish rescue activities, including conducting capacity studies in Upper Penitencia Creek and monitoring and testing for amphibian pathogens or invasive species that can potentially be released during fish relocation (per FWS recommendations), it is appropriate to plan to conduct the fish rescue activities annually unless otherwise directed by NMFS. Therefore, Commission staff recommend Valley Water supplement the existing Fish Rescue and Relocation Plan to include NMFS's measures described above to minimize harm to *O. mykiss* that could occur during fish capture and relocation and include reporting schedules following relocation efforts. Further, Commission staff recommend annual implementation of the fish rescue and relocation Plan unless otherwise determined in consultation with NMFS.

NMFS also recommended that Valley Water annually monitor adult *O. mykiss* presence and spawning through spawning ground surveys in the reach of Coyote Creek from Anderson Dam to Metcalf Road, at least monthly from January through April beginning in 2021 through completion of the ADSRP. NMFS also recommended annual juvenile surveys, in the 10-mile reach between Anderson Dam and the Coyote Percolation Pond, be conducted beginning in 2021 through completion of the ADSRP and include: (1) juvenile outmigration surveys using three migrant traps (fyke nets or screw traps), operated least 5 days a week, 24 hours a day, from February through May; and (2) juvenile rearing surveys. The results of the juvenile surveys will inform future fish rescue and relocation efforts, allow for estimation of *O. mykiss* production, survival, and movement, and help evaluate presence, distribution, and relative abundance. In their letter filed August 24, 2020, Valley Water stated the measures could be invasive and have adverse effects to both *O. mykiss* and their critical habitats. Valley Water additionally stated that their proposal for non-invasive eDNA sampling, combined with the Vaki data, will provide information about the presence of *O. mykiss* in the CWMZ, and conducting the fish rescue and relocation effort (if indicated by the eDNA sampling) will provide information about the abundance and distribution of juvenile *O. mykiss*. However,

Valley Water stated it will perform adult *O. mykiss* spawning surveys upstream of the Coyote fishway after at least one adult fish is detected on the Vaki River Watcher in order to determine precise spawning locations between the Coyote fishway (at Metcalf Road) and Anderson Dam. In the September 25, 2020 filing, Valley Water provided some resolution on the issue of fisheries monitoring, stating that it is committed to monitoring the health of *O. mykiss* and Chinook salmon in Coyote Creek to confirm the effectiveness of the imported water and temperature management actions proposed under FOCP. Further, Valley Water stated that it will develop a monitoring program in collaboration with NMFS and other regulatory agencies with jurisdiction to assess the health and condition of anadromous salmonids during the FOCP, and that the program will include, but is not limited to, direct assessment of trends in distribution, abundance, and growth of *O. mykiss* in the CWMZ, and may consider use of downstream migrant traps.

Commission staff recognize that the surveys recommended by NMFS will do more than provide data to inform future fish rescue efforts, as the surveys provide information about spawning areas and habitat use, outmigration, and summer rearing habitat conditions. Similarly, Valley Water's proposal to use non-invasive methods (eDNA sampling data, Vaki data, and habitat data) will provide information about fish presence without risk of potentially harming listed species. The September 25, 2020 letter indicates that the goal of fisheries monitoring is to assess the health and condition of anadromous salmonids during the FOCP, and that there is a measure of flexibility regarding the specific methods that we earlier proposed by NMFS and Valley Water.

In recognition that the ADSRP is in the foreseeable future, and due to the potential for cumulative effects to *O. mykiss* and critical habitat, Commission staff conclude that development of fisheries surveys is be reasonable and that the identification of specific methodology for such fisheries surveys requires additional consultation in order to achieve the goals of monitoring. Therefore, Commission staff recommend that Valley Water develop an adaptive management plan for fisheries monitoring which could be implemented throughout the FOCP. The plan should identify and define: (1) objectives, goals, and methods to achieve those goals, for monitoring fisheries and habitat; (2) a process for adjusting management actions and /or directions based on relevant fisheries and habitat information; and (3) appropriate decision points and thresholds for initiation of alternative or additional fisheries surveys of methods. The additional or alternative studies that may be enacted based on the available fisheries and habitat information that becomes available may include, but is not limited to, implementation of spawning ground surveys, juvenile outmigration surveys, juvenile rearing surveys, distribution studies, habitat utilization studies, tagging, and /or trapping. The plan should detail the thresholds, locations, methods, and reporting timeframes.

As discussed in *Section 3.3.3.2 Water Quality*, NMFS recommended temperature monitoring and reporting to provide information about the effects of imported water and

conditions during FOCP. This data will be valuable to inform whether conditions are suitable for *O. mykiss* or whether fish rescue efforts should be initiated. As previously stated, Commission staff agree that this temperature monitoring should be implemented and suggest that it become a requirement of any approval of the Reservoir Drawdown and Operations Plan.

Finally, NMFS recommended development of models for forecasting streamflow and water temperature conditions (daily time-step) six months into the future at 50% and 90% exceedance intervals in Coyote Creek between Anderson Dam and Metcalf Road to predict environmental conditions and inform decisions regarding the need for future fish relocation. In its letter filed August 24, 2020, Valley Water stated it will conduct real-time monitoring of these parameters in order to inform fish rescue efforts, and that additional water temperature and stream flow modeling efforts will be duplicative of existing models created collaboratively with parties to the FAHCE Agreement. The predictive model proposed by NMFS will allow advance planning for the fish rescue effort and improves detection of trends that affect habitat quality for *O. mykiss*. Commission staff conclude that due to the level of planning and coordination necessary for the fish rescue effort, the proposed predictive model would provide an advantage over use of real-time monitoring to inform fish rescue efforts. Commission staff recommend adopting NMFS's proposed measure to develop and implement a Streamflow and Water Temperature Forecast Model.

Water Quality during FOCP

Sedimentation

During dewatering, there will be an increase in water discharged into Coyote Creek resulting in the potential for elevated suspended sediment conveyed to Coyote Creek as demonstrated by the sediment modeling analyses (see *Section 3.3.3.2 Water Quality*). Based on the sediment modeling under typical winter inflows, minimal erosion is expected and sediments will settle in the reservoir, therefore flow releases associated with reservoir drawdown are expected to have minimal impact on downstream suspended sediment concentrations and associated habitat quality. Valley Water will implement specific plans and BMPs to avoid or minimize erosion, suspended sediment, and other water quality impacts. Suspended sediment levels that are likely to be generated during drawdown under typical inflows are not expected to reach levels that will cause direct injury to or disrupt the normal behavior of *O. mykiss*, and are not expected to result in destruction or adverse modification of critical habitat.

The sediment modeling also examined the impacts of storm events on sediment mobilization, which will cause an increase in downstream sediment transport. Active drawdown is anticipated to occur beginning October 1, 2020 and continuing through January or April 2021, and will therefore have the potential to affect spawning adults,

incubating eggs, fry, and rearing juveniles in Coyote Creek. The potential severity of these effects at different life stages depends on the concentration of suspended sediment and duration of exposure to suspended sediments (Newcombe and Jensen 1996). An increase in suspended sediment can have lethal and sublethal effects to *O. mykiss*, and can encompass behavioral changes (including avoidance and displacement from the affected area), disruption of normal physiology, and alteration of normal growth and development (Newcombe and Jensen 1996). Increased sedimentation can also reduce foraging success, reduce prey availability by altering the primary and secondary productivity of the system, and degrade spawning and rearing habitat by filling interstitial spaces in the gravel, reducing pool depth, or causing suffocation or entrapment of eggs and early life stages (Jensen et al 2009, Colas et al. 2013).

Based on the sediment modeling during storm events, the concentration of TSS is expected to peak quickly at approximately 3,800 mg/L for a short a short duration (approximately 1 hour) following peak inflow, which will settle out or become diluted over approximately 3.5 days to approximately 200 mg/L (Figure 8), with the majority of deposition in Ogier and Coyote Percolation Ponds (with the flashboard dam down) (Table 16, Table 17). As described above in *Section 3.3.3 Water Quality*, there is little information about the range of typical suspended sediment concentrations, and the effects of seasons, storm events, and location in the watershed on sedimentation is also largely unknown. Based on the little information available, the peaks in TSS expected during drawdown under storm conditions will be elevated beyond typical conditions experienced in Coyote Creek. Although the model indicates that fish will not be exposed to high turbidity for a prolonged period of time during storm events, adverse effects are expected to occur as a result of the increased sedimentation.

Figure 8: Outflow and TSS from Anderson Reservoir for Scenario 1 (existing low-level outlet; reservoir elevation 488 ft) with two-year event inflow.

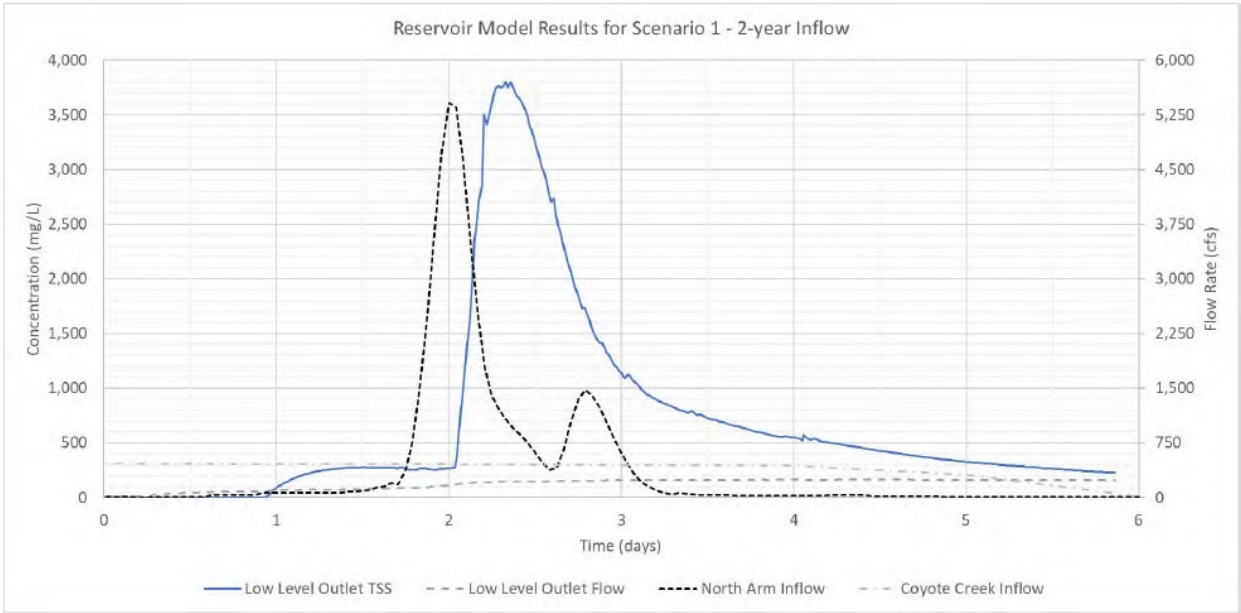


Table 16: Peak TSS Results Summary (Valley Water 2020a).

SCENARIO	FLOW EVENT	TSS RELEASED FROM RESERVOIR	TSS UPSTREAM OF OGIER PONDS	TSS DOWNSTREAM OF METCALF PONDS	TSS NEAR UPPER PENITNCIA CREEK CONFLUENCE	TSS AT MILPITAS
1	2-year Inflow	3,604	3,112	806	1,933	1,217
2	2-year Inflow with Double Peak	8,798	7,400	5,411	4,724	4,816

Table 17: Sediment Deposition in Ogier and Metcalf Ponds (Valley Water 2020a).

SCENARIO	FLOW CONDITIONS	DEPOSITION IN OGIER PONDS (TONS)	DEPOSITION IN METCALF PONDS (TONS)	DEPOSITION IN OGIER PONDS (INCHES)	DEPOSITION IN METCALF PONDS (INCHES)
1	2-year event	1,276	762	0.2	0.2
2	2-year event with double peak	5,619	1,297	0.7	0.3

At the expected levels of exposure during a 2-year storm event, migrating adults and rearing juveniles can experience sublethal effects expressed in behavioral changes. Migrating adult *O. mykiss* will be expected to readily avoid high turbidity and suspended sediment and move to adjacent holding areas, but will not be expected to abandon their migration (Stillwater Sciences 2020a). High turbidity may delay migration back to spawning sites, and the energy expenditure associated with migratory delay may reduce spawning success, and therefore population size. Rearing fry and juveniles could be displaced from preferred habitat or protective cover, which may result in a short-term reduction in feeding rates and feeding success or increase their susceptibility to predation (Stillwater Sciences 2020a). Changes in feeding behavior are primarily related to the reduction in visibility that occurs in turbid water, although macroinvertebrate prey items may be adversely affected due to the sedimentation (see *Section 3.3.4.2 Aquatic Resources*) which could result in a diminished food supply for rearing *O. mykiss*. The consequences of fish moving away from preferred habitat to avoid elevated TSS concentrations will not be beneficial if displacement is to sub-optimal habitat, because the fish may be stressed and more vulnerable to predation. The direct effects to individual *O. mykiss* behavior are expected to be temporary and are expected to subside as sediment settles out or is flushed downstream. However, the temporary behavior changes can result in reduced growth and survival for juveniles and reduced spawning success for adults, which can culminate in population-level effects to the Coyote Creek *O. mykiss*. The reservoir will remain in the drawndown condition for an extended period of time and it is assumed that sediment will be released to Coyote Creek until completion of ADSRP, therefore long-term adverse effects to the population may be expected.

Survival of eggs is dependent on a continuous supply of well oxygenated water through the streambed gravels, and sedimentation can reduce the flow of water and, therefore, oxygen to eggs and alevins. At the level of exposure during a 2-year storm event, incubating eggs may experience paralethal effects (e.g., effects which do not result in directly measurable mortality, but surrogates of mortality or reduction in fitness such as reduced growth, reduced fish density, habitat damage such as reduced porosity of

spawning gravel, delayed hatching, and reduction in population size) (Newcombe and Jensen 1996). Sedimentation resulting from a two-year storm event occurring after spawning (approximately December through May) can result in a decrease in spawning production due to reduced fitness of the incubating eggs (paralethal effects), however, multiple two-year storm events in a single season could culminate in 20 percent mortality of incubating eggs (Stillwater Sciences 2020a).

Based on the sediment modeling, any fines that don't settle in the reservoir will be released to Coyote Creek: between 6 to 16 percent of the suspended sediment is expected to be deposited in the CWMZ, between 17 to 46 percent will settle in Ogier and Metcalf Ponds, and between 40 and 80 percent will settle by the time Coyote Creek reaches Highway 237 at Milpitas (URS Appx F 2020). Sediment deposition may alter stream bed composition, change channel hydrology and geometry, and reduce the depth of pools and riffle areas. This can cumulatively reduce available fish habitat, and subsequently decrease fish holding capacity and decrease fish populations. Sediment deposition in the CWMZ could result in a localized and temporary effect to *O.mykiss* critical habitat by affecting the physical and biological features of freshwater rearing habitat and migration corridors through temporary degradation of water quality, reduced available prey for rearing juveniles, and potentially reduced pool habitat for rearing steelhead (Stillwater Sciences 2020a).

Although the sedimentation effect from potential mass movements from landslides in the reservoir rim has not been quantified, the suspended sediment concentrations are expected to be much greater than if only sediment is entrained from the flow releases. The rate of reservoir drawdown is intended to minimize erosive forces and sedimentation. In the reservoir, Valley Water's bank and rim stability improvements and intake structure modifications will minimize landslide risk and sediment mobilization and deposition, which will reduce sediment transport to steelhead habitat downstream of Anderson Dam. These measures will have no effects on steelhead, and the resulting reduction in downstream sediment transport is not likely to adversely affect steelhead or destroy or adversely modify critical habitat (Stillwater Sciences 2020a).

To minimize potential effects of sedimentation during drawdown to *O. mykiss*, Valley Water implemented the spring 2020 pulse flow and the August 2020 Fish Rescue and Relocation Plan to remove *O. mykiss* from the area prior to the effects. Valley Water will monitor water quality and conduct fisheries sampling in the CWMZ during FOCP to inform the need for future fish rescue efforts throughout the duration of the drawdown and construction activities. The reservoir drawdown is expected to adversely affect steelhead through capture stress associated with fish rescue, but this is to prevent lethal take that will otherwise result from exposure to poor water quality. Valley Water will implement plans and BMPs to protect water quality and habitat during drawdown and construction activities to avoid or minimize potential turbidity, suspended sediment, and other water quality impacts (see *Section 3.3.3 Water Quality*).

There will be adverse effects to steelhead critical habitat as a result of sedimentation, but with implementation of the above-mentioned plans and BMPs, the effects do not rise to the level of destruction or adverse modification of critical habitat. Valley Water initiated habitat criteria mapping in the CWMZ in August 2020 to estimate the amount of habitat available to *O. mykiss* at specific flows (Stillwater Science Technical Memorandum May 2020). The proposal for habitat criteria mapping includes a description of base map development (which will generate seamless high-resolution orthorectified base map imagery of selected sites or series of contiguous sites identified from the 2019 habitat inventory), field methods to map suitable habitat at each sampling site, and analytical methods to calculate suitable habitat area and total available habitat area. Results from this assessment will provide life-stage-specific information on habitat availability to inform management decisions regarding future flow releases. Further, the information will be helpful to identify impacts to key physical and biological features of critical habitat from sedimentation, which will facilitate identification and mitigation of adverse effects from sediment transport and deposition on critical habitat for steelhead and is continuing to consult with the resource agencies to identify a range of habitat restoration measures that may be enacted following FOCP to mitigate for any measured effects.

Under the emergency procedures of the ESA, on August 31, 2020, NMFS filed conservation recommendations (summarized in Table 18). As described above in *Section 3.3.3 Water Quality*, Valley Water has stated it is willing to collaborate with the TWG to add sediment monitoring downstream of Anderson Dam, which will provide valuable data about the suspended sediment discharges from Anderson Reservoir, and the effect of the discharges on Coyote Creek downstream of the dam. In addition, NMFS recommended that Valley Water supplement its habitat criteria mapping proposal to include mapping the spatial quantity and quality of spawning gravels suitable for *O. mykiss* prior to reservoir drawdown, and annually during the FOCP drawdown period. Specifically, NMFS recommends mapping with the following criteria: (1) the aerial extent of suitable gravel patches should be mapped onto the aerial imagery developed for the habitat criteria mapping study's 13 flatwater and 9 riffle habitat units; (2) the criteria for determining suitable spawning patches should be those areas having a minimum area of 1.9 square meters with a dominant particle size (D50) in the range of 10 to 50 mm; (3) to document existing conditions, baseline mapping should be completed in the fall of 2020 and prior to any potential sediment release; (4) beginning in 2021, Valley Water should remap the extent of suitable spawning patches on an annual basis; (5) suitable spawning areas should be digitized into a GIS and changes in spawning gravel area calculated on an annual basis; and (6) the percent embeddedness of 20 rocks within one suitable spawning gravel patch should be measured at each of the 22 habitat units during the baseline survey and subsequent annual surveys. In their response dated September 11, 2020, Valley Water stated it will replace its proposed habitat monitoring and

restoration approach (directly monitoring the primary constituent elements of critical habitat using transects in specific habitats) with the proposal recommended by NMFS. Commission staff agree that supplementing the habitat criteria monitoring plan with NMFS's recommendations will be beneficial in determining the extent that the sedimentation is affecting aquatic habitat in Coyote Creek. Commission staff agree that this plan must be developed and implemented in order to monitor impacts to spawning gravel and suggest that it become a requirement of any approval of the Reservoir Drawdown and Operations Plan.

Temperature and Flow Conditions

Once the reservoir is drawn down to elevation 488 ft, temperatures in Coyote Creek will increase as a result in a reduction of releases from Anderson in dry summer and fall months, as well as warmer releases from Anderson Reservoir due to the loss of the cold pool and releases from the water surface were temperatures are warmer, and an increase in imported water releases from the CVP necessary to prevent dryback in the summer months. As described in *Section 3.3.3 Water Quality*, the anticipated daily maximum temperatures of imported water that will be discharged downstream of Anderson Dam, depending on water year type and ambient temperatures, is estimated to be 24°C to 26°C from July through October (Stillwater Sciences, 2020).

During Years 1 to 3 with the reservoir drawn down and increased warm water releases from the CVP (prior to the extension), temperatures in Coyote Creek will exceed the suitable temperature ranges for *O. mykiss*, (Stillwater Sciences 2020a). Valley Water has currently identified a suitable daily average temperature threshold of 22°C, and has indicated that it will continue to consult with the resource agencies to identify specific criteria. The summer temperatures during these years could affect juvenile *O. mykiss* in Coyote Creek, as there will be no available thermal refugia in the CWMZ, and the downstream ponded reaches tend to have higher temperatures. Temperatures at sub-lethal levels can alter normal salmonid growth and behavior, and long exposures to thermal stress can decrease chances for long-term survival (Ligon et al. 1999). Valley Water will enact measures to reduce the impact of increased temperatures in Coyote Creek, including: releasing imported upstream of Ogier Ponds through the proposed CVP extension, and using chillers to cool water released from the Santa Clara conduit upstream of the CWMZ. Further, Valley Water will implement a Water Quality Sampling Plan and fish monitoring efforts which is expected to inform future fish rescue activities and minimize the effects of unsuitable temperatures on juvenile *O. mykiss* that may be in Coyote Creek.

In summer and fall months during Years 1 to 3 with the reservoir drawn down, there is potential for flows in Coyote Creek to dry back due to the decreased storage in Anderson Reservoir if sufficient releases of imported water are not available to offset the decreased storage and due to percolation losses in Coyote Creek (Valley Water 2020a).

During this period, streamflow through the CWMZ during most years could not be adequately maintained, resulting in dryback of the lower reaches of the CWMZ, as well as the reach from Ogier Ponds to between Montague Expressway and Berryessa Road. Juvenile *O. mykiss* could be affected by being trapped in pools disconnected from the stream, exposing themselves to high temperatures and low DO in the isolated pools, and stranding in shallow water. This could affect the physical and biological features of designated habitat by limiting migratory corridors without obstacles, water quality, and water quantity. Measures to reduce the impact of the altered flow and potential for dryback include continued normal operation of Coyote Reservoir, and measures for imported water releases (the CVP extension and chillers). As we've said, Valley Water will implement a Water Quality Sampling Plan, fish monitoring efforts, and flow monitoring (to detect migration flows) which will inform the need to initiate additional fish rescue activities, therefore minimizing the effects to juvenile *O. mykiss* that may be in Coyote Creek.

Future releases from Anderson Dam to Coyote Creek once the reservoir is drawn down may provide a more natural hydrograph. During the winter, flow releases from Anderson Reservoir will generally be of greater magnitude and the hydrograph will increase and decrease much more rapidly, and decrease between storm events, providing flow for migrating adult *O. mykiss*. During the time when Anderson Reservoir is drawn down, Valley Water states it cannot commit to providing future pulse flows to encourage juvenile *O. mykiss* to outmigrate with water releases from Coyote Reservoir due to the potential for impacts to listed species downstream of Coyote Reservoir. Without Anderson Reservoir being operated for storage and without the option to release pulse flows from Coyote Reservoir, natural precipitation events in late winter or spring will be bypassed through Anderson Dam and could result in potential migration flows within the CWMZ sufficient to support migration of *O. mykiss* downstream before temperature conditions in the CWMZ become unsuitable in the summer months. The less impaired flow variations during this time could provide flows for migrating adults and emigrating juveniles, as well as promote natural processes that support physical and biological features of critical habitat, such as sediment sorting and maintenance of aerated gravels that are important habitat for invertebrates and for fish spawning (migratory corridor, spawning and rearing habitat) (Stillwater Sciences 2020a). However, higher peaks in flows will adversely affect *O. mykiss* juveniles by encouraging them to move from suitable rearing habitat in the CWMZ to less suitable habitat downstream if high-flow refuge is not available (Stillwater Sciences 2020a).

As described in *Section 3.3.3 Water Quality*, completion of the CVP extension (expected in summer 2021) will keep Coyote Creek downstream of Ogier Ponds wetted, which will allow Valley Water to reduce the volume of imported water released by the Coyote Creek Discharge Line downstream of Anderson Dam. Temperatures at the release site downstream of Ogier Ponds will provide wetted conditions with temperatures

similar to historical conditions. Once the new pipeline extension is operational, the volume of imported water released into the CWMZ by the Coyote Creek Discharge Line can be reduced, and the reduced volume of imported water could then be chilled prior to release in the CWMZ. The electric chillers are scheduled to be operational by 2021 at the earliest and 2023 at the latest. No effects to *O. mykiss* or critical habitat are anticipated during construction of either the CVP extension or the chillers, and therefore no effects to *O. mykiss* are anticipated from this activity. Once these measures are in place, in coordination with NMFS and California DFW, Valley Water will release imported water when available to the CWMZ, and will chill any water that is unsuitably warm to a monthly average of 16°C prior to release; assuming that *O. mykiss* are present within the CWMZ (Stillwater Sciences 2020a). Based on Valley Water's temperature analysis for dry season water temperatures without a cold water pool in Anderson Reservoir and with the pipeline extension and chillers installed, predicted water temperatures in the CWMZ will generally be in the suitable range for *O. mykiss* fry and rearing juveniles, between 16°C to 21°C depending on the amount of imported water chilled (up to 10 cfs). Comparatively, releases from Anderson Reservoir water blended with larger releases of non-chilled imported water were estimated to be about 22°C in September under the range of flows that were assessed. Although Valley Water may be able to maintain temperatures in the CWMZ, due to the influence of imported water at the CVP extension and the warming effects of the pond complexes, the downstream reaches of Coyote Creek are expected to remain warm. If exposed to these increased temperatures during their seaward migration, smolts may experience adverse effects including mortality, altered emigration timing, and desmoltification (Richter and Kolmes 2005).

In summary, temperature in the Coyote Creek downstream of Anderson Dam is expected to be unsuitable for rearing juvenile *O. mykiss* in the summer and fall months, and reduced flows could result in dryback. Because this condition will persist in the dry seasons until the new CVP extension and the chillers are operational, Valley Water will monitor water quality conditions and fish presence in the CWMZ and initiate fish rescue activities when necessary. With the CVP extension and the chillers in place, Valley Water may be able to maintain temperatures in the CWMZ within a range suitable for *O. mykiss* rearing, reducing the need to relocate *O. mykiss* from Coyote Creek. However, depending on site conditions and functionality of the chillers, unsuitable conditions may continue to persist following implementation of these measures. Therefore, the increased temperature conditions may affect and are likely to adversely affect *O. mykiss* in Coyote Creek, and may adversely affect critical habitat by affecting the physical and biological features of freshwater rearing habitat and migration corridors through degradation of water quality. Imported water releases are not likely to destroy or adversely modify critical habitat.

The adverse effects will be minimized through implementation of the Fish Rescue and Relocation Plan, the use of chillers, identification of suitable temperature thresholds, water temperature monitoring, and the more natural hydrograph. Specifically, Valley Water will monitor summer water temperatures in the CWMZ in 2020, 2021, and through construction of ADTP and ADSRP, and implement fish rescue and relocation measures as needed. The more natural hydrograph expected to occur during FOCP will likely provide natural pulse flows to encourage outmigration before conditions become unsuitable in the summer months, and Valley Water has proposed to monitor migration flows. Further, as noted in *Section 3.3.3 Water Quality* and in Table 18, NMFS has requested water temperature monitoring which will allow a better understanding of the effects of imported water to Coyote Creek. In addition, in their August 31, 2020 conservation recommendations, NMFS recommended use of a lower temperature threshold than the 22°C identified by Valley Water to define suitable water temperatures for juvenile steelhead rearing, and further requested collaborative identification of suitable temperatures for egg incubation and smolt outmigration. Valley Water's letter dated September 11, 2020, clarified that the intention of the 22 °C threshold was to reflect a daily average temperature, however, Valley Water committed to continued consultation to identify appropriate site-specific temperature thresholds. Commission staff agree that the TWG must collaboratively identify temperature thresholds that are both site-specific and biologically meaningful based on the life stage present in Coyote Creek and suggest that this measure become a requirement of any approval of the Reservoir Drawdown and Operations Plan. With implementation of these measures, adverse effects of the FOCP on *O. mykiss* and critical habitat will be mitigated.

Water Quality During FOCP Conclusion

Overall, under the Proposed Action the drawdown of Anderson Reservoir and the interim operations prior to the AMMs coming online could affect juvenile *O. mykiss* during summer and fall months due to diminished water quality, increased potential for dryback, and increased sedimentation, which can individually and cumulatively alter salmonid behavior and growth. The physical and biological features of critical habitat that will be affected during summer time are water quality and quantity and floodplain connectivity of the rearing habitat. The anticipated water quality issues may affect, and are likely to adversely affect *O. mykiss* juveniles. Sedimentation will affect early life stages, particularly if there are sequential storm events. The effects described above will be temporary, lasting for the duration of the reservoir drawdown period and the subsequent period when the reservoir will remain at deadpool, and prior to the implementation of AMMs. Any disruptions of the normal behavior are expected to be brief but may result in increased risk of predation or reduced fitness, which will be consequential at the population level. The potential for stranding, increased temperature, and increased sediment erosion, transportation, and deposition will have an adverse effect on the physical and biological features of the designated critical habitat (e.g., safe and unobstructed migratory corridors, spawning habitat with water quantity and quality

conditions and substrate supporting spawning, incubation and larval development). The adverse effects will be minimized through implementation of the Fish Rescue and Relocation Plan, the use of chillers, identification of suitable temperature thresholds, and water temperature and sediment monitoring.

Under the Fish Rescue and Relocation Plan, Valley Water removed *O. mykiss* from the CWMZ and relocated them to Upper Penitencia Creek during the week of August 17, 2020. This reduced the expected impacts to juvenile *O. mykiss* prior to the adverse effects associated with loss of the cold pool and the reservoir drawdown. With the future implementation of Fish Rescue and Relocation Plan based on the results of fisheries monitoring data and water quality data, the likelihood of stranding due to altered stream flow and subsequent injury or mortality of individual salmonids due to degraded water quality from unsuitable temperatures or exposure to sedimentation will be low. Though some stress to captured *O. mykiss* is anticipated under the Fish Rescue and Relocation Plan, overall the measure prevents lethal take from stranding or experiencing poor water quality therefore, there will be incidental take via capture and relocation.

Non-Native Predatory Fish

As described in *Section 3.3.4.1 Aquatic Resources*, non-native predatory fish, such as spotted bass and largemouth bass, are present in Anderson Reservoir and in Coyote Creek downstream of Anderson Dam. The presence of non-natives in the pond complexes creates a predatory barrier to safe migration for juvenile *O. mykiss* smolts during emigration. The water quality conditions associated with the FOCP will likely improve habitat suitability of non-native fishes, as they favor ponded environments with low velocities and warmer temperatures.

In order to prevent release of reservoir fish into the CWMZ during drawdown, Valley Water will install a fyke trap in Coyote Creek within a suitable location downstream Anderson Reservoir outlet, in the south channel canal where the net will be able to capture the flow of the entire channel starting in September 2020 and continuing through November 2020 (that is, just prior to and during draw down Anderson Reservoir), and to the extent possible when flows are 100 cfs or lower. The fyke net will capture fish passing through the existing reservoir outlet which will allow Valley Water to intercept non-native fish and reduce the risk of resident *O. mykiss* in the reservoir entering the Coyote Creek CWMZ during the FOCP. As noted in *Section 3.3.4.2 Aquatic Resources*, entrainment of *O. mykiss* in the reservoir through the outlet is unlikely, but if captured they will be held in aerated containers, enumerated, and measured prior to being relocated back into the main body of Anderson Reservoir release. During any Fish Rescue and Relocation efforts, Valley Water will dispatch any AIS captured. The fyke trap is expected to minimize introduction of additional invasive fish from the reservoir into Coyote Creek, and the measures in the Fish Rescue and Relocation Plan will help with control of the species in the CWMZ.

In a letter dated August 31, 2020, NMFS filed several conservation recommendations under the emergency procedures of the ESA (summarized in Table 18). In order to address the risks posed by invasive piscivorous fish, one of NMFS's recommendations was for Valley Water to implement an invasive species control program for the benefit of steelhead and other native aquatic species in Coyote Creek below Anderson Dam during FOCP. NMFS recommended that this plan be available for its review by December 2021 and that the plan include preventative, targeted, and opportunistic control, as well as a monitoring and reporting component to assess the program's effectiveness. Targeted control must focus on reaches expected to harbor non-native predatory species (e.g., Coyote Percolation Pond, Ogier Ponds, and other former gravel extraction sites) and opportunistic control must include events, such as dewatering for construction activities, monitoring/sampling activities, and fish rescues. In its response dated September 11, 2020, Valley Water indicated it is willing to collaborate with the TWG to determine appropriate State and Federally permittable approaches to control aquatic invasive species in Coyote Creek. Commission staff agree that this aquatic invasive species monitoring and control must be implemented, and suggest that it become a requirement of any approval of the Reservoir Drawdown and Operations Plan. So that Commission Staff and the resource agencies are apprised of the details of the Aquatic Invasive Species Monitoring and Control Plan, including locations, methods, schedule, data collection and data reporting procedures, the exemptee should be required to file the plan with the Commission for approval.

Construction

Under the emergency consultation procedures for section 7 of the ESA, NMFS provided conservation recommendations on August 31, 2020 that were specific to minimizing the effects of construction during FOCP. Specifically, NMFS recommended that Valley Water develop and implement measures to avoid and minimize construction-related impacts to *O. mykiss* and critical habitat when building, as applicable here, the CVP extension. Measures must be designed to avoid and minimize effects from discharge of sediment, construction debris, and other potential construction-related impacts. Site-specific avoidance and minimization measures should be provided to NMFS for review prior to initiation of construction activities in Coyote Creek. Valley Water responded on September 11, 2020, noting that the recommendation is consistent with the existing plans to employ standard best management practices for working in creek environments including: practices for evaluation of site activities for suitability of relocation of native aquatic vertebrates, minimizing impacts of temporary waterway access points, restoration of channel bottoms to pre-activity conditions, monitoring and controlling of sediment and turbidity from construction related diversion and groundwater dewatering discharges, practices for standard flow diversion, and preventing water pollution. Further, Valley Water will implement the Fish Rescue and Relocation Plan prior to localized dewatering activities associated with construction, and will monitor turbidity in areas of active construction within the CWMZ and beyond to inform

the need for fish rescue. With these measures, the effects of construction are not likely to adversely affect steelhead, and no destruction or adverse modification of critical habitat will result from the CVP extension. Commission staff agree that development of site-specific plan for the CVP extension construction activities is a valuable measure to avoid and minimize adverse effects to *O. mykiss* and their critical habitat, and suggest that it become a requirement of any approval of the Reservoir Drawdown and Operations Plan.

In order to evaluate fish use and stranding following ADTP construction and channel reopening, NMFS's section 7 emergency consultation conservation recommendations, filed on August 31, 2020 and summarized in Table 18, recommend the Valley Water develop a detailed survey plan to provide monitoring of the northern outlet channel and provide it to NMFS for review prior to completion of ADTP. NMFS also recommends a formal process be established to facilitate its participation in the design of the bladder dam facility at the Coyote Percolation Pond Dam. As we've said in *Section 2.3.2, Measures Not Analyzed in this EA,* recommendations for the ADTP including measures and comments that relate to the low-level outlet and corresponding mitigation measures will be addressed in a supplemental EA where Commission staff will analyze Valley Water's proposal to construct these measures.

Proposed Restoration Activities

Valley Water will monitor of the physical and biological features of critical habitat in the CWMZ to confirm the scope and intensity of adverse impacts to steelhead habitat from increased sediment erosion, transportation, and deposition associated with activities under the FOCP. This will inform implementation of phased habitat restoration activities within the CWMZ to address and restore those features confirmed to have been impacted by the FOCP. Valley Water states that phasing for implementation of CWMZ restoration measures is expected to occur in coordination with the implementation of the ADSRP to assure that ADRSP construction impacts do not undermine or eliminate CWMZ steelhead habitat restoration work and its benefits (Valley Water 2020a). NMFS provided conservation measures under the emergency consultation procedures on August 31, 2020, which recommends that Valley Water provide additional compensatory mitigation from the expected effects of the FOCP that will result from sediment deposition, loss of perennial stream habitat, and release of non-native predatory fish from the reservoir. As we've said in *Section 2.3.2 Measures Not Analyzed in this EA,* recommendations for the ADTP including measures and comments that relate to the low-level outlet and corresponding mitigation measures will be addressed in a supplemental EA where Commission staff will analyze Valley Water's proposal to construct these measures.

Overall, the drawdown of Anderson Reservoir is likely to adversely affect *O. mykiss* downstream of Anderson Dam, and may affect and is likely to adversely affect critical habitat but will not result in destruction or adverse modification of critical habitat. Valley Water's implementation of the Fish Rescue and Relocation Plan will relocate fish

to more suitable habitat to avoid and minimize lethal take and harm from the FOCP activities, which result in increased temperatures, altered stream flow, and increased sediment concentrations relative to the existing conditions; therefore the adverse effect is related to capture, handling, and relocation. It is anticipated that all rescue and relocation efforts will result in incidental take of less than 5 percent injury and mortality. This level of take is not expected to jeopardize the continued existence of CCC DPS steelhead, since relatively few individuals are anticipated to be encountered, and there is a high likelihood that relocation will be successful with minimal injury and mortality. Further, the Fish Rescue and Relocation Plan is intended as a temporary measure until additional components of the proposed action intended to improve water quality are operational, though Valley Water should plan to conduct the effort annually. As described above, Commission staff recommend that the Fish Rescue and Relocation Plan be supplemented with information regarding handling measures, in consultation with NMFS, FWS, and California DFW. Commission staff recommend development of a streamflow and water temperature forecast model in order to inform future fish rescue efforts. Commission staff also recommend development of an adaptive management plan for fisheries monitoring which should detail the thresholds for fisheries data (using the eDNA and Vaki counter as the starting point), goals and objectives for fisheries monitoring, locations, methods, and reporting timeframes. The plan should be developed in consultation with the NMFS, FWS, and California DFW and provided to the Commission for approval.

The FOCP will have impacts on steelhead spawning and rearing habitat due to increases in water temperature and increased suspended and deposited sediment. The effects to temperature will be minimized and potentially mitigated through implementation of chillers, and through implementation of the Fish Rescue and Relocation Plan when necessary. Commission staff recommend the inclusion of temperature monitoring, as discussed in *Section 3.3.3.2 Water Quality*, and also recommend that Valley Water and the TWG collaborate to identify temperature thresholds that are both site-specific and biologically meaningful based on the life stage present in Coyote Creek. The increases in suspended sediment concentrations will likely result in minor physiological stress and behavioral changes to adult and juvenile *O. mykiss*, and will result in paralethal or lethal effects to incubating eggs under unlikely conditions with successive storm conditions. As discussed in *Section 3.3.3.2 Water Quality*, Commission staff recommend that Valley Water develop and implement a Sedimentation and Turbidity Monitoring Plan. Commission staff also recommend that Valley Water supplement its habitat criteria monitoring plan in accordance with NMFS's recommendations to map the spatial quantity and quality of spawning gravels suitable for *O. mykiss*, as it will be beneficial in determining the extent that the sedimentation is affecting aquatic habitat in Coyote Creek.

The FOCP includes construction of the CVP extension. Commission staff recommend development of site-specific plans during construction activities to avoid and minimize adverse effects to *O. mykiss* and their critical habitat.

Provisions to reduce the threat of predation by non-native fish will also ensure a safe migratory corridor. Therefore, Commission staff recommend development of an Aquatic Invasive Species Monitoring and Control Plan, including locations, methods, schedule, data collection and data reporting procedures.

Finally, in order to ensure timely and dedicated collaborative efforts to support Valley Water's implementation of FOCP operations and minimize impacts to threatened CCC steelhead during the period of Anderson Reservoir drawdown, Commission staff recommend Valley Water establish an interagency work group that includes NMFS, California DFW, and FWS. The operations work group should meet monthly, or more frequently if warranted, for the purpose of reviewing current information regarding Coyote Creek conditions (i.e., flow, temperature, water quality), fisheries data, imported water operations, and Valley Water's operational forecasts.

Green Sturgeon

Green sturgeon are rare in south San Francisco Bay (USGS 2018), and based on tagging studies conducted in 2011, there were no tagged green sturgeon detections in the lower reaches of Coyote Creek. Despite the presence of critical habitat within the lowermost tidally influenced reaches of Coyote Creek, green sturgeon are unlikely to occur within the action area. The potential effects of the FOCP (e.g., increased suspended sediment) are not anticipated to be substantial within the tidally influenced reaches of lower Coyote Creek, because it is over 33 miles downstream of Anderson Dam. Therefore, no effect of the proposed action on green sturgeon is anticipated and no adverse modification of green sturgeon habitat is anticipated.

Essential Fish Habitat

The action area includes areas designated as EFH for various life-history stages of *O. mykiss* and Central Valley fall-run Chinook salmon in the Santa Clara Hydrologic Unit (hydrologic unit code 2205). Affected portions of EFH include migratory corridors, spawning habitat, and rearing habitat for *O. mykiss* and Chinook salmon. As described above, implementation of FOCP may result in short and long-term impacts, both positive and negative, to a variety of habitat parameters. The potential adverse impacts on EFH for *O. mykiss* and fall-run Chinook salmon are the same as those described for the ESA-listed salmonids and their critical habitat, therefore, the effects analysis addresses impacts of the proposed action to steelhead and fall-run Chinook EFH.

On September 15, 2020, NMFS stated that several components of the FOCP will result in adverse effects to EFH, including degraded water quality, fine sediment deposition, and impaired fish passage. NMFS confirmed that their recommendations submitted in the August 31, 2020 letter also serve as their recommendations under the emergency consultation procedures of the MSA. NMFS's recommendations to minimize and mitigate these impacts on threatened CCC steelhead and their critical habitat will also apply to EFH for Chinook salmon.

Conservation recommendations provided by NMFS on August 14 and 31, 2020, summarized in Table 18, with the exception of measures associated with fish rescue/relocation, are applicable to Chinook salmon and serve as dual purpose for EFH. Based on the above analysis, although aspects of the Proposed Action are expected to result in adverse impacts on EFH, all reasonable actions for minimizing FOCP effects are included in the proposed action and in Commission staff recommendations. Therefore, Commission staff conclude that the proposed action will not adversely affect EFH.

3.3.6.3 Conservation Recommendations

FWS Conservation Recommendations

On August 24, 2020, as revised on September 16, 2020, FWS filed a letter with the Commission noting 20 measures required by the SCVHP and 2 additional measures that will further minimize adverse effects to ESA-listed species and other special-status species. Through coordination with the SCVHA, the Commission, and other resource and regulatory agencies, FWS determined that it is appropriate to include the proposed project under the SCVHP because all of the FOCP activities are "covered projects" under the SCVHP. The FWS provided 5 additional conservation recommendations. These measures are discussed below:

FWS noted the following 20 conditions from the SCVHP concerning ESA-listed species and others covered through the SCVHP:[53]

1. Condition 1 – Avoid Direct Impacts on Legally Protected Plant and Wildlife Species.
2. Condition 3 – Maintain Hydrologic Conditions and Protect Water Quality.
3. Condition 4 – Avoidance and Minimization for Instream Projects.

[53] For further information on the conditions see the SCVHP. SCVHP, Ch. 6 Conditions on Covered Activities and Application Process, https://scv-habitatagency.org/DocumentCenter/View/128/Chapter-6-Conditions-on-Covered-Activities-and-Application-Process.

4. Condition 5 – Avoidance and Minimization Measures for In Stream Operations and Maintenance.
5. Condition 7 – Rural Development Design and Construction Requirements.
6. Condition 11 – Stream and Riparian Setbacks.
7. Condition 12 – Wetland and Pond Avoidance and Minimization.
8. Condition 13 – Serpentine and Associated Covered Species Avoidance and Minimization.
9. Condition 17 – Tricolored Blackbird.
10. Condition 19 – Plant Salvage when Impacts are Unavoidable.
11. Condition 20 – Avoid and Minimize Impacts to Covered Plant Occurrences.

12. Surveys for, and capture of, CRLFs and western pond turtles in areas where electrofishing will occur during fish capture, to avoid electrofishing impacts on these species. Relocation of any CRLFs or western pond turtles that are detected during fish capture efforts to the nearest suitable habitat upstream, outside the area where electrofishing could affect them.

13. Limits on the number of steelhead that will be released in a given reach or habitat feature within Upper Penitencia Creek, to reduce competition with or predation on other sensitive species in that reach including the California red-legged frog and foothill yellow-legged frog. The number of steelhead relocated to a given area within Upper Penitencia Creek will be low enough so that the number of existing fish in that area, plus the number released, will be no greater than the second-highest abundance observed during previous surveys of the creek, using all surveys that have been conducted to date. In that way, steelhead abundance will be lower than the highest levels observed naturally within each reach, so that steelhead densities will be below presumed carrying capacity and within the natural range of variation that has allowed populations of other sensitive species (such as CRLFs and foothill yellow-legged frogs) to persist.

14. Following relocation of fish from the Coyote Creek CWMZ but prior to drawing down Anderson Reservoir, a fish trap known as a fyke trap will be installed in Coyote Creek downstream of the Anderson Reservoir outlet to capture fish passing through the existing reservoir outlet and reduce the risk of native trout in the reservoir entering the Coyote Creek CWMZ during the Anderson Dam tunnel construction. All captured fish will be held in aerated containers or the trap prior to being identified, enumerated, and measured prior to release. Captured trout will be relocated to the Anderson Reservoir deadpool. Fish found stranded during the drawdown of Anderson Reservoir will be relocated to the Anderson Reservoir deadpool. All captured aquatic invasive species (https://wildlife.ca.gov/Conservation/Invasives/Species) will be dispatched. No fish will be released into the tributaries above Anderson Reservoir to avoid

effects to California red-legged frogs and foothill yellow-legged frogs that occur in the tributaries above Anderson Reservoir.

15. Valley Water will monitor the effects of the drawdown of Anderson Reservoir on western pond turtles along Coyote Creek downstream of Anderson Dam.

16. BMPs to avoid the introduction and spread of amphibian diseases (e.g. chytrid fungus (*Batrachochytrium dendrobatidis*) (Bd) and (*Batrachochytrium salamandrivorans)* (Bsal)), aquatic invasive species (e.g. New Zealand mud snail), and invasive plants. All staff working in aquatic systems (i.e., streams, ponds, and wetlands)—including site monitors, construction crews, and surveyors—will be required to adhere to the most current guidance for equipment decontamination provided by the Service and California DFW at the time of activity implementation. Valley Water has developed, and will implement, decontamination procedures for aquatic pathogens and aquatic invasive species to minimize the potential for spread of chytrid fungus, which can kill or impair the health of amphibians, as well as ranavirus, other pathogens, and non-native invasive plant and wildlife species. Because invasive New Zealand mud snails are reported to be in Coyote Creek, extreme care will be taken to not transfer water, nets, or boots to Upper Penitencia Creek without gear being decontaminated. Additionally, to minimize the potential for the spread of amphibian diseases during the relocation of steelhead, no water from Coyote Creek will be dumped into Upper Penitencia Creek; all steelhead captured from Coyote Creek will be rinsed with water from Upper Penitencia Creek before being released into Upper Penitencia Creek.

17. Phytophthora Pathogen Management Plan (PPMP). Valley Water has developed measures to minimize the potential for spread or infestation of the plant pathogen Phytophthora, which can impair the health of or kill plants such as Coyote ceanothus, during geotechnical investigations to inform the design of the larger Anderson Dam Seismic Retrofit Project. However, full FOCP implementation will involve much more extensive clearing of vegetation, earth-moving, and translocation of materials throughout the proposed project area than previous geotechnical investigations, as well as movement of personnel, vehicles, and equipment, both within the site and on and off the site. As a result, a more detailed approach to managing the risk of Phytophthora spread is necessary during FOCP implementation, but the details of that approach need to be developed in conjunction with the details of FOCP design and of the manner in which the contractor will implement the proposed project. To ensure that appropriate measures, tailored to the details of proposed project design and performance, are implemented during the proposed project, Valley Water shall prepare a PPMP detailing the measures to be implemented to minimize the

potential for the spread of Phytophthora during proposed project implementation. At a minimum, the PPMP will meet the following requirements:

a. Provide maps depicting locations that are currently known to be contaminated (or not) with Phytophthora.
b. Provide maps depicting locations of particularly sensitive plant species and communities (e.g., Coyote ceanothus-dominated mixed serpentine chaparral and sycamore alluvial woodland) that will not be impacted by the proposed project, but that are located in close proximity to impact areas.
c. Discuss how materials (including vegetation, soil, and construction materials) and construction personnel, vehicles, and equipment will move around the site and between on-site and off-site areas, with particular emphasis on movement between known contaminated areas and adjacent or downstream sensitive areas.
d. Describe measures (including any additional BMPs to assist in guiding construction specifications or proposed project implementation) that will be implemented to minimize the potential for spread of Phytophthora on equipment, tools, vehicles, and personnel, potentially including (but not limited to) the following:
    i. Before arrival at the site, equipment, vehicles, and tools will be free of soil, including debris on tires, wheel wells, vehicle undercarriages, and other surfaces. A high-pressure washer and/or compressed air may be used to ensure that soil and debris are completely removed.
    ii. Vehicles may be cleaned at an appropriate commercial vehicle or truck washing facility. Vehicles that travel and park only on paved public roads do not require external cleaning. The interior of vehicles and equipment (cabs, etc.) must be free of mud, soil, gravel, and other debris (e.g., vacuumed, swept, or washed).
    iii. Vehicle wash stations may be installed at entrances and exits to the site. All wastewater from those stations should be detained so that it does not enter natural waterbodies or areas of unimpacted vegetation. Wash station water should be free of contamination, and must contain an appropriate sanitizing agent or utilize an effective sanitation treatment if water is recycled. Vehicle wash stations should be staffed with a biomonitor to ensure compliance.
    iv. Small tools and equipment must be washed to be free of soil or other contamination and sanitized. Wood handles on tools should be sealed with a waterproof coating to make them easier to sanitize. Before sanitizing, all soil and organic material (roots, sap, etc.) will be removed from the surface. If necessary, a detergent solution and brush will be used to scrub off surface contaminants. A sanitizing agent may also be used as a cleaning fluid.

Screwdrivers or similar implements may be needed to clean soil out of crevices or shoe treads. Brushes and other implements used to help remove soil will be cleaned and sanitized after use.

v. After surface soil and contamination are removed, the surface should be treated with a sanitizing agent, allowing the appropriate contact time before use or rinsing. If surfaces are clean and dry, surfaces should be thoroughly wetted and allowed to rest for the appropriate contact time. If the sanitizer has been used to help clean the surface, fresh sanitizer should be used to rinse off any dirty solution, and again the equipment should be allowed to rest for the required contact time. If treated surfaces are wetted with water, the sanitizing solution may become diluted; enough sanitizer should be applied to completely displace the water film. Sanitizing agents may be applied by using spray bottles and applied to thoroughly wet the surface. All appropriate safety precautions will be observed to prevent contact with eyes or skin when using these agents.

vi. Sanitizing agents may include 70-90 percent ethyl or isopropyl alcohol (sprayed to thoroughly wet the surface and allowed to air dry before use); freshly diluted bleach solution (0.525 percent sodium hypochlorite) for a minimum of 1 minute (due to corrosivity, not advised for steel or other materials damaged by bleach); or 2,000 parts per million quaternary ammonium disinfectant for 1 minute (or according to manufacturer recommendations for use against Phytophthora), freshly made or tested to ensure target concentrations.

vii. Soles and uppers of footwear must be free of debris and soil before arriving at the site. Footwear will be cleaned and sanitized as described in item iv, v, and vi above.

viii. At the start of work at each new job site, workers' clothes should be free of all mud or soil. If clothes are not freshly laundered, remove all debris and adhered soil with a stiff brush.

ix. Before entering the job site, field workers will receive training that includes information on Phytophthora diseases and how to prevent the spread of these and other soil-borne pathogens by following approved phytosanitary procedures.

x. Contractors will be instructed to avoid bringing more vehicles into work sites than absolutely necessary. Within the site, vehicles will remain on surfaced or graveled roads whenever possible to minimize soil movement.

xi. Work will be planned to minimize movement between areas with high and low risk of contamination. Where possible, work in low-risk areas will be completed before moving to higher risk areas.

Alternatively, personnel may be restricted to working in either high- or low-risk areas exclusively to reduce the need for decontamination.

xii. To the degree feasible, work should be organized or timed so that known or suspected contaminated areas are worked in after and not before sensitive areas. If this is not feasible, equipment, vehicles, tools, and footwear or other personal protective equipment in contact with soil should be thoroughly decontaminated after working in contaminated areas and before moving to a new site or area of the proposed project.

xiii. Soil and plant debris should be cleaned from equipment, and hand tools, buckets, gloves, and footwear will be sanitized when moving from higher risk to lower risk areas or when moving between widely separated portions of a site. xiv. To the degree possible, work activities associated with a high risk of spreading contamination should be scheduled to avoid rainy periods or times when soil is very wet and more likely to contaminate equipment.

e. Describe measures for disposing of cleared vegetation so that Phytophthora on plant roots, leaves, or stems is not spread to uncontaminated areas.
f. Describe measures for transporting and stockpiling soil so that Phytophthora is not spread from contaminated soil (e.g., in runoff).
g. Describe appropriate phytosanitary measures for implementing erosion control and/or Stormwater Pollution Prevention Plan that may be required for the proposed project.
h. Describe monitoring and documentation needed to ensure that the PPMP is properly implemented, and monitoring for the presence and location of Phytophthora-contaminated areas during proposed project implementation, to avoid introduction into sensitive areas, and determine the efficacy of minimization measures and inform adaptive management as needed.
i. Describe the means by which plant materials used in site restoration at the end of proposed project construction will be ensured to be free of Phytophthora infestation.
j. Describe post-project monitoring, including the frequency, duration, locations, and type of monitoring to be performed, to determine whether Phytophthora has spread as a result of the proposed project and to determine whether and where remedial measures may be needed.
k. Describe the process by which the need for any remedial measures to address the post-project spread of Phytophthora will be determined, with examples of feasible remedial measures that can be implemented if Phytophthora is found to have spread.

18. Protect or Create a New Population of the Coyote Ceanothus. Recently, an occurrence of the Coyote ceanothus on the Baird and Davidson properties, on the west side of Coyote Valley, was acquired and protected, thus allowing Valley Water to meet the SCVHP's five-year timeframe since ADSRP geotechnical investigations first impacted Coyote ceanothus in 2015. The SCVHP also states that within the permit term, five populations of the Coyote ceanothus must be created or protected. To meet the SCVHP's long-term requirements, Valley Water has begun establishing a new population of Coyote ceanothus on property it owns on Coyote Ridge, north of Anderson Dam. Planting of seedlings and direct seeding in the test plots on Coyote Ridge has been occurring since 2015, and these plants are being monitored to determine the success of the site to support a new, functional population of the Coyote ceanothus. The goal of Valley Water's Coyote Ridge population will be commensurate with the number of individuals that are affected by the proposed FOCP and Anderson Dam Seismic Retrofit Project combined (i.e., a 1:1 ratio).

19. Wetland and Riparian Habitat Dryback Monitoring Plan. This plan will describe the areas to be monitored; the duration of monitoring; monitoring methods (which will include aerial photography, possibly using drones, as well as groundwater monitoring); and methods for determining whether impacts have occurred, and the extent of such impacts to riparian habitat along Coyote Creek and wetlands in Coyote Valley, as a result of FOCP-related dryback and changes to groundwater recharge (as opposed to natural drought conditions or typical Valley Water releases from Anderson Dam under drought conditions). If dryback impacts that occur as a result of the FOCP cause the loss of wetland, pond, or riparian habitat, Valley Water will pay SCVHP fees based on the acreage of habitat loss that has occurred.

20. SCVHP Fees. Valley Water will pay all applicable development fees to the SCVHA prior to initiation of construction of the proposed project. The total estimated fees are not available at this time. Also, it is not known what long-term effects the drawdown of Anderson Reservoir will have on riparian and stream habitat in Coyote Creek downstream of Anderson Dam and wetlands within Coyote Valley that are dependent on groundwater recharge provided by Anderson Reservoir. Therefore, Valley Water will implement the Wetland and Riparian Habitat Dryback Monitoring Plan to monitor the effects to stream, riparian, and wetland habitat in order for the impacts to be accurately accounted for and mitigated through the SCVHP.

FWS recommends the following additional conservation measures not required by the SCVHP:

21. Monarch Butterfly Avoidance. A survey to be conducted for milkweed (*Asclepias* spp.), the larval host plant of the federally petitioned monarch butterfly, within FOCP impact areas prior to FOCP activities. If any milkweed is found, it will be avoided if feasible. If avoidance is infeasible, the milkweed will be inspected for monarch eggs or larvae, and if any of these are found, Valley Water will contact the FWS to discuss recommendations.

22. Test Relocated Steelhead for Amphibian Diseases. Due to concerns raised by the FWS about the potential for relocated steelhead to transmit amphibian diseases, Valley Water agreed during a meeting with the FWS on August 14, 2020, to test the steelhead for amphibian diseases by swabbing the skin of relocated steelhead and submitting the results to a lab to test for the presence of amphibian diseases.

In addition to the measures discussed above, FWS provided 5 conservation recommendations pursuant to emergency consultation provisions of section 7 of the ESA. These measures include:

1. Implementation of a FWS-approved invasive species control plan (e.g. bullfrogs, crayfish, non-native fish, and/or red-eared sliders, etc.) for the benefit of the CRLF, Central California tiger salamander, western pond turtle, and foothill yellow-legged frog at FWS-approved locations in the Coyote Creek and Upper Penitencia Creek watersheds. FWS suggests that Valley Water could implement a bullfrog control program at FWS-approved locations in high quality habitat in the upper Coyote Creek watershed (e.g. FWS-approved locations in breeding ponds and streams above Anderson Reservoir or Coyote Lake) and Upper Penitencia Creek watershed (e.g. FWS-approved locations in breeding ponds and streams above Alum Rock Falls) where a bullfrog control program will have the most benefit to the CRLF, Central California tiger salamander, western pond turtle, and foothill yellow-legged frog and have the highest potential for success. The invasive species control plan must also be submitted to California DFW and SCVHA for their review and approval. The FWS believes that steelhead and other native fish will also benefit from the removal of invasive competitors within the Coyote Creek and Upper Penitencia Creek watersheds. NMFS provided a similar conservation recommendation, as discussed below.

2. Implementation of a FWS-approved monitoring plan evaluating the effects of the relocation of steelhead to Upper Penitencia Creek on the CRLF and foothill yellow-legged frog for any observed effects to these SCVHP-covered species. The monitoring plan should include sampling for amphibian diseases (e.g. testing water samples for eDNA evidence of Bd, Bsal, ranaviruses, etc.; swabbing the skin of CRLF, foothill yellow-legged frogs, tree frogs, bullfrogs; and relocated steelhead to test for amphibian diseases), and surveying for invasive New Zealand mud snails in reaches Upper Pen-3 and Upper Pen-4 and immediately above and

below the cataract at the upstream end of reach Upper Pen-4 that creates a passage barrier for steelhead along Upper Penitencia Creek. The monitoring should also include testing water samples and swabbing frogs for amphibian diseases at the Coyote Creek CWMZ where steelhead where captured. The water samples collected to test for *O. mykiss* eDNA as described in the Fish Rescue and Relocation Plan should also be tested for eDNA of amphibian diseases to provide baseline data for the SCVHP to implement its conservation strategy for the CRLF, foothill yellow-legged frog, and Central California tiger salamander. The information obtained from the monitoring plan including whether relocated steelhead can transmit amphibian diseases will provide vital information for other proposed steelhead relocation projects within habitat for the CRLF, foothill yellow-legged frog, Central California tiger salamander, and other special-status amphibians. If it is concluded that the fish relocation has resulted in the introduction of one or more amphibian diseases or invasive New Zealand mud snails, Valley Water should provide mitigation in the form of invasive species or disease control implementation in Upper Penitencia Creek, with a control plan (above and beyond the invasive species control plan in recommendation number 1 above) reviewed and approved by the FWS specific to one or more invasive species or diseases.

3. Implementation of a monitoring and relocation plan for the western pond turtle and an invasive red-eared slider removal plan to be reviewed and approved by FWS, California DFW, and SCVHA. The drawdown of Anderson Reservoir to deadpool will result in a decrease in the availability of aquatic habitat for the western pond turtle around Anderson Reservoir and increased resource competition with invasive red-eared sliders. Western pond turtle nests near the shoreline of the Anderson Reservoir deadpool may also be flooded once the reservoir levels are raised following the completion of the FOCP.

4. FWS provided a recommendation for the benefit of federally listed and SCVHP-covered species if a large-scale riparian restoration project downstream of Anderson Dam is included as part of the proposed project as recommended by NMFS and California DFW. FWS stated that Valley Water informed the FWS on July 24, 2020, that NMFS and California DFW were recommending replacing the Cross Valley Pipeline extension and chiller avoidance and minimization measures with the large-scale restoration of stream/riparian habitat for the benefit of steelhead in Coyote Creek downstream of Anderson Dam as mitigation for the proposed project. Thus, FWS stated that Valley Water should include the creation/restoration of basking and nesting habitat for the western pond turtle, side channel habitat for the California red-legged frog and western pond turtle, and off-channel breeding habitat for the California red-legged frog within the proposed stream/riparian habitat restoration plan. FWS stated that since the SCVHP-covered and federally listed as endangered under the ESA least Bell's vireo (*Vireo*

bellii pusillus) and SCVHP-covered tricolored blackbird have been observed within the area downstream of Anderson Dam along Coyote Creek, the proposed stream/riparian habitat restoration plan should also include the restoration of suitable nesting habitat for these special-status birds.

5. To further minimize the effects of the proposed project on the federally petitioned monarch butterfly, native milkweed larval host plants and nectar plants for the monarch butterfly should be planted within all suitable upland habitat restored within the FOCP project footprint post-construction and in upland areas adjacent to the proposed stream/riparian habitat restoration along Coyote Creek. Any restoration plantings should follow the BMPs for avoiding the introduction and spread of Phytophthora available at: http://www.suddenoakdeath.org/welcome-to-calphytos-org-phytophthoras-in-native-habitats/.

Commission staff reviewed the 20 measures from the SCVHP and recommend Valley Water implement these measures to comply with the plan. Of particular note, Valley Water should develop the PPMP and HDMP in consultation with the FWS and file the plans for Commission staff review and approval. Implementation of these plans will minimize the spread of Phytophthora, and determine effects of the drawdown on groundwater recharge and impacts to wetland, pond, and riparian habitat, respectively. Filing these plans with the Commission assists in monitoring compliance with the plans which will aid in the protection of ESA-listed species and habitat.

Surveying for milkweed, a plant used by the monarch butterfly, will help determine if monarch butterflies are located at Anderson Dam and will assist in future consultation with the FWS should it be listed under the ESA, especially given the length of time the drawdown and construction activities will last. Commission staff recommend Valley Water develop and implement a plan to survey for milkweed. The survey plan must document areas proposed for surveying around construction activity locations. The survey must detail the locations of milkweed and Valley Water must avoid removal of any located plants. The plan must discuss how if avoidance is infeasible, the milkweed must be inspected for monarch butterfly eggs or larvae, and if found, Valley Water must contact the FWS for recommendations.

Regarding swabbing and testing of relocated steelhead, Commission staff find this recommendation important in understanding the risk associated with relocation activities in the potential for transmitting amphibian diseases. Valley Water must therefore implement this measure.

Regarding FWS's 5 conservation recommendations, Commission staff recommend the adoption of 4 of these recommendations, as modified and discussed below, including why one measure is not recommended:

1. *Invasive Species Control Plan.* FWS recommended an Invasive Species Control Plan for the benefit of California red-legged frogs and California tiger salamanders. NMFS recommended an invasive species control plan as well to benefit steelhead, therefore Commission staff recommend combining these plans into one single plan for review by both agencies in addition to the SCVHA and California DFW. FWS suggested Valley Water could consider locations in upper Coyote Creek above Anderson Dam to control invasive species such as bullfrogs and non-native fish, but Commission staff recommend focusing on areas downstream of the Anderson Dam in Coyote Creek and Upper Penitencia Creek given the action area and overlapping areas of interest for both FWS and NMFS.

2. *Amphibian Disease and New Zealand Mud Snail Monitoring Plan.* Commission staff recommend Valley Water implement FWS's measure concerning amphibian disease and New Zealand mud snail monitoring. While Valley Water will implement BMPs such as rinsing rescued steelhead with water from Upper Penitencia Creek before relocating the fish, the additional swabbing of fish and amphibians and testing of water samples from Coyote Creek where the fish were rescued will provide information about the presence of amphibian diseases on the relocated fish and the waters from which they came to better inform the potential for transmission of amphibian diseases. FWS did not require testing for New Zealand mud snails on relocated fish, but as noted in the FWS's September 16, 2020 filing, given that mud snails can be transported in the gut and scales of fish, testing would be invasive. Rinsing fish in water from Upper Penitencia Creek is also unlikely to remove an attached mud snail and it is unknown if rinsing would remove an amphibian pathogen from an infected fish. FWS noted that amphibian diseases and New Zealand mud snails are present in Coyote Creek so fish relocation activities have the potential to introduce amphibian pathogens and an invasive species to Upper Penitencia Creek. In comments provided by Valley Water in a letter filed with the Commission on September 21, 2020, Valley Water notes the inability to determine if relocated steelhead could be responsible for the introduction of amphibian diseases or invasive species given the potential that these may already be present in Upper Penitencia Creek and that there could be other vectors, such as recreationists that use the same waters.

   Commission staff recommend requiring FWS's recommended measure to develop and implement a monitoring plan evaluating the effects of the relocation of steelhead to Upper Penitencia Creek on the California red-legged frog and foothill yellow-legged frog and to mitigate for any observed effects to these species. The monitoring plan must include sampling for amphibian diseases and the New Zealand mud snail in Upper Penitencia Creek. While there are many possible vectors for the introduction of pathogens and invasive species, fish

relocation is one of them. Establishing a baseline would be important to measure any potential effects. Commission staff therefore recommend Valley Water develop, in consultation with the FWS, thresholds in the monitoring plan to determine if it must provide mitigation in the form of invasive species or disease control implementation in Upper Penitencia Creek specific to one or more invasive species or diseases based on the sampling efforts. Valley Water must develop the plan in consultation with the FWS, California DFW, and NMFS.

3. Commission staff recommend a measure regarding a monitoring and relocation plan for western pond turtles and removal of invasive red-eared sliders along Anderson Reservoir. In comments Valley Water filed with the Commission on September 22, 2020, it notes that there will still be close to 3,000 acre feet in water storage at deadpool, which, in addition to the tributary inflows, will provide persistent aquatic habitat for the western pond turtle. Valley Water also states that although the number of western pond turtles using Anderson Reservoir is unknown, there have never been observations of large numbers of turtles in this reservoir during numerous surveys. No turtles have been detected in the reservoir during numerous pre-activity surveys for geotechnical investigations for ADSRP or during baseline survey efforts. Valley Water argues that there is no evidence that turtles are present in such large numbers that there will be density-dependent adverse effects on the species when drawdown occurs. While the western pond turtle is not a species listed under the ESA, it is a species of interest under the SCVHP. Valley Water does not have a good understanding of the distribution of the western pond turtle using Anderson Reservoir given its statements that it did not perform dedicated surveys. A reservoir drawdown will reduce the available aquatic habitat and will increase competition with other wildlife including the invasive red-eared slider. Valley Water should develop this plan in consultation with FWS, California DFW, and SCVHA.

4. Commission staff does not recommend Valley Water develop a Stream Habitat Restoration Plan. FWS recommends that Valley Water prepare and implement a Stream Habitat Restoration Plan in consultation with the FWS to include the creation and/or restoration of basking and nesting habitat for the western pond turtle, side channel habitat for the CRLF and western pond turtle, and off-channel breeding habitat for the CRLF. FWS stated in its September 16, 2020 filing it recommended this plan given a July 24, 2020 discussion with Valley Water regarding how NMFS and California DFW indicated that an alternative action to the CVP extension was being developed by those agencies. Valley Water has not filed an amendment to its Reservoir Drawdown and Operations Plan requesting a change to the proposed CVP extension. Further, the specifics of a "large-scale

restoration of stream/riparian habitat for the benefit of steelhead in Coyote Creek" as an alternative to the proposed CVP extension as FWS describes the potential action, has not been defined nor proposed by NMFS in its conservation recommendations filed with the Commission on August 14, 2020. Commission staff do not recommend adopting this conservation recommendation because the CVP extension, as the proposed action Commission staff analyzed, includes appropriate monitoring and mitigation in the form of BMPs and other measures to reduce impacts to riparian habitat such as erosion control measures, water quality monitoring, and revegetation of disturbed areas with native plants. The CVP extension will provide supplemental chilled water to the benefit of steelhead and the stream which would also benefit the California red-legged frog, among other wildlife. The CVP will also provide necessary ground water augmentation to benefit the larger environment downstream of Anderson Dam. Therefore, Commission staff do not recommend adopting this conservation recommendation as an alternative to the CVP extension due to the lack of a proposal before us to consider the location, purpose, and specific work that would be involved to inform an effects or alternatives analysis.

5. *Restoration Plantings of Native Plants*. FWS recommends Valley Water plant native milkweed larval host plants and nectar plants for the monarch butterfly within all suitable upland habitat restored within the FOCP project footprint post-construction including the reservoir rim. Any restoration plantings must follow the BMPs for avoiding the introduction and spread of Phytophthora available at: http://www.suddenoakdeath.org/welcome-to-calphytos-org-phytophthoras-in-native-habitats/. Revegetation after any reservoir rim stability improvements should include native species, and Valley water should include milkweed and nectar plants if suitable habitat is located.

NMFS Recommended Measures

On August 14, 2020, NMFS provided 4 conservation recommendations specific to the Fish Rescue and Relocation Plan, and on August 31, 2020, NMFS provided 12 conservation recommendations specific to the FOCP actions. In a letter filed September 15, 2020, NMFS confirmed that the recommendations contained in the August 31, 2020 letter will also apply to EFH for Chinook salmon. NMFS's recommendations seek to minimize adverse effects and mitigate for impacts to CCC *O. mykiss* and designated critical habitat, primarily through additional monitoring of *O. mykiss* and habitat conditions in Coyote Creek, development of models to better inform future activities and planning, development of design plans, and fostering future decision making through formation of a workgroup and preparation of reports. Valley Water provided its response to NMFS's recommendations in letters dated August 24, September 11, and September 25, 2020, which were considered in our review. NMFS's recommendations and Commission staff findings for measures recommended to become a requirement of any

approval of the Reservoir Drawdown and Operations Plan are in summarized in Table 18, and discussed in more detail in the relevant sections above.

Table 18: NMFS conservation recommendations and Commission staff response and recommendations.

NMFS Recommendation	Timeline	Expected outcome	Commission staff recommendation
Fish Rescue and Relocation Plan			
Conduct annual Fish rescue and relocation for juvenile *O. mykiss* & prepare reports.	Summer of 2020 through completion of ADSRP (unless otherwise directed by NMFS)	Minimizes harm to *O. mykiss* by ensuring activities are conducted by qualified personnel, separating fish by size class, and not PIT tagging if temperatures exceed 18C. Reduces effects to Upper Penitencia Creek *O. mykiss* by annually determining habitat capacity.	Commission staff recommend this measure.
Conduct annual monitoring of adult and juvenile *O. mykiss* and prepare reports.	Adult *O. mykiss* monitoring: monthly January-April 2021 through completion of ADSRP	Confirms use of CWMZ during FOCP through ADSRP and potential spawning locations or timing. Informs future fish rescue.	Develop an adaptive management plan for fisheries monitoring which should identify and refine appropriate decision points and thresholds for initiation of alternative or additional fisheries surveys, and including methods for conducting spawning surveys, outmigration surveys, and/or summer rearing surveys that may be enacted based on the available fisheries and habitat information. The plan should
	Juvenile outmigration monitoring and PIT tagging: trapping 5 days/week, February through May 2021 through completion of ADSRP	Indicates how many fish outmigrate, when, and where fish move out of the system. Provides information about anadromous or resident life history. Informs future fish rescue.	

NMFS Recommendation	Timeline	Expected outcome	Commission staff recommendation
	Juvenile rearing surveys annually 2021 through completion of ADSRP	Identifies what areas of Coyote Creek provide suitable summer rearing habitat conditions.	detail the thresholds, locations, methods, and reporting timeframes.
Conduct continuous water temperature monitoring at 10 existing sites and 3 additional sites and prepare reports.	February 2021 through completion of ADSRP	Provides temperature conditions in Coyote Creek and at areas influenced by imported water outlets.	Commission staff recommend this measure.
Develop models to forecast streamflow and water temperature conditions 6 months into the future at 50 and 90% exceedance intervals and provide monthly reports.	Monthly starting in February 2021	Predicts expected environmental conditions. Informs future fish rescue efforts.	Commission staff recommend this measure.
Anderson Reservoir Drawdown and Operations			
Establish an interagency workgroup.	Monthly meetings (at minimum)	Members will review current habitat and fishery conditions, project operations, and operational forecasts to guide decision making and determine if avoidance and minimization measures for performing as anticipated.	Commission staff recommend this measure.

NMFS Recommendation	Timeline	Expected outcome	Commission staff recommendation
Determine appropriate temperature suitability thresholds for juvenile *O. mykiss.*	Not stated	Ensures protection of rearing juvenile *O. mykiss* and critical habitat. Protects physical and biological features of critical habitat (freshwater rearing habitat and migration corridors).	Commission staff recommend this measure.
Implement an invasive species control program detailing preventative, targeted, and opportunistic control; include monitoring and reporting to determine effectiveness.	Prepare a plan by December 2021.	Addresses risk of increased predation due to entrained reservoir fish exploiting warm water habitats in Coyote Creek. Protects physical and biological features of critical habitat (freshwater rearing habitat and migration corridors).	Commission staff recommend this measure.
Anderson Dam Tunnel Project			
Replace the fixed weirs at the outlet channels with adjustable weirs; develop a formal consultation process for the design plans, operations and maintenance manuals, and monitoring plans for the adjustable weirs	Prior to completion of ADSRP	Allows for modification of the flow split response to varying reservoir release rates, water temperature, fish behavior, and other changing conditions;	Commission staff defer decision of this recommendation until the supplemental EA, as discussed in *Section 2.3.2*.

NMFS Recommendation	Timeline	Expected outcome	Commission staff recommendation
		ensures consultation on designs and plans.	
Develop a plan to monitor and report fish use and stranding in the northern outlet channel	Prior to completion of ADTP	Minimizes risk of stranding for fish that may be in the north channel following flow changes	Commission staff defer decision of this recommendation until the supplemental EA, as discussed in *Section 2.3.2.*
Coyote Percolation Pond Inflatable Dam Project			
Develop a formal consultation process and focused workgroup to incorporate fish passage into the design plans, operations and maintenance manuals, and monitoring plans for the bladder dam facility	Not stated	Ensures fish passage measures consistent with NMFS standards at the new facility and under expected flow conditions; protects physical and biological features of critical habitat (migration corridors)	Commission staff defer decision of this recommendation until the supplemental EA, as discussed in *Section 2.3.2.*
Imported Water Releases and CVP Extension			
Monitor *O. mykiss* presence and habitat and monitor water quality (as described above).	During FOCP	Provides information that can inform fish rescue efforts. Provides information about the performance of the chillers and accuracy of the streamflow and temperature forecasting tools.	Commission staff recommend this measure.

NMFS Recommendation	Timeline	Expected outcome	Commission staff recommendation
Sediment Management and Monitoring			
Develop and implement a plan to: minimize discharge of sediment and sediment laden water from Anderson Dam during FOCP, including efficacy monitoring and reporting to inform adaptive management.	October 2020	Identifies specific actions to minimize sediment discharge. Protects physical and biological features of critical habitat (spawning and rearing habitat).	Valley Water is not able to filter, trap or otherwise contain the fine sediment that will be released during the drawdown or winter discharge events. The recommendation is not timely nor technically feasible. Commission staff do not recommend this measure.
Develop a plan to continuously monitor and adaptively manage suspended sediment discharged from Anderson Reservoir during FOCP and the effects of the sediment discharges on Coyote Creek.	October 2020	Measures sediment concentration and characteristics during FOCP. Provides means to validate the sediment model, and allows assessment of effects to *O. mykiss* and the physical and biological features of critical habitat (spawning and rearing habitat).	Commission staff recommend this measure.
Supplement existing habitat mapping proposal to monitor impacts of sediment by mapping spatial quantity and quality of spawning gravels.	Prior to reservoir drawdown and annually during the FOCP drawdown period.	Tracks changes to the quantity and quality of spawning gravels over time and allows assessment of effects to	Commission staff recommend this measure.

NMFS Recommendation	Timeline	Expected outcome	Commission staff recommendation
		the physical and biological features of critical habitat (spawning and rearing habitat).	
Minimization and Mitigation Actions			
Develop and implement a gravel augmentation program and complete one or more large scale channel and floodplain restoration actions on Coyote Creek, in consultation with resource agencies.	To be completed prior to November 2028	Restoration actions will mitigate for impacts of sediment and construction of ADTP by enhancing and restoring fluvial processes, geomorphic processes, and riparian conditions; reconnect and reactivate flood terraces and floodplains; and enhance channel complexity and habitat conditions for *O. mykiss* spawning and rearing	Commission staff defer decision of this recommendation until the supplemental EA, as discussed in *Section 2.3.2.*
Develop and implement measures to avoid and minimize construction related impacts, in consultation with NMFS.	Prior to initiation of construction activities.	Protects *O. mykiss* and critical habitat from potential construction related impacts.	Commission staff recommend this measure.

3.3.7 Recreation Resources

Anderson Lake County Park, operated by Santa Clara County Parks & Recreation Department (County Parks) encompasses the majority of Anderson Reservoir, except for a portion of the reservoir where Los Animas Creek flows into the lake. The park contains a variety of outdoor recreation facilities including a boat launch; picnic areas on the reservoir and along Coyote Creek below the dam; trails for hiking, biking, and equestrian use; and pavilions which can be reserved for large groups. Recreational activities at Anderson Lake include boating, jet skiing, waterskiing, wakeboarding, tubing, kayaking, paddle boarding, fishing, picnicking, hiking, mountain biking and watching wildlife. Open Space Authority manages the Coyote Ridge Open Space Preserve which abuts Los Animas Creek where it flows into Anderson Lake, as well as Coyote Creek County Park which extends along Coyote Creek below the dam.

3.3.7.1 Affected Environment

The recreation sites will be impacted by reduction of the reservoir level include: Anderson Boat Launch, Live Oak Day Use Area, Rosendin Park, and Woodchoppers Flat Picnic Area (see Figure 9). Additionally, informal trails and shoreline access north of the dam will be closed to recreation use.

<u>Anderson Boat Launch</u>

The Anderson Boat Launch is located on the southwest end of the dam. The recreation site includes a four-lane boat launch with boarding floats, trailhead for the Lake View Trail, restrooms, parking for 15 vehicles and 123 vehicles with trailers (parking across crest of the dam provides 57 more parking spaces nearby). In addition to being the only boat launch providing access to Anderson Reservoir, the site also facilitates the following recreation activities: shoreline access for fishing, walking, and relaxing; hiking on the Lake View Trail and other trails in the Rosendin Park Area (only public access point to Rosendin Park); wildlife watching; and scenic viewing of the impoundment and surrounding foothills, as well as the City of Morgan Hill.

<u>Live Oak Day Use Area</u>

The Live Oak Day Use Area, which has an extensive tree canopy to provide shade for recreationists, is located adjacent to Coyote Creek at the base of the dam. The site includes two group picnic areas, Live Oak (accommodates 100 people) and Toyon (accommodates 75 people), as well as approximately two dozen individual picnic tables, many of which have grills for small groups. The site provides access to Coyote Creek, is the trailhead for the 0.6-mile-long Serpentine Trail, which leads hikers to the dam crest, and provides access to the Coyote Creek Trail. Restroom facilities, potable water, and parking for approximately 140 vehicles (5 accessible) are available at the site.

Woodchoppers Flat Picnic Area

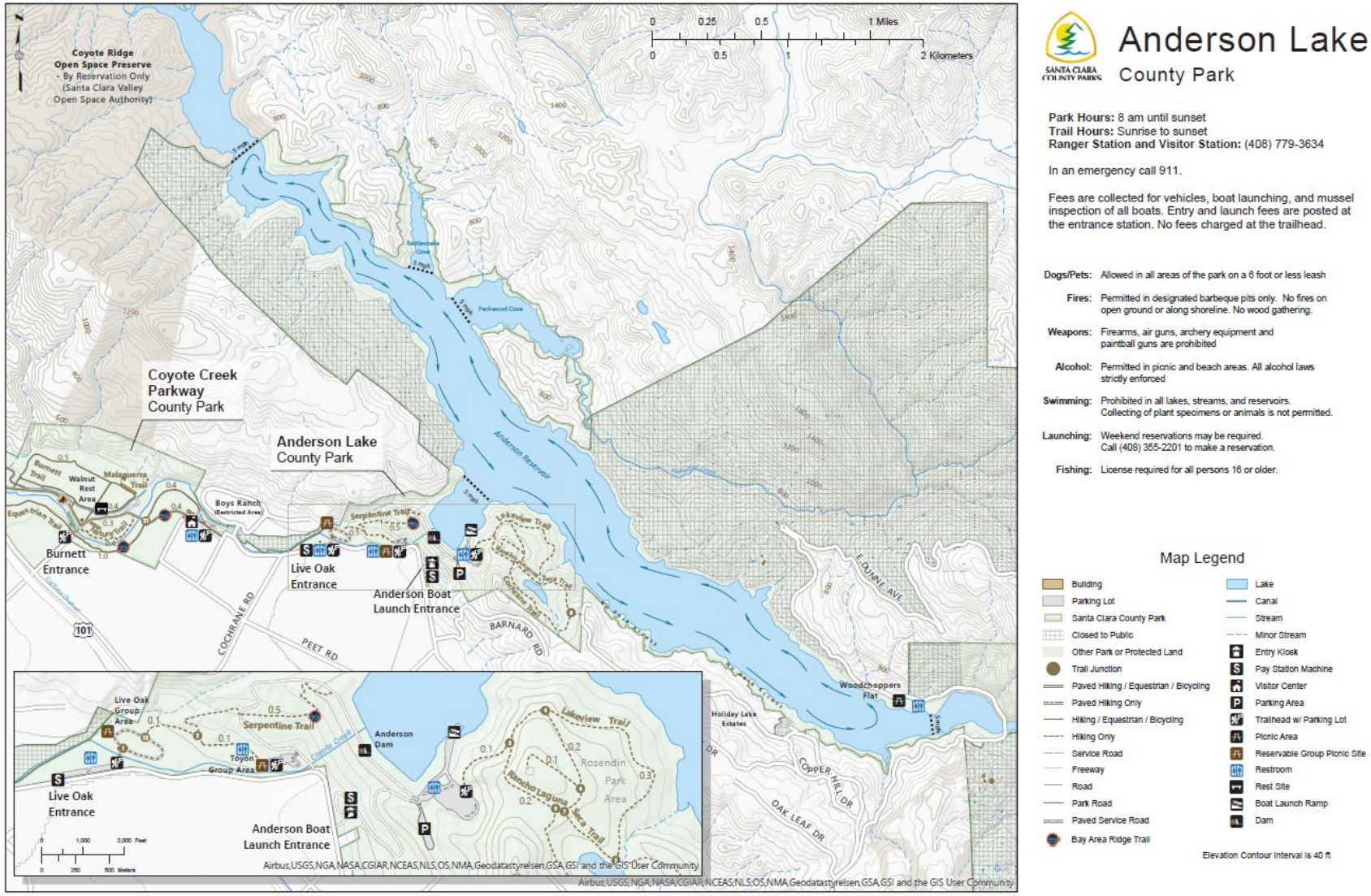
The Woodchoppers Flat Picnic Area is located on the eastern shore of Anderson Lake, off East Dunne Avenue. The recreation site includes picnic tables, shoreline access, pit toilets, and a gravel parking lot that can accommodate approximately 45 vehicles.

3.3.7.2 Environmental Effects

Due to the drawdown, no boating or angling will be allowed at Anderson County Park. Anderson Reservoir is the largest freshwater body of water available for boating in Santa Clara County and accounted for 14 percent of all boating use at Santa Clara County reservoirs in 2015.[54] Displaced boaters will have to travel to other reservoirs such as Lexington and Stevens Creek for non-motorized boating, or Coyote and Calero for motorized boating. The availability of alternative boating sites varies each year depending on water levels and the type of recreation experience varies by site. Losing boating access to Anderson Reservoir may lead to overcrowding and reduced quality of recreation experiences or limits on the number of watercraft allowed at the alternative reservoirs due to issues like water year type and willingness to travel longer distances to participate in boating dependent activities. Anglers have more options to pursue outdoor recreation activities, since fishing is allowed at other reservoirs at low water levels (when boats cannot be launched) and anglers can use Uvas, Chesbro, and Almaden reservoirs or Hellyer County Park and Henry W. Coe State Park where boating is either not allowed or not available. Anglers also have the option to fish downstream of the dam in Coyote Creek or at other creeks and lakes in the vicinity. The quality of the experience will likely be diminished below Anderson Dam due to modified flow regimes and fish relocation measures. Those individuals participating in picnicking or hiking have a wider diversity of options, as compared to the limited number of water bodies nearby for boaters and warm water anglers, as long as transportation is available. While some displacement will occur, to avoid being near construction or because preferred trails or picnic sites are closed, the inconvenience associated with finding alternative locations to participate in those outdoor pursuits will be minimal for most visitors. Group picnic sites are less common and accommodating demand will be difficult once the Toyon Group Picnic site is closed.

[54] Santa Clara County Department of Parks and Recreation 2015 Boater Usage.

Figure 9: Anderson Lake County Park Recreation Sites and Facilities (Source: Santa Clara County Parks and Recreation Department, 2020).



The Anderson Lake Boat Launch and nearby parking along the dam crest will be closed to the public during the drawdown and used as a staging area for monitoring impacts of the drawdown on resources, and as the primary access point for any mitigation measures needed within the reservoir area. This closure will eliminate public access to the north side of the dam and parking for recreationists wanting to use trails in the Rosendin Park area on the south side of the dam, adjacent to Holiday Lake Estates (a trailhead is located at the boat launch parking lot). Although a second trailhead exists in Holiday Lake Estates to access the Rosendin Park area, parking is limited to approximately 8 vehicles for residents of the development only. Coyote Road, which currently provides public access to the dam crest will be closed during the drawdown and is planned for future removal. Valley Water did not specify to what extent public access will be provided upon completion of the FOCP. Site closures will have a moderate adverse effect on recreation activities at Anderson Lake County Park. Due to the lack of public parking, the Rosendin Park Area of Anderson Lake County Park will effectively become a private park for residents of Holiday Lake Estates during the closure.

In order to mitigate for adverse effects regarding the lack of public access to recreation opportunities at Anderson reservoir, Valley Water developed an avoidance and minimization measure (AMM REC-1) (Horizon Water and Environment 2020). This measure includes notification and coordination with County Parks prior to the commencement of construction activities that necessitate limited access to, or closure of, recreation facilities. This will provide timely notice for County Parks to educate the public regarding public access issues and alternative recreation sites. Valley Water will also post signage at affected facilities to inform the public of alternate recreation sites.

The Woodchoppers Flat Picnic Area lies within an area where slope failures have historically occurred, thus the site may be directly impacted by future slides or used as a staging area for bank and rim stabilization improvements should any be needed along East Dunne Avenue.

During the drawdown, the Anderson Lake boat launch will be closed to public access. Since the parking lot at the boat launch provides the only public access to the trails in the Rosendin Park area, which will remain open during the drawdown, Commission staff recommend Valley Water develop a temporary parking lot, trailhead and signage to provide public access to the trails in the Rosendin Park area (options to consider include the terminus of Barnard Road or at staging area 2 along Cochrane Road).

Commission staff also recommend Valley Water implement the recreation related avoidance and minimization measure (AMM REC-1), to provide advance notice of limited access or closure of recreation facilities. Information regarding alternative locations to pursue outdoor recreation must be provided for all user groups, including but

not limited to: anglers, motorized boaters, non-motorized boaters, hikers, wildlife watchers, and picnickers.

3.3.8 Land Use

The FOCP encompasses lands within unincorporated Santa Clara County, the City of Morgan Hill and the City of San Jose. Lands within the project area are owned by Valley Water, the County, or private parties. Land use designations within the proposed project area are Regional Parks, Agriculture, and Hillsides, in the Santa Clara County General Plan, Open Space and Rural County in the City of Morgan Hill General Plan, and Open Hillside in the City of San Jose General Plan.

Utility areas in the project area overlap on most of these designated land use areas. The primary land use, however, for the lands within the project area is utility; specifically related to Anderson Dam and Reservoir. Water resource facilities within the project area include: the dam, reservoir, spillway, and outlet work, which are owned by Valley Water. The Anderson Lake County Park, operated by County Parks, is a 4,275-acre park that encompasses most of Anderson Reservoir and includes the Live Oak, Toyon and Woodchoppers Picnic Areas as well as the Serpentine and Like Oak trails. Additionally, Anderson Reservoir itself, a 7-mile long, 1,250-surface-acre lake, provides opportunities for motorized and non-motorized boating and fishing.

3.3.8.1 Affected Environment

The project area contains grasslands, chaparral, and oak woodland communities as well as a mix of native and non-native annual and perennial species typical of disturbed areas, such as wild oats, bromes, and mustards. While the lands immediately surrounding Anderson Reservoir and Anderson Dam are predominately part of the County Parks system, some private ranch lands and lands managed by the Open Space Authority are also adjacent to the reservoir's north arm. The Holiday Lake Estates residential community is located adjacent to Anderson reservoir. The Santa Clara County Justice Training Center and the William F. James Boys Camp, as well as single-family residential housing, are located adjacent to park lands below the dam.

3.3.8.2 Environmental Effects

Existing land uses are not expected to be greatly impacted since the drawdown will occur within the existing infrastructure used for project operations.

The water in Anderson Reservoir has historically been used by CalFire as a source for collecting water via helicopter to combat wildfires in the area. In a September 10, 2020 filing, Ms. Rasmussen raised concerns regarding lowering the water level of the

reservoir and the risk of wildfire to nearby homes. While the volume of water available for such use will be greatly diminished due to the reservoir drawdown, even at deadpool approximately 2,820 ac-ft of water will remain in the reservoir with a maximum depth of 38 feet (Valley Water, 2020a). Due to the devastating wildfires that the State of California is still experiencing and the likelihood that such fires could continue in the future (Williams, Abatzoglou, et. al., 2019), efforts must be made to collaborate with CalFire to ensure the ability to gather water safely via helicopter bucket remains viable at deadpool. Providing notice of the drawdown to CalFire as well as general bathymetry information for the reservoir at deadpool to pilots will facilitate use of the reservoir during wildfire emergencies. Additionally, Coyote Reservoir, located approximately 1.5 miles upstream of Anderson Reservoir, will be managed consistent with historic lake levels and thus be available as an alternative water source. While wildfires remain an ongoing concern in the area around Anderson Reservoir, Valley Water is required to address the seismic instability of the dam which has the potential to cause a catastrophic event should failure occur.

Due to the ongoing threat of wildfires in the area, Valley Water must notify CalFire of the drawdown, provide general bathymetry data, and if needed, implement measures to ensure safe access to reservoir waters via helicopter at deadpool for firefighting activities.

3.3.9 Cultural Resources

Historic properties are cultural resources listed or eligible for listing in the National Register. Historic properties can be buildings, structures, objects, districts (a term that includes historic and cultural landscapes), or sites (archaeological sites or locations of important events). Historic properties also may be resources of traditional religious and cultural importance to any living community; such as an Indian tribe or a local ethnic group, that meets National Register criteria; these properties are known as traditional cultural properties. Cultural properties must possess sufficient physical and contextual integrity to be considered historic properties. For example, dilapidated structures or heavily distributed archaeological sites, although they may retain certain historical or cultural values, may not have enough integrity to be considered eligible.

Section 106 of the NHPA requires the Commission to evaluate potential effects on properties listed or eligible the National Register prior to an undertaking. An undertaking means a project, activity, or program funded in whole or part under the direct or indirect jurisdiction of a federal agency, including, among other things, processes requiring a federal permit, license, or approval. Advisory Council regulations implementing section 106 define effects on historic properties as those that change those properties for inclusion for the National Register. In this case, the undertaking, as discussed in the executed PA, is the lowering of the Anderson Reservoir and construction of the low-level

outlet which has not been surveyed or evaluated adequately enough to determine if there are archaeological or cultural resources eligible for the National Register.

Determination of historic properties first requires identification of any historic properties in the Area of Potential Effects (APE). The Advisory Council's regulations define the APE as "the geographic area or areas within which an undertaking may directly or indirectly cause alternations in the character or use of historic properties, if any such properties exist."[55] For this undertaking, the APE comprises the maximum horizontal and vertical extent of all proposed project activities including any construction preparations, channel modifications, drilling, excavation, stockpiling, staging, access, Coyote Channel modification immediately downstream of the Anderson Dam, and the entirety of the Anderson Reservoir up to the maximum operating elevation of 627.9 ft. The APE also includes the full boundaries of any intersecting previously recorded cultural resources, and although ineligible for listing in the National Register, features associated with the Anderson Dam.

3.3.9.1 Affected Environment

Anderson Dam is located at the eastern margin of the Santa Clara Valley, a wide plain bounded by the Santa Cruz Mountains on the west, the Diablo and Gabilan ranges on the east and south, and the San Francisco Bay on the north. For time periods proceeding the origin of radiocarbon dating, general geological terms are utilized: Terminal Pleistocene, Early Holocene, and Middle Holocene.

Throughout California, Terminal Pleistocene occupation is infrequently encountered and most often represented by isolated fluted points. No fluted points or archaeological deposits dated to the Terminal Pleistocene have been documented in the Bay-Delta Area, likely due to sea-level rise, coastal erosion, localized subsidence, and the sparse archeological signature on the landscape of early migrated groups. The Early Holocene people gathered a wide range of marine, lacustrine and terrestrial resources. Early Holocene assemblages in California are distinguished by the ubiquitous presence of milling tools, such as hand stones and milling slabs. A single Early Holocene archaeological site is documented with the Santa Clara Valley, the Bloody Alley site in the Coyote Narrows. Five additional sites are found the surrounding Bay-Delta area. All six sites were identified in buried terrestrial contexts.

More than 60 Bay-Delta Area archaeological sites have been radiocarbon dated to the Middle Holocene, including surface sites and buried sites with diverse cultural assemblages, substantial residential settlements, and occasional burials. Several isolated human burials have also been found in buried contexts, including several in the northern Santa Clara Valley, along the edge of the Bay in the southwest region, and near Coyote

[55] 36 C.F.R. Section 800.16(d) (2020).

Point (Henn et al. 1972; Leventhal 1987; Meyer 2008, 2015; Scher and Meyer 2014). Artifact assemblages are varied and include ground stone (some only with milling slabs and hand stones, some with mortars and pestles, and some with both); side-notched dart points; cobble tools for chopping, scraping, and pounding; and shell beads and ornaments (Rosenthal and Fitzgerald 2012; Meyer and Rosenthal 1998).

The Late Holocene is very well-documented in the Bay-Delta Area, with more than 240 radiocarbon-dated sites reflecting widespread occupation (Milliken et al. 2007). Over the last 4,000 years regional human population increased, with corresponding increases in social, political, and economic complexity reflected in the development of distinct geographic cultural traditions. Several studies indicate resource intensification—an increasing reliance on lower-ranked and more costly foods such as smaller species of marine mammals, terrestrial mammals, birds, fish, plants, and possibly dogs (Broughton 1999, 2002; Whitaker and Byrd 2014; Wohlgemuth 2002). The Late Holocene is divided into the following six main time periods: Early, Early/Middle Transition, Middle, Middle/Late Transition, Late, and Post-Contact Native American.

The Santa Clara Valley falls within the territory of Ohlone-speaking Native Americans. The territory of the Ohlone covered around 6,700 square miles extending 110 miles along the Pacific Coast from south of the Monterey Bay all the way up the San Francisco Peninsula and inland 20-45 miles into the Coast Ranges. The Ohlone territory included the open coast, the littoral zone of the bay, and a variety of inland settings, with a varied range of resources. The native people from this area were some of the earliest to be impacted by the Spanish missionaries from Mission Santa Clara, founded in 1777, and Mission Santa Cruz, founded in 1791.

Permanent villages were established near the coast, the Bay, and along river drainages, with temporary camps in prime resource processing areas. Some tribes occupied a central village, while others had several villages within a few miles of each other. The most common type of housing consisted of hemispherical huts thatched with grasses and rushes. Prior to European contact, the Ohlone and other Native people of the Bay-Delta area were hunters, gatherers, and fisherfolks. The Spanish occupation of the Ohlone area lasted 46 years, from 1776 to 1822, included the establishment of multiple outposts, and marked the beginning of continued and intensified Euro-American occupation of the area.

In the 1830s, the area where Anderson Dam is located in Santa Clara County was primarily utilized for cattle ranching. Drought in the 1860, however, propelled wheat cultivation to the forefront. Wheat yields began to decline in the 1880s, and dairy and fruit production became the mainstay of Santa Clara Valley agriculture. This shift to horticulture triggered changing land ownership patterns, as large ranch owners subdivided and sold their land for highly profitable orchard plots.

Agriculture in the Santa Clara Valley relied on available groundwater. Until around 1900, groundwater levels were sufficiently high that farmers irrigated from artesian wells. By 1915, increased pumping and drought resulted in a substantial drop in groundwater levels, and by 1930 the groundwater table had dropped to alarming levels. The Santa Clara Valley Water Conservation District (SCVWCD, now Santa Clara Valley Water District) was established in 1929, and valley leaders and local engineers proposed a system of dams and conservation facilities to aid in recharging the valley's groundwater (American Society of Engineers 2003). The original main storage dams were Calero, Almaden, Guadalupe, Vasona and Stevens Creek, built in 1935, and Coyote Reservoir, finished in 1936. The SCVWCD built Anderson Dam in 1950 and Lexington Dam in 1952.

Agriculture continued to be the backbone of the Morgan Hill area economy until the 1970s when high-tech firms began locating in the city and US Highway 101 was built as a freeway that bypassed the downtown area. The area has become a suburb of San Jose, triggering the construction of large residential subdivisions east and north of Morgan Hill and their annexation into the city. In recent decades, relatively dense residential development has spread east of Morgan Hill towards the vicinity of Anderson Dam, further altering the once rural and agricultural character of the area.

Cultural Resources Investigation

Valley Water conducted archaeological inventories in 2013, 2014, 2017, and from 2019-2020. The exemptee conducted background research utilizing the Northwest Information Center of the California Historical Resources Information System at Sonoma State University, performed sensitivity assessments, as wells as field efforts. Valley Water's pedestrian surveys have included the entire APE and areas outside of the reservoir. In 2019, reservoir rim survey was conducted from the high-water level of 578 ft above mean sea level to the reservoir's maximum operation of 627.9 ft elevation and included: (1) intensive pedestrian surveys; (2) mixed-strategy surveys; (3) and minor scraping or subsurface tests. No survey was conducted in inaccessible areas. No survey has been conducted for portions of the APE below 578 ft elevation in the reservoir. Field efforts in 2019 also included subsurface identification in areas of the APE downstream of the dam outlet consisting of backhoe trenching on Santa Clara County Parks, Valley Water, and privately-owned properties. As a result of identification efforts to date, the exemptee has documented ten archaeological resources within the APE. These include two resources downstream of the dam outlet and eight resources along the reservoir edge. None of the identified archaeological resources have been evaluated.

The reservoir drawdown may expose previously inundated archaeological sites to erosion. Valley Water's initial sensitivity assessment indicated there is a high potential for archaeological resources in areas adjacent to Coyote Creek downstream of Anderson

Dam. Subsequent observations suggest the overall potential for buried archaeological resources is far lower than expected due to the nature of the underlying landforms.

Valley Water evaluated the Anderson Dam, built in 1950, for eligibility for listing on the National Register in a 2006 report, which was subsequently updated in 2019. The report determined that the dam, and appurtenant buildings and structures does not meet the criteria for listing in the National Register as an individual resource, or as part of a historic district. On January 29, 2020, the California SHPO provided concurrence with this finding.

Additional archaeological investigations are necessary to determine the presence or absence of historic properties in the APE in order to provide a fully informed assessment for cultural resources. The Commission, in consultation with the California SHPO, developed a PA, which stipulates that Valley Water conduct the following: (1) surveys of the reservoir area during and following the drawdown; (2) evaluations of identified archaeological resources for National Register eligibility; and (3) assessment of effects of the undertaking on any historic resources. The PA was developed for the entire FOCP proposed action. The PA was executed between the Commission and the California SHPO by signature on September 4, 2020 and September 9, 2020, respectively. The Corps and Valley Water concurred.

3.3.9.2 Environmental Effects

The Commission defined the undertaking as the following major action: (1) Valley Water must begin a full drawdown of the project's reservoir to 488 ft (deadpool) elevation by no later than October 1, 2020; (2) Valley Water must design and construct a low-level outlet to allow for a more reliable and quicker draw down of the reservoir after an earthquake or significant precipitation events providing increased protection for residents and property downstream. These activities have the potential to adversely affect historic properties and cultural resources.

The Commission is the lead federal agency during the consultation to satisfy section 106 of the NHPA, as implemented at 36 C.F.R. § Part 800. Valley Water and the Commission are consulting on the identification of historic properties and findings of effect with the California SHPO, under the regulation of expedited procedures.

On March 20, 2020, the Commission notified the Advisory Council pursuant to 36 C.F.R. § 800.6(a)(1) of the potential for adverse effects from this undertaking and has afforded the Council an opportunity to comment. By letter dated March 30, 2020, the Council stated its participation in the consultation was not needed to resolve adverse effects. There are no federally-recognized Tribes that may have interests in the project area, but Valley Water and the Commission have consulted with the following local Tribes recognized by the Native American Heritage Commission: Amaah Mutsun Tribal

Band, Amah Mutsun Band of Mission San Juan Bautista, North Valley Yokuts Tribe, Muwekma Ohlone Indian Tribe of the San Francisco Bay Area, Ohlone Indian Tribe, and Indian Canyon Mutsun Band of Costanoan.

As we've said, the PA stipulates that Valley Water will complete the initial, on-going pedestrian surveys, then develop a work plan detailing the scope of work for archaeological resources investigations before and during the undertaking. The work plan will discuss plans to survey the reservoir, survey methods, and any analysis. As part of its archaeological investigations, Valley Water will formally evaluate sites for the National Register. Unevaluated sites will be assumed to be eligible for listing in the National Register. If traditional cultural properties (TCP) are discovered, Valley Water must take inventory of any TCPs in accordance with guidance provided in the National Register Bulletin No. 38, Guidelines for Evaluating and Documenting Traditional Cultural Properties (Parker and King, 1990).

The PA also addresses the following stipulations: (1) at the end of every quarter , Valley Water will provide a summary report detailing the progress made in implementing the terms of the PA, and within 12 months after the Commission determined that all fieldwork has been completed, Valley Water will complete a final report documenting the results; (2) Valley Water will submit a preliminary finding of effect to the Commission and complete the procedures for adverse effect or no effect; (3) Valley Water will adhere to the standards as outlined in the PA; (4) the Commission, Valley Water, and the California SHPO will adhere to the roles and responsibilities outlined in the PA; (5) if it is necessary to modify the project's APE, the Commission will consult with the California SHPO and concurring and consulting parties to the PA, providing for a 15-day review period; (6) if Valley Water's qualified staff determines the undertaking will affect a previously unidentified cultural resources or will affect a known historic property in an unanticipated manner or have a greater adverse effect on a known historic property than previously anticipated, Valley Water will cease all work and address the discovery or unanticipated effect ; (7) should an emergency situation occur which represents an imminent threat to public health or safety, or creates a hazardous condition, the Commission will immediately notify the California SHPO and take measures to respond to the emergency or hazardous condition; (8) amendments to the PA may be proposed by signatories to the PA with consultation of no more than 30 days; (9) dispute resolution provisions; (10) duration of the PA; (11) provisions to terminate the PA; and (12) effective date of the PA.

Commission staff will require Valley Water to implement the stipulations of the PA and will ensure the measures are carried out. These measures will clarify the framework that will be followed to address any potential adverse effects on historic properties and cultural resources due to the reservoir drawdown and construction

activities. Commission staff will review the executed PA to determine if it is necessary to revise the project's APE as the Undertaking is refined.

3.3.10 Aesthetic Resources

Anderson Dam is an earth-filled structure which is approximately 200 ft tall, 40 ft wide at its base, and 1,400 ft long. The dam face typically blends with the earth tones of the grass which dries to a golden hue and the dark green and browns of oak trees and shrubs which predominate the surrounding landscape, except when the bright green sprouts of annual grasses appear in early Spring. The dam is visible from Highway 101. The 800-ft-long concrete spillway is approximately 200 ft wide at the dam crest and narrows to 100 ft wide at the toe. Due to the orientation of the spillway, it is not a dominant feature of the landscape for residents of Morgan Hill, nor does it stand out from the dam when viewed from Highway 101.

3.3.10.1 Affected Environment

The Anderson Dam facilities are located in Santa Clara County at the urban-wildland interface. The Town of Morgan Hill extends up to the base of the dam and the Holiday Lake Estates housing development is adjacent to the southwest corner of the reservoir. The remainder of the reservoir is surrounded predominately by grass covered hillsides. Coyote Creek has a vegetative buffer through the sparsely developed Coyote Valley that gives way to increasingly dense development moving north into the City of San Jose. The project area is not located within the viewshed of any designated scenic highways. Dunne Avenue (from Dunne Avenue Bridge to Henry Coe State Park) is a County designated scenic route and wraps around the southeastern border of the reservoir. Although Anderson Reservoir provides scenic views to the public, the reservoir is not designated as a scenic vista in the Santa Clara County General Plan.

At full pool (627.8 ft), Anderson Reservoir's north arm extends approximately three miles up Los Animas Creek, while the south arm extends approximately four miles up Coyote Creek resulting in a surface area of approximately 1,245 acres. Currently, the reservoir elevation is approximately 535 ft, which has greatly reduced the surface area of the reservoir and thus modified the aesthetics of the lake. Reducing the reservoir level to deadpool will result in an additional two thirds reduction of the reservoir surface area to approximately 150 acres.

In addition to the aesthetic impacts associated with the drawdown to deadpool, Valley Water's proposed avoidance and minimization measures (Horizon Water and Environment. 2020) are also likely to result in aesthetic impacts. The energy dissipation structure and slope protection cascade zone for the outlet of the CVP Extension is likely to impact the aesthetic view for recreationists using the Coyote Creek Trail. Commission staff anticipates that ongoing consultation with resource agencies and other stakeholders

will result in additional information regarding the proposed avoidance and minimization measures. However, these measures have not been finalized and therefore cannot be analyzed in the EA.

3.3.10.2 Environmental Effects

Individuals participating in outdoor recreation activities within Anderson Lake County Park and visitors to Coyote Creek County Park who travel up to the dam crest will be impacted by the reservoir being lowered to deadpool for an extended time period. Residents of Holiday Lake Estates as well as residents whose homes are accessed via East Dunne Avenue (a county designated scenic road) beyond Anderson Lake will also be impacted by the lowered reservoir, as well as visitors using the portions of Anderson Lake County Park which will remain open during construction and those travelling to Henry W. Coe State Park via East Dunne Avenue. Due to the long time period that the reservoir is expected to be maintained at deadpool, aesthetics will be moderately adversely impacted for frequent park visitors and nearby residents.

Should lowering of the reservoir pool result in additional slumping of the slide prone areas, Valley Water plans to make reservoir bank and stability improvements which may take a variety of forms depending upon the severity of the slope failures. The aesthetic impact of these improvements will be minimal to moderate. While the viewshed of oak scrub grassland along East Dunne Avenue for residents of Holiday Lake Estates and others living in the area, as well as for those individuals driving on the road will be impacted during stabilization efforts, long term impacts could be mitigated through revegetation of the stabilized slopes and use of stabilization materials which blend into the landscape. Construction will occur in areas that may provide scenic views to residents and visitors in the project vicinity and the perception of adverse impact is highly variable among individuals. While construction will not occur near any designated or eligible state scenic highways, the viewshed of a designated county scenic highway will be impacted by the drawdown. Since the aesthetic impacts will occur over a multi-year timeframe, there will be moderate long-term effects to aesthetic resources.

In order to mitigate long term aesthetic impacts associated with lowering the reservoir pool, Valley Water must design the reservoir bank and stability improvement measures to blend with the environment using local stone or other materials, native plants for revegetation or vegetative screening, or natural tones for painted surfaces.

3.3.11 Transportation

3.3.11.1 Affected Environment

Regional access to the project site is provided via U.S. Highway 101, a north-south freeway extending northward through San Francisco and southward along the coast to Los Angeles, and passing approximately 1.5 miles southwest of Anderson Dam. The

highway is an eight-lane freeway (three mixed-flow lanes and one high-occupancy vehicle lane in each direction) north of the project and a six-lane freeway with no high-occupancy vehicle lanes to the south. Local access to the project from U.S. Highway 101 is provided via full interchanges at Cochrane Road and Dunne Avenue.

Cochrane Road is an east-west divided roadway that runs for approximately 3 miles through Morgan Hill. West of U.S. Highway 101, Cochrane Road provides four lanes, before quickly narrowing to two. Cochrane Road has posted speed limits of 40 and 45 mph and runs immediately adjacent to the downstream toe of Anderson Dam. The road also provides access to the boat launch at Anderson Lake County Park located at the south end of the dam. Traffic volume data collected in March 2019 indicate daily vehicular volumes of approximately 18,000 vehicles along Cochrane Road just east of U.S. Highway 101, and approximately 5,000 vehicles just east of where the road narrows to two lanes. The counts showed that approximately one percent of the total traffic volume along Cochrane Road is comprised of large trucks.

Dunne Avenue is a four-lane major arterial, with the exception of a short two-lane arterial segment east of U.S. Highway 101, and transverses Morgan Hill extending from the east part of town to the west with posted speed limits of 35 to 40 mph. Dunne Avenue provides access to the project site via Hill Road and Main Avenue, which approach the dam from the southwest. Dunne Avenue also provides access to both sides of the southern arm of Anderson Reservoir. Holiday Drive begins at an intersection with Dunne Avenue and runs along the south bank of the southern arm while Dunne Avenue crosses Coyote Creek upstream of the impoundment and runs along the northern side of the arm.

The CVP, where it passes just west of Ogier ponds, is accessible from U.S. Highway 101 through an interchange with Bailey Avenue and Santa Teresa Boulevard/Hale Avenue. Bailey Avenue is a four lane undivided highway as it crosses U.S. Highway 101 but narrows to two lanes just to the west. Santa Teresa Boulevard/Hale Avenue is a two lane undivided highway that serves as the major north-south arterial route on the west end of Morgan Hill. The area between the existing CVP and Ogier ponds, along San Bruno Avenue from its intersection with Hale Avenue, is primarily used for agricultural purposes, with a small number of residences.

3.3.11.2 Environmental Effects

The area most prone to potential landslides is located in the southern arm, below Dunne Avenue and Holiday Drive. The initial monitoring work will result in a small increase in traffic in this area, consisting of several staff to place equipment and take measurements, travelling in passenger vehicles and light duty trucks. These staff will require access through private property and Valley Water will develop agreements as necessary. However, if stabilization measures are needed, the exemptee will transport

equipment such as drilling rigs, bulldozers, excavators, and compactors to the sites using flatbed trailers. Valley Water will establish staging areas in the Woodchopper picnic area and a nearby pull-off on Dunne Avenue and at the Holiday Lake Estates boat ramp off of Holiday Drive. The route used by these vehicles will be through U.S. Highway 101, then continuing along Dunne Avenue to the north rim of the reservoir, or leaving Dunne Avenue to travel on Holiday Drive to gain access to the south rim. The exemptee intends to access the slides primarily from the staging areas by constructing temporary access roads as necessary.

To monitor and possibly stabilize landslides near the intake structure, Valley Water will make use of the same equipment and haul vehicles as those used along the southern arm of the reservoir. However, the activities at the intake will likely require a smaller number of vehicles due to the less extensive landslide area at the location. The route used by these vehicles will be from U.S. Highway 101 along Cochrane Road to Anderson Dam.

Construction of the CVP extension will generally follow San Bruno Avenue, allowing access directly from the roadway. The placement of equipment along the road will progress along with construction of the pipeline, and vehicles will be located on any particular segment of the avenue for a short period of time. Although San Bruno Avenue ends east of its intersection with Hale Avenue, before its end it intersects with Dougherty Avenue, which also provides access from Hale Avenue. Consequently, during much of the time for construction of the CVP extension along San Bruno Avenue, road uses will be able to avoid the activities dependent upon their destination and the location of the pipeline work at the time.

On the major thoroughfares near the project, the additional truck traffic required for landslide stabilization and construction of the CVP extension will negligibly increase the total traffic volume in the area. However, particular areas that will be affected such as the Holiday Lake Estates development are typically subject to much lower amounts of traffic and are rarely used by the type of vehicles required to haul the equipment and materials that will be necessary to carry out the proposed construction activities. These vehicles will likely interfere with typical traffic patterns, causing brief delays and impeding the traffic that typically travels through the development, resulting in moderate short-term adverse effects. To mitigate for this, Valley Water's plan to establish specific staging areas and develop temporary access routes from these locations to the specific work site will simplify the altered traffic pattern, minimize the extent of the disturbance, and institute well-defined routes for the construction traffic on existing roads that local residents will be made aware of.

3.3.12 Air Quality

3.3.12.1 Affected Environment

The Bay Area Air Quality Management District (BAAQMD) has jurisdiction over air emissions throughout the San Francisco Bay area, including the Santa Clara Valley. The Santa Clara Valley is bounded by the San Francisco Bay to the north and by mountains to the east, south, and west. Temperatures are warm on summer days and cool on summer nights, while winter temperatures are fairly mild. At the northern end of the valley near San Jose, mean maximum temperatures are in the low 80s during the summer and the high 50s during the winter, and mean minimum temperatures range from the high 50s in the summer to the low 40s in the winter.[56] Further inland, where the moderating effect of the Bay is not as strong, temperature extremes are greater. For example, in San Martin, located 5 miles south of the project site, temperatures can be more than 10ºF warmer on summer afternoons and more than 10ºF cooler on winter nights relative to San Jose.

Winds in the valley are greatly influenced by the terrain, resulting in a prevailing flow that roughly parallels the valley's northwest–southeast axis. A north-northwesterly sea breeze flows through the valley during the afternoon and early evening, and a light south southeasterly flow occurs during the late evening and early morning. In the summer, the southern end of the valley sometimes becomes a convergence zone, in which air flowing from Monterey Bay is channeled northward into the southern end of the valley and meets with the prevailing north-northwesterly winds. Wind speeds are greatest in the spring and summer and weakest in the fall and winter. Nighttime and early morning hours frequently have calm winds in all seasons, while summer afternoons and evenings are quite breezy. Strong winds are rare, associated mostly with the occasional winter storm.

The air pollution potential of the Santa Clara Valley is high. High summer temperatures, stable air, and mountains surrounding the valley combine to promote ozone formation. Ozone is an air pollutant that is not typically emitted directly from sources but is formed in the atmosphere from the interaction of light, oxygen, and precursors such as nitrogen oxides and reactive organic gases. In addition to the many local sources of pollution, precursors from heavily urbanized areas to the north are carried by prevailing winds into the Santa Clara Valley. The valley tends to channel pollutants toward the southeast, where the project is located. In addition, on summer days with low-level inversions, ozone can be recirculated by southerly flows in the late evening and early morning and by the prevailing northwesterly winds in the afternoon. A similar recirculation pattern occurs in the winter, affecting levels of carbon monoxide and

[56] All temperatures in this section are in degrees Fahrenheit (ºF).

particulate matter. This movement of the air up and down the valley substantially increases the effect of air pollutant emissions.

The Santa Clara Valley has a high concentration of industrial activity at its northern end. Some of these industrial activities are sources of toxic air contaminants as well as criteria air pollutants such as carbon monoxide, ozone precursors, nitrogen oxides, and sulfur dioxide. In addition, the Santa Clara Valley's large population and many work-site destinations generate the highest mobile-source emissions of any region in the San Francisco Bay area.

Many toxic air contaminants are confirmed or suspected carcinogens or are known or suspected to cause birth defects or neurological damage. For carcinogens, no thresholds exist below which exposure can be considered risk-free. According to the California Almanac of Emissions and Air Quality, diesel particulate matter is considered a primary contributor to health risk because particles in diesel exhaust carry many harmful organics and metals, rather than being a single substance as are other toxic air contaminants. The BAAQMD estimated the lifetime cancer risk from toxic air contaminants based on air pollution measurements in the San Francisco Bay area to be 300 in 1 million in 2012. More than 70 percent of the cancer risk related to air pollution in the San Francisco Bay area is due to diesel particulate matter and 90 percent of the total risk is due to diesel particulate matter, benzene, and 1,3-butadiene, all of which are emitted through fuel combustion.

The San Francisco Bay area, including the Santa Clara Valley, is designated as a state and federal nonattainment area for ozone and particulate matter with aerodynamic diameter of 2.5 micrometers or less (PM2.5), and a state nonattainment area for particulate matter with aerodynamic diameter of 10 micrometers or less (PM10). Santa Clara County is a marginal nonattainment area for the federal 8-hour ozone standard and a moderate nonattainment area for the federal 24-hour PM2.5 standard.

A large number of residences are located near the project, generally to the south of the dam and along the previously described access routes. Santa Clara County also operates a juvenile detention facility immediately north of the project location.

3.3.12.2 Environmental Effects

The drawdown of the reservoir requires no construction activities and therefore no effect to air quality is expected. Although dewatering the reservoir and exposing sediment will increase the possibility of dust being generated during high wind events, the probability will be similar to existing conditions when the reservoir is drawn down during the summer. Furthermore, the strongest winds occur during winter storms which are typically accompanied by rainfall wetting the sediment, significantly reducing the likelihood of it being transported by wind.

Construction activities will be necessary for reservoir rim stability and construction of the CVP extension. The off-road construction equipment and vehicles necessary to transport the equipment will primarily be powered using diesel engines, leading to the production of harmful air pollutants. Pollutants that will be produced during construction activities include reactive organic gasses and nitrogen oxides, which are precursors to ozone formation, carbon monoxide, sulfur dioxides, and PM2.5 and PM10. In addition to combustion related pollutant sources, land disturbing activities resulting from landslide stabilization work such as constructing temporary access roads and grading landslide areas has the potential to result in fugitive dust emissions.

Construction activities related to landslide stabilization will not be intense, requiring only moderate numbers of equipment and will not last for significant lengths of time. Any adverse impacts on air quality will be moderate and brief, and will be insubstantial over the long term and emissions from the proposed activities will be minor when compared to the regional existing environment. To further reduce localized short term impacts, Valley Water intends to control the production of combustion related emissions by requiring the use of properly maintained late model equipment and limiting idling times. The exemptee will also possibly use alternative fuels and/or install aftermarket emission control technology on the equipment.

4.0 CONCLUSIONS

4.1 Staff Recommended Measures

Water Quality and Quantity

As described in *Section 3.3.3.2 Environmental Effects* to water quality, Commission staff recommend two measures pertaining to downstream water temperature and sedimentation. First, in agreement with NMFS' conservation recommendation, Valley Water should develop and implement a Water Temperature Monitoring Plan for continuous water temperature logging at the 10 permanent monitoring locations on Coyote Creek downstream of Anderson Dam, and installation of additional temperature loggers in Coyote Creek: (a) above the new imported water turnout of the CVP Extension; (b) below the new imported water turnout of the CVP Extension; and (c) upstream of the Coyote Percolation Pond. NMFS requested operation of the temperature loggers to begin in February 2021, and continue through the completion of the ADSRP, and that daily average, maximum, and minimum temperatures at each station should be reported monthly to NMFS beginning in February 2021. So that Commission staff and the resource agencies are apprised of the details of this water temperature monitoring, including monitoring methods, data collection and data reporting procedures, Valley Water should be required to file this plan for Commission approval. The plan should detail the monitoring locations, monitoring methods, data collection methods, and

reporting timeframes. The plan should be developed in consultation with the NMFS, FWS, and California DFW.

Secondly, in agreement with NMFS' conservation recommendations, Commission staff recommended that Valley Water develop and implement a Sedimentation and Turbidity Monitoring Plan to continuously monitor suspended sediment discharges from Anderson Reservoir, and to monitor the effect of the discharges on Coyote Creek downstream of the dam, including effects to spawning gravel quality, egg incubation, juvenile rearing and fish migration. The results of the monitoring will be used for adaptive management.

Aquatic Resources and Endangered and Threatened Species

As described in Section 3.3.6.2 *Environmental Effects* to threatened and endangered resources, Commission staff recommend that the Fish Rescue and Relocation Plan be supplemented with specific handling methods to ensure protection of captured *O. mykiss* and that the fish rescue effort be conducted annually unless otherwise determined in consultation with NMFS, FWS, and California DFW. The revised plan would be filed with the Commission for approval. Because Commission staff also recommend that Valley Water and the TWG should collaboratively identify temperature thresholds that are both site-specific and biologically meaningful based on the life stage present in Coyote Creek, these thresholds should be included in the final Fish Rescue and Relocation Plan.

Commission staff also recommend development of a Fisheries Monitoring Adaptive Management Plan. The plan should identify and define appropriate decision points and thresholds for initiation of alternative or additional fisheries surveys, using the eDNA and Vaki counter as the starting point and including methods for conducting spawning surveys, outmigration surveys, and/or summer rearing surveys that may be enacted based on the available fisheries and habitat information that becomes available. The plan should detail the goals and objectives for fisheries monitoring, thresholds, locations of study or data collection, methods, and reporting timeframes. The plan should be developed in consultation with the NMFS, FWS, and California DFW and provided to the Commission for approval.

Commission staff recommend development of models for forecasting streamflow and water temperature conditions (daily time-step) six months into the future at 50% and 90% exceedance intervals in Coyote Creek between Anderson Dam and Metcalf Road, which would include runoff originating from the upper Coyote Creek watershed, releases from Coyote Reservoir, and imported water discharges to Coyote Creek.

Commission staff recommend that Valley Water supplement its habitat criteria monitoring plan in accordance with NMFS's recommendations to map the spatial

quantity and quality of spawning gravels suitable for *O. mykiss*. Specifically, the revised habitat mapping plan should include the following additional methods: (a) the aerial extent of suitable gravel patches should be mapped onto the aerial imagery developed for the habitat criteria mapping study's 13 flatwater and 9 riffle habitat units; (b) the criteria for determining suitable spawning patches should be those areas having a minimum area of 1.9 square meters with a dominant particle size (D50) in the range of 10 to 50 mm; (c) to document existing conditions, baseline mapping should be completed in the fall of 2020 and prior to any potential sediment release; (d) beginning in 2021, Valley Water should remap the extent of suitable spawning patches on an annual basis; (e) suitable spawning areas should be digitized into a GIS and changes in spawning gravel area calculated on an annual basis; (f) the percent embeddedness of 20 rocks within one suitable spawning gravel patch should be measured at each of the 22 habitat units during the baseline survey and subsequent annual surveys. The plan should be developed in consultation with the NMFS, FWS, and California DFW and provided to the Commission for approval.

Commission staff recommend that development of site-specific plans during construction of the CVP extension. The construction plans should include measures designed to avoid and minimize effects from dewatering, fish relocation, discharge of sediment, construction debris, and other potential construction-related impacts. These site and activity specific avoidance and minimization measures should be provided to the TWG for review prior to initiation of construction activities in Coyote Creek.

Commission staff recommend development of an Invasive Species Monitoring and Control Plan, including locations, methods, schedule, data collection and data reporting procedures. Both FWS and NMFS recommended Valley Water prepare invasive species control plans in their section 7 ESA consultation conservation recommendations. Commission staff recommend a single plan be developed that will address both conservation recommendations for monitoring and controlling invasive species. The plan should include methods and schedules for preventative, targeted, and opportunistic control of invasive aquatic species, and a monitoring and reporting component to assess the program's effectiveness. Targeted control should focus on Coyote Creek and Upper Penitencia Creek. Opportunistic control should include events, such as dewatering for construction activities, monitoring/sampling activities, and fish rescues. This plan should be developed in consultation with NMFS, FWS, California DFW, and SCVHA prior to being filed with the Commission for review and approval.

Finally, in order to ensure timely and dedicated collaborative efforts to support Valley Water's implementation of FOCP operations and minimize impacts to threatened CCC *O. mykiss* during the period of Anderson Reservoir drawdown, Commission staff recommend Valley Water should establish an interagency work group that includes NMFS, California DFW, and FWS. The operations work group should meet monthly, or more frequently if warranted, for the purpose of reviewing current information regarding

Coyote Creek conditions (i.e., flow, temperature, water quality), fisheries data, imported water operations, and Valley Water's operational forecasts.

Wildlife and Terrestrial Resources

Valley Water proposes to implement a number of BMPs for mitigating impacts to wildlife and terrestrial resources. These specific BMPs are listed in Appendix A of this EA. Commission staff recommend Valley Water implement these BMPs to reduce potential adverse impacts to these resources.

Commission staff recommend Valley Water continue to implement conditions of the SCVHP as it relates to the drawdown of the reservoir, the bank and rim stability improvements, existing intake structure modifications, imported water releases and cross valley pipeline extension, and steelhead and fish avoidance and minimization measures, including the 20 SCVHP measures FWS noted in its September 16, 2020 filing. Of particular note, Valley Water should develop a PPMP and a HDMP. Filing these plans with the Commission will assist in monitoring compliance with the plans which will help protect and mitigate impacts to ESA listed species and their habitat.

Valley Water should develop and implement an amphibian disease and New Zealand mud snail monitoring plan evaluating the effects of the relocation of steelhead to Upper Penitencia Creek on the California red-legged frog and foothill yellow-legged frog and mitigate for any observed effects to these species. The monitoring plan must include sampling for amphibian diseases and surveying for invasive New Zealand mud snails in Upper Penitencia Creek. Valley Water must develop, in consultation with the FWS, thresholds in the monitoring plan to determine if it must provide mitigation in the form of invasive species or disease control implementation in Upper Penitencia Creek specific to one or more invasive species or diseases. Valley Water must develop the plan in consultation with the FWS, California DFW, and NMFS and file it with the Commission for review and approval.

Commission staff recommend Valley Water develop and implement a plan to survey for milkweed, the larval host plant of the monarch butterfly. The survey plan must document areas proposed for surveying around construction activity locations. The survey must detail the locations of milkweed and Valley Water must avoid removal of any located plants. The plan must discuss how if avoidance is infeasible, the milkweed must be inspected for monarch butterfly eggs or larvae, and if found, Valley Water must contact the FWS for recommendations. The plan must be developed in consultation with the FWS. Commission staff also recommend restoration plantings of native plants, including native milkweed larval host plants and nectar plants for the monarch butterfly. These plants should be planted after reservoir rim stabilization construction is completed if suitable upland habitat is present. Any restoration plantings must follow the BMPs for avoiding the introduction and spread of Phytophthora available at:

http://www.suddenoakdeath.org/welcome-to-calphytos-org-phytophthoras-in-native-habitats/.

Valley Water must develop and implement a monitoring and relocation plan for the western pond turtle and an invasive red-eared slider removal plan. The reservoir drawdown will reduce aquatic habitat and will likely cause increased competition with the invasive red-eared slider. The plan must be developed in consultation with the FWS, California DFW, and the Santa Clara Valley Habitat Agency for approval.

Recreation Resources

As discussed in Section 3.3.7.2 *Environmental Effects* to recreation resources, the proposed action will result in adverse impacts on recreation resources for the short term. During the drawdown the Anderson Lake boat launch will be closed to public access. Since the parking lot at the boat launch provides the only public access to the trails in the Rosendin Park area, which will remain open during the drawdown, Commission staff recommend Valley Water develop a temporary parking lot and access trail to the trails in the Rosendin Park area (options to consider include the terminus of Barnard Road or Cochrane Road near staging area 2).

Commission staff recommend Valley Water implement the recreation related avoidance and minimization measure (AMM REC-1), to provide advance notice of limited access or closure of recreation facilities. Information regarding alternative locations to pursue outdoor recreation must be provided for all user groups, including but not limited to the following: anglers; motorized boaters; non-motorized boaters; hikers; wildlife watchers; and picnickers.

Land Use

A discussed in Section 3.3.8.2 *Environmental Effects* to land use, due to the ongoing threat of wildfires in the area, Commission staff recommend that Valley Water notify CalFire of the drawdown, provide general bathymetry data, and if needed, identify measures to ensure safe helicopter access to reservoir waters at deadpool for firefighting activities.

Cultural Resources

The effects of the proposed action to cultural resources and historic properties cannot be fully determined. Therefore, the Commission has entered into a PA to clarify the framework to address any potential adverse effects on historic properties and cultural resources due to the reservoir drawdown and construction of the low-level outlet, where surveys and other investigations are outstanding. The PA between the Commission and the California SHPO, with Valley Water, the Corps, and County Parks as concurring

parties, should be incorporated in any order the Commission my issue to mitigate adverse effects to historic properties. We also recommend Valley Water implement the stipulations of the PA.

Aesthetics

As discussed in Section 3.3.10.2 *Environmental Effects* to aesthetic resources, there is a history of landslides at Anderson reservoir. Valley Water has developed reservoir bank and rim stability improvement measures to be used in the event of additional slope failures caused by reducing the reservoir to deadpool. In order to mitigate long term aesthetic impacts associated with repairs of any landslides, Commission staff recommend Valley Water take steps to ensure reservoir bank and stability improvement measures blend with the surrounding environment by using local stone or other materials, native plants for revegetation or vegetative screening, or natural tones for painted surfaces.

4.2 Unavoidable Adverse Effects

The requirement to draw down the reservoir and maintain it at the deadpool elevation for an extended period results in adverse effects to water quantity and several related resources. Valley Water will be unable to use water stored within Anderson Reservoir to augment naturally low summer levels in Coyote Creek, resulting in adverse impacts to drinking water supply, groundwater recharge, subsidence prevention, and environmental protection. Although the exemptee intends to import water from Reclamation's Central Valley Project, such allocations are subject to availability. The prolonged duration of the drawdown will increase the likelihood of a drought occurring during the time in which water from Anderson Reservoir is unavailable. A dearth of water from Anderson Dam and interbasin transfers will lead to adverse impacts to areas in and around Coyote Creek that have become dependent upon unnaturally high and reliable summer flow levels.

As described in detail in Section *3.3.3.2 Environmental Effects to water quality*, the proposed action will likely cause some unavoidable adverse impacts to water quality. Drawdown of the reservoir to deadpool will cause elimination of the reservoir's coldwater pool. The lack of a coldwater water pool, and the resulting reliance on imported water to Coyote Creek, will result in elevated water temperatures in Coyote Creek until the CVP extension is constructed. Valley Water is proposing to chill imported water before discharging it into Coyote Creek at the upstream end of the CWMZ. Until the new CVP extension and the chillers are in place (2022 or 2023), there is expected to be a temporary adverse impact to water temperature. Additionally, lowering and maintaining the reservoir at deadpool, and the exposure of unstable soils to

erosion for a prolonged period could result in an increase in suspended solids downstream of the dam, resulting adverse water quality effects.

As described in detail in *Section 3.3.6.2 Environmental Effects to Threatened and Endangered Species and Essential Fish Habitat*, the proposed action will likely cause some unavoidable adverse impacts to *O. mykiss* and their critical habitat. Lowering and maintaining the reservoir at deadpool, and the exposure of unstable soils to erosion for a prolonged period could result in an increase in suspended solids downstream of the dam, resulting adverse effects to *O. mykiss* behavior and survival. Further, the expected sedimentation will result in adverse effects to the quality and availability of spawning and rearing habitat in Coyote Creek.

Reservoir rim stability improvements could cause permanent loss to coast live oak forest and woodland and therefore reduce available habitat for wildlife.

The proposed drawdown will result in unavoidable adverse impacts to aesthetics due to the lowered water level exposing bare soil where park visitors, individuals driving the county scenic road, and nearby residents have grown accustomed to seeing water. As vegetation establishes itself, this impact will lessen somewhat, but the long-term nature and the extent of the drawdown will negatively impact aesthetics at the reservoir until normal operations are reestablished.

4.3 Consistency with Comprehensive Plans

Section 10(a)(2) of the FPA, 16 U.S.C., § 803(a)(2)(A), requires the Commission to consider the extent to which a project is consistent with federal or state comprehensive plans for improving, developing, or conserving a waterway or waterways affected by the project. We reviewed the following seven comprehensive plans that are applicable to the Anderson Dam Hydroelectric Project, located in California. No inconsistencies were found.

California Department of Fish and Game. 1990. Central Valley Salmon and Steelhead Restoration and Enhancement Plan. Sacramento, California.

California Department of Fish and Game. 1996. Steelhead Restoration and Management Plan for California. Sacramento, California.

California Department of Fish and Game. 2007. California Wildlife: Conservation Challenges, California's Wildlife Action Plan. Sacramento, California.

California Department of Fish and Wildlife. 2008. California Aquatic Invasive Species Management Plan. Sacramento, California.

California Department of Parks and Recreation. 1994. California Outdoor Recreation Plan.

California State Water Resources Control Board. 2017. San Francisco Bay Basin (Region 2) Water Quality Control Plan.

National Marine Fisheries Service. 2016. Final Coastal Multispecies Recovery Plan for California Coastal Chinook Salmon, Northern California Steelhead, and Central California Coast Steelhead.

Although it does not have Comprehensive Plan status under Section 10(a)(2) of the FPA, we also reviewed the SCVHP during our analysis within this EA.

5.0 FINDING OF NO SIGNIFICANT IMPACT

Valley Water will implement dam safety IRRMs through its Reservoir Drawdown and Operations Plan to comply with the Commission's February 20, 2020 dam safety directives for Anderson Dam. The Plan outlines how Valley Water will begin the drawdown of the Anderson Dam reservoir on October 1, 2020 to the deadpool elevation of 488 ft. Valley Water proposes to implement a number of BMPs, mitigation measures, and conditions from the SCVHP to avoid, minimize, and mitigate adverse effects associated with the drawdown of the reservoir. In our effects analysis, we considered not only the implementation of a reservoir drawdown, but also the period of time that drawdown could last, potentially until the ADSRP is completed in 2030 based on Valley Water's projections. A sustained reservoir drawdown has the potential to create adverse effects to water quantity, water quality, and aquatic resources including steelhead which is federally listed as threatened under the ESA, if not appropriately mitigated. We recommend requiring Valley Water to implement the measures we define as our staff alternative to mitigate the adverse effects associated with a sustained reservoir drawdown.

Commission staff will continue reviewing Valley Water's plans regarding the ADTP construction and operation including downstream mitigation measures and will issue a supplemental EA on those aspects of Valley Water's Reservoir Drawdown and Operations Plan. Beginning the reservoir drawdown to deadpool will reduce dam safety risk and should be implemented absent any further action on the ADTP. On the basis of our independent analysis, we find that approval, in part, of the proposed Reservoir Drawdown and Operations Plan, regarding Valley Water's plans for the reservoir drawdown, reservoir bank and rim stability measures, and construction of the CVP extension, and associated mitigation measures as recommended by staff, will not

constitute a major federal action significantly affecting the quality of the human environment.

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APPENDIX A

Proposed Best Management Practices and Avoidance and Minimization Measures for Wildlife and Terrestrial Resources

Table A 1: Abbreviations and Biological Resources Effects

Abbreviation	Biological Resources Effect
BIO-1a	Effects on Special-Status Plant Species
BIO-1b	Effects on California Tiger Salamander, California Red-Legged Frog, and Western Pond Turtle
BIO-1c	Effects on Bald Eagle and Golden Eagle
BIO-1d	Effects on Other Breeding Special-Status Birds
BIO-1e	Effects on Pallid Bats
BIO-1f	Effects on Other Special-Status Mammals
BIO-1g	Effects on Nonbreeding Special-Status Birds and Non-Special-Status Animals
BIO-1h	Effect from Introduction or Spread of Invasive Species
BIO-1i	Effects from the Spread of Phytophthora
BIO-2a	Effects on Riparian Habitats
BIO-2b	Effects on Sensitive Upland Plant Communities (Coast Live Oak Forest and Woodland)
BIO-3	Effects on Federally Protected Wetlands, Waters of the U.S., and Waters of the State
BIO-4	Effects on the Movement of Native Resident or Migratory Fish or Wildlife Species, Established Native Resident or Migratory Wildlife Corridors, or Native Wildlife Nursery Sites
BIO-5	Conflicts with Local Policies or Ordinances Protecting Biological Resources
BIO-6	Conflicts with Adopted Habitat Conservation Plans or Natural Community Conservation Plans

Table A 2 Summary of Valley Water BMPs to Be Implemented for Project Effects on Wildlife and Terrestrial Resources

	Biological Resources Effect														
BMP	**BIO-1a**	**BIO-1b**	**BIO-1c**	**BIO-1d**	**BIO-1e**	**BIO-1f**	**BIO-1g**	**BIO-1h**	**BIO-1i**	**BIO-2a**	**BIO-2b**	**BIO-3**	**BIO-4**	**BIO-5**	**BIO-6**
AQ-1/2/3 Dust Control	X								X	X	X	X			X
BI-2 Protect Aquatic Verts		X					X						X		X
BI-3 Temporary Fill Removal		X										X	X		X
BI-4 Waterway Access		X					X	X	X	X		X	X		X
BI-5 Temporary Fills		X					X					X	X		X
BI-8 Nesting Migratory Birds			X	X			X								X
BI-9 Nesting Migratory Birds				X			X								X
BI-10 Veg Clearing	X			X	X	X	X	X	X	X	X		X	X	X
BI-11 Root Impacts	X			X	X	X	X	X	X	X	X		X	X	X
BI-12 Rare Plants/Comms	X	X		X	X	X	X	X	X	X	X		X	X	X
BI-13 Use Local Plants	X			X		X	X	X	X	X	X		X		X
BI-15 Channel Bottom		X					X					X	X		X
BI-16 Animal Entrapment		X				X	X						X		X
BI-17 Predator Attraction		X	X	X	X	X	X						X		X
HM-10 Vehicle Fueling		X					X					X	X		X
HM-11 Vehicle Maintenance		X					X					X	X		X
HM-12 Haz Mat Mgmt		X					X					X	X		X
HM-13/14 Prevent Spills		X					X					X	X		X

BMP	Biological Resources Effect														
	BIO-1a	**BIO-1b**	**BIO-1c**	**BIO-1d**	**BIO-1e**	**BIO-1f**	**BIO-1g**	**BIO-1h**	**BIO-1i**	**BIO-2a**	**BIO-2b**	**BIO-3**	**BIO-4**	**BIO-5**	**BIO-6**
WQ-6 Construc Entrance/Exit								X	X				X		X
WQ-21/22 Control Turbidity		X					X					X	X		X
WQ-23 Veg Filtration		X					X					X	X		X
WQ-27 Armoring		X					X					X	X		X
WQ-28 Flow Diversion		X					X					X	X		X
WQ-15 Prevent Pollution		X					X					X	X		X
WQ-16 Prevent SW Pollution		X					X					X	X		X

Table A 3 Summary of Santa Clara Valley Habitat Plan Conditions Applicable to Project Effects on Wildlife and Terrestrial Resources

Project Effect	Santa Clara Valley Habitat Plan Conditions*									
	VHP Condition 1: Avoid Direct Impacts on Legally Protected Plant and	VHP Condition 3: Maintain Hydrologic Conditions and	VHP Condition 4: Avoidance and Minimization for In-stream Projects	VHP Condition 7: Rural Development Design and Construction	VHP Condition 11: Stream and Riparian Setbacks	VHP Condition 12: Wetland and Pond Avoidance and Minimization	VHP Condition 13: Serpentine and Associated Species Avoidance and	VHP Condition 17: Tricolored Blackbird	VHP Condition 19: Plant Salvage When Impacts Are Unavoidable	VHP Condition 20: Avoid and Minimize Impact to Covered Plant Occurrences
BIO-1a		X	X	X	X		X		X	X
BIO-1b		X	X	X	X	X	X			X
BIO-1c	X									
BIO-1d	X									
BIO-1e		X	X	X	X		X			
BIO-1f	X			X	X					
BIO-1g	X	X	X	X	X	X	X	X		
BIO-1h				X						X
BIO-1i		X	X				X			X
BIO-2a		X	X	X	X	X				
BIO-2b				X						
BIO-3		X	X	X	X	X				
BIO-4				X	X					

Project Effect	Santa Clara Valley Habitat Plan Conditions*									
	VHP Condition 1: Avoid Direct Impacts on Legally Protected Plant and	**VHP Condition 3: Maintain Hydrologic Conditions and**	**VHP Condition 4: Avoidance and Minimization for In-stream Projects**	**VHP Condition 7: Rural Development Design and Construction**	**VHP Condition 11: Stream and Riparian Setbacks**	**VHP Condition 12: Wetland and Pond Avoidance and Minimization**	**VHP Condition 13: Serpentine and Associated Species Avoidance and**	**VHP Condition 17: Tricolored Blackbird**	**VHP Condition 19: Plant Salvage When Impacts Are Unavoidable**	**VHP Condition 20: Avoid and Minimize Impact to Covered Plant Occurrences**
BIO-5										
BIO-6	X	X	X	X	X	X	X	X	X	X

* A description of each SCVHP condition is included in the Santa Clara Valley Habitat Plan (ICF 2012).

Table A 4 Summary of VHP-Required Aquatic Avoidance and Minimization Measures Related to Conditions 3, 4, and 5 That Are Applicable to Project Effects on Wildlife and Terrestrial Resources*

ID	Avoidance and Minimization Measure (AMM)	Project Effect														
		BIO-1a	BIO-1b	BIO-1c	BIO-1d	BIO-1e	BIO-1f	BIO-1g	BIO-1h	BIO-1i	BIO-2a	BIO-2b	BIO-3	BIO-4	BIO-5	BIO-6
General																
1	Minimize potential impacts on covered species most likely to be affected by changes in hydrology and water quality.	X	X								X		X	X		X
2	Reduce stream pollution by removing pollutants from surface runoff before the polluted surface runoff reaches local streams.	X	X	X				X			X		X	X		X
3	Maintain the current hydrograph and, to the extent possible, restore the hydrograph to more closely resemble predevelopment conditions.	X	X					X			X		X	X		X
6	Activities in the active (i.e., flowing) channel will be avoided, or AMMs in this table will be applied.	X	X	X				X			X		X	X		X
7	Personnel shall prevent the accidental release of chemicals, fuels, lubricants, and non-storm drainage water into channels.	X	X	X	X			X			X		X	X		X

ID	Avoidance and Minimization Measure (AMM)	Project Effect														
		BIO-1a	BIO-1b	BIO-1c	BIO-1d	BIO-1e	BIO-1f	BIO-1g	BIO-1h	BIO-1i	BIO-2a	BIO-2b	BIO-3	BIO-4	BIO-5	BIO-6
8	Spill prevention kits shall always be in close proximity when using hazardous materials (e.g., crew trucks and other logical locations).	X	X	X	X			X			X		X	X		X
11	Vehicles shall be washed at approved areas. No washing of vehicles shall occur at job sites.	X	X	X	X			X		X	X		X	X		X
12	No equipment servicing shall be done in the stream channel or immediate floodplain, unless equipment cannot be readily relocated.	X	X	X	X			X			X		X	X		X
13	Personnel shall use the appropriate equipment for the job that minimizes disturbance to the stream bottom.	X	X	X				X			X		X	X		X
14	If high groundwater is present in a work area, pump it out of the work site carefully to remove sediment prior to the water re-entering a creek.	X	X	X				X			X		X	X		X
15	Implement native aquatic vertebrate relocation plan when ecologically appropriate as determined by a qualified biologist.		X					X								X

ID	Avoidance and Minimization Measure (AMM)	Project Effect														
		BIO-1a	BIO-1b	BIO-1c	BIO-1d	BIO-1e	BIO-1f	BIO-1g	BIO-1h	BIO-1i	BIO-2a	BIO-2b	BIO-3	BIO-4	BIO-5	BIO-6
17	Install cofferdams both upstream and downstream not more than 100 feet from the extent of the work areas.	X	X	X				X			X		X	X		X
18	Small in-channel berms that deflect water to one side of the channel may be constructed of channel material in channels with low flows.	X	X	X				X			X		X	X		X
20	Diversions shall maintain ambient stream flows below the diversion, with no reduction or degradation.	X	X	X				X			X		X	X		X
21	If stream bed design changes are not part of the project, the stream bed will be returned to as close to pre-project condition as appropriate.	X	X	X	X			X			X		X	X		X
22	Remove all temporary diversion structures and the supportive material no more than 48 hours after work is completed.	X	X	X				X			X		X	X		X
23	Temporary fills, such as for access ramps, diversion structures, or cofferdams, shall be completely removed upon finishing the work.	X	X	X				X			X		X	X		X

ID	Avoidance and Minimization Measure (AMM)	Project Effect														
		BIO-1a	BIO-1b	BIO-1c	BIO-1d	BIO-1e	BIO-1f	BIO-1g	BIO-1h	BIO-1i	BIO-2a	BIO-2b	BIO-3	BIO-4	BIO-5	BIO-6
24	To prevent increases in temperature and decreases in dissolved oxygen (DO), properly size bypass pipes or use a low-flow channel.	X	X	X	X			X			X		X	X		X
25	Diversions shall maintain fish passage under specified project conditions.													X		X
26	Any sediment removed from a project site shall be stored and transported in a manner that minimizes water quality impacts.	X	X	X				X		X	X		X	X		X
29	Existing native vegetation shall be retained by removing as much vegetation as necessary to accommodate the trail clearing width.	X	X	X	X	X	X	X	X		X	X	X	X	X	X
30	Vegetation control and removal in channels, on stream banks, and along levees and maintenance roads shall be limited.	X	X	X	X	X	X	X	X		X	X	X	X	X	X
31	When conducting vegetation management, retain as much understory brush and as many trees as feasible.	X	X	X	X	X	X	X	X		X	X	X	X	X	X

ID	Avoidance and Minimization Measure (AMM)	Project Effect														
		BIO-1a	BIO-1b	BIO-1c	BIO-1d	BIO-1e	BIO-1f	BIO-1g	BIO-1h	BIO-1i	BIO-2a	BIO-2b	BIO-3	BIO-4	BIO-5	BIO-6
32	The top of the bank shall be protected by leaving vegetation in place to the maximum extent possible.	X	X	X	X	X	X	X	X		X	X	X	X	X	X
33	Regional Board objectives for temperature change in receiving waters shall not be exceeded.		X	X				X			X		X	X		X
Project Design																
34	Use the minimum amount of impermeable surface (building footprint, paved driveway, etc.) practicable.	X	X	X	X	X	X	X	X		X	X	X	X		X
35	Use pervious materials, such as gravel or turf pavers, in place of asphalt or concrete to the extent practicable.	X	X	X	X	X	X	X			X	X	X	X		X
36	Use flow control structures such as swales, retention/ detention areas, and/or cisterns to maintain the existing (pre-project) peak runoff.	X	X					X			X		X	X		X
39	Minimize alterations to existing contours and slopes, including grading the minimum area necessary.	X	X	X	X	X	X	X	X	X	X	X	X	X		X

ID	Avoidance and Minimization Measure (AMM)	Project Effect														
		BIO-1a	BIO-1b	BIO-1c	BIO-1d	BIO-1e	BIO-1f	BIO-1g	BIO-1h	BIO-1i	BIO-2a	BIO-2b	BIO-3	BIO-4	BIO-5	BIO-6
40	Maintain native shrubs, trees, and groundcover whenever possible and revegetate disturbed areas with local native or non-invasive plants.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
42	Use flow-control structures, permeable pavement, cisterns, and other methods to ensure no change in peak runoff.	X	X					X			X		X	X		X
43	Assess site conditions to determine if designs such as bioengineered bank treatments with live vegetation can be successfully utilized.	X	X		X	X	X	X			X	X	X	X		X
44	Maintain natural stream characteristics, such as riffle-pool sequences, riparian canopy, sinuosity, floodplain, and a natural channel bed.	X	X		X	X	X	X			X		X	X		X
45	Incorporate free-span bridges that allow for upland habitat under bridges.	X	X		X	X	X	X	X		X	X	X	X		X
49	The project or activity must be designed to avoid the removal of riparian vegetation, if feasible.	X	X		X	X	X	X	X		X	X	X	X	X	X

ID	Avoidance and Minimization Measure (AMM)	Project Effect														
		BIO-1a	BIO-1b	BIO-1c	BIO-1d	BIO-1e	BIO-1f	BIO-1g	BIO-1h	BIO-1i	BIO-2a	BIO-2b	BIO-3	BIO-4	BIO-5	BIO-6
51	All projects will be conducted in conformance with applicable County and/or city drainage policies.	X	X	X	X			X			X	X	X	X		X
53	When possible, maintain a vegetated buffer strip between staging/ excavation areas and receiving waters.	X	X	X				X			X		X	X	X	X
54	Outside of the construction footprint, maintain deep pools within stream reaches as refugia for fish and wildlife.		X											X		X
56	Bank stabilization site design shall consider hydraulic effects immediately upstream and downstream of the work area.	X	X		X			X			X		X	X		X
58	Use existing access routes/levee roads to minimize impacts of new construction in special-status species habitats and riparian zones.	X	X	X	X	X	X	X	X	X	X	X	X	X		X
Construction																
61	Minimize ground disturbance to the smallest area feasible.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

ID	Avoidance and Minimization Measure (AMM)	Project Effect														
		BIO-1a	BIO-1b	BIO-1c	BIO-1d	BIO-1e	BIO-1f	BIO-1g	BIO-1h	BIO-1i	BIO-2a	BIO-2b	BIO-3	BIO-4	BIO-5	BIO-6
62	Use existing roads for access and disturbed area for staging as site constraints allow.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
63	Prepare and implement sediment erosion control plans.	X	X	X	X			X	X	X	X	X	X	X		X
64	No winter grading shall occur unless approved by City Engineer and specific erosion control measures are incorporated.	X	X	X	X			X	X		X	X	X	X		X
65	Control exposed soil by stabilizing slopes (e.g., with erosion control blankets) and protecting channels.	X	X	X	X			X	X	X	X	X	X	X		X
66	Control sediment runoff using sandbag barriers or straw wattles.	X	X	X	X			X	X	X	X	X	X	X		X
67	No stockpiling or placement of erodible materials shall occur in waterways or along areas of natural stormwater flow.	X	X	X	X			X	X	X	X	X	X	X		X
68	Stabilize stockpiled soil with geotextile or plastic covers.	X	X	X	X			X	X	X	X	X	X	X		X
69	Maintain construction activities within a defined project area to reduce the amount of disturbed area.	X	X	X	X	X	X	X	X	X	X	X	X	X		X

ID	Avoidance and Minimization Measure (AMM)	Project Effect														
		BIO-1a	BIO-1b	BIO-1c	BIO-1d	BIO-1e	BIO-1f	BIO-1g	BIO-1h	BIO-1i	BIO-2a	BIO-2b	BIO-3	BIO-4	BIO-5	BIO-6
70	Clear/prepare land which will be actively under construction in the near term.	X	X	X	X	X	X	X	X		X	X	X	X		X
71	Preserve existing vegetation to the extent possible.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
72	Equipment storage, fueling, and staging areas will be sited on disturbed areas or non-sensitive habitat outside of a stream channel.	X	X	X	X	X	X	X	X	X	X	X	X	X		X
73	Avoid wet season construction.	X	X	X	X			X	X		X	X	X	X		X
74	Stabilize site ingress/ egress locations.	X	X	X	X			X	X	X		X	X	X		X
75	Dispose of all construction waste in designated areas and prevent stormwater from flowing onto or off of these areas.	X	X	X	X			X	X	X		X	X	X		X
76	Prevent spills and clean up spilled materials.	X	X	X	X			X			X	X	X	X		X
77	Sweep nearby streets at least once a day.	X	X	X	X			X			X		X	X		X
78	In-stream projects occurring while the stream is flowing must use appropriate measures to protect water quality and native aquatic species.	X	X	X	X			X			X		X	X		X

ID	Avoidance and Minimization Measure (AMM)	Project Effect														
		BIO-1a	BIO-1b	BIO-1c	BIO-1d	BIO-1e	BIO-1f	BIO-1g	BIO-1h	BIO-1i	BIO-2a	BIO-2b	BIO-3	BIO-4	BIO-5	BIO-6
80	All personnel working in or adjacent to the stream setback will be trained by a qualified biologist in AMMs.	X	X	X	X	X	X	X	X		X	X	X	X		X
83	Sediments will be stored and transported in a manner that minimizes water quality impacts.	X	X	X	X			X	X	X	X	X	X	X		X
84	Appropriate erosion control measures (e.g., fiber rolls, filter fences, vegetative buffer strips) will be used on site.	X	X	X	X			X	X		X	X	X	X		X
86	Topsoil removed during soil excavation will be preserved and used as topsoil during revegetation when it is necessary.	X	X					X	X		X	X	X	X		X
87	Vehicles operated within and adjacent to streams will be checked and maintained daily to prevent leaks.	X	X	X	X			X			X		X	X		X
88	Vehicles and equipment will be parked on pavement, existing roads, and previously disturbed areas.	X	X	X	X	X	X	X	X	X	X	X	X	X		X
89	The potential for traffic impacts on terrestrial animal species will be minimized by adopting traffic speed limits.		X		X		X	X						X		X

ID	Avoidance and Minimization Measure (AMM)	Project Effect														
		BIO-1a	BIO-1b	BIO-1c	BIO-1d	BIO-1e	BIO-1f	BIO-1g	BIO-1h	BIO-1i	BIO-2a	BIO-2b	BIO-3	BIO-4	BIO-5	BIO-6
90	All trash will be removed from the site daily to avoid attracting potential predators to the site.		X	X	X	X	X	X						X		X
91	To prevent the spread of exotic species and reduce the loss of natives, aquatic species will be netted; natives will be released, exotics removed.		X					X	X					X		X
92	To minimize the spread of pathogens, all staff working in aquatic systems will adhere to equipment decontamination guidelines.	X	X	X	X			X		X	X		X	X		X
93	When accessing upland areas adjacent to riparian areas or streams, access routes on slopes > 20% should generally be avoided.	X	X	X	X			X	X		X	X	X	X		X
94	Personnel shall use existing access ramps and roads if available.	X	X	X	X	X	X	X	X	X	X	X	X	X		X
95	To minimize entrapment of animals, the project biologist or job foreman will survey the work area at the end of daily activities to identify and remediate conditions that might trap animals.		X				X							X		X

ID	Avoidance and Minimization Measure (AMM)	Project Effect														
		BIO-1a	BIO-1b	BIO-1c	BIO-1d	BIO-1e	BIO-1f	BIO-1g	BIO-1h	BIO-1i	BIO-2a	BIO-2b	BIO-3	BIO-4	BIO-5	BIO-6
97	Erosion control measures shall be in place at all times during construction.	X	X	X	X			X	X	X	X	X	X	X		X
98	When needed, utilize in-stream grade control structures to control channel scour, sediment routing, and headwall cutting.	X	X	X	X			X	X		X	X	X	X		X
Post-Construction																
99	Conduct street cleaning on a regular basis.		X	X	X			X		X	X		X	X		X
100	Potential contaminating materials must be stored in covered storage areas or secondary containment impervious to leaks and spills	X	X	X	X			X		X	X	X	X	X		X
101	Runoff pathways shall be free of trash containers or trash storage areas. Trash storage areas shall be screened or walled.	X	X	X	X	X	X	X	X		X	X	X	X		X
102	Immediately after project completion and before close of seasonal work window, stabilize all exposed soil.	X	X	X	X			X	X	X	X	X	X	X		X
103	All disturbed soils will be revegetated with native plants and/or grasses or sterile nonnative species.	X	X						X	X	X	X	X	X		X

ID	Avoidance and Minimization Measure (AMM)	Project Effect														
		BIO-1a	BIO-1b	BIO-1c	BIO-1d	BIO-1e	BIO-1f	BIO-1g	BIO-1h	BIO-1i	BIO-2a	BIO-2b	BIO-3	BIO-4	BIO-5	BIO-6
104	Measures will be utilized on site to prevent erosion along streams (e.g., from road cuts or other grading).	X	X	X	X			X	X		X	X	X	X		X
110	If debris blockages threaten bank stability and may increase sedimentation of downstream reaches, debris will be removed.	X	X					X			X		X	X		X
111	If bank failure occurs due to debris blockages, bank repairs will use compacted soil and reseeding with native/ sterile nonnative plants.	X	X						X		X	X	X	X		X
112	Pumps and generators shall be maintained and operated in a manner that minimizes impacts to water quality and aquatic species.	X	X	X	X			X			X		X	X		X