CHAPTER 5
ALTERNATIVES

5.1 INTRODUCTION

According to State CEQA Guidelines (section 15126.6), an EIR shall describe a range of reasonable alternatives to the project or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives. The guidelines further require that the discussion focus on alternatives capable of eliminating significant adverse impacts of the project or reducing them to a level of insignificance even if these alternatives would impede to some degree the attainment of the project objectives or would be more costly. The alternatives analysis also should identify any significant effects that may result from a given alternative.

The lead agency is responsible for selecting a range of potentially feasible project alternatives for examination, and must publicly disclose its reasoning for selecting those alternatives. The range of alternatives is governed by a "rule of reason" that requires the EIR to set forth only those potentially feasible alternatives necessary to permit a reasoned choice. The alternatives shall be limited to those that would avoid or substantially lessen any of the significant effects of the project. Of those alternatives, the EIR need examine in detail only those that the lead agency determines could feasibly attain most of the basic objectives of the project. An EIR need not consider every conceivable alternative to a project. Rather, it must consider a reasonable range of potentially feasible alternatives that will foster informed decision-making and public participation.

An EIR is not required to consider alternatives which are infeasible. "Feasible" means capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors (State CEQA Guidelines, section 15364). Among the factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries (projects with a regionally significant impact should consider the regional context), and whether the proponent can reasonably acquire, control, or otherwise have access to the alternative site (or already owns the alternative site). None of these factors establishes a fixed limit on the scope of reasonable alternatives.

5.2 SUMMARY OF SIGNIFICANT IMPACTS AND PROJECT OBJECTIVES

5.2.1 Significant Project Impacts

The following potentially significant Project impacts have been identified, all of which can be mitigated to a less-than-significant level.

BIO-1A **Special-status Species – Federally-listed Species.** The Project could result in direct impacts to federally-listed steelhead, if any individuals are present, and indirect impacts to habitat for the steelhead and federally- and state-listed coho salmon.

BIO-1B **Special-Status Species – State-Listed Species.** The Project could result in impacts to foothill yellow-legged frog, a candidate for state listing, if any individuals are present at the construction sites.

BIO-1C **Special-status Species – State Species of Special Concern.** The Project could result in impacts to animals that are identified as state Species of Special Concern that could be present at the sites during construction. These potential species include Western pond turtle, Santa Cruz black salamander, California giant salamander, San Francisco dusky-footed woodrat, pallid bat and Townsend's big-eared bat.

BIO-1D **Special-status Plant Species.** Project construction and ground disturbance in proposed staging and work areas could result in impacts to special-status plant species if any plants are present.

BIO-2 **Sensitive Habitats.** Project construction and ground disturbing activities in proposed staging and work areas could result in impacts to and loss of sensitive vegetation communities that are present in these areas.

BIO-3 **Jurisdictional Aquatic Resources.** The Project could result in impacts to jurisdictional aquatic resources, including wetlands and non-wetland waters of the United States.

BIO-4 **Nesting Birds.** The Project could result in impacts to nesting birds if vegetation removal and/or construction activities occur during the nesting season.

BIO-8 **In-Reservoir Fish and Water Quality.** The Project could result in impacts to existing non-native game fish due to adverse effects on water quality from in-reservoir construction activities.

CUL-5 **Paleontological Resources.** Ground-disturbing activities during construction could result in damage to previously undiscovered, intact paleontological resources below the ground surface.

FOR-2 **Loss of forest land or conversion of forest land to non-forest use.** The proposed Project would result in conversion of forest land.

HAZ-1B **Disposal of Hazardous Waste.** Project construction would potentially generate bedrock/soil spoils with metals concentrations in excess of disposal standards for a Class III landfill.

HAZ-2A: **Upset and Release of Hazardous Materials.** Project construction would potentially result in incidental spills of petroleum products and hazardous materials.

HAZ-2B: **Upset and Release of Hazardous Materials.** Project construction would potentially result in health hazards to construction workers, due to exposure to metals in submerged Reservoir sediments, upland bedrock excavations, and upland excavation spoils.

HYDRO-4: **Water Quality.** Proposed dredging, tunneling, excavations, and grading would potentially violate water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality due to potential erosion or inadvertent transport of construction debris or materials into Newell Creek or the Reservoir.

5.2.2 Summary of Project Objectives

1. Protect the City's water supply system by addressing deficiencies in the NCD inlet/outlet works to maintain full system functionality and reliability, including the ability to collect water from different elevations in the Reservoir for treatment at the Graham Hill Water Treatment Plant.
2. Address deficiencies in the NCD inlet/outlet works to meet DSOD requirements to lower the maximum reservoir storage by 10 percent of the hydraulic head within seven days and to fully drain the reservoir to the deadpool in 90 days.
3. Improve overall operational efficiency and system performance of the NCD inlet/outlet works to provide flexibility to efficiently meet water demands and reservoir maintenance.
4. Improve access and ability to inspect and maintain the inlet/outlet system.

5. Implement an inlet/outlet replacement project that is relatively cost-effective in terms of both capital and operation/maintenance costs.
6. Complete the first segment replacement of the existing aging Newell Creek Pipeline to prevent damage during construction of the NCD inlet/outlet replacement project.
7. Maintain uninterrupted beneficial flow releases during construction of a new inlet/outlets works project.

5.3 ALTERNATIVES CONSIDERED BUT ELIMINATED

Section 15126.6(c) of State CEQA Guidelines indicates that the range of potential alternatives shall include those that could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the significant effects. The EIR should briefly describe the rationale for selecting the alternatives to be discussed.

The EIR also should identify any alternatives that were considered by the lead agency but were rejected as infeasible, and briefly explain the reasons underlying the lead agency's determination. Among the factors that may be used to eliminate alternatives from detailed consideration in an EIR are:

(1) failure to meet most of the basic project objectives,

(2) infeasibility, or

(3) inability to avoid significant environmental impacts.

The City considered the following Project alternatives, which were eliminated from further consideration as explained in the following sections:

- Rehabilitation of Existing Inlet/Outlet Facilities
- Alternative Conduit Tunnel Alignment, Design and Construction Techniques
- Reservoir Intake Design Alternatives and Reduced Dredging

5.3.1 Rehabilitation of Existing Inlet/Outlet Facilities

The existing Newell Creek Dam (NCD) inlet/outlet works is approaching the end of its useful design life as illustrated by three primary identified deficiencies: inlet/outlet conduit deterioration, an inoperable and partially closed plug valve at the toe of the dam, and an inoperable fifth inlet/outlet gate in the Loch Lomond Reservoir (Reservoir) as explained in Chapter 3, Project Description. In 2016, City staff began evaluating alternatives to address deficiencies, which were a result of age and subsequent deterioration, and which were rendering the water supply from the Reservoir less reliable and were not able to meet the California

Division of Safety of Dam's (DSOD) emergency drawdown requirements. The City has been operating the dam under a temporary agreement with DSOD that is contingent on the City expeditiously working on a long-term solution of the system's deficiencies.

Rehabilitation was considered and eliminated from further consideration by the City for a number of reasons outlined below, which include issues with engineering feasibility, as well as costs, risks during construction, and regulatory requirements. The City assessed the feasibility of rehabilitating or replacing the existing inlet/outlet works in an engineering review summarized in the Project Alternatives Memorandum (AECOM, 2016) and based on the facility inspections over the past six years.

- **Feasibility:** A portion of the pipe cannot be rehabilitated; therefore, the same deficiencies would exist after rehabilitation. The Inlet-Outlet conduit pipe consists of three sections, telescoping from a 24-inch section at the upstream face of the dam, through a 30-inch section, to the 36-inch section that extends beneath the dam to the downstream toe. The engineering evaluation concluded that the 30-inch section is too remote and inaccessible, and has too many bends for successful rehabilitation. Therefore, even with successful rehabilitation of the 24- and 36-inch pipeline segments, a portion of the existing infrastructure would remain in its current deteriorated condition. Corrosion and encrustations observed in the conduit pipes during past remotely operated vehicle (ROV) inspections would worsen over time and could result in constricted flow and increased risk of debris or encrustations dislodging and inhibiting flow through the conduit (AECOM, 2016), which could threaten reliability of water deliveries to the GHWTP and Reservoir.
- **Infrastructure and Life Cycle Costs:** Although rehabilitation would cost less initially, replacement would be required within 20 or less years after rehabilitation; therefore, rehabilitation only buys time and replacement is inevitable. A new system would be expected to have 50-year minimum asset life; a rehabilitated system would have an expected 20-year life after which additional rehabilitation would be required, or more likely, construction of a new system. Furthermore, the new system is being designed to provide easier rehabilitation in the future.
- **Risk of Failure during Construction:** There is a risk that portions of the badly deteriorated steel liner (which was used as a concrete form for the outlet conduit during construction) would be damaged during rehabilitation. This might result in sections pulling away from the concrete and make rehabilitation more unpredictable and challenging. Potential leakage during dewatering could affect the dam structure.
- **Regulatory (DSOD) Requirements:** Rehabilitation would not allow the dam to meet current DSOD emergency drawdown requirements; while replacement would. Based on assumptions about the ability to rehabilitate the existing pipe and the flow characteristics of the rehabilitated pipe, engineering calculations indicate that a rehabilitated system would not be able to meet DSOD emergency drawdown requirements of 10 percent in 7days. Furthermore, meeting current DSOD requirements

is contingent upon the successful opening of the fifth-lowest intake gate, which was not achievable during a prior gate-replacement project due in part to the landslide debris covering the gate.

- **Supply Reliability:** Rehabilitation would require the pipeline to be out of service for at least four months. During this time, DSOD would require a system of pumps capable of meeting drawdown, which would be a costly undertaking with large, diesel fueled pumps. In addition, the water supply provided by the Reservoir would be unavailable, thereby reducing overall water supply reliability.

Based on the feasibility-related challenges, risks of pipe failure and reduced supply reliability during construction of the rehabilitation option, the improved infrastructure and ability to meet DSOD requirements with replacement, and the overall comparative costs, rehabilitation of the Newell Creek Dam Inlet-Outlet pipeline was determined to be an infeasible alternative.

5.3.1 5.3.2 Inlet/Outlet Facility Alternatives

Outlet / Tunnel Design Alternatives

Tunnel Alignment/Location

Alternative locations for the new conduit-tunnel alignment were considered by the City. Based on a review of data from previous studies and investigations, it was determined that the left abutment of the Reservoir is less preferable than the right because steeper terrain on the left abutment makes construction access more difficult and may require a deeper shaft. The left abutment is also less preferable because (1) there is a large active landslide located on that side of the Reservoir and (2) sloughing and sediment accumulation on the left side closer to the dam that has buried the lowest intake (AECOM, June 2017). It was also determined that constructing a new inlet/outlet conduit through the existing dam embankment was not feasible because a flow path could be created through the dam that could potentially lead to a catastrophic failure. For these reasons, the City eliminated these design alternatives from further consideration.

Portal Alternate Location

The 10% engineering design review also considered alternate locations for the new tunnel portal. Moving the portal closer to the toe of the dam would potentially reduce the grading for the construction platform at the toe of the dam by decreasing the tunnel portal size and eliminating excavation along the old logging road. However, it was determined that positioning the tunnel portal closer to the toe of the dam was not feasible due to an inability to provide minimum clearance between the tunnel crown and the dam embankment when passing under the dam. The minimum clearance requirement is dependent on the site's geotechnical characteristics. In order to lower the alignment enough to provide sufficient clearance beneath the dam, the portal would need to be lower than what would be practical/possible with the

existing topography at the base of the dam (AECOM, June 2017). In a subsequent review, the City reviewed a partial fill at the toe of the dam would found that there would not be adequate space for construction vehicles with a reduced fill area, and this was eliminated from further consideration.

Portal Construction Platform Size Reduction

Reduction of the portal construction platform area was also considered and eliminated from consideration. It was estimated that the launch portal area and the receiving shaft will require a minimum of approximately 5,000 and 2,000 square feet of useable staging area, respectively. The current proposed size of about 0.5 acre was deemed necessary to provide adequate access for large equipment, and given the constrained area, no further reduction was deemed feasible.

Tunnel Construction Alternatives

Four replacement tunnel alignments were assessed in an engineering review (AECOM, September 2016) conducted for the City. All four alignments were through the right (west) abutment. Two alignments were selected for further evaluation: (1) a straight alignment tunneled with a microtunnel boring machine (MTBM) and (2) a curved alignment tunneled by conventional methods (AECOM, July 2018a). Based on this evaluation and results of a preliminary geotechnical investigation conducted in late 2016, the City moved forward with a 10% engineering design for both the MTBM and conventional tunnel alignments.

Microtunneling is a trenchless construction method that involves installing a pipe by pushing pipe segments through the ground with hydraulic jacks assembled in a jacking frame located in a launch pit. As the MTBM is pushed forward, spoils (excavated material) are simultaneously transported back to the launch portal by a conveyance system or a slurry pumping system. This process is repeated until the leading pipe segment reaches a receiving shaft. These machines, when applied correctly, are capable of crossing under sensitive structures while minimizing ground settlement (AECOM, June 2017). The main requirements for the straight microtunnel alignment are three-fold: to keep the tunnel run as short as possible to avoid/reduce the number of intermediate jacking stations, to ensure that the alignment has sufficient clearance between the crown of the tunnel and the dam embankment, and to make sure there is a sufficient depth of rock above the tunnel in general. If a slurry MTBM process is used for excavation, the resulting spoils would likely be unsuitable for reuse as fill material and would need to be disposed of in accordance with local, state, and federal regulations (AECOM, June 2017).

Following a review of the 10% design report the City decided to eliminate the microtunneling alternative due to concern that the MTBM could become stuck due to overburden caused by the required tunneling depth, because of concern that the tunnel length would be too long between available shaft locations, and because it would require challenging horizontal “wet taps” into the reservoir. Therefore, the microtunneling alternative was eliminated from further review.

5.3.3 Reservoir Intake Design Alternatives and Reduced Dredging

Intake Structure Alternatives

The 10% engineering design report evaluated alternative intake structures. Several inlet structure options were explored during the conceptual design phase of this project. The structures listed below are options that have been removed from further consideration.

Free Standing Tower

A free standing intake tower within the Reservoir would be connected to the new inlet/outlet tunnel. It would have to be approximately 100 feet tall to include a low level inlet (480 feet) and be above the Reservoir surface when the reservoir is full (Elevation 577.5 feet). A bridge would provide land access to the tower. It was eliminated from further consideration because of the large amount of underwater construction and the difficulty of making a tower of this height seismically stable (AECOM, June 2017).

Connecting to the Existing Sloping Intake

Connection to the existing sloping intake configuration was removed from consideration for multiple reasons. Constructing a new inlet/outlet conduit on the right abutment and providing a connection across the deepest portion of the Reservoir to the left abutment, where the existing sloping intake is located, would require challenging and expensive underwater construction. The existing sloping intake itself is nearly 60 years old and a sloughing and sediment accumulation in the left abutment has covered the lowest intake. Uncovering this lower gate to achieve operational flexibility would also be challenging and expensive. However, as discussed in Section 5.3.1, rehabilitation was not deemed feasible. Therefore, this alternative was eliminated from further consideration.

Vertical Intakes Connecting to Microtunnel

For this option a single adit would be microtunneled below the rock line into the Reservoir. Inlets would then be drilled down vertically from the Reservoir. There are two major issues with vertical inlets for the microtunnel alternative. It was determined that it would be extremely difficult if not impossible to construct a connection between the 24 or 30-inch inlet and the 48 inch inlet/outlet pipe within a 6-foot diameter tunnel. To provide a portal for the microtunnel, a shaft would need to be constructed through an ancient landslide on the right abutment of the dam. This could create issues with drainage of seepage, and lowering the downstream portal excavation would add significantly to the cost of the project because of additional excavation and shoring (AECOM, June 2017). Therefore, this alternative was eliminated from further consideration.

Sloping Intake

A sloping intake configuration, similar to the existing inlet structure, is commonly used at reservoirs in California due to favorable seismic performance. Allowable slopes for the underwater excavations were evaluated based on slope models with consideration of soil/rock stratigraphy and soils conditions identified from soils borings. After several engineering reviews, it was decided that the inlet structures needed to be founded on bedrock for stability during a seismic event. Once that decision was made it became unclear whether the best arrangement would consist of three inlets each with a vertical shaft or a sloped concrete encased intake conduit with three inlets and a single vertical shaft. After considerable review, the three shaft arrangement was chosen because it was judged to likely have better seismic performance and because it would reduce overall project risk by reducing the amount of underwater work (AECOM, July 2018a). Therefore, the sloping intake design was eliminated from further consideration due to seismic design considerations and the potential for increased construction activity in the Reservoir.

Reservoir Dredge Alternatives

Another alternative considered moving the dredged Reservoir materials from the dredged site by barge to another location in the Reservoir for placement rather than moving the dredged materials directly into the thalweg downslope of the proposed inlets. Other locations for disposal were considered and eliminated from further consideration for the following reasons:

- Disposal elsewhere in the Reservoir would require two separate areas with silt screens, which would increase the square footage of required silt screens.
- The construction schedule would lengthen as barges would need to enter and exit each of the silt screen cells between trips.
- It would be impractical to compact the dredged material, and placing the unconsolidated spoils higher in the reservoir would require placing it at very shallow slopes to keep it stable. Even at shallow slopes, the material could move during seismic events.

5.4 ALTERNATIVES CONSIDERED

Based on the above discussion and the City's consideration of other alternatives, the following section evaluates the following alternatives:

- ❒ No Project – Required by CEQA
- ❒ Alternative 1 – Reduced Project
- ❒ Alternative 2 – Reduced Construction Area

Each alternative is described and analyzed below, and the ability to meet project objectives is addressed. Table 5-1 summarizes key components of the alternatives.

5.4.1 No Project Alternative

Section 15126.6(e) of the State CEQA Guidelines requires that the impacts of a "no project" alternative be evaluated in comparison to the proposed project. Section 15126(e) also requires that the No Project Alternative discuss the existing conditions that were in effect at the time the Notice of Preparation was published, as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services.

Description

Under the No Project Alternative, the proposed Project would not be constructed. The City is currently operating under an "Interim Drawdown Plan" approved by the California Division of Safety of Dam (DSOD). The objective of the interim drawdown plan is to meet DSOD's emergency reservoir drawdown criteria using existing functional infrastructure until NCD outlet system rehabilitation or replacement is completed. The existing NCD outlet infrastructure with a partially open 24-inch plug valve at the toe of the dam is inadequate to meet DSOD emergency drawdown requirements for the 10 percent in 10-day drawdown requirement, but the 90-day drawdown requirement can be met by using the a combination of downstream pipes. Therefore, it is not expected that the City would be able to operate under the interim plan indefinitely.

Impacts

None of the impacts identified in this EIR would occur with the No Project Alternative. However, under this alternative, it is likely that replacement of the inlet/outlet works would be required at some point in the near future due to continued deterioration of the existing inlet/outlet works and the need to meet DSOD requirements. Thus, the proposed Project would be deferred to an unknown time in the future, and impacts identified in this EIR would likely result at that time.

Ability to Meet Project Objectives

The No Project Alternative would not meet the basic Project objectives (#1-6), but beneficial flow releases would not be affected as no construction would occur (#7).

5.4.2 Alternative 1 – Reduced Project

Description

Under this alternative, the size of two project components would be reduced: the intake and the conduit tunnel. For the intake component, one of the three proposed intake inlets would be eliminated. Three inlets are proposed to provide operational flexibility in drawing water from the Reservoir to achieve optimum water quality. Under this alternative, the lowest inlet would

remain in order to meet drawdown requirements, but one of the other two inlets would be eliminated. This would result in a potentially reduced foundation area with slightly reduced Reservoir dredging. However, it is not expected that there would a substantial reduction in disturbed area because an adequate area would continue to be needed for the air vent, debris walls protecting the two inlets, and creation of stable side slopes. It is estimated that the proposed Project inlets and air vent would cover a submerged Reservoir area of approximately 13,000 square feet (0.3 acres). Under this alternative, inlet and air vent coverage might be reduced by 2,000-3,000 square feet; however, this would only reduce the overall potential submerged dredge area (approximately 1.1 acres) by approximately 5-6 percent.

The second component would be reduction of the conduit tunnel to a 10-foot diameter size rather than the proposed 14-foot diameter size. While this would result in some reduction of the volume of excavated spoils and the need for disposal, which in turn could reduce the needed onsite disposal areas, it may make the project more difficult and extend the tunnel construction schedule because of construction limitations and the difficulty of working within a more confined space. It is estimated that a 10-foot diameter tunnel would reduce excavated spoils by about 40 percent from approximately 13,600 cubic yards (cy) to 8,000 cy (total bulked amount). The total spoils from the tunnel and construction platform would be reduced from 22,600 to 17,000 cy, of which approximately 14,450 cy could be disposed on site. However, the reduced tunnel size may create limitations/constraints as to the type of construction equipment that can be used.

Impacts

Biological and Forest Resources

This alternative would not reduce or eliminate direct or indirect impacts to fish and special status amphibian species or sensitive wetland habitats (BIO-1A, BIO-1B, BIO-3) as there would be no change to the Project components that include work in or adjacent to Newell Creek. The slightly reduced Reservoir inlet footprint and dredging would result in some reduction of impacts to fish and water quality in the Reservoir (BIO-8), but use of silt screens as proposed would be required under this alternative. All Project Best Management Practices (BMPs) and mitigation measures identified for the proposed Project would continue to be required with this alternative. With reduced tunnel size and resulting excavated spoils, a slight reduction in on-site staging areas may be possible. To the extent that disturbance to create areas for placement of spoils are reduced or eliminated, there would also be an overall reduction in the level of impact related to some special status species-woodrats and bats (BIO-1C), special status plant species (BIO-1D), sensitive habitat (BIO-2), and nesting birds (BIO-4). However, mitigation would still be required.

This alternative could potentially reduce, but not eliminate, impacts related to conversion of forest lands (FOR-2) as a result of potential reduction of staging area disturbance with reduced

spoils disposal from a reduced tunnel size. However, mitigation would still be required as with the proposed Project.

Cultural Resources

This alternative would reduce the amount and size of tunnel excavation, which would result in a reduction of potential impacts to paleontological resources (CUL-5). Mitigation would continue to be required.

Hazards and Hazardous Materials

With a reduction in Reservoir dredging and the tunnel size, there would be a reduction in disturbed soils with a potential reduction in exposure to elevated metals in soils (HAZ-1B and HAZ-2B), that may be present in both dredged and excavated soils. Other impacts related to transport of hazardous fuels (HAZ-1A) and potential for accidental spills (HAZ-2A) would remain unchanged as the overall construction schedule and equipment would not be altered.

Hydrology and Water Quality

This alternative would result in impacts to stormwater drainage, emergency releases, and water quality or flood hazards similar to the proposed Project. Best Management Practices and mitigation measures would continue to be required for water quality protection in the Reservoir and Newell Creek.

Other Impacts

The reduced sizes of two of the Project components – inlets and tunnel size – would not substantially alter construction schedules or equipment use, and thus, air quality impacts related to criteria pollutant (AIR-2, AIR-3) and GHG emissions (AIR-6) would not be substantially altered. These impacts would remain less than significant as with the proposed Project. Similarly, impacts related to construction noise (NOISE-3) would not be substantially changed, and impacts would remain less than significant as with the proposed Project. Less-than-significant impacts related to historical (CUL-1) and archaeological resources (CUL-2/3) and geology and soils (GEO-1, GEO-2, GEO-3-1) would not change from the proposed Project.

Ability to Meet Project Objectives

The Reduced Project Alternative would fully meet five Project objectives. These include meeting DSOD requirements (#2), improving access and maintenance capabilities (#4), implementing a cost-effective project (#5), completing the first segment of the NCP replacement (#6), and maintaining beneficial flow releases during construction (#7). The elimination of one inlet would not provide as much operational flexibility as the three proposed with the Project. The proposed three inlets provide redundancy for emergency drawdowns; two inlets would still provide

redundancy, but not as much as with the proposed design. Thus, this alternative would not fully meet two objectives (#1 and #3) related to improvements that would enhance system operational functionality and flexibility.

5.4.3 Alternative 2 – Reduced Construction Area

Description

Under this alternative construction staging areas would be eliminated and/or reduced in size. Staging area sizes would need to consider storage of materials and products, treatment and temporary storage of spoils, tunnel equipment laydown, and potentially a concrete batch plant. Staging area requirements for tunnel, shaft, and inlet construction would vary depending on the contractor's selected method of construction. For this alternative, the elimination of Staging Areas 6 and 7 or a reduction in the area of disturbance would result in reduction of potentially disturbed construction areas by about 3 acres, as well as potentially result in reduced road improvements on the east side of the Reservoir that would otherwise be needed for construction equipment access.

Impacts

Biological and Forest Resources

This alternative would not reduce or eliminate direct or indirect impacts to fish and special status amphibian species or sensitive wetland habitats (BIO-1A, BIO-1B, BIO-3) as there would be no change to the Project components that include work in or adjacent to Newell Creek. Similarly there would be no change to potential impacts in the Reservoir (BIO-8), and all BMPs and mitigation measures identified for the proposed Project would continue to be required with this alternative. With a reduction in on-site staging areas, less acreage would be temporarily disturbed during construction, and there would also be an overall reduction in the level of impact related to some special status species-woodrats and bats (BIO-1C), special status plant species (BIO-1D), sensitive habitat areas (BIO-2), and nesting birds (BIO-4). However, mitigation would still be required.

This alternative could potentially reduce, but not eliminate, impacts related to conversion of forest lands (FOR-2) as a result of a reduction in on-site construction staging areas. Mitigation would continue to be required.

Cultural Resources

This alternative would not reduce the amount of tunnel excavation or potential impacts to sensitive paleontological resources (CUL-5) that may be discovered during construction. Mitigation would continue to be required.

Hazards and Hazardous Materials

This alternative would not reduce the amount of excavated or dredged materials, and there would be no change to identified impacts related to potential exposure to elevated metals (HAZ-1B and HAZ-2B), that may be present in both excavated and dredged materials. Other impacts related to transport of hazardous fuels (HAZ-1A) and potential for accidental spills (HAZ-2A) would remain unchanged as the overall construction schedule and equipment would not be altered.

Hydrology and Water Quality

This alternative would not result in changes to stormwater drainage, emergency releases, water quality or flood hazards. Best Management Practices and mitigation measures would continue to re required for water quality protection in the Reservoir and Newell Creek. However, the elimination of construction staging areas could reduce potential erosion associated with improvement and use of the onsite informal road on the east side of the Reservoir.

Other Impacts

Reduction and/or elimination of staging/disposal areas on the Project site would result in some loss of construction efficiency from the reduction in available construction areas, but this would not substantially alter construction schedules or equipment use. Therefore, air quality impacts related to criteria pollutant (AIR-2, AIR-3) and GHG emissions (AIR-6) would not be expected to be substantially change, and impacts would remain less than significant as with the proposed Project. Impacts related to construction noise (NOISE-3) would also not be substantially changed, and impacts would remain less than significant as with the proposed Project. Less-than-significant impacts related to historical (CUL-1) and archaeological resources (CUL-2/3) and geology and soils (GEO-1, GEO-2, GEO-3-1) would not substantially change, although less area would be disturbed with elimination of construction staging areas, which could slightly reduce impacts. To the extent that the reduction in available staging areas for disposal of excavated spoils would require additional off-site hauling to dispose of these materials, there could be slight increase in daily trips or extended duration of trips over the period in which haul trips would occur. However, this would not be substantial, and traffic and associated vehicular air emissions would remain less-than-significant.

Ability to Meet Project Objectives

The Reduced Construction Area Alternative would meet all Project objectives.

5.4.4 Environmentally Superior Alternative

According to CEQA Guidelines section 15126.6(e), if the environmentally superior alternative is the “no project” alternative, the EIR shall also identify an environmentally superior alternative

among the other alternatives. Furthermore, Sections 21002 and 21081 of CEQA require lead agencies to adopt feasible mitigation measures or feasible alternatives in order to substantially lessen or avoid otherwise significant adverse environmental effects, unless specific social or other conditions make such mitigation measures or alternatives infeasible. Where the environmentally superior alternative also is the no project alternative, CEQA Guidelines in Section 15126(d)(4) requires the EIR to identify an environmentally superior alternative from among the other alternatives.

In the present case, none of the alternatives, including the No Project Alternative, would eliminate significant Project impacts, although Alternatives 1 and 2 would reduce the level of impact, but not to a less-than-significant level. Table 5-1 presents a comparison of project impacts between the proposed Project and the alternatives. Both Alternatives 1 and 2 would reduce impacts, but would not substantially lessen significant impacts. Excluding the No Project Alternative, Alternative 2 – Reduced Construction Area Alternative – is considered the environmentally superior alternative of the CEQA alternatives considered. Although it would not reduce significant impacts to less-than-significant levels, it would reduce some of the identified significant impacts and would best meet project objectives. However, it would not substantially lessen the identified significant environmental impacts.

Table 5-1 is on the next page.

Table 5-1: Comparison of Impacts of Project Alternatives

Environmental Issue	Proposed Project	No Project	ALT 1 – Reduced Project	ALT 2 – Reduced Project Area
AIR-2/3: Criteria Pollutant Emissions	LS	NI	LS -	LS
AIR-4/5: Sensitive Receptors / Odors	LS	NI	LS -	LS
AIR-6: Greenhouse Gas Emissions	LS	NI	LS -	LS
BIO-1A: Special Status Species Federally-Listed Fish	LSM	NI	LSM	LSM
BIO-1B: Special Status Species State-Listed -Foothill yellow-leg frog	LSM	NI	LSM -	LSM
BIO-1C: Special Status Species – Calif. Species of Special Concern	LSM	NI	LSM -	LSM -
BIO-1D: Special Status Plant Species	LSM	NI	LSM	LSM-
BIO-2: Sensitive Habitat	LSM	NI	LSM-	LSM
BIO-3: Jurisdictional Aquatic Resources	LSM	NI	LSM	LSM
BIO-4: Nesting Birds	LSM	NI	LSM-	LSM-
BIO-8: In-Reservoir Fish and Water Quality	LSM	NI	LSM-	LSM
CUL-1: Historical Resources	LS	NI	LS	LS
CUL-2/3: Archaeological Resources	LS	NI	LS	LS-
CUL-4: Tribal Cultural Resources	LS	NI	LS	LS-
CUL-5: Paleontological Resources	LSM	NI	LSM-	LSM
FOR-2: Loss or Conversion of Forest Land	LSM	NI	LSM-	LSM-
GEO-1: Exposure to Seismic Hazards	LS	NI	LS	LS
GEO-2: Slope Stability	LS	NI	LS-	LS-
GEO-3: Expansive Soil	LS	NI	LS	LS
HAZ-1A: Use and Transport of Hazardous Materials	LS	NI	LS-	LS-
HAZ-1B: Disposal of Hazardous Waste	LSM	NI	LSM-	LSM
HAZ-2A: Upset and Release of Hazardous Materials-Accidental Spills	LSM	NI	LSM	LSM
HAZ-2B: Upset and Release of Hazardous Materials-Exposure to Hazards	LSM	NI	LSM	LSM
HYDRO-2: Alteration of Drainage Patterns	LS	NI	LS	LS
HYDRO-3: Increased Surface Flows – Emergency Releases	LS	NI	LS	LS
HYDRO-4: Water Quality	LSM	NI	LSM-	LSM-
HYDRO-5: Flood Hazards	LS	NI	LS	LS
HYDRO-7: Seiches, Tsunamis, Mudflows	LS	NI	LS	LS
NOISE-2: Permanent Noise Increases	LS	NI	LS	LS
NOISE-3: Temporary Noise Increases	LS	NI	LS	LS
TRAF-1: Traffic-Circulation System Impacts	LS	NI	LS-	LS-
New Significant Impacts		None	None	None

LEGEND	
NI No Impact LS Less than significant impact LSM Less than significant impact with mitigation	+ Greater adverse impact than proposed project - Lesser adverse impact than proposed project

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CHAPTER 6
OTHER CEQA CONSIDERATIONS

Section 15126 of the California Environmental Quality Act (CEQA) Guidelines requires that all aspects of a project must be considered when evaluating its impact on the environment, including planning, acquisition, development, and operation. The EIR must also discuss (1) significant environmental effects of the proposed project, (2) significant environmental effects that cannot be avoided if the proposed project is implemented, (3) significant irreversible environmental changes that would result from implementation of the proposed project, and (4) growth-inducing impacts of the proposed project. Chapter 1, Summary, and Chapter 4, Environmental Setting, Impacts, and Mitigation Measures, of this EIR provide a comprehensive identification and evaluation of the proposed project's environmental effects, mitigation measures, and the level of impact significance both before and after mitigation. This section addresses the other required topics identified above. Cumulative impacts are discussed in each section of Chapter 4, and project alternatives are discussed in Chapter 5, Project Alternatives.

6.1 SIGNIFICANT UNAVOIDABLE IMPACTS

The CEQA Guidelines require a description of any significant impacts, including those that can be mitigated but not reduced to a level of insignificance (Section 15126.2(b)). Where there are impacts that cannot be alleviated without imposing an alternative design, their implications and the reasons why the project is being proposed, notwithstanding their effect, should be described. This EIR identified no significant unavoidable project impacts or cumulative impacts.

6.2 SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES

The CEQA Guidelines require a discussion of significant irreversible environmental changes with project implementation, including uses of nonrenewable resources during the initial and continued phases of the project (Section 15126.2(c)). As described in Section 15126.2(c), use of nonrenewable resources during the initial and continued phases of the project may be irreversible since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as highway improvement which provides access to a previously inaccessible area) generally commit future generations to similar uses. Irreversible damage can also result from environmental accidents associated with the project.

According to Section 15126.2(c), a project would generally result in a significant irreversible impact if:

- The project would involve a large commitment of nonrenewable resources during initial and continued phase of the project;

- Primary and secondary impacts would generally commit future generations to similar uses;
- The project would involve uses in which irreversible damage could result from environmental accidents; or
- The proposed consumption of resources is not justified (e.g., the project involves the wasteful use of energy).

Implementation of the project would involve the use of some nonrenewable resources. Project construction would require consumption of fossil fuels, labor, and construction materials. These expenditures would be, for the most part, irrecoverable. However, such resources are not considered to be in short supply, and their use would not impede the continued availability of these resources for other projects. Project operation would continue the existing land use on the project site; therefore, the project would not commit future generations to land uses that do not already exist. Energy use is addressed is section 6.4.

Irreversible changes to the physical environment could occur from accidental release of hazardous materials associated with construction activities. However, environmental accidents would be minimized through adherence to federal, state and local regulations. Additionally, the Project includes Best Management Practices (BMPs) that include measures to prevent accidental release of hazardous materials with development of emergency plans that outline procedures to follow in the event of an accidental release. Compliance with State and federal hazardous materials regulations would reduce the potential for accidental release of hazardous materials to a less-than-significant level.

No other irreversible changes are expected to result from the construction of the proposed Project.

6.3 GROWTH-INDUCING IMPACTS

CEQA requires that any growth-inducing aspect of a project be discussed in an EIR. This discussion should include consideration of ways in which the project could directly or indirectly foster economic or population growth in adjacent and/or surrounding areas. Projects that could remove obstacles to population growth (such as major public service expansion) must also be considered in this discussion. According to CEQA, it must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment.

According to the CEQA Guidelines, a project would have the potential to induce growth if it would:

- Remove obstacles to population growth (e.g., through the expansion of public services into an area that does not currently receive these services), or through the provision of new access to an area, or a change in restrictive zoning or land use designation; or

- Result in economic expansion and population growth through employment opportunities and/or construction of new housing.

As discussed in Section 4.1.5 of this EIR, the project would not include housing or generate new employment opportunities. The project would consist of replacement of existing infrastructure and associated improvements at the existing Newell Creek Dam to enhance operational efficiency, improve system performance, provide for long-term reliable storage for the City's drinking water supply, and enable the City to meet the California Department of Water Resources Division of Safety of Dams (DSOD) reservoir drawdown requirements in case of an emergency. The Project would not involve procurement of additional water supplies or expansion of public services into areas that do not currently receive these services. Thus, the Project would not remove obstacles to population growth. As an improvement to a water supply facility, the project would not result in uses that would directly or indirectly induce substantial economic growth.

It is noted that the Santa Cruz Water Department is in the process of implementing a Capital Improvement Program (CIP) that includes plans and funding for numerous capital improvements projects, including rehabilitation or replacement projects, upgrades and improvements projects, water supply reliability studies, and water main replacements as discussed in Section 4.0.3.2. The City has submitted applications for changes to its existing water rights would change the manner of diversion and location of use and also has embarked on a pilot water-sharing agreement with Soquel Creek Water District. These future projects could result in a change and/or increase in inflows to and seasonal withdrawals from Loch Lomond Reservoir. However, the proposed Project is independent of these other planned projects and would not result in population growth inducement.

6.4 ENERGY CONSERVATION

To assure that energy implications are considered in project decisions, Appendix F of the CEQA Guidelines requires that an EIR disclose and discuss the potential impacts of a project on energy resources and conservation, with particular emphasis on avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy resources.

6.4.1 Methodology

Energy demand for the proposed project is based on the California Emissions Estimator Model (CalEEMod), Version 2016.3.2, as well as the Sacramento Metropolitan Air Quality Management District (SMAQMD) Harborcraft, Dredge, and Barge Emission Factor Calculator (July 2017), which were used to estimate potential project-generated greenhouse gas (GHG) emissions associated with off-road equipment and on-road vehicles, and GHGs from the flat-bottom crew boat and the push boat, respectively. The estimated GHGs were then back-calculated based on carbon

content (i.e., kilograms of carbon dioxide [CO_2] per gallon) to estimate fuel usage during project construction. Energy use calculations are provided in Appendix D.

Regarding operations and maintenance (O & M), activities would include routine inspection and maintenance and would be expected to be on the same order of magnitude as the existing facility. As such, any potential increase in operational energy demand would be negligible and was not quantified for the project.

6.4.2 Impacts and Mitigation Measures

Energy Consumption

Construction would involve several phases over an approximate 24-month period. Construction equipment estimates, including daily use during each project phase/sequence, were provided by the City's consulting engineer. The type and amount of equipment used in each construction phase, as well as other construction assumptions, are summarized in Appendix B.

Electricity

Construction Use. Temporary electric power for as-necessary lighting and electronic equipment (such as computers inside temporary construction trailers and heating, ventilation, and air conditioning) would be provided by Pacific Gas and Electric Company (PG&E). Electrically powered hand tools would also be used during construction. The vast majority of the energy used during construction would be from petroleum. The electricity used for such activities would be temporary and negligible; therefore, impacts would be *less than significant*.

Operational Use. As part of the project, several additional components would require monitoring that would result in a negligible increase in electricity use. However, overall, operational electricity requirements would not be expected to change in comparison to the existing facility. As such, the project would not have an impact on the local utility and would not result in a wasteful use of energy. Impacts related to operational electricity use would be *less than significant*.

Natural Gas

Construction Use. Natural gas is not anticipated to be required during construction of the project. Fuels used for construction would primarily consist of diesel and gasoline, which are discussed below. Any minor amounts of natural gas that may be consumed as a result of Project construction would be temporary and negligible and would not have an adverse effect; therefore, impacts would be *less than significant*.

Operational Use. Long-term project operations would not result in natural gas usage. Therefore, the project would not have an impact on the local utility and would not result in a wasteful use of energy. Therefore, natural-gas-consumption impacts would be *less than significant*.

Petroleum

Construction Use. Petroleum would be consumed throughout construction of the project. Fuel consumed by construction equipment and boats would be the primary energy resource expended over the course of construction, and vehicle miles traveled (VMT) associated with the transportation of construction materials and construction-worker commutes would also result in petroleum consumption. Heavy-duty construction equipment, boats, and on-road haul trucks associated with construction activities would rely on diesel fuel. Construction workers would travel to and from the project site throughout the duration of construction. It is assumed in this analysis that construction workers' vehicles would be gasoline-powered.

There are no unusual project characteristics or construction processes that would require the use of equipment that would be more energy intensive than that used for comparable activities, or equipment that would not conform to current emissions standards (and related fuel efficiencies).

Heavy-duty construction equipment of various types would be used during each phase of construction. Equipment anticipated for project construction is summarized in Table 6.4-1: Hours of Operation for Construction Equipment. In summary, over all phases of construction, diesel-fueled construction equipment would run for an estimated 63,224 hours.

Fuel consumption from construction equipment and boats was estimated by converting the total CO_2 emissions from each construction phase to gallons using the conversion factors for CO_2 to gallons of gasoline or diesel. Construction is estimated to occur in phases based on the anticipated project construction schedule. The conversion factor for gasoline is 9.13 kilograms of CO_2 per gallon (kg CO_2/gallon) and the conversion factor for diesel is 10.21 kg CO_2/gallon (The Climate Registry 2017). The estimated diesel fuel usage from construction equipment and boats are shown in Table 6.4-2and Table 6.4-3, respectively.

Fuel consumption from worker and vendor trips were estimated by converting the total CO2 emissions from each construction phase to gallons using the conversion factors for CO2 to gallons of gasoline or diesel. Worker vehicles are assumed to be gasoline-fueled, and vendor/hauling vehicles are assumed to be diesel-fueled. Calculations for total worker, vendor, and haul truck fuel consumption are provided in Table 6.4-4, Table 6.4-5, and Table 6.4-6 respectively.

As shown in Table 6.4-2 through Table 6.4-6, the project is estimated to consume 275,273 gallons of petroleum during overall project construction. By comparison, California's consumption of petroleum is approximately 52.9 million gallons per day (CEC 2018). Therefore,

because petroleum use during construction would be temporary and would not be wasteful or inefficient, impacts would be *less than significant*.

Operational Use. During operations, the majority of fuel consumption resulting from the project would involve the use of motor vehicles traveling to and from the project site for routine inspection and maintenance activities, which would be on the same order of magnitude as for the existing facility. Given these considerations, the petroleum consumption associated with the project would not be considered inefficient or wasteful and therefore would result in a *less than significant* impact.

Table 6.4-1: Hours of Operation for Construction Equipment

Construction Phase	Equipment Types	Hours of Equipment Use
Mobilization	Articulated haul truck, forklift, loader	150
Develop Staging Areas	Articulated haul trucks, excavator, dozers, loaders, water trucks, crane/boom truck	420
Construct NCP Bypass	Articulated haul trucks, excavator, dozer, motor grader, loader, roller, water truck, forklift, crane/boom truck	3,432
Install Boat Launch/Silt Curtain	Diesel generator, articulated haul trucks, excavator, motor grader, roller, water truck, forklift, crane/boom truck, loader	1,880
Dredge and Drill Shafts	Crane/boom truck, clamshell dredger, drill rig, generator set, breathing compressors, hot water suit heaters	3,300
Access Road Improvement	Articulated haul trucks, excavator, dozer, motor grader, loader, roller, water truck, forklift	204
Grade Portal Platform	Articulated haul trucks, dozers, loaders, water trucks, concrete mixers, crane/boom truck	2,968
Install Culvert Bridge	Articulated haul truck, excavator, dozer, roller, forklifts, crane/boom truck, loader	2,660
Construct Intake/Air Vent	Concrete mixers, forklift, crane/boom truck, generator set, breathing compressors, hot water suit heaters	10,890
Tunnel Excavation	Diesel generator, articulated haul trucks, concrete mixer, tunneling roadheader, air compressors, ventilator fan, water treatment plant	19,800
Inlet Control House	Articulated haul truck, excavator, motor grader, concrete mixers, forklift, crane/boom truck, loader	2,400
Inlet/Outlet Conduit/Backfill Tunnel	Diesel generator, concrete mixers, forklifts, air compressors, loader	7,500
Start Outlet Yard Construction	Diesel generator, articulated haul truck, excavator, motor grader, roller, concrete mixers, forklifts, crane/boom truck, loader	3,200
Complete Outlet Yard Construction	Diesel generator, articulated haul truck, excavator, motor grader, roller, concrete mixer, forklifts, crane/boom truck, loader	1,880
Electrical Controls Installation	Diesel generators, excavator, loader, forklifts, crane/boom truck	690
Perform Start-Up Testing	Crane/boom truck	250
Decommission Existing Outlet	Articulated haul truck, concrete mixer, crane/boom truck, loader	1,600
	Total	**63,224**

Source: See Appendix D.

Table 6.4-2. Construction Equipment Diesel Demand

Phase	Pieces of Equipment	Equipment CO_2 (MT)	kg CO_2/Gallon	Gallons
Mobilization	3	5.68	10.21	556.65
Develop Staging Areas	11	22.72	10.21	2,225.05
Construct NCP Bypass	10	170.62	10.21	16,710.81
Install Boat Launch/Silt Curtain	10	85.91	10.21	8,414.07
Dredge and Drill Shafts	6	151.98	10.21	14,885.87
Access Road Improvement	9	10.48	10.21	1,025.97
Grade Portal Platform	14	114.28	10.21	11,192.77
Install Culvert Bridge	8	101.48	10.21	9,939.17
Construct Intake/Air Vent	7	360.88	10.21	35,345.67
Tunnel Excavation	9	923.00	10.21	90,401.24
Inlet Control House	8	62.30	10.21	6,102.26
Inlet/Outlet Conduit/Backfill Tunnel	10	102.99	10.21	10,086.73
Start Outlet Yard Construction	11	94.68	10.21	9,273.71
Complete Outlet Yard Construction	10	66.27	10.21	6,490.44
Electrical Controls Installation	7	22.31	10.21	2,184.93
Perform Start-Up Testing	1	7.99	10.21	782.11
Decommission Existing Outlet	4	22.10	10.21	2,164.87
			Total	**227,782.33**

Sources: Appendix D (pieces of equipment and equipment CO_2);The Climate Registry 2017 (kg CO_2/gallon)
Notes: CO_2 = carbon dioxide; MT = metric ton; kg = kilogram

Table 6.4-3. Construction Boat Diesel Demand

Phase	Number of Boats	Boat CO2 (MT)	kg CO_2/Gallon	Gallons
Dredge and Drill Shafts	2	60	10.21	5,896.55
Construct Intake/Air Vent	2	181	10.21	17,689.64
			Total	**23,586.19**

Sources: Appendix D (construction boat CO_2); The Climate Registry 2017 (kg CO_2/gallon)
Notes: CO_2 = carbon dioxide; MT = metric ton; kg = kilogram

Energy Consumption with Accelerated Construction Schedule

There may be an "accelerated" construction schedule in which some work activities/sequences are scheduled during consecutive evening/nighttime periods to complete a particular phase in a shorter amount of time. Under this scenario, a 16-hour work day is anticipated with two work shifts. The tunnel excavation construction may include 24-hour construction with three 8-hour shifts. If an accelerated construction schedule were to be implemented, there could be a brief overlap of construction workers arriving to and leaving the site. However, the amount of

equipment would remain the same, although the duration of use would be extended. Construction assumptions with an accelerated schedule are included in Appendix B.

Energy calculations with an accelerated are included in Appendix D. Total hours of construction equipment use and construction equipment diesel demand would slightly decrease, while construction boat diesel demand would the nearly the same as under a two-year schedule. Construction worker, vendor, and haul trip fuel demand also would be similar or slightly reduced with the accelerated schedule. Therefore, petroleum consumption associated with an accelerated construction schedule would not be considered inefficient or wasteful and therefore would result in a *less than significant* impact.

Mitigation Measures

No mitigation measures are required as a significant impact has not been identified.

Table 6.4-4. Construction Worker Vehicle Gasoline Demand

Phase	Trips	Vehicle CO_2 (MT)	kg CO_2/Gallon	Gallons
Mobilization	170	1.38	9.13	150.65
Develop Staging Areas	0	0.00	9.13	0.00
Construct NCP Bypass	1,496	12.10	9.13	1,325.72
Install Boat Launch/Silt Curtain	680	5.50	9.13	602.61
Dredge and Drill Shafts	1,870	15.13	9.13	1,657.15
Access Road Improvement	102	0.83	9.13	90.39
Grade Portal Platform	0	0.00	9.13	0.00
Install Culvert Bridge	1,292	10.45	9.13	1,144.94
Construct Intake/Air Vent	0	0.00	9.13	0.00
Tunnel Excavation	5,100	40.75	9.13	4,463.03
Inlet Control House	0	0.00	9.13	0.00
Inlet/Outlet Conduit/Backfill Tunnel	2,550	19.92	9.13	2,181.31
Start Outlet Yard Construction	1,360	10.62	9.13	1,163.37
Complete Outlet Yard Construction	680	5.31	9.13	581.69
Electrical Controls Installation	510	3.98	9.13	436.27
Perform Start-Up Testing	850	6.64	9.13	727.11
Decommission Existing Outlet	1,360	4.51	9.13	494.44
			Total	**15,018.67**

Sources: Appendix D (construction worker CO_2); The Climate Registry 2017 (kg CO_2/gallon)
Notes: CO_2 = carbon dioxide; MT = metric ton; kg = kilogram

Table 6.4-5. Construction Vendor Truck Diesel Demand

Phase	Trips	Vehicle CO_2 (MT)	kg CO_2/Gallon	Gallons
Mobilization	20	0.37	10.21	36.09
Develop Staging Areas	0	0.00	10.21	0.00
Construct NCP Bypass	176	3.24	10.21	317.61
Install Boat Launch/Silt Curtain	80	1.47	10.21	144.37
Dredge and Drill Shafts	220	4.05	10.21	397.01
Access Road Improvement	12	0.22	10.21	21.66
Grade Portal Platform	56	1.03	10.21	101.06
Install Culvert Bridge	152	2.80	10.21	274.30
Construct Intake/Air Vent	330	6.07	10.21	594.62
Tunnel Excavation	900	16.53	10.21	1,619.28
Inlet Control House	120	2.19	10.21	214.75
Inlet/Outlet Conduit/Backfill Tunnel	450	8.22	10.21	805.32
Start Outlet Yard Construction	240	4.39	10.21	429.50
Complete Outlet Yard Construction	120	2.19	10.21	214.75
Electrical Controls Installation	60	1.10	10.21	107.38
Perform Start-Up Testing	100	1.83	10.21	178.96
Decommission Existing Outlet	240	1.86	10.21	182.54
			Total	**5,639.19**

Sources: Appendix D (construction vendor CO_2); The Climate Registry 2017 (kg CO_2/gallon)
Notes: CO_2 = carbon dioxide; MT = metric ton; kg = kilogram

Table 6.4-6. Construction Haul Truck Diesel Demand

Phase	Trips	Vehicle CO_2 (MT)	kg CO_2/Gallon	Gallons
Mobilization	0	0.00	10.21	0.00
Develop Staging Areas	200	8.48	10.21	830.36
Construct NCP Bypass	176	7.46	10.21	730.72
Install Boat Launch/Silt Curtain	24	1.35	10.21	132.51
Dredge and Drill Shafts	0	0.00	10.21	0.00
Access Road Improvement	20	0.85	10.21	83.04
Grade Portal Platform	346	14.67	10.21	1,436.53
Install Culvert Bridge	6	0.34	10.21	33.12
Construct Intake/Air Vent	0	0.00	10.21	0.00
Tunnel Excavation	0	0.00	10.21	0.00
Inlet Control House	0	0.00	10.21	0.00
Inlet/Outlet Conduit/Backfill Tunnel	0	0.00	10.21	0.00
Start Outlet Yard Construction	0	0.00	10.21	0.00
Complete Outlet Yard Construction	0	0.00	10.21	0.00
Electrical Controls Installation	0	0.00	10.21	0.00
Perform Start-Up Testing	0	0.00	10.21	0.00
Decommission Existing Outlet	0	0.00	10.21	0.00
			Total	**3,246.29**

Sources: Appendix D (construction haul truck CO_2); The Climate Registry 2017 (kg CO_2/gallon)
Notes: CO_2 = carbon dioxide; MT = metric ton; kg = kilogram

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CHAPTER 7
REFERENCES AND LIST OF PREPARERS

7.1 AGENCIES AND PERSONS CONTACTED

City of Santa Cruz

Public Works Department: Hoi Yu

County of Santa Cruz

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7.3 EIR TEAM

City of Santa Cruz Water Department

Heidi Luckenbach, P.E., Deputy Director/Engineering Manager

Leah VanDerMattan, P.E., Project Manager, Associate Engineer

Sarah Easley Perez, CEQA Lead, Associate Planner

Chris Berry Watershed Compliance Manager

Zeke Bean, Senior Environmental Projects Analyst

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Dudek

Ann Sansevero, AICP, Principal

Stephanie Strelow, Project Manager

Catherine Wade, Ph.D., Senior Project Manager/Environmental Planner

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Biological Resources: Sean O'Brien, Lisa Achter, Keith Babcock, Laura Burris, Dave Compton, Andrew Hatch, Craig Seltenrich

Cultural Resources: Ryan Brady M.A., RPA, Sarah Brewer, Samantha Murray, Kate Kaiser, Sarah Siren, Fallin Steffen, Kolin Taylor, Michael Williams

Forest Resources: Scott Eckardt

Geology, Hydrology, Hazardous Materials: Perry Russell, Nicole Peacock

Noise: Jonathan Leech, Chris Barnobi, Mark Storm

Traffic: Dennis Pascua

Graphics: Rachel Strobridge

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CHAPTER 8
DRAFT EIR COMMENTS AND RESPONSES

8.1 INTRODUCTION

This chapter includes the comment letters received on the Draft EIR (DEIR) and provides responses to individual comments that were submitted by agencies, organizations, and individuals as summarized below in Section 4.2. Section 4.3 summarizes sections of the EIR document that have been revised by the City to provide corrected or clarified text or in response to public comments. The comment letters and responses to comments that address environmental issues and the DEIR are included in Section 4.4.

State CEQA Guidelines section 15088(a) requires a lead agency to evaluate comments on environmental issues and provide written responses. Section 15204(a) provides guidance on the focus of review of EIRs as follows:

> In reviewing draft EIRs, persons and public agencies should focus on the sufficiency of the document in identifying and analyzing the possible impacts on the environment and ways in which the significant effects of the project might be avoided or mitigated. Comments are most helpful when they suggest additional specific alternatives or mitigation measures that would provide better ways to avoid or mitigate the significant environmental effects. At the same time, reviewers should be aware that the adequacy of an EIR is determined in terms of what is reasonably feasible, in light of factors such as the magnitude of the project at issue, the severity of its likely environmental impacts, and the geographic scope of the project. CEQA does not require a lead agency to conduct every test or perform all research, study, and experimentation recommended or demanded by commenters. When responding to comments, lead agencies need only respond to significant environmental issues and do not need to provide all information requested by reviewers, as long as a good faith effort at full disclosure is made in the EIR.

In reviewing comments and providing responses on the following pages, this section of the CEQA Guidelines will be considered. The focus will be on providing responses to significant environmental issues.

8.2 LIST OF COMMENT LETTERS RECEIVED

The DEIR was published and circulated for review and comment by the public and other interested parties, agencies, and organizations for a 45-day public review period from November 7, 2018 through December 21, 2018. Copies of the document were distributed to the State Clearinghouse, regional and local agencies, and interested organizations and individuals for their

review and comment. A Notice of Availability of the DEIR was sent to neighboring property owners. The DEIR also was available for public review during normal business hours during the comment period at the City Water Department, the Downtown Santa Cruz Public Library, and the Felton Public Library.

The following five letters of comment were received:

- ❒ Monterey Bay Air Resources District
- ❒ California Department of Fish and Wildlife
- ❒ California Governor's Office of Planning and Research
- ❒ San Andreas Land Conservancy
- ❒ Raines Janecka

8.3 SUMMARY OF CHANGES TO EIR TEXT

Chapter 1 – Summary

Revisions to text include minor corrections to Mitigation Measures BIO-1B-1, BIO-1C-5, BIO-4-1, and HAZ-1B-2; corrections are also made in the respective EIR sections.

Chapter 2 - Introduction

Pages 2-5 to 2-6 — Revisions to text include results of the Draft EIR public review process.

Pages 2-9 to 2-10 — Revisions to text include description of new Chapters 8 and 9 in the Final EIR.

Chapter 3 - Project Description

Revisions to text include minor corrections on pages 3-1 (Project Location), 3-2 (existing appurtenant structures), and the following.

Pages 3-16 to 3-17 — Revisions to text include a new description of a controlled detonation construction technique that could potentially be used during excavation of the tunnel.

Pages 3-28-3-31 — Revisions to text include minor revisions to Project Best Management Practices (BMPs), related to dust control and addition of a new BMP requiring pre-construction Worker Environmental Awareness Training.

Chapter 4 – Environmental Setting, Impacts and Mitigation Measures

Section 4.0.3.2 - Cumulative Projects. Minor revisions to text include addition of the Newell Creek Access Road Bridge Pier Repair Project (pages 4-5 and 4-7).

Section 4.2 - Air Quality and Greenhouse Gas Emissions. Revisions to text include correction of table numbers and the following:

Pages 4.2-16 Revisions to text include a new description of a controlled detonation construction technique that could potentially be used during excavation of the tunnel.

Page 4.2-21 Text added regarding potential air quality impacts resulting from controlled detonation.

Section 4.3 - Biological Resources: Minor text corrections to Mitigation Measures BIO-1B-1, BIO-1C-5, BIO-4-1 and minor revisions to cumulative impacts (page 4.3-31).

Section 4.7 - Hazards and Hazardous Materials. Revisions to text include the following:

Page 4.7-9 Text added regarding potential hazardous materials impacts resulting from controlled detonation.

Section 4.9 – Noise. Revisions to text include minor corrections on pages 4.9-5 (vibration and sensitive receptors), 4.9-8 (thresholds of significance), page 4.9-19 (added references) and the following:

Pages 4.9-9-4.9-10 Revisions to text include a new description of a controlled detonation construction technique that could potentially be used during excavation of the tunnel.

Page 4.9-15 Text added regarding potential noise impacts resulting from controlled detonation.

Pages 4.9-17-18 A new less-than-significant Impact (Noise-4) is added regarding potential vibration impacts resulting from controlled detonation.

8.4 PUBLIC COMMENTS AND RESPONSES

Agencies, organizations, and individuals that submitted written comments on the Draft EIR are outlined above in section 8.2. Each letter of comment is included in this section, followed by responses to the comments. As indicated above, the State CEQA Guidelines section 15088(a) requires a lead agency to evaluate comments on environmental issues and provide a written

response. Therefore, the emphasis of the responses will be on significant environmental issues raised by the commenters. (CEQA Guidelines, § 15204, subd. (a).) Appropriate changes that have been made to the DEIR text based on these comments and responses are provided in EIR text and summarized in section 8.3.

LETTER 1

Monterey Bay Air Resources District
Serving Monterey, San Benito, and Santa Cruz Counties

24580 Silver Cloud Court
Monterey, CA 93940
PHONE: (831) 647-9411 • FAX: (831) 647-8501

December 27, 2018

Sarah Easley Perez, Associate Planner
City of Santa Cruz Water Department
212 Locust Street, Suite C
Santa Cruz, CA 95060

SUBJECT: NEWELL CREEK DAM INLET/OUTLET REPLACEMENT PROJECT DRAFT EIR

Dear Ms. Perez,

Thank you for providing the Monterey Bay Air Resources District (Air District) the opportunity to comment on the above-referenced document. The Air District has reviewed the document and has the following comments:

Minor edits:

1-1 • In the draft EIR available online, the chapter 4 link is referenced as chapter 2 at the top of the folder tab in the pdf format.

1-2 • Please change the references to Table 4.2.2 and 4.2.3 on page 4.2-20. The tables are erroneously referenced as 4.1.2 and 4.1.3 respectively.

Draft EIR Chapter 1, 1.5.3, Less the Significant Impacts

1-3 • The Air District appreciates the reference and use of appropriate modeling tools such as the California Emissions Estimator Model (CalEEMOD). However, the Air District recommends that this section be titled "Less Than Significant with Mitigation". The project duration is scheduled for at least 2 years and therefore has the potential to create fugitive construction dust and operational emissions during the construction period. Construction and operational emissions can be mitigated as well as maintaining compliance with Air District *Rule 402 (Nuisance) and CEQA Guidelines, Section 8.2*, http://mbard.org/pdf/CEQA_full%20(1).pdf by implementing the following Best Management Practices:

- *Construction Dust:*
  1. Prohibit all grading activities during periods of high wind (over 15 mph)
  2. Water all active construction areas at least twice daily. Frequency should be based on the type of operation, soil, and wind exposure.
  3. Apply chemical soil stabilizers on inactive construction areas (disturbed lands within construction projects that are unused for at least four consecutive days)
  4. Apply non-toxic binders (e.g., latex acrylic copolymer) to exposed areas after cut and fill operations, or hydro-seed area.
  5. Maintain at least 2'0" of freeboard in haul trucks.
  6. Cover all trucks hauling dirt, sand, or loose materials.
  7. Plant vegetative ground cover in disturbed areas as soon as possible.
  8. Cover inactive storage piles.
  9. Install wheel washers or other appropriately effective track-out capture methods at the construction site for all exiting trucks.
  10. Post a publicly visible sign which specifies the telephone number and person to contact regarding dust complaints. This person shall respond to complaints and take corrective action within 48 hours. The phone number of the Air District shall be visible to ensure compliance with *Rule 402 (Nuisance)*

- *Operational Emissions:*

1-4 1. With respect to diesel operated construction and other stationary equipment, the Air District recommends using cleaner equipment that conforms to the California Air Resources Board (ARB) Tier 3 or Tier 4 diesel emission standards. We further recommend that, whenever feasible, construction equipment should use alternative fuels such as compressed natural gas (CNG), propane, electricity or biofuels.

1-5 2. Diesel on and off-road construction vehicles used on the project should be verified for compliance to the appropriate ARB Diesel Regulations as referenced in the project draft EIR.

1-6 3. Please consult with the Air District Engineering Division on the use of stationary portable engines. Per *Rule 201, Section 4.14.1 (10/15/2014)* any stationary IC engine greater than 50 HP must be permitted by the Air District or registered with ARB.

1-7 4. During demolition/retrofitting and trenching activities other Air District rules may apply. This includes *Rule 424, National Emissions Standards for Hazardous Air Pollutants. Rule 424* contains the investigation and reporting requirements for asbestos which includes surveys and advanced notification on structures being renovated or demolished. Notification to the Air District is required at least ten days prior to renovation or demolition activities. If old underground piping or other asbestos containing construction materials are encountered during trenching activities, *Rule 424* could also apply. *Rule 424* can be found online at https://www.arb.ca.gov/drdb/mbu/cur.htm. Please contact Shawn Boyle, Compliance Program Coordinator, at (831) 718-8010 for more information regarding this rule.

Please feel free to contact the Planning Division at the Air District to discuss these comments or if there are any questions or clarifications.

Best Regards,

Alan Romero
Air Quality Planner III
aromero@mbard.org
831.718.8030

cc: David Frisbey

LETTER 1 – Monterey Bay Air Resources District

1-1 Online Link to DEIR. The comment indicates the link to the online Chapter 4 is referenced as Chapter 2. Comment is noted; all links are currently labeled correctly.

1-2 Table 4.2.2. The comment indicates references to Table 4.2.2 and 4.2.3 are erroneously referenced as 4.1.2 and 4.1.3, respectively. The EIR text has been corrected.

1-3 Air Impacts and Mitigation. The comment states that the air impact should be titled "Less Than Significant with Mitigation". The air emissions modeling factored in all construction phases and sequences including overlapping construction phases. A second scenario was modeled in which construction would occur in an accelerated schedule with extended daily construction periods. For both scenarios, air emissions were modeled and were below the District's adopted significance thresholds. Therefore, the impact was determined to be less than significant. Mitigation measures are only required for identified significant impacts. The comment suggests implementation of additional Best Management Practices (BMPs) identified in the comment. The proposed Project already includes some of these as Project BMPS: 1-dust control during high winds (BMP 4); 7-revegetation of disturbed areas (BMP 18); and stockpile containment (BMP 2). The following additional specific measures were determined to be applicable to the project and have been added to BMP 4:

- Water active construction areas as necessary to control fugitive dust.
- Hydro seed and/or apply non-toxic soil binders to exposed areas after cut and fill operations.
- Cover inactive storage piles.
- Cover all trucks hauling dirt, sand, or loose materials off site.
- Install appropriately effective track-out capture methods at the construction site for all existing trucks.

1-4 Construction Equipment. The comment recommends using cleaner construction equipment that conforms to California Air Resources Board Tier 3 and Tier 4 diesel emission standards and use of alternative fuels, whenever feasible. The comment is noted; however, these measures are not required as a significant impact to air quality was not identified.

1-5 Diesel Equipment. The comment indicates that diesel construction vehicles should be verified for compliance to appropriate Air Resources Board regulations as referenced in the DEIR. The comment is noted and referred to City staff for further consideration.

1-6 Stationary Portable Engines. The comment requests that the District's Engineering Division be consulted regarding the use of stationary portable generators; any stationary engine greater than 50 horsepower must be permitted by the Air District. The comment

is noted. The construction specifications require that the contractor obtain required permits.

1-7 Compliance with Air District Rules. The comment indicates that Air District rules may apply to demolition and trenching activities, such as Rule 424 regarding asbestos. The Comment is noted. However, it is noted that no building demolition is currently proposed. Additionally, the existing Newell Creek Pipeline is not made of asbestos.

State of California – The Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Bay Delta Region
7329 Silverado Trail
Napa, CA 94558
(707) 944-5500
www.wildlife.ca.gov

LETTER 2

December 7, 2018

Ms. Sarah Easley Perez
City of Santa Cruz Water Department
212 Locust Street, Suite C
Santa Cruz, CA 95060
seasleyperez@cityofsantacruz.com

Dear Ms. Easley Perez:

Subject: Newell Creek Dam Inlet/Outlet Replacement Project, SCH #2018062071, Draft Environmental Impact Report, City and County of Santa Cruz

The California Department of Fish and Wildlife (CDFW) has reviewed the draft Environmental Impact Report (EIR) prepared by the City of Santa Cruz for the Newell Creek Dam Inlet/Outlet Replacement Project (Project) located in the County of Santa Cruz.

CDFW is a Trustee Agency with responsibility under the California Environmental Quality Act (CEQA) §15386 for commenting on projects that could impact fish, plant, and wildlife resources. CDFW is also considered a Responsible Agency if a project would require discretionary approval, such as the California Endangered Species Act (CESA) Permit, the Native Plant Protection Act, the Lake and Streambed Alteration Agreement (LSAA) and other provisions of the Fish and Game Code that afford protection to the State's fish and wildlife trust resources. Pursuant to our jurisdiction, CDFW offers the following comments and recommendations regarding the Project.

PROJECT DESCRIPTION AND LOCATION

The Project consists of the replacement of the Newell Creek Dam water inlet/outlet, which impounds Loch Lomond Reservoir (Reservoir). The Project will include the following components:

- Three new inlets located within the Reservoir that will convey flows in and out of the Reservoir;
- An outlet structure with valves and controls at the toe of the dam to convey flows in and out of the inlet/outlet works; the structure would provide for energy dissipation for water releases to the Newell Creek Pipeline or beneficial releases;
- A new dam seepage collection and monitoring system;
- A 12-foot maximum diameter tunnel containing 48-inch and 10-inch inlet/outlet pipelines through the western dam abutment and under the dam;
- Replacement of approximately 2,000-linear-foot section of the Newell Creek Pipeline between the existing outlet structure and the fist isolation valve;
- Improvements along the dam's access roads to improve access for construction, including a new culvert crossing at the spillway plunge pool; and

- Decommission of the existing inlet/outlet works once the replacement inlet/outlet system is operational.

ENVIRONMENTAL SETTING

Salmonid species, amphibian species, migratory birds, and special-status species are known to inhabit or utilize the Project site and surrounding area. Based on a review of the California Natural Diversity Database (2018), the special-status species that are known to occur, or have the potential to occur in or near the Project site, include:

- California giant salamander (*Dicamptodon ensatus*), a state species of special concern;
- California red-legged frog (*Rana draytonii*), a state species of special concern and listed as threatened under the federal Endangered Species Act (ESA);
- Coho salmon – Central California Coast Evolutionarily Significant Unit (*Oncorhynchus kisutch*), listed as endangered under CESA and listed as endangered under ESA;
- Foothill yellow-legged frog (*Rana boylii*), a candidate species under CESA;
- Marbled murrelet (*Brachyramphus marmoratus*), listed as endangered under CESA and listed as threatened under ESA;
- San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*), a state species of special concern;
- Santa Cruz black salamander (*Aneides niger*); a state species of special concern;
- Steelhead – Central California Coast Distinct Population Segment (*Oncorhynchus mykiss irideus*), listed as threatened under ESA; and
- Western pond turtle (*Emys marmorata*), a state species of special concern.

COMMENT

2-1 *Foothill Yellow-Legged Frog*
The draft EIR indicates that the Project area lacked suitable breeding habitat for foothill yellow-legged frog during habitat assessment surveys, conducted in June 2018; however, one sub-adult foothill yellow-legged frog was observed within the Project area during habitat assessment surveys. Since foothill yellow-legged frog is a candidate species under CESA and is treated as a CESA listed species throughout the species' candidacy period, additional foothill yellow-legged frog specific surveys should be conducted before Project commencement to 1) develop baseline data for foothill yellow-legged frog with the Project area and 2) identify if an Incidental Take Permit for foothill yellow-legged frog should be obtained with CDFW.

Recommendations on how to develop a foothill yellow-legged frog survey protocol are listed below.

1. Have a biologist, with at least three years of foothill yellow-legged frog surveying experience, conduct a visual encounter foothill yellow-legged frog survey at least one year before Project commencement to identify whether the one sub-adult was an outlier occurrence or if additional foothill yellow-legged frogs are located within the Project area.

2. Survey all stages of foothill yellow-legged frogs (e.g., egg masses, tadpoles, sub-adults, adults); and

3. To increase foothill yellow-legged frog detections:
   a. Conduct multiple surveys throughout the year (e.g., spring, summer, fall);
   b. Survey at least 500 feet downstream and upstream of the Project area;
   c. Conduct surveys mid-day during sunny days; and
   d. Include enough biologists to visually cover the entire width of the stream during surveys (e.g., have a biologist on each streambank).

The CDFW Considerations for Conserving the Foothill Yellow-Legged Frog document, located online at https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=157562&inline, may also be a good reference to develop foothill yellow-legged frog survey protocol.

If additional foothill yellow-legged frogs are found within the Project area and it is determined that "take" of the species might be required for Project implementation, please contact CDFW to start the Incidental Take Permit process. Early consultation is encouraged, as it can take time to develop mitigation and minimization measures.

Information about CDFW's Incidental Take Permit can be found online at https://www.wildlife.ca.gov/Conservation/CESA/Incidental-Take-Permits.

REGULATORY REQUIREMENTS

2-2

California Endangered Species Act
Please be advised that a CESA permit must be obtained if the Project has the potential to result in "take" of plants or animals listed under CESA, either during construction or over the life of the Project. Issuance of a CESA Permit is subject to CEQA documentation; the CEQA document must specify impacts, mitigation measures, and a mitigation monitoring and reporting program. If the Project will impact CESA listed species, early consultation is encouraged, as significant modification to the Project and mitigation measures may be required to obtain a CESA Permit.

CEQA requires a Mandatory Finding of Significance if a project is likely to substantially impact a threatened or endangered species (CEQA §§ 21001(c), 21083, and CEQA Guidelines §§ 15380, 15064, 15065). Impacts must be avoided or mitigated to less-than-significant levels unless the CEQA Lead Agency makes and supports Findings of Overriding Consideration (FOC). The CEQA Lead Agency's FOC does not eliminate the project proponent's obligation to comply with Fish and Game Code § 2080.

Lake and Streambed Alteration Agreement
CDFW will require an LSAA, pursuant to Fish and Game Code §§ 1600 et. seq. for Project-related activities within any 1600-jurisdictional waters within the proposed Project area. Notification is required for any activity that will substantially divert or obstruct the natural flow; change or use material from the bed, channel, or bank including associated riparian or wetland resources; or deposit or dispose of material where it may pass into a river, lake or stream. Work within ephemeral streams, washes, watercourses with a subsurface flow, and floodplains are

subject to notification requirements. CDFW, as a Responsible Agency under CEQA, will consider the CEQA document for the Project. CDFW may not execute the final LSAA until it has complied with CEQA (Public Resources Code § 21000 et seq.) as the responsible agency.

FILING FEES

CDFW anticipates that the Project will have an impact on fish and/or wildlife, and assessment of filing fees is necessary (Fish and Game Code, § 711.4; Pub. Resources Code, § 21089). Fees are payable upon filing of the Notice of Determination by the Lead Agency and serve to help defray the cost of environmental review by CDFW.

Thank you for the opportunity to comment on the Project's draft EIR. If you have any questions, please contact Ms. Monica Oey, Environmental Scientist, at (707) 428-2088 or monica.oey@wildlife.ca.gov; or Ms. Randi Adair, Senior Environmental Scientist (Supervisory), at (707) 576-2786 or randi.adair@wildlife.ca.gov.

Sincerely,

Gregg Erickson
Regional Manager
Bay Delta Region

cc: State Clearinghouse #2018062071

cc: Darren Howe
NOAA
darren.howe@noaa.gov

Chad Mitcham
U.S. Fish and Wildlife Service
chad_mitcham@fws.gov

Jacob Martin
U.S. Fish and Wildlife Service
jacob_martin@fws.gov

Kim Sanders
Central Coast Regional Water Quality Control Board
Kim.Sanders@waterboards.ca.gov

LETTER 2 – California Department of Fish and Wildlife (CDFW)

2-1 Foothill Yellow-Legged Frog Surveys. The comment recommends that foothill yellow-legged frog surveys be conducted prior to Project commencement to develop baseline data and identify if an Incidental Take Permit for the species should be obtained from CDFW. The EIR includes a mitigation measure (BIO-1B-1) that calls for pre-construction surveys, construction monitoring, and implementation of other specified measures if an animal is found. The surveys would be at construction areas in and adjacent to Newell Creek, the spillway plunge pool, and the seepage channel. In response to this comment, the City has amended BIO-1B-1 to include seasonal surveys based on guidance provided by the CDFW, including survey methods outlined in CDFW's "Considerations for Conserving the Foothill Yellow-Legged Frog." (May 2018). The surveys will be initiated at least one year prior to construction.

2-2 Regulatory Requirements. The comment references State regulatory requirements, and is so noted. The City has submitted an application to the CDFW for a Lake and Streambed Alteration Agreement.

LETTER 3

STATE OF CALIFORNIA

GOVERNOR'S OFFICE *of* PLANNING AND RESEARCH

EDMUND G. BROWN JR.
GOVERNOR

KEN ALEX
DIRECTOR

December 24, 2018

Sarah Easley Perez
City of Santa Cruz
212 Locust St, Suite C
Santa Cruz, CA 95060

Subject: Newell Creek Dam Inlet/Outlet Replacement Project
SCH#: 2018062071

Dear Sarah Easley Perez:

3-1 The State Clearinghouse submitted the above named Draft EIR to selected state agencies for review. On the enclosed Document Details Report please note that the Clearinghouse has listed the state agencies that reviewed your document. The review period closed on December 21, 2018, and the comments from the responding agency (ies) is (are) enclosed. If this comment package is not in order, please notify the State Clearinghouse immediately. Please refer to the project's ten-digit State Clearinghouse number in future correspondence so that we may respond promptly.

Please note that Section 21104(c) of the California Public Resources Code states that:

> "A responsible or other public agency shall only make substantive comments regarding those activities involved in a project which are within an area of expertise of the agency or which are required to be carried out or approved by the agency. Those comments shall be supported by specific documentation."

These comments are forwarded for use in preparing your final environmental document. Should you need more information or clarification of the enclosed comments, we recommend that you contact the commenting agency directly.

3-2 This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act. Please contact the State Clearinghouse at (916) 445-0613 if you have any questions regarding the environmental review process.

Sincerely,

Scott Morgan
Director, State Clearinghouse

Enclosures
cc: Resources Agency

Document Details Report
State Clearinghouse Data Base

LETTER 3

SCH# 2018062071
Project Title Newell Creek Dam Inlet/Outlet Replacement Project
Lead Agency Santa Cruz, City of

Type EIR Draft EIR

Description The proposed project would consist of replacement of the existing aging inlet/outlet works in new locations at the Newell Creek Dam and Loch Lomond Reservoir and other associated improvements. Primary components would include a new inlet/outlet structure with three new inlets located within the Reservoir, a new outlet structure and valves at the toe of the dam, a new 10-ft-diameter tunnel containing 48-in and 10-in inlet/outlet pipelines through the right (west) dam abutment and under the dam, a new control house on the dame crest to house controls for the inlets, replacement of an approx 2,000-lf section of Newell Creek Pipeline between the outlet structure and the first isolation valve, improvements along the dam's access roads, and decommission of the existing inlet/outlet works once the replacement system is operational.

Lead Agency Contact

Name Sarah Easley Perez
Agency City of Santa Cruz
Phone (831) 420-5327 **Fax**
email
Address 212 Locust St, Suite C
City Santa Cruz **State** CA **Zip** 95060

Project Location

County Santa Cruz
City
Region
Lat / Long
Cross Streets Newell Creek Rd
Parcel No. 076-251-24
Township **Range** **Section** **Base**

Proximity to:

Highways 9
Airports
Railways
Waterways Newell Creek, Loch Lomond Reservoir
Schools
Land Use water supply reservoir/TP/O-L & O-C

Project Issues Archaeologic-Historic; Biological Resources; Flood Plain/Flooding; Forest Land/Fire Hazard; Geologic/Seismic; Noise; Soil Erosion/Compaction/Grading; Toxic/Hazardous; Traffic/Circulation; Vegetation; Water Quality; Water Supply; Wetland/Riparian; Cumulative Effects

Reviewing Agencies Resources Agency; Department of Fish and Wildlife, Region 3; Cal Fire; Office of Historic Preservation; Department of Parks and Recreation; Department of Water Resources; California Highway Patrol; Caltrans, District 5; Office of Emergency Services, California; State Water Resources Control Board, Division of Drinking Water; State Water Resources Control Board, Division of Drinking Water, District 5; Regional Water Quality Control Board, Region 3; Department of Toxic Substances Control; Native American Heritage Commission

Date Received 11/07/2018 **Start of Review** 11/07/2018 **End of Review** 12/21/2018

Note: Blanks in data fields result from insufficient information provided by lead agency.

LETTER 3

State of California – The Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Bay Delta Region
7329 Silverado Trail
Napa, CA 94558
(707) 944-5500
www.wildlife.ca.gov

EDMUND G. BROWN JR., Governor
CHARLTON H. BONHAM, Director

Clear 12/21/18 6

December 7, 2018

Ms. Sarah Easley Perez
City of Santa Cruz Water Department
212 Locust Street, Suite C
Santa Cruz, CA 95060
seasleyperez@cityofsantacruz.com

Dear Ms. Easley Perez:

Subject: Newell Creek Dam Inlet/Outlet Replacement Project, SCH #2018062071, Draft Environmental Impact Report, City and County of Santa Cruz

The California Department of Fish and Wildlife (CDFW) has reviewed the draft Environmental Impact Report (EIR) prepared by the City of Santa Cruz for the Newell Creek Dam Inlet/Outlet Replacement Project (Project) located in the County of Santa Cruz.

CDFW is a Trustee Agency with responsibility under the California Environmental Quality Act (CEQA) §15386 for commenting on projects that could impact fish, plant, and wildlife resources. CDFW is also considered a Responsible Agency if a project would require discretionary approval, such as the California Endangered Species Act (CESA) Permit, the Native Plant Protection Act, the Lake and Streambed Alteration Agreement (LSAA) and other provisions of the Fish and Game Code that afford protection to the State's fish and wildlife trust resources. Pursuant to our jurisdiction, CDFW offers the following comments and recommendations regarding the Project.

PROJECT DESCRIPTION AND LOCATION

The Project consists of the replacement of the Newell Creek Dam water inlet/outlet, which impounds Loch Lomond Reservoir (Reservoir). The Project will include the following components:

- Three new inlets located within the Reservoir that will convey flows in and out of the Reservoir;
- An outlet structure with valves and controls at the toe of the dam to convey flows in and out of the inlet/outlet works; the structure would provide for energy dissipation for water releases to the Newell Creek Pipeline or beneficial releases;
- A new dam seepage collection and monitoring system;
- A 12-foot maximum diameter tunnel containing 48-inch and 10-inch inlet/outlet pipelines through the western dam abutment and under the dam;
- Replacement of approximately 2,000-linear-foot section of the Newell Creek Pipeline between the existing outlet structure and the fist isolation valve;
- Improvements along the dam's access roads to improve access for construction, including a new culvert crossing at the spillway plunge pool; and

- Decommission of the existing inlet/outlet works once the replacement inlet/outlet system is operational.

ENVIRONMENTAL SETTING

Salmonid species, amphibian species, migratory birds, and special-status species are known to inhabit or utilize the Project site and surrounding area. Based on a review of the California Natural Diversity Database (2018), the special-status species that are known to occur, or have the potential to occur in or near the Project site, include:

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- Steelhead – Central California Coast Distinct Population Segment (*Oncorhynchus mykiss irideus*), listed as threatened under ESA; and
- Western pond turtle (*Emys marmorata*), a state species of special concern.

COMMENT

Foothill Yellow-Legged Frog
The draft EIR indicates that the Project area lacked suitable breeding habitat for foothill yellow-legged frog during habitat assessment surveys, conducted in June 2018; however, one sub-adult foothill yellow-legged frog was observed within the Project area during habitat assessment surveys. Since foothill yellow-legged frog is a candidate species under CESA and is treated as a CESA listed species throughout the species' candidacy period, additional foothill yellow-legged frog specific surveys should be conducted before Project commencement to 1) develop baseline data for foothill yellow-legged frog with the Project area and 2) identify if an Incidental Take Permit for foothill yellow-legged frog should be obtained with CDFW.

Recommendations on how to develop a foothill yellow-legged frog survey protocol are listed below.

1. Have a biologist, with at least three years of foothill yellow-legged frog surveying experience, conduct a visual encounter foothill yellow-legged frog survey at least one year before Project commencement to identify whether the one sub-adult was an outlier occurrence or if additional foothill yellow-legged frogs are located within the Project area.

2. Survey all stages of foothill yellow-legged frogs (e.g., egg masses, tadpoles, sub-adults, adults); and

3. To increase foothill yellow-legged frog detections:
   a. Conduct multiple surveys throughout the year (e.g., spring, summer, fall);
   b. Survey at least 500 feet downstream and upstream of the Project area;
   c. Conduct surveys mid-day during sunny days; and
   d. Include enough biologists to visually cover the entire width of the stream during surveys (e.g., have a biologist on each streambank).

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If additional foothill yellow-legged frogs are found within the Project area and it is determined that "take" of the species might be required for Project implementation, please contact CDFW to start the Incidental Take Permit process. Early consultation is encouraged, as it can take time to develop mitigation and minimization measures.

Information about CDFW's Incidental Take Permit can be found online at https://www.wildlife.ca.gov/Conservation/CESA/Incidental-Take-Permits.

REGULATORY REQUIREMENTS

California Endangered Species Act
Please be advised that a CESA permit must be obtained if the Project has the potential to result in "take" of plants or animals listed under CESA, either during construction or over the life of the Project. Issuance of a CESA Permit is subject to CEQA documentation; the CEQA document must specify impacts, mitigation measures, and a mitigation monitoring and reporting program. If the Project will impact CESA listed species, early consultation is encouraged, as significant modification to the Project and mitigation measures may be required to obtain a CESA Permit.

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Lake and Streambed Alteration Agreement
CDFW will require an LSAA, pursuant to Fish and Game Code §§ 1600 et. seq. for Project-related activities within any 1600-jurisdictional waters within the proposed Project area. Notification is required for any activity that will substantially divert or obstruct the natural flow; change or use material from the bed, channel, or bank including associated riparian or wetland resources; or deposit or dispose of material where it may pass into a river, lake or stream. Work within ephemeral streams, washes, watercourses with a subsurface flow, and floodplains are

subject to notification requirements. CDFW, as a Responsible Agency under CEQA, will consider the CEQA document for the Project. CDFW may not execute the final LSAA until it has complied with CEQA (Public Resources Code § 21000 et seq.) as the responsible agency.

FILING FEES

CDFW anticipates that the Project will have an impact on fish and/or wildlife, and assessment of filing fees is necessary (Fish and Game Code, § 711.4; Pub. Resources Code, § 21089). Fees are payable upon filing of the Notice of Determination by the Lead Agency and serve to help defray the cost of environmental review by CDFW.

Thank you for the opportunity to comment on the Project's draft EIR. If you have any questions, please contact Ms. Monica Oey, Environmental Scientist, at (707) 428-2088 or monica.oey@wildlife.ca.gov; or Ms. Randi Adair, Senior Environmental Scientist (Supervisory), at (707) 576-2786 or randi.adair@wildlife.ca.gov.

Sincerely,

Gregg Erickson
Regional Manager
Bay Delta Region

cc: State Clearinghouse #2018062071

cc: Darren Howe
NOAA
darren.howe@noaa.gov

Chad Mitcham
U.S. Fish and Wildlife Service
chad_mitcham@fws.gov

Jacob Martin
U.S. Fish and Wildlife Service
jacob_martin@fws.gov

Kim Sanders
Central Coast Regional Water Quality Control Board
Kim.Sanders@waterboards.ca.gov

LETTER 3 – California Governor's Office of Planning and Research

3-1 Compliance with State Clearinghouse Environmental Review. The letter acknowledges that the City of Santa Cruz complied with the State Clearinghouse review requirements for review of draft environmental documents pursuant to the California Environmental Quality Act and attached a letter of comment from CDFW. The comment is acknowledged; and no response is necessary. The CDFW comments are addressed in the preceding Letter 2 responses.

David S. Kossack, Ph.D.
San Andreas Land Conservancy
P. O. Box 268
Davenport, CA 95017

Thursday, December 20, 2018
831.419.8307
dkossack@san-andreas-land-conservancy.org

Sarah Easley Perez, Associate Planner
City of Santa Cruz Water Department
212 Locust Street, Suite C
Santa Cruz, CA 95060
seasleyperez@cityofsantacruz.com

Re: Comments on the "Newell Creek Dam Inlet/Outlet Replacement Project" EIR.

Ms. Perez, and City Council:

Thank you for this opportunity to comment on the City of Santa Cruz Water Department's Environmental Impact Report for their "Newell Creek Dam Inlet/Outlet Replacement Project". We recognize the need to replace, repair and update the City's water infrastructure associated with the Newell Creek Dam within the context of existing conditions. Protecting and restoring the state's water resources is a public trust value and is everyone's business. We appreciate the City's effort to inform the community as well as state, federal and local agencies of your intent carryout this project. We also appreciate the City's need to meet the state's (DSOD) dam safety requirements. However we are deeply concerned that this document fails to provide the most basic of information necessary for a reasonable person to understand how the City's Water Department determined either the magnitude or the need for such a massive water works. We offer the following comments to detail our concern, we request a written response to our comments:

1. DSOD conditions.

4-1

From the EIR,

> 3.2.3 Emergency Reservoir Drawdown Conditions and Requirements.
> DSOD requires dams with a storage capacity greater than 5,000 acre-feet to have an outlet capable of drawing down 10 percent of the hydraulic head in 7 to 10 days. NCD has historically been required by DSOD to have an inlet/outlet structure with sufficient capacity to lower the maximum reservoir storage by 10 percent of the hydraulic head[1] within 10 days and to fully drain the reservoir to the "deadpool"[2] in 90 days. The sizing of outlets for new dam projects and major outlet modifications of existing dams should meet standards as recommended by DSOD.
>
> [1] In accordance with documented communications between DSOD and SCWD, the hydraulic head behind NCD is defined as the vertical height between the spillway crest (elevation 577.2) and the upstream dam toe (elevation 436), or 141.2 feet.
> [2] Deadpool refers to the elevation of the lowest operable intake gate.

The EIR does not include and needs to provide :

- The volume of water (e.g., acre-feet) that needs to be removed from Loch Lomond Reservoir to reduce max Water Surface Elevation (WSE) by 10% of the hydraulic head (i.e., the amount of water that needs to be moved in 7 to 10 days);

- Logs of daily WSEs, these logs will provide a range of working WSE for NCD (i.e., how much water would really need to be moved in a 10% event);

- The residual volume in the 'deadpool' (how much water would really have to be moved in a 90 day drain (= 8646 ac ft - 'deadpool').

4-2 Because of the "V" shape of Newell Creek Canyon most of the volume of Loch Lomond is at the surface of the Reservoir. This means that the amount of water removed from the reservoir in a 10% drop in the hydraulic head, as defined in footnote 1 above (i.e., 10% vertical drop in WSE from the spillway crest) is not the same volume as a 10% reduction in storage (i.e., a reduction of 846.4 ac ft), at the spillway crest the volume associated with 10% hydraulic head by the it is likely significantly more than 10% of total volume… In any case, **10% of NCD's 141.2 foot hydraulic head is 14.12 feet.**

Figure 3-5A shows the project's Overall Site Plan. The graphic presents the NCD, the proposed tunnel alignment and the existing outlet conduit. The graphics also includes a bathtub ring representing the "Max WSE EL 577.2" and a second bathtub ring representing "Min WSE EL 562.2", **a difference of 15 feet.** The 10% hydraulic head drawdown of 14.12 feet required by DSOD is less than the normal operating range of NCD under standard conditions.

The 10% Max WSE hydraulic head volume and 'deadpool' volume are important numbers for determining how big the pipes need to be to move this water within the respective time periods. It is interesting to note a flow rate of 62.3 cfs will drain 10% of the reservoir by volume in 7 days, it will drain the entire reservoir, to upstream dam toe, in ~70 days. As shown below a 20 inch pipe in the project's proposed configuration can discharge 75 cfs.

2. Tunnel sizing.

4-3 The **NOTICE OF PREPARATION OF AN ENVIRONMENTAL IMPACT REPORT RE: Newell Creek Dam Inlet/Outlet Replacement Project states on pg 3:**
The proposed project would be comprised of the following primary components:

- A new *ten-foot diameter tunnel* containing 48-inch and 10-inch inlet/outlet pipelines through the right (west) dam abutment and under the dam;

The EIR, states on pg 1-1:

- A *14-foot maximum diameter tunnel* containing 48-inch and 10-inch inlet/outlet pipelines through the right (west) dam abutment and under the dam;

A 14 foot diameter tunnel has essentially 2X the cross sectional area of a 10 foot diameter tunnel, that's 2X the amount of bedrock that needs to be removed and 2X the amount of cement backfill. In terms of packing, a 10 foot tunnel can fit 4-48 inch pipes, a 14 foot tunnel can fit 8-48 inch pipes.

The EIR provides no information on how the tunnel size is/will be selected. The EIR needs to provide a discussion of tunnel criteria and what is the change in conditions between 10 foot tunnel in the NOP to 14 foot tunnel in the EIR. The EIR needs to specifically confirm that a single Outlet Conduit Pipe, and beneficial use pipe, will encased in the tunnel.

3. Pipe sizing.

4-4 The EIR provides no information on why a 48 inch pipe is needed in this infrastructure update when more modest configurations appear able to provide in excess of operating flows[1]:

---

[1] Relative flow rates are calculated using a gravitational flow form of the Hazen-Williams equation.

Pipe diameter:	X	ft
Roughness coefficient:	140	
Pipe length:	1500	ft
Drop (Max WSE, 577.2 ft - Tunnel Portal, 390 ft):	187.2	ft

The EIR does not provide water capacities for other pieces of the plumbing, they are assumed to contribute to all configurations equally and are ignored in these flow analysis.

Existing 1 foot diameter pipes, 0.78 sq ft, provides 19.7 cfs each.
5 X 1 foot diameter pipe = total area: 3.9 sq ft, 98.5 cfs total.
A single 26.8 inch diameter pipe also 3.9 sq ft, in the proposed tunnel config.: provides 162.7 cfs
A 20 inch diameter pipe, 2.2 sq ft, provides 75.4 cfs
A 30 inch diameter pipe, 4.9 sq ft, provides 218.9 cfs
A 48 inch diameter pipe, 12.6 sq ft, provides 753.5 cfs

"Typical Inflows/Outflows to/from Loch Lomond Reservoir" (3.2.1 Overview of Existing Operations, pg 3-4) range from 3 - 20 cfs. Even the "emergency drawdown scenario" of 164 cfs (pg 3-10), which really can't analyzed absent the volume of the Max WSE 10% hydraulic head, is within the range of the existing plumbing (i.e., 30 inch conduit) configuration. Estimated 48 inch diameter pipe flows of 753.5 are pretty amazing.

4. Other EIR Items.

4-5 • The EIR does not provide Median February Flows for Newell Creek. Newell Creek February flows are likely to be greater than 12 cfs provided by a 10 inch diameter pipe described in the project plumbing.

As a condition of approval the Proposed Project needs to provide 20 inch diameter pipe for beneficial flows.

4-6 • Impact BIO-8 In-Reservoir non-native fish…

With 0.5 inch screen how does the Project, and the City Water Department, prevent non-native game fish from being released into Newell Creek during day to day operation, construction drawdown and/or emergency drains? Non-native, introduced exotics, are a significant impact to ecologies of the Santa Cruz Mountains. The EIR needs to identify a mechanism to prevent non-native fish from escaping, preferably by replacing them with native fish…

4-7 • Pg 2-8 makes a reference to "sale of removed trees".

Any trees that need to be removed as part of this project should be retained in the watershed as large woody debris in the creek. Lead agency should assure that trees cut under this project are kept to useful lengths. The EIR needs to include a letter from NMFS and/or CDFW acknowledging the Project's commitment. This should be a condition of approval.

4-8 • Does Loch Lomond stratify into thermoclines?

The EIR gives no indication of how the middle intake was selected for 'beneficial' flows. Water removed for beneficial flows should be biased towards diversion of colder water to maintain water quality downstream in Newell Creek and San Lorenzo River.

4. Project Fragmentation/Segmentation; Growth Inducing and Cumulative Impacts.

4-9 This is a huge project. It has the potential to increase the capacity of Loch Lomond's water works by almost an order of magnitude.

- Why are such a massive water works necessary for little ol' Loch Lomond Reservoir?

4-10 • Is the City/City Water Department looking to leverage this project to force other water projects? You present a lot of other projects but the EIR does not discuss how they interact, depend on each other.

4-11 • Is the City/City Water Department intending to raise the height of Newell Creek Dam?

4-12 • The City's Water Department says that it is asking Division of Water Rights to modify their water rights, where are these documents and how do they depend upon/affect this project. The City Water Department's application(s) to the Division of Water Rights needs to be included as part of this EIR.

4-13 These are project "fragmentation" under CEQA.

Project Fragmentation/Segregation limits analysis and the range of alternatives. Based on the rulings in **Laurel Heights Improvement Association v. Regents of the University of California**, the Lead Agency is required to define the pending project in a manner that ensures a complete analysis of impacts resulting from future expansion or continuation of the initial aspects of project development (e.g., "10,000 new UCSC students"[2] and raising NCD). Such impacts must be assessed when the "future expansion or other actions" are a reasonably foreseeable consequence of the project as initially conceived and where the future expansion or action will likely change the scope or nature of the initial project or its effects. This project and the City's Water Department project list is an octopus...

A number of court cases have served to define an agency's obligations to examine later aspects of a proposed action. For example, in addressing the growth-inducing impacts associated with specific project activities (i.e., roadway construction) that may facilitate subsequent development, the court in City of Antioch v. City Council of the City of Pittsburg concluded that "construction of the road way and utilities (including water works) cannot be considered in isolation from the development it presages. . . .the sole reason to construct the road and sewer (and water works) project(s) is to provide a catalyst for further development in the immediate area. Because construction of the project could not be undone, and because achievement of its purpose would almost certainly have significant environmental impacts, construction should not be permitted to commence until such impacts are evaluated in the manner prescribed by CEQA."

- Santa Cruz Sentinel, Jan. 12, 2018:
  SANTA CRUZ >> UC Santa Cruz is preparing to grow its student body by more than 50 percent — some 10,000 students — by the year 2040, Chancellor George Blumenthal announced Friday.

Any discussion of project impacts, including fragmentation/segmentation, growth inducing and cumulative impacts, must recognize the "foreseeable future" as at least through "the year 2040".

4-14 The CEQA Guidelines and the CEQ NEPA Regulation identify several ways in which a project could have growth-inducing impacts. Projects that remove obstacles to population growth, and projects that encourage and facilitate other activities that are beyond those proposed as part of the project and that could affect the environment are considered growth-inducing (CEQA Guidelines Section 15126(g)). Within the context of this proposed project the assumption is that the increased water supplies and improved supply reliability associated with this proposed project will, along with the other factors mentioned above stimulate growth and remove barriers to growth, particularly in terms of UCSC expansion and pressures on housing and resource consumption.

With respect to the EIR's claim (6.3 Growth-inducing Impacts, pg 6-3) that this project is not growth inducing is absurd, the availability of reliable supplies of water has always been one of several potential obstacles to population growth.

If the City Water Department really feels that water availability and reliability are not growth-inducing then the City (Council) should include a condition of approval limiting water services to existing hookups (e.g., as defined 3.3.1 Purpose and Need, pg 3-7, in footnote 3 (probably better defined 10 years ago)) denying additional water service(s) to UCSC expansion related activities including new building and student housing both on and off-campus (i.e., UCSC needs to operate outside of City of SCz Water Department infrastructure). This condition of approval needs to apply to UCSC's "10,000 new students".

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[2] Please note: we did ask the planners at the "Wednesday, July 18, 2018 from 6:30 – 8:00 p.m. at Santa Cruz Police Department Community Room, 155 Center Street, in Santa Cruz." that they needed to address "10,000 new students."

This condition of approval is long overdue considering the City's water agreement with UCSC was made in the 1960s and things have changed... Under both CEQA, and NEPA, changed conditions require a reevaluation of the environmental effects of the project… the Act's manifest concern with preventing uninformed action.

- We feel that part of this proposed project EIR is simply playing, "The 1st Rule of Negotiating" Ask for the outrageous so when you only get half of what you ask for it is more than you need.

6. Necessary Mitigation.

4-15 The mitigations proposed in this EIR are minuscule and boiler plate. They do nothing to address the fragmentation, growth inducing and cumulative impacts that this proposed project and the City Water Department's other projects in various stages of implementation in Santa Cruz, Santa Cruz County and the Santa Cruz Mountains. We offer the recovery of MaMu populations in Santa Cruz County (aka SCz Mts.) as a poster-child for the level of habitat protection and restoration that needs to be put in place as
4-16 mitigation for the Newell Creek Dam Inlet/Outlet Replacement Project. This level of recovery is also necessary for any Habitat Conservation Planning whether it is defined by a Federal agency (i.e., USFWS and/or NMFS) or otherwise that the City Water Department might be developing.

The City of Santa Cruz's "Watershed Planning Process" (circa 2000-2003) was to address the impacts of commercial logging in the City Water Department's watershed properties. The Watershed Planning Process was particularly concerned with impacts to fish and wildlife but it was also concerned with the impacts of erosion and sediment on water quality. One of the motivations among many that supported the Process was to eliminate commercial logging in City watersheds all together, one of the tools capable effecting this goal is a Conservation Easement (CE). The Process Committee was aware of CEs, because I told members of the Committee about CEs. A CE dedicated to a qualified entity that takes the timber rights off the table could protect existing "late seral" trees and allow existing logged forest to grow through to "late seral" age class. It could protect the City's watersheds in perpetuity. It is unfortunate that the management goals of other landowners that should be considered capable of providing "habitat protection and restoration" for our poster-child don't seem to have the grip (e.g., State Parks, CDL, Rancho San Vicente) but that is the way it is... City of Santa Cruz should not follow that path.

A conservation easement on City watersheds that promotes a mature forest ecology would be good for fish, too, a denser canopy means more shade; more fog drip; cooler water temperatures; and more stream complexity. A mature forest ecology provides more carbon storage particularly beyond 100 - 1000 years with the accumulation of root mass and large/coarse woody debris. With respect to the proposed NMFS HCP, in addition to the San Lorenzo River the City takes water from Laguna and Liddell Creek watersheds, the Big Basin Hydrologic Unit. A City/NMFS HCP could contribute to of managing the Hydrologic Unit as a single watershed including listed CCC coho and steelhead.

Requested Mitigation:

- The Santa Cruz City Council should place a Conservation Easement on City of Santa Cruz watersheds that is capable of protecting and restoring MaMu populations and the mature forest ecologies that they depend upon. This is a hundred year project, it is a good project.

Thank you for this opportunity to comment on the "Newell Creek Dam Inlet/Outlet Replacement Project" EIR.

David Kossack
On behalf of
San Andreas Land Conservancy

LETTER 4 – San Andreas Land Conservancy

4-1 Emergency Reservoir Drawdown Conditions and Requirements. The comment makes some statements regarding DSOD requirements, and states that the EIR needs to include: volumes of water (in acre-feet) to meet DSOD requirements; logs of daily water surface elevations; and residual volume in the "deadpool". The comment and requested information do not pertain to analyses included in the EIR. However, while a response is not necessary, the following information is provided. The maximum reservoir storage capacity is approximately 8,646 acre-feet (AF), based on the Reservoir storage curve in the 2009 United States Geological Survey storage capacity reports. The maximum normal elevation for storage purposes is 577.2 feet (spillway crest elevation) and 10% of hydraulic head is elevation 563 feet. Assuming a 7-day drawdown, the average flow rate needed is 106 million gallons per day (MGD) or 164 cubic feet per second (cfs). Drawdown volume from the spillway elevation is 2,272 AF (740 million gallons [MG]). With the lowest proposed intake at elevation 480 feet, the approximate drawdown volume is 8,305 AF (2,705 MG). Evacuation of the Reservoir from the spillway elevation to the dead pool over a period of 90 days would require an average outflow of approximately 29 MGD or 45 cfs.

4-2 Drawdown Volumes and Pipe Sizing. The comment makes some statements regarding the reservoir configuration, water surface elevations, drawdown levels, and pipe sizing. The comment does not pertain to analyses included in the EIR; however, Response to Comment 4-1 provides a description of the drawdown volumes and the reasons for pipe sizing are explained in Response to Comment 4-4.

4-3 Tunnel Size. The comment states that the EIR provides no information on how the tunnel size is/will be selected and that this information should be included in the EIR with an explanation of the change in conditions between the 10-foot tunnel identified in the EIR Notice of Preparation (NOP) and the maximum 14-foot tunnel described in the EIR. The focus of the EIR is on the environmental impacts of the Project, and details of project design and decisions are not required to be included in an EIR. However, while a response is not necessary, the following information is provided. A minimum 10-foot tunnel is necessary to accommodate construction equipment and provide adequate space and clearance for workers to weld pipe segments together. The actual tunnel size will depend on the equipment available to the contractor and their construction means and methods but would not exceed 14-feet in tunnel diameter and may be as small as 10-feet.

4-4 Inlet/Outlet Pipeline Size. The comment states that the EIR provides no information as to why a 48-inch pipeline is needed when smaller sizes appear capable to provide required drawdown flows. The comment and requested information do not pertain to analyses included in the EIR. However, while a response is not necessary, the following information is provided. A 48-inch pipe was selected for ease of inspection and repair,

assuming that the City would want to be able to drive a small electric cart through the approximately 1,500-foot-long pipe segment, which requires a minimum of conduit diameter of 48-inches. If maintenance access with a cart was not needed, a smaller diameter conduit could be selected. Based on velocities, the smallest diameter conduit is 36 inches. High velocities can damage the outlet structures. Ease of maintenance and access are extremely important, considering the tunnel would be backfilled and the pipe would not be accessible from above ground due to its depth below ground.

4-5 Newell Creek Median Flows. The comment states that the EIR does not provide median February flows for Newell Creek, which are likely to be greater than 12 cubic feet per second (cfs) provided by a 10-inch diameter and that a 20-inch diameter pipe should be provided for beneficial flows. The comment does not address analyses included in the EIR, and the requested information regarding median flows does not pertain to analyses in the EIR. However, while a response is not necessary, the following information is provided. Under current operations, beneficial releases to Newell Creek are typically a continuous 1 cfs. The 10-inch diameter pipeline is intended to primarily convey the continuous beneficial flow release. The 48-inch pipeline is configured so that it can also provide beneficial flows to the creek when necessary.

4-6 Reservoir Fish. The comment asks how non-native game fish in the reservoir will be prevented from being released into Newell Creek and whether the 0.5-inch intake screen would prevent non-native fish releases during daily operations, construction drawdown and/or emergency drains. The comment also suggests replacing non-native fish with native fish. The comment on restocking the Reservoir with native fish species is noted, but is not within the scope of the Project or the EIR analyses.

As discussed on page 3-10 of the DEIR, each of the proposed three new inlets would include a drum-style inlet screen that would be 48 inches in diameter, 54 inches tall, and have a 30-inch outlet flange connection. Screen wires would be constructed with copper-nickel alloy with a slot width of 0.5 inches. Loch Lomond Reservoir does not provide habitat for state- or federally-listed fish species, although a variety of non-native game fish are known to be present in the reservoir. At present, neither CDFW nor NMFS have any written policy, requirements or guidance that is specific to screening of intakes in lakes or reservoirs that do not contain or provide passage for anadromous salmonids (or other state/federally-listed fish species).

The original intake structure constructed in 1960 consists of a sloping intake with five 12-inch diameter inlet gates that allow water into the outlet pipeline through the intake gates. The five intake gates are spaced at twenty-foot vertical intervals between elevations of 550 (Intake Gate 1) and 470 (Intake Gate 5) feet above mean sea level. In 2012, four of the original five intake gates were replaced utilizing screens with 0.5-inch openings.

Since the new intake structures would be located approximately 200-250 feet from shore in deep water where juvenile fish are typically not present (due to lack of cover and associated increased predation risk), the potential for entrainment of small fish is considered to be extremely low. Consequently, a 0.5-inch screen opening size (as installed in 2012 on the original intake structure) would be adequate to avoid entrainment of smaller fish present in the reservoir.

4-7 Tree Removal. The comment states that any trees removed as part of the Project should be retained in the watershed as large woody debris in creeks as a condition of approval with letters from agencies "acknowledging the Project's commitment." The comment is noted, but does not address analyses in the DEIR. As part of its watershed management, the City has maintained woody debris in streams; however, it is noted that given the area of potential tree removal, it likely would not be possible to utilize all trees removed as part of the Project as woody debris within creeks.

4-8 Intake Locations. The comment states that the EIR gives no indication of how the middle intake was selected for 'beneficial' flows and that water removed for beneficial flows should be biased towards diversion of colder water to maintain water quality downstream in Newell Creek and San Lorenzo River. The comment and requested information do not pertain to analyses included in the EIR. However, while a response is not necessary, the following information is provided. The City selected the proposed inlets at elevations 530 feet, 500 feet, and 480 feet. This selection was made using information generated by a lake model that included water quality characteristics at different elevations, including water temperature. The proposed middle and lowest elevation intakes, 500-feet and 480-feet, have historically had "cold" water with similar if not identical temperatures, because both elevations are below the thermocline when the lake is stratified. Additionally, the 48-inch pipeline is configured so that it can also provide beneficial flows to the creek if necessary; therefore, a beneficial release can come from any of the three intake elevations. The proposed intake elevations are similar to the existing intake elevations, which as indicated in Response to Comment 4-6, are spaced at twenty-foot vertical intervals between elevations of 550 (Intake Gate 1) and 470 (Intake Gate 5). The biological evaluations conducted for the EIR did not identify impacts related to long-term operations, and the EIR indicates that Newell Creek would continue to receive base flows as required, and would continue to provide cold water into the San Lorenzo watershed downstream of the Project area.

4-9 Reservoir Capacity. The comment states that the Project has the potential to increase the capacity of Loch Lomond's "water works". The proposed project does not change or affect the storage capacity of Loch Lomond Reservoir. The replacement of the inlet and outlet facilities is due to deterioration of existing facilities and to meet emergency drawdown requirements established by the State. The size of the replaced segment of Newell Creek Pipeline will increase from a 22-inch to a 30-inch diameter pipeline for ease

of maintenance. However, the new facilities would have no effect on the storage or operating capacity of the Reservoir.

4-10 Project Relation to Other Projects. The comment asks whether the City is looking "to leverage this project to force other water projects". The proposed inlet/outlet replacement Project does not change overall reservoir capacity or operations and is not related to other planned water infrastructure projects. See also Response to Comment 4-12.

4-11 Dam Height. The comment asks whether the City is intending to raise the height of Newell Creek Dam. There are no plans to raise the height of the dam.

4-12 Relation to Water Rights Modification. The comment asks how the City's proposed water rights modification depend upon/affect this Project and states that the City's application to the State Division of Water Rights needs to be included in the EIR. The comment suggests "fragmentation" by not evaluating both projects, and indicates that impacts resulting from reasonably foreseeable consequences of a project must be addressed. The comment seems to suggest that the project would lead to other future expansions of the Newell Creek Dam facility or lead to growth, particularly at UCSC.

The State CEQA Guidelines define a project under CEQA as "the whole of the action" that may result either directly or indirectly in physical changes to the environment. "Piecemealing" or "segmenting" are terms used when a project is divided into two or more pieces with evaluation of each piece in a separate environmental document, rather than evaluating the whole of the project in one environmental document. This is not permitted under CEQA, which has been affirmed in some court decisions. However, if proposed projects have different purposes and one is not needed for the other to proceed, there would be no piecemealing.

The proposed Newell Creek Dam Inlet/Outlet Replacement Project is independent of the City's Water Rights Project. Neither project is needed for the other project to proceed. The DEIR also identifies other cumulative Water Department projects and indicates that the City released an Initial Study/Notice of Preparation for proposed modifications to its existing water rights and also has embarked on a pilot water-sharing agreement with Soquel Creek Water District. These future projects could result in operational changes to the water system including Loch Lomond Reservoir. The Water Rights Project would increase the flexibility of the water system by improving the City's ability to utilize surface water within existing allocations while enhancing flows for local anadromous fisheries. It would not increase the City's overall water supply to accommodate growth, but would rather improve the flexibility and operational efficiency of the City's water supply. However, the proposed Project is independent of this and other planned projects and is not necessary for the other projects to occur.

4-13 Growth Inducement. The comment suggests that the increased water supplies and improved supply reliability associated with the proposed Project would be considered growth inducing, particularly in terms UCSC expansion. Growth inducing impacts are discussed in Section 6.3 of the DEIR (pages 6-2 to 6-3). Pursuant to CEQA, the discussion includes consideration of ways in which the project could directly or indirectly foster economic or population growth in adjacent and/or surrounding areas, inducing projects that could remove obstacles to population growth (such as major public service expansion). The Project would replace the aging inlet/outlet works and a 2,000-foot segment of the existing Newell Creek Pipeline near the toe of the dam, and associated improvements at the existing Newell Creek Dam to enhance operational efficiency, improve system performance, provide for long-term reliable storage for the City's drinking water supply, and enable the City to meet the California Department of Water Resources Division of Safety of Dams (DSOD) reservoir drawdown requirements in case of an emergency. While the pipeline size would increase from a 22- to a 30-inch diameter pipeline for the replacement segment, the larger pipe size does not change the capacity of existing water supplies. The pipe size was selected based on typical sizes to improve pumping and operational efficiencies. The Project would not expand the capacity of the Reservoir, increase water supplies, change Reservoir operations, or extend services into an area currently not served by the City. The Project would not involve procurement of additional water supplies or expansion of public services into areas that do not currently receive these services. Thus, the Project would not remove obstacles to population growth. As an improvement to a water supply facility, the project would not result in uses that would directly or indirectly induce substantial economic growth.

4-14 Conditions of Approval for Growth Inducement. The comment asks the City to include as a condition of approval limiting water services to existing hookups and denying additional water service to UCSC expansion-related activities. As indicated in the previous response, the proposed Project does not result in increased water supply capacity, but addresses aging infrastructure that takes water to and from Loch Lomond Reservoir. No growth-inducing impacts have been identified that warrant mitigation or conditions or approval, and the recommendation in the comment is a policy decision unrelated to the environmental analyses in the DEIR.

4-15 Mitigation Measures. The comment states that the mitigation measures in the EIR are "minuscule and boiler plate" and do not address fragmentation, growth inducing and cumulative impacts of the project, and the City Water Department's other projects. The comment does not address specific mitigation measures, so a specific response cannot be made. However, the DEIR includes detailed mitigation measures to address biological and other impacts. The commenter's use of the term "fragmentation" appears to refer to project piecemealing or segmenting, which is addressed in Response to Comment 4-12. See Response to Comments 4-13 and 4-14 regarding growth inducement. The comment does not provide a specific comment regarding cumulative impacts. However, relevant

cumulative projects are identified on Table 4-1 of the DEIR (page 4-7), and cumulative impacts are addressed in each topical section of Chapter 4.

4-16 Marbled Murrelet Recovery and Watershed Conservation. The comment discusses marbled murrelet recovery, impacts of commercial logging, and suggests that the City Council place a conservation easement on the City's watershed lands to protect and restore the murrelet populations and mature forest ecologies. The comment is noted, but does not address analyses in the EIR. The DEIR addresses marbled murrelets, but found lack of suitable nesting habitat in the project area (pages 4-3-16 to 4-3-17), and also addresses impacts to forest resources (Section 4.5).

CITY OF SANTA CRUZ

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Newell Creek Dam Inlet/Outlet Replacement Project
Written Comments on the Draft Environmental Impact Report (EIR)
(please print)

5-1 WATER RELEASED FROM the RESERVOR to the LOWER NEWELL CREEK IS DEPRIVED OF OXYGEN AND SEDIMENT. THIS IMPACTS the LOWER NEWELL creek and ~~CAN be mitigated~~ these ~~th~~ SIGNIFICANT effects CAN be MITIGATED IN the design OF the INTAKE WATER LINE that feeds the LOWER NEWELL CREEK. WATER could be delivered to the LOWER Newell creek FROM the RESERVOR AT VARIOUS LOCATIONS INSTEAD OF ~~just~~ the CURRENT LOCATION APPROXIMATELY AT the BOTTOM OF the RESERVOR. LOWER Newell creek IS the ONLY CREEK IN the WATERSHED THAT IS NOT ON the IMPAIRED 303D LIST FOR EXCESS SEDIMENT. ~~the~~ LOWER NEWELL CREEK gets NO SEDIMENT OR WOODY DEBRIS FROM the WATER RELEASED FROM the CITY OF SANTA

Please note: Comments, including personal information, become public information and may be released to interested parties if requested.

(See Reverse for Additional Information)

CITY OF SANTA CRUZ

WATER DEPARTMENT
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Newell Creek Dam Inlet/Outlet Replacement Project
Written Comments on the Draft Environmental Impact Report (EIR)
(please print)

5-3 CURRENTLY. IT WOULD BENIFIT THE LOWER NEWELL CREEK IF THE CITY OF SANTA CRUZ WOULD TAKE THESE FACTS INTO CONSIDERATION AND ~~MITIGATE THEM~~ AND DESIGN THIS NEW SYSTEM WITH OXYGEN, SEDIMENT AND WOODY DEBRIS AS IMPORTANT ELEMENTS.

Please note: Comments, including personal information, become public information and may be released to interested parties if requested.

(See Reverse for Additional Information)

LETTER 5 – Raines Janecka

5-1 Reservoir Releases. The comment states that the water released from the Reservoir to Newell Creek is "deprived of oxygen and sediment," which impacts the creek. The comment suggests that water releases be from various locations instead of the current location near the bottom of the Reservoir and that these factors should be taken into consideration in the project design. The comment is noted, but does not address analyses in the EIR. However, it is noted that the beneficial release water is not deprived of oxygen because it is naturally aerated as it is discharged. The release water is also in compliance with NPDES requirements for sediment. Additionally, the proposed intake elevations are similar to existing intake elevations, although the proposed lowest intake is about 10 higher than the existing lowest intake. See also Response to Comment 4-8.

CHAPTER 9
MITIGATION MONITORING AND REPORTING PROGRAM

This Mitigation Monitoring and Reporting Program (MMRP) for the Newell Creek Dam Inlet/Outlet Replacement Project has been prepared pursuant to the California Environmental Quality Act (CEQA – Public Resources Code, Section 21000 *et seq*.), the CEQA Guidelines (Cal. Code Regs., Title 14, Chapter 3, Sections 15074 and 15097). A master copy of this MMRP shall be kept in the office of the City of Santa Cruz Water Department and shall be available for viewing upon request.

This MMRP includes mitigation measures and Project Best Management Practices (BMPs) in the Mitigation Monitoring and Reporting Program Matrix on the following pages that correspond to the Final EIR for the project. The matrix lists each mitigation measure or series of mitigation measures by environmental topic, followed by the BMPs. For each mitigation measure and BMP, the frequency of monitoring and the responsible monitoring entity is identified. Mitigation measures may be shown in submittals and may be checked only once, or they may require monitoring periodically during and/or after construction. Once a mitigation measure is complete, the responsible monitoring entity shall date and initial the corresponding cell, and indicate how effective the mitigation measure was. To aid the City in implementation of the MMRP, Table 9-1 identifies the general sequencing for implementation of mitigation measures and BMPs.

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Mitigation Measure	Implementation Actions	Monitoring / Reporting Responsibility	Timing Requirements	Reporting Requirements & Verification of Compliance
Biological Resources				
MITIGATION BIO-1A-1: All in-stream construction activities shall be limited to the low-flow period between June 15 through November 1, except by extension approved by CDFW and NOAA Fisheries.	Implementation actions are outlined in the mitigation measure, and the measure will be included as a Construction Specification.	• City staff are responsible for inclusion of measure in Construction Specifications and periodic inspections during construction. • Contractor is responsible for implementation during construction.	• Include measure in construction specs. • Periodic inspection during construction to ensure no violations.	
MITIGATION BIO-1A-2: If native fish or native aquatic vertebrates are present when cofferdams, water bypass structures, and silt barriers are to be installed, a native fish and aquatic vertebrate rescue and relocation plan shall be prepared, approved by CDFW and NOAA Fisheries, and implemented by a qualified biologist during dewatering of the spillway plunge pool and Newell Creek to ensure that significant numbers of native fish and aquatic vertebrates are not stranded.	Implementation actions are outlined in the mitigation measure.	• Fish rescue and relocation plan included in Biological Assessment to be reviewed by NOAA Fisheries. • City responsible for hiring qualified biologist to be present during dewatering and to implement fish rescue and relocation plan if needed. • Biologist shall maintain records of fish relocation efforts as set forth in the fish rescue plan.	• Plan to be approved prior to construction. • Biologist to be present during dewatering.	
MITIGATION BIO-1B-1: Seasonal surveys based on guidance provided by the CDFW, including survey methods outlined in CDFW's "Considerations for Conserving the Foothill Yellow-Legged Frog." (May 2018) shall be initiated at least one year prior to construction. Not more than 48 hours prior to commencement of construction activities occurring between March 1 and September 30 in or adjacent to Newell Creek associated with the installation of the NCP, new culvert bridge crossing downstream of the spillway plunge pool, and establishment of the construction platform work area at the toe of NCD, a qualified biologist, or trained designee (as approved	Implementation actions are outlined in the mitigation measure.	• City responsible for hiring qualified biologist to conduct pre-construction survey and trained designee for daily monitoring and implementation of relocation if needed	• Initiate seasonal surveys at least one year prior to construction. • Preconstruction: Prior to construction (48 hours) • Daily monitoring, March-September for construction elements described in measure	

Mitigation Measure	Implementation Actions	Monitoring / Reporting Responsibility	Timing Requirements	Reporting Requirements & Verification of Compliance
by CDFW), shall conduct a pre-construction survey for foothill yellow-legged frog. The survey shall be conducted within suitable habitat that could be directly or indirectly impacted by construction activities associated with the Project components and at the locations described above. The surveys shall be conducted pursuant to currently accepted methods/protocols for this species as determined by CDFW. If no individual foothill yellow-legged frogs are observed during the pre-construction surveys, monitoring and inspection of suitable habitat shall occur each day during construction activities implemented during March 1 – September 30, unless otherwise approved by CDFW, to ensure that no individual foothill yellow-legged frogs have moved into the work areas in the time since the focused pre-construction survey was completed. If foothill yellow-legged frogs are detected during the pre-construction survey or during the monitoring and inspections during construction, CDFW shall be consulted to determine the appropriate course of action to avoid take of the species. Such actions could include avoidance of the occupied area until it is determined that the individual is no longer present in the habitat area to be disturbed; establishment of exclusion fencing or similar measures; increased frequency or duration of inspections and monitoring; and/or relocation of any individual frogs that could be adversely affected by the Project.				
MITIGATION BIO-1C-1. Due to the presence of suitable aquatic and upland habitats for Western pond turtle, Santa Cruz black salamander, and California giant salamander in the Project construction footprint, wildlife exclusion fencing shall be installed to: (1) prevent individuals of these species from accessing the active work and staging areas; and (2) define the boundary of and protect all suitable aquatic and upland habitat areas that will not be directly affected by construction activities. The wildlife exclusion fencing will be established between the identified	Implementation actions are outlined in the mitigation measure. Installation of exclusion fencing to be included in Construction Specifications.	• City staff are responsible for inclusion of exclusion fencing measure in Construction Specifications and periodic inspections during construction. • City is responsible for hiring qualified biologist to determine locations of exclusion fencing	• Include measure in construction specs. • Installation prior to construction. • Periodic inspection during construction to ensure no violations.	

Mitigation Measure	Implementation Actions	Monitoring / Reporting Responsibility	Timing Requirements	Reporting Requirements & Verification of Compliance
construction areas and upland and aquatic habitats to be avoided. The specific locations and placement of fencing will be determined by the City in coordination with a qualified biologist and will be based on the extent of proposed construction activities and field conditions at each work area. The fencing alignment and work areas enclosed by the fencing shall be thoroughly inspected by a qualified biologist prior to installation by searching under rocks, logs, leaf litter, etc. to find and relocate any individuals of these species in the area. Following completion of fencing installation, the fence alignment will be inspected once daily for the duration of construction activities by a qualified biologist, or trained designee (as approved by CDFW), to confirm the integrity and function of the fencing and ensure wildlife are not becoming entrapped in the fencing.		for aquatic species. • Contractor is responsible for installation.		
MITIGATION BIO-1C-2: Western Pond Turtle. Not more than five days prior to the commencement of construction activities in Loch Lomond Reservoir and any ground disturbing activities associated with establishment of Staging Areas 1 and 7, the access road to these staging areas, construction platform at the toe of NCD, and associated work areas in or adjacent to Newell Creek and spillway plunge pool, a qualified biologist shall conduct a focused survey for Western pond turtle, its nests, and/or eggs within these work areas and within 50 feet of the construction/ground disturbance footprint. If no Western pond turtles are observed, construction activities may begin without the need for further surveys or protection measures. If Western pond turtles are observed, then a qualified biologist shall capture the turtles and translocate them to an area of equally suitable habitat away from the construction footprint. Approval from CDFW would be required prior to handling/translocating individuals of this species. If occupied nests are observed during the pond turtle nesting season (March – July), the nests will be marked and fenced with	Implementation actions are outlined in the mitigation measure.	• City responsible for hiring qualified biologist to conduct pre-construction survey.	Prior to construction (not more than 5 days) at locations specified in measure.	

Mitigation Measure	Implementation Actions	Monitoring / Reporting Responsibility	Timing Requirements	Reporting Requirements & Verification of Compliance
exclusion fencing in such a manner that emerging young would not be able to move into areas where they could be crushed by vehicles or equipment. If nests cannot be avoided, construction activities within 50 feet of the identified nest location shall be delayed until the qualified biologist determines that the nests are no longer occupied.				
MITIGATION BIO-1C-3: Santa Cruz Black Salamander. Not more than 48 hours prior to initial ground disturbing activities, a pre-construction survey for Santa Cruz black salamander shall be conducted within all areas of Santa Cruz black salamander suitable habitat that will be directly or indirectly affected by Project construction activities and within 50 feet of such areas. Suitable habitat for this species in the study area consists of damp upland areas near/adjacent to existing aquatic features at the base of NCD including Newell Creek, the spillway plunge pool, seepage channel, ephemeral drainage, and seeps. Monitoring for this species shall also be conducted at least once daily during initial ground disturbing activities. If any individuals of Santa Cruz black salamander are observed during the pre-construction survey or subsequent monitoring, they shall be moved to the nearest appropriate habitat outside of the construction footprint by a qualified biologist. Approval from CDFW would be required prior to handling/translocating individuals of this species.	Implementation actions are outlined in the mitigation measure.	• City responsible for hiring qualified biologist to conduct pre-construction survey and construction monitoring.	• Prior to construction (not more than 48 hours) at locations specified in measure. • Biological monitoring during initial ground disturbing activities.	
MITIGATION BIO-1C-4. California Giant Salamander. Not more than 48 hours prior to initial ground disturbing activities, a pre-construction survey for California giant salamander shall be conducted within all areas of suitable habitat for this species (i.e., Newell Creek, the seepage channel, seeps and surrounding upland areas associated with these aquatic features) that will be directly or indirectly affected by Project construction activities and within 50 feet of such areas. Monitoring for this species shall also be conducted at least once daily during initial ground disturbing activities. If any individuals	Implementation actions are outlined in the mitigation measure.	• City responsible for hiring qualified biologist to conduct pre-construction survey and construction monitoring.	• Prior to construction (not more than 48 hours) at locations specified in measure. • Biological monitoring during initial ground disturbing activities.	

Mitigation Measure	Implementation Actions	Monitoring / Reporting Responsibility	Timing Requirements	Reporting Requirements & Verification of Compliance
of California giant salamander are observed during surveys, they shall be moved to the nearest appropriate habitat outside of the construction footprint by a qualified biologist. Approval from CDFW would be required prior to handling individuals of this species.				
MITIGATION BIO-1C-5. San Francisco Dusky-footed Woodrat. Not more than thirty (30) days prior to commencement of ground disturbing activities at each work area, a qualified biologist shall conduct a pre-construction survey to locate existing San Francisco dusky-footed woodrat nests. Any nests that are identified in the construction footprint or within 20 feet shall be photographed, mapped and flagged or fenced for avoidance. For the protection of San Francisco dusky-footed woodrat individuals that may be present in the construction footprint, complete avoidance of San Francisco dusky-footed woodrat middens/nests is recommended. If avoidance of identified middens/nests is not feasible, the following measures are recommended prior to the commencement of ground disturbing activities to avoid and reduce impacts on San Francisco dusky-footed woodrat: a) After obtaining approval of the biologist qualifications from CDFW, a qualified biologist shall dismantle the nest by hand to allow for adult San Francisco dusky-footed woodrat individuals to escape (this work shall be conducted outside of the breeding season for this species which is April through June); b) If young are observed during the dismantling process, the qualified biologist shall stop work for a minimum of 24 hours to allow the adult woodrats to relocate their young; c) Once the nest is determined to be vacant, the dismantling process shall be completed and the nest materials shall be collected and moved to another	Implementation actions are outlined in the mitigation measure.	• City responsible for hiring qualified biologist to conduct pre-construction survey and nest removal if necessary.	• Prior to construction (not more than 30 days prior) at locations specified in measure. • Prior to construction, removal of nests outside breeding period, which is April-June	

Mitigation Measure	Implementation Actions	Monitoring / Reporting Responsibility	Timing Requirements	Reporting Requirements & Verification of Compliance
suitable location nearby and outside of the construction footprint to allow for nest reconstruction; and d) Where feasible, piles of cut vegetation and slash generated by project clearing and grubbing activities shall be left outside of, but near the work area, to provide refuge for woodrats that may become displaced by project activities.				
MITIGATION BIO-1C-6. Special-status Bats. Not more than 15 days prior to the initiation of any construction activities that involve tree trimming or removal, including clearing and grubbing of work areas and staging areas, that could affect potential daytime or maternity roost sites, a focused visual survey shall be completed by a qualified biologist to determine if any potential roost sites are present. Surveys for daytime roosts are required year round while surveys for potential maternity roost sites are only required from April through July. If active daytime roosts are discovered, disturbance to the roost site shall not occur until it is determined by the biologist that any bats using the roost are no longer present. If active maternity roosts are discovered that could be directly impacted by tree trimming/removal and/or Project construction activities, an appropriate no disturbance buffer will be established by a qualified biologist in coordination with City staff and maintained until it is determined by the biologist that all young have fledged and are no longer dependent upon the roost site for survival. The no disturbance buffer distances will be a minimum of 25 feet, but this distance may be increased or decreased based on site specific conditions, including location and relationship of the roost site to the construction zone, and type of construction activities being conducted.	Implementation actions are outlined in the mitigation measure.	• City responsible for hiring qualified biologist to conduct pre-construction survey.	• Prior to construction (not more than 15 days prior) at tree trimming or tree removal area; year-round for daytime roosts; Apr-July for maternity roosts. • Prior to construction, removal of nests outside breeding period, which is April-June	

Mitigation Measure	Implementation Actions	Monitoring / Reporting Responsibility	Timing Requirements	Reporting Requirements & Verification of Compliance
MITIGATION BIO-1D-1: If ground disturbing activities will occur in Staging Areas 5-7 or are proposed outside of these or any of the other (previously surveyed) staging or work areas, protocol-level surveys shall be performed for woodland woolythreads plant species during the blooming period for this species which is typically March to July. If this species is not detected, no further surveys or mitigation would be necessary. If any individuals or populations of woodland woolythreads are detected, the location(s) shall be mapped, and a mitigation plan shall be prepared and implemented that includes, but is not limited to, the following elements and criteria: a) A description of any areas of habitat occupied by special-status plants to be preserved and/or removed by the Project; b) Identification and evaluation of the suitability of on-site or off-site areas for preservation, restoration, enhancement or translocation; c) Analysis of species-specific requirements and considerations and specific criteria for success relative to the Project's impact on this species and restoration, enhancement or translocation. d) A description of proposed methods of preservation, restoration, enhancement, and/or translocation; e) A description of specific performance standards, including a required replacement ratio and minimum success standard of 1:1 for impacted individuals or populations; f) A monitoring and reporting program to ensure mitigation success; and g) A description of adaptive management and associated remedial measures to be implemented in the event that performance standards are not achieved.	Implementation actions are outlined in the mitigation measure.	• City responsible for hiring qualified biologist to conduct protocol plant survey.	• Prior to construction during blooming period (March-July) at Staging Areas 5-7 or other areas not previously surveyed where ground disturbing activities will occur	
MITIGATION BIO-2-1: When working in or adjacent to the active stream channel (i.e., construction of the culvert bridge crossing	Implementation actions are outlined in the mitigation	• City responsible for review of final plans.	• Include measure in construction specs.	

Mitigation Measure	Implementation Actions	Monitoring / Reporting Responsibility	Timing Requirements	Reporting Requirements & Verification of Compliance
and NCP crossing), avoid disturbance of retained riparian vegetation (Red alder-Bigleaf maple forest), to the maximum extent practicable.	measure. Installation of exclusion fencing to be included in Construction Specifications.	• City is responsible for hiring qualified biologist to determine locations of exclusion fencing for retained riparian vegetation. • Contractor is responsible for installation. • City responsible for periodic inspections during construction.	• Installation prior to construction. • Periodic inspection during construction to ensure no violations.	
Mitigation BIO-2-2: For unavoidable impacts to the Red alder-bigleaf maple forest (which constitutes the only riparian community in the study area), coast live oak-madrone woodland, and bigleaf maple forest communities, a project-specific revegetation and restoration plan shall be developed and implemented. The plan shall specify the criteria and standards by which the revegetation and restoration actions will compensate for impacts of the proposed Project on these communities and shall at a minimum include discussion of the following: a) the restoration objectives and type and amount of restoration to be implemented (in-kind at a minimum restoration to impact ratio of 1:1); b) the location of the proposed restoration site(s) (either on-site or within the San Lorenzo River watershed, if possible); c) the methods to be employed for restoration implementation; d) success criteria and a monitoring program to ensure vegetation community restoration success; e) adaptive management and remedial measures to be implemented in the event that performance stands are not achieved; and a mechanism for long term management and protection of the restoration area.	Implementation actions are outlined in the mitigation measure.	• City responsible for final mitigation plans. • City is responsible for implementation as specified in the plan. .	• Mitigation plan to be included in permit reviews by CDFW (1602 Streambed Alteration Agreement) and RWQCB (401 Water Quality Certification) prior to site preparation (tree removal, ground disturbance).	

Mitigation Measure	Implementation Actions	Monitoring / Reporting Responsibility	Timing Requirements	Reporting Requirements & Verification of Compliance
MITIGATION BIO-3-1: Future refinements to the proposed Project (i.e., as Project components are further developed from the 50% design level to 100% design) shall endeavor to avoid jurisdictional aquatic resources, to the extent practicable, through Project design changes or implementation of alternative construction methodologies.	Implementation actions are outlined in the mitigation measure.	• City responsible for review of final plans. .	• Plans to be completed prior to site preparation.	
MITIGATION BIO-3-2: For unavoidable impacts to jurisdictional aquatic resources, a project-specific mitigation plan shall be developed, approved by the ACOE and RWQCB through their respective regulatory permitting processes, and implemented. The mitigation plan shall specify the criteria and standards by which the mitigation will compensate for impacts of the proposed Project and include discussion of the following: a) the mitigation objectives and type and amount of mitigation to be implemented (in-kind mitigation at a minimum mitigation ratio of 1:1); b) the location of the proposed mitigation site(s) (within the San Lorenzo River watershed, if possible); c) the methods to be employed for mitigation implementation (wetland establishment, re-establishment, enhancement, preservation); d) success criteria and a monitoring program to ensure mitigation success; e) adaptive management and remedial measures in the event that performance standards are not achieved; and f) a mechanism for long term management and protection of the mitigation area.	Implementation actions are outlined in the mitigation measure.	• City responsible for final mitigation plans. • City is responsible for implementation as specified in the plan. .	• Mitigation plan to be included in permit reviews by ACOE (404), and RWQCB (401 Water Quality Certification) prior to site preparation (tree removal, ground disturbance).	
MITIGATION BIO-3-3: Where feasible and appropriate, all jurisdictional aquatic resources not directly affected by construction activities will be avoided and protected by establishing staking, flagging or fencing between the identified construction areas and aquatic resources to be avoided/preserved.	Implementation actions are outlined in the mitigation measure. Installation of exclusion fencing to be included in Construction Specifications.	• City responsible for review of final plans. • City is responsible for hiring qualified biologist to determine locations of exclusion fencing for jurisdictional resources not	• Include measure in construction specs. • Installation prior to construction. • Periodic inspection during construction to	

Mitigation Measure	Implementation Actions	Monitoring / Reporting Responsibility	Timing Requirements	Reporting Requirements & Verification of Compliance
		impacted • Contractor is responsible for installation. • City responsible for periodic inspections during construction.	ensure no violations.	
MITIGATION BIO-4-1: If ground disturbing activities are to commence during the nesting season (February 1 – August 31), no more than two weeks prior to any ground disturbing activities, including site preparation, staging, removal of vegetation and clearing and grubbing, a nesting bird survey shall be completed by a qualified biologist to determine if any native birds are nesting in or adjacent to the study area (including within a 50-foot buffer for passerine species and a 250-foot buffer for raptors). If any active nests of native birds are observed during surveys, a suitable avoidance buffer from the nests should be determined by a qualified biologist in coordination with City staff, based on species, location, and extent and type of planned construction activity. Impacts to active nests shall be avoided until the chicks have fledged and the nests are no longer active, as determined by the qualified biologist.	Implementation actions are outlined in the mitigation measure.	• City responsible for hiring qualified biologist to conduct pre-construction survey.	• Prior to tree removal or ground disturbance between February 1 and August 31.	
MITIGATION BIO-4-2: Bald Eagle Pre-construction Survey. A focused nest survey shall be conducted by a qualified biologist if construction activities are initiated during the nesting season for bald eagle (February—July for this species in California). The survey shall be conducted not more than 30 days prior to the initiation of construction activities including tree removal, other site preparation or ground disturbing activities adjacent to the Reservoir (e.g., clearing and grubbing/grading for establishment of staging areas), or any in-reservoir work, a focused nest survey shall be conducted by a qualified biologist. Surveys shall be conducted within all suitable nest habitat within the study area and within one half mile (or as otherwise determined appropriate by the qualified biologist) of the study area. If an	Implementation actions are outlined in the mitigation measure.	• City responsible for hiring qualified biologist to conduct pre-construction survey.	• Not more than 30 days prior to tree removal or ground disturbance between February 1 and July.	

Mitigation Measure	Implementation Actions	Monitoring / Reporting Responsibility	Timing Requirements	Reporting Requirements & Verification of Compliance
active nest is located, the biologist, in coordination with City staff, shall determine the level of direct/indirect impacts that would likely occur to the nest and tree if construction activity will occur during the nesting season. The determination shall be made taking into consideration the type/extent of the activity, the location of the nest, and the direct line of sight of the activity from the nest. If no-disturbance buffers are determined to be necessary to protect nesting bald eagles, the buffer distances shall be established based on application of the criteria and standards described in the National Bald Eagle Management Guidelines (USFWS 2007). If it is determined that no direct impacts to an active nest will occur (i.e., the tree would not be removed, trimmed, etc.), measures to mitigate indirect impacts will be taken depending on if there is visual line of sight to the construction activity. a) If the tree with an active nest is within a visual line of sight of construction activity, then efforts will be made to conduct the construction activity outside the period when the nest is occupied, as determined by the biologist. Construction can begin/continue once it is determined that any young have fledged from the nest and are no longer dependent upon the nest for survival. b) If the tree with an active nest is outside the direct line of site from the construction area, but construction will occur during the period of time the nest is active, an appropriate no disturbance buffer, taking into consideration factors such as the type/extent of the activity, the age of any young in the nest, tree cover, and topography, shall be established and maintained, until any young have fledged from the nest and are no longer dependent upon the nest for survival. c) If it is determined that a tree with an active bald eagle nest will be directly impacted (i.e., removed, trimmed, etc.) or that indirect impacts could result in take (e.g., nest abandonment, nest failure) of eggs or young in the nest, then the CDFW shall be consulted regarding the				

Mitigation Measure	Implementation Actions	Monitoring / Reporting Responsibility	Timing Requirements	Reporting Requirements & Verification of Compliance
need for an Incidental Take Permit pursuant to Section 2081 of the California Fish and Game Code, and the United States Fish and Wildlife Serve shall be consulted to determine the need for a take permit pursuant to the Bald and Golden Eagle Protection Act.				
MITIGATION BIO-8-1.A Turbidity Monitoring Plan (Plan) shall be developed, submitted to RWQCB for review and approval, and implemented to guide appropriate management practices and corrective actions to ensure elevated turbidity levels in Loch Lomond Reservoir do not occur. This Plan would protect water quality in Loch Lomond Reservoir and ensure turbid water and/or water with elevated levels of contaminants are not released into Newell Creek via the continuous 1 CFS beneficial release. The Plan will describe the sampling methods, frequency, and criteria as well as thresholds for corrective action. The Plan will also specify a program for monitoring and reporting to the Central Coast RWQCB.	Implementation actions are outlined in the mitigation measure.	• City responsible for hiring qualified professional to prepare plan and submit to RWQCB for review/approval. • Contractor to conduct monitoring.	• Prior to site preparation or work in or near the Reservoir for preparation of the plan. • Sampling and monitoring during construction in accordance with specifications in the plan.	
Cultural Resources				
MITIGATION CUL-5-1: Prior to commencement of any grading activity on-site, the City shall retain a qualified paleontologist to prepare a Paleontological Resources Impact Mitigation Program (PRIMP), consistent with the guidelines of the Society of Vertebrate Paleontology (SVP) (2010) that outlines requirements for: worker environmental awareness training; locations and timing of construction monitoring; procedures for discoveries treatment; and paleontological methods (including sediment sampling for microvertebrate fossils), reporting, and collections management. The qualified paleontologist shall attend a preconstruction meeting to provide construction worker training regarding procedures in the event of discovery of paleontological resources during construction. Monitoring shall consist of	Implementation actions are outlined in the mitigation measure.	• City responsible for hiring qualified paleontologist to prepare the PRIMP and conduct worker training and monitoring.	• Prior to site grading or excavation for preparation of PRIMP and worker training. • Paleontological monitoring to be conducted at times identified in the measure.	

Mitigation Measure	Implementation Actions	Monitoring / Reporting Responsibility	Timing Requirements	Reporting Requirements & Verification of Compliance
onsite spot-checking once a week for five weeks during the excavation for the staging area, for two days during the first week of the tunnel excavation (to get a sense of the equipment operations), and several intermittent spot-checks thereafter. Monitoring of excavation shall consist of reviewing tunnel spoils but not entering the tunnel. In the event that significant paleontological resources (e.g., fossils) are unearthed during grading, the paleontological monitor shall coordinate with the Construction Manager or City Staff to temporarily halt and/or divert grading activity within a 50-foot radius to examine the resource. If the find is significant, the City shall require treatment of the find in accordance with the recommendations of the paleontologist, which may include, but are not limited to, specimen recovery and curation or thorough documentation. Once documentation and/or collection of the find is completed, grading may recommence in the area of the find.				
Forestry Resources				
MITIGATION FOR-2-1: Replant trees where removed in temporarily disturbed areas resulting from Project construction where planting would meet forest management or habitat enhancement goals and recommendations identified in the City's Draft Watershed Lands Management Plan (City of Santa Cruz, 2013) or the Watershed Resources Management Plan Planning Analysis and Recommendations Report (Swanson et al., 2002).	Implementation actions are outlined in the mitigation measure.	• City responsible for preparing a replanting plan and replanting.	• Upon completion of construction.	
MITIGATION FOR-2-2: Implement forest management measures on retained forest land consistent with City's Draft Watershed Management Plan (City of Santa Cruz, 2013). Management acreage should equal the total of permanently impacted forest land. Management may include:	Implementation actions are outlined in the mitigation measure.	• City responsible for identifying forest management areas and completing management efforts as recommended in the measure.	• Upon completion of construction.	

Mitigation Measure	Implementation Actions	Monitoring / Reporting Responsibility	Timing Requirements	Reporting Requirements & Verification of Compliance
• Recruitment of snags or other elements to facilitate the development of late-seral forest conditions. • Removal of dead, dying, diseased, or hazardous trees. • Management of fuel loads (e.g., fuel breaks, treatment of ladder fuels) to minimize the threat of catastrophic wildfire. • Treatment and/or removal of invasive species, notably French broom.				
MITIGATION FOR-2-3: Implement measures to protect retained trees/stands from construction damage. This would be based on a project-specific Tree Protection Plan to be prepared by an International Society of Arboriculture (ISA) Certified Arborist or Registered Professional Forester (RPF). The intent of the Plan is to minimize the potential for tree damage or mortality caused by construction-related activity. The Plan will address retained trees/stands adjacent to areas where soil disturbance is proposed and where tools or equipment have the potential for damaging tree roots and canopies. The Plan will include specific protection measures for the root zone, bole, and canopies of retained trees. The Plan will be consistent with ANSI A300 standards (ANSI 2012) for management and protection of trees during site development and construction activities and should include a construction monitoring and reporting component.	Implementation actions are outlined in the mitigation measure.	• City responsible for hiring qualified professional to prepare Tree Protection Plan in accordance with specifications in measure and construction monitoring and reporting. • Contractor is responsible for installing/maintaining tree protection measures during construction.	• Prior to construction for preparation of plan. • During construction for implementation of provisions in Tree Protection Plan and monitoring and reporting.	
MITIGATION FOR-2-4: Implement measures to minimize the potential for pathogen spread. Sanitize tools and equipment used in vegetation clearing (including tree removal) operations. If soil is collected on equipment, rinse equipment on site with a portable water tank or water truck, or at a designated rinsing station, to remove soil-borne pathogens and prevent transport to new sites. Implement additional prevention methods for SOD (University of California, 2010,	Implementation actions are outlined in the mitigation measure and the measure will be included as a construction specification.	• City responsible for inclusion of measure in Construction Specifications .Contractor is responsible for implementing during construction.	• Include measure in construction specs. • Implement during construction.	

Mitigation Measure	Implementation Actions	Monitoring / Reporting Responsibility	Timing Requirements	Reporting Requirements & Verification of Compliance
COMTF, 2014) and pitch canker (University of California, 2013). Inspect loads of logs and equipment leaving the site to ensure that no host material is being transported without a permit (if material is being transported to a location outside the SOD Regulated Area). If importing vegetative material for restoration purposes, ensure that material that has been produced in conformance with the latest horticultural standards in pest and disease avoidance and sanitation.				
Hazards and Hazardous Materials				
MITIGATION HAZ-1B-1 The City shall require testing of representative bedrock/soil spoil samples, to be exported offsite, in accordance with the acceptance criteria of the anticipated disposal facility.	Implementation actions are outlined in the mitigation measure.	• City responsible for inclusion of measure in Construction Specifications. • Contractor responsible for hiring qualified professional to test spoil samples and determine disposal location.	• Prior or disposal of excavated spoils. • Testing to be completed before off-site disposal.	
MITIGATION HAZ-1B-2 In the event that offsite disposal of spoils would occur at construction projects in the area, the City shall require testing of representative bedrock/soil spoil samples, to be exported offsite, in accordance with regulatory criteria with respect to reuse on other properties located off the Project site.	Implementation actions are outlined in the mitigation measure.	• City responsible for inclusion of measure in Construction Specifications. • Contractor responsible for hiring qualified professional to test spoil samples and determine disposal location.	• Prior or disposal of excavated spoils. • Testing to be completed before off-site disposal. .	
MITIGATION HAZ-2A-1 The City shall direct the contractor to wash out concrete trucks in a designated area, either on site or off site, where the material cannot run off into Loch Lomond Reservoir or Newell Creek. This area shall be specified on all applicable construction plans and be in place before any concrete is poured. The City shall direct the	Implementation actions are outlined in the mitigation measure, and measure, and the measure will be included as a construction specification.	• City responsible for inclusion of measure in Construction Specifications and periodic inspections during construction. • Contractor is responsible for implementing during	• Include measure in construction specs. • Implement during construction with periodic inspection. .	

Mitigation Measure	Implementation Actions	Monitoring / Reporting Responsibility	Timing Requirements	Reporting Requirements & Verification of Compliance
contractor to service construction vehicles in a manner that contains fluids, such as lubricants, within an impervious area to avoid spill-related water quality impacts.		construction.		
MITIGATION HAZ-2A-2 The City shall direct the contractor to inspect and, as necessary, service all equipment before it enters the construction site and regularly thereafter, and before working adjacent to the Loch Lomond Reservoir and Newell Creek, to avoid equipment leak-related water quality impacts. The City shall direct the contractor to repair any leaks or hoses/fittings in poor condition before the equipment begins operating.	Implementation actions are outlined in the mitigation measure, and measure, and the measure will be included as a construction specification.	• City responsible for inclusion of measure in Construction Specifications and periodic inspections during construction. • Contractor is responsible for implementing during construction.	• Include measure in construction specs. • Implement during construction with periodic inspection. .	
MITIGATION HAZ-2A-3 The City shall direct the contractor to prepare a spill contingency/containment plan prior to equipment use on the Project site, including in-reservoir and on the ground construction. The City shall direct the contractor to follow the spill contingency/ containment plan, which shall include, but not be limited to: a) Specific bermed equipment maintenance and refueling areas. b) Spill containment boom around the dredge. c) Bermed and lined hazardous materials storage areas on-site that are covered during the rainy season. d) Hazardous material spill cleanup equipment for onshore areas (e.g., absorbent pads, shovels, and bags to contain contaminated soil) and within the reservoir (e.g., skimmers, socks and boom, absorbent pads, dispersants). e) Workers trained in the location and use of cleanup equipment.	Implementation actions are outlined in the mitigation measure, and measure, and the measure will be included as a construction specification.	• City responsible for inclusion of measure in Construction Specifications. • City responsible for review of contractor spill contingency plan and periodic inspections during construction.. • Contractor is responsible for preparing and spill contingency plan and implementing during construction.	• Include measure in construction specs. • Implement during construction with periodic inspection. .	
MITIGATION HAZ-2B-1 The City shall direct the contractor to consult with an industrial hygienist to determine the	Implementation actions are outlined in the mitigation measure, and measure, and the	• City responsible for inclusion of measure in Construction Specifications.	• Include measure in construction specs.	

Mitigation Measure	Implementation Actions	Monitoring / Reporting Responsibility	Timing Requirements	Reporting Requirements & Verification of Compliance
appropriate level of personal protective equipment (PPE), if any, would be required for construction personnel during handling of Reservoir bottom sediments and participation in tunneling, excavating, stockpiling, and handling of on site bedrock and associated spoils. The contractor shall implement the recommendations by the industrial hygienist in order to minimize potential exposure of construction personnel to metals concentrations in bedrock/sediments during construction. All recommendations shall be completed in accordance with Occupational Safety and Health Administration (OSHA) Training Requirements (29 CFR 1910.132 and 1910.134, Subpart I – Personal Protective Equipment).	measure will be included as a construction specification.	• Contractor is responsible for implementation.	• Implement during construction. .	
Hydrology and Water Quality				
MITIGATION HYDRO-4-1 Develop and maintain construction access roads to minimize erosion and sediment generation in accordance with recommendations in the Draft Watershed Lands Management Plan, including, but not limited to: a) Install and maintain effective water bars and rolling drain dips. b) Maintain out-sloped roads wherever possible. c) Surface and/or resurface Project access roads with rock or other appropriate material to reduce erosion where road surface is visibly eroding and being transported off of the road, particularly where sediment can enter a watercourse. d) Reduce the use of inside ditches and culverts by installing rolling dips at appropriate intervals.	Implementation actions are outlined in the mitigation measure, and the measure will be included as a construction specification.	• City responsible for inclusion of measure in Construction Specifications. • Contractor is responsible for implementation.	• Include measure in construction specs. • Inspect roads during construction to ensure compliance. .	
MITIGATION HYDRO-4-2 Conduct field inspections of roads and drainage systems, including: a) Conduct field inspections prior to the rainy season, and during rainfall events greater than 2 inches, as	Implementation actions are outlined in the mitigation measure.	• City responsible for inclusion of measure in Construction Specifications. • Contractor responsible for	• Inspection timing is specified in the measure. .	

Mitigation Measure	Implementation Actions	Monitoring / Reporting Responsibility	Timing Requirements	Reporting Requirements & Verification of Compliance
needed. b) Clear road inlets, culverts, and other stream crossing structures of obstructions prior to and throughout the wet season.		inspections and clearing road inlets, culverts and other stream crossing structures as necessary.		
Project-Proposed Best Management Practices (BMPs)				
Erosion and Air Quality Control				
BMP-1. Implement erosion control Best Management Practices (BMPs) for all construction activities occurring in or adjacent to jurisdictional aquatic resources, including the Reservoir, spillway, spillway plunge pool, Newell Creek, ephemeral drainage, and undisturbed wetlands. These measures may include, but are not limited to: (1) installation of silt fences, fiber rolls, and/or bales along limits of work/construction areas and from the edge of the water course; (2) covering of stockpiled spoils; (3) re-vegetation and physical stabilization of disturbed graded and staging areas; and (4) sediment control including fencing, dams, barriers, berms, traps, and associated basins.	Implementation actions are outlined in the BMP, which will be included as a Construction Specification.	• City responsible for inclusion of measure in Construction Specifications and periodic inspection. • Contractor is responsible for implementation.	• Include measure in construction specs. • Implement during construction. • Pre-construction inspection to confirm measures are in place. • Periodic inspection during construction to ensure no violations.	
BMP-2. Provide stockpile containment and exposed soil stabilization structures (e.g., Visqueen plastic sheeting, fiber rolls, gravel bags, and/or hydroseed).	Implementation actions are outlined in the BMP, which will be included as a Construction Specification.	• City responsible for inclusion of measure in Construction Specifications and periodic inspection. • Contractor is responsible for implementation.	• Include measure in construction specs. • Implement during construction. • Pre-construction inspection to confirm measures are in place. • Periodic inspection during construction to ensure no violations.	
BMP-3. Provide runoff control devices (e.g., fiber rolls, gravel bag barriers/chevrons, etc.) used during construction phases conducted during the rainy season,	Implementation actions are outlined in the BMP, which will be included as a Construction	• City responsible for inclusion of measure in Construction Specifications, per-construction inspections, and periodic	• Include measure in construction specs. • Implement during construction.	

Mitigation Measure	Implementation Actions	Monitoring / Reporting Responsibility	Timing Requirements	Reporting Requirements & Verification of Compliance
	Specification.	inspections. • . Contractor is responsible for implementation.	• Pre-construction inspection to confirm measures are in place. • Periodic inspection during construction to ensure no violations.	
BMP-4. Implement wind erosion (dust) controls, including: • Use of a water truck. • Use of a water truck. • Water active construction areas as necessary to control fugitive dust. • Hydro seed and/or apply non-toxic soil binders to exposed areas after cut and fill operations. • Cover inactive storage piles. • Cover all trucks hauling dirt, sand, or loose materials off site. • Install appropriately effective track-out capture methods at the construction site for all existing trucks.	Implementation actions are outlined in the BMP, which will be included as a Construction Specification.	• City responsible for inclusion of measure in Construction Specifications. • Contractor is responsible for implementation.	• Include measure in construction specs. • Implement during construction. • Pre-construction inspection to confirm measures are in place. • Periodic inspection during construction to ensure no violations.	
BMP-5. Limit level of road use, including: • Limit road use based on road conditions, surfacing, cumulative rainfall, and saturation. • Close roads seasonally and as needed to prevent excessive erosion and sedimentation. • Restrict access on low-use roads with gates or other barriers.	Implementation actions are outlined in the BMP, which will be included as a Construction Specification.	• City responsible for inspections and imposition of use restrictions, if necessary.	• Implement during construction. • Periodic inspection during construction to ensure no violations.	
Water Quality				
BMP-6. Utilize sediment curtains, silt fences and/or coffer dams where construction activities could cause sediment to enter Newell Creek. These measures would be placed at the perimeter of the construction zone to prevent sediment disturbed during excavation/grading activities from being transported and deposited outside of the construction zone. Silt fencing would be	Implementation actions are outlined in the BMP, which will be included as a Construction Specification.	• City responsible for inclusion of measure in Construction Specifications and pre-construction and periodic inspections. • Contractor is responsible for	• Include measure in construction specs. • Implement during construction. • Pre-construction	

Mitigation Measure	Implementation Actions	Monitoring / Reporting Responsibility	Timing Requirements	Reporting Requirements & Verification of Compliance
installed in upland areas based on topography and where construction occurs within 50 feet of Newell Creek or tributaries.		implementation.	inspection to confirm measures are in place. • Periodic inspection during construction to ensure no violations.	
BMP-7. Silt curtains or silt screens shall be employed during dredging and disposal activities in the Reservoir to isolate the dredged material and maintain water quality elsewhere in the Reservoir in compliance with Central Coast RWQCB Basin Plan objectives. The silt curtains shall be designed and installed without holes in which pond turtles could become trapped. Silt curtains will encompass the in-reservoir work area and extend from the water surface to the bed of the reservoir.	Implementation actions are outlined in the BMP, which will be included as a Construction Specification.	• City responsible for inclusion of measure in Construction Specifications and pre-construction and periodic inspections. • Contractor is responsible for implementation.	• Include measure in construction specs. • Implement during construction. • Pre-construction inspection to confirm measures are in place. • Periodic inspection during construction to ensure no violations.	
BMP-8. Spoil disposal sites and other debris areas such as concrete wash sites shall be located, stabilized, and sediment control measures implemented so that sediment is not conveyed to Newell Creek.	Implementation actions are outlined in the BMP, which will be included as a Construction Specification.	• City responsible for inclusion of measure in Construction Specifications and pre-construction and periodic inspections. • Contractor is responsible for implementation.	• Include measure in construction specs. • Implement during construction. • Pre-construction inspection to confirm measures are in place. • Periodic inspection during construction to ensure no violations.	
BMP-9. Minimize potential for hazardous spills from heavy equipment by not storing equipment or fueling within a minimum of 65 feet of the active stream channel or water body unless approved by permitting agencies along with implementation of additional spill prevention methods such as secondary containment and inspection	Implementation actions are outlined in the BMP, which will be included as a Construction Specification.	• City responsible for inclusion of measure in Construction Specifications and pre-construction and periodic inspections. • Contractor is responsible for implementation.	• Include measure in construction specs. • Implement during construction. • Pre-construction inspection to confirm	

Mitigation Measure	Implementation Actions	Monitoring / Reporting Responsibility	Timing Requirements	Reporting Requirements & Verification of Compliance
			measures are in place. • Periodic inspection during construction to ensure no violations.	
BMP-10. Other than watercraft, heavy equipment (such as cranes) for loading water craft, barges, and in-reservoir equipment that cannot be readily removed from the Reservoir, no equipment fueling or servicing shall be done in the Reservoir, or within 50 feet of the Reservoir boundary.	Implementation actions are outlined in the BMP, which will be included as a Construction Specification.	• City responsible for inclusion of measure in Construction Specifications and pre-construction and periodic inspections. • Contractor is responsible for implementation.	• Include measure in construction specs. • Implement during construction. • Periodic inspection during construction to ensure no violations.	
BMP-11. Ensure that gas, oil, or any other substances that could be hazardous to aquatic life or pollute habitat are prevented from contaminating the soil and/or entering waters of the state and/or waters of the United States by storing these types of materials within an established containment area. Vehicles and equipment would have spill kits available, be checked daily for leaks, and would be properly maintained to prevent contamination of soil or water from external grease and oil or from leaking hydraulic fluid, fuel, oil, and grease. Any gas, oil, or other substance that could be considered hazardous provided on the barge, shall be stored in water-tight containers with secondary containment. Emergency spill kits shall be onsite at all times.	Implementation actions are outlined in the BMP, which will be included as a Construction Specification.	• City responsible for inclusion of measure in Construction Specifications and pre-construction and periodic inspections. • Contractor is responsible for implementation.	• Include measure in construction specs. • Implement during construction. • Pre-construction inspection to confirm measures are in place. • Periodic inspection during construction to ensure no violations.	
BMP-12. Prevent equipment fluid leaks through regular equipment inspections.	Implementation actions are outlined in the BMP, which will be included as a Construction Specification.	• City responsible for inclusion of measure in Construction Specifications and periodic inspection. • Contractor is responsible for implementation.	• Include measure in construction specs. • Implement during construction. • Periodic inspection during construction to ensure no violations.	

Mitigation Measure	Implementation Actions	Monitoring / Reporting Responsibility	Timing Requirements	Reporting Requirements & Verification of Compliance
BMP-13. Tremie-placed concrete shall contain an anti-washout admixture and shall be placed in an area isolated from the main area of the reservoir or stream by a silt curtain or other means. Other fresh concrete shall be isolated from wetted channels for a period of 30 days after it is poured. If a 30-day curing period is not feasible, a concrete sealant as approved by NMFS and CDFW may be applied to the surfaces of the concrete structure. If a sealant is used, the manufacturer's guidelines for drying times would be followed before re-establishing surface flows within the work area.	Implementation actions are outlined in the BMP, which will be included as a Construction Specification.	• City responsible for inclusion of measure in Construction Specifications and pre-construction and periodic inspections. • Contractor is responsible for implementation.	• Include measure in construction specs. • Implement during construction. • Pre-construction inspection to confirm measures are in place. • Periodic inspection during construction to ensure no violations.	
BMP-14. Implement proper waste/trash management.	Implementation actions are outlined in the BMP, which will be included as a Construction Specification.	• City responsible for inclusion of measure in Construction Specifications and pre-construction and periodic inspection during implementation. • Contractor is responsible for implementation.	• Include measure in construction specs. • Implement during construction. • Pre-construction inspection to confirm measures are in place. • Periodic inspection during construction to ensure no violations. •	
In-Channel Work-Fish Species Protection				
BMP-15. Activities in the active (i.e., flowing) channel will be avoided whenever possible. If activities must be conducted in the active channel, best management practices #16, 17, and 21-27 shall be applied.	Implementation actions are outlined in the BMP, which will be included as a Construction Specification.	• City responsible for inclusion of measure in Construction Specifications and periodic inspection during implementation. • Contractor is responsible for implementation.	• Include measure in construction specs. • Implement during construction. • Periodic inspection during construction to ensure no violations.	
BMP-16. Isolate work areas as needed and bypass flowing water around work site (see dewatering measures below).	Implementation actions are outlined in the BMP, which will be included as a Construction	• City responsible for inclusion of measure in Construction Specifications and periodic	• Include measure in construction specs.	

Mitigation Measure	Implementation Actions	Monitoring / Reporting Responsibility	Timing Requirements	Reporting Requirements & Verification of Compliance
	Specification.	inspection during implementation. • Contractor is responsible for implementation.	• Implement during construction. • Pre-construction inspection to confirm measures are in place. • Periodic inspection during construction to ensure no violations.	
BMP-17. Personnel shall use the appropriate equipment for the job that minimizes disturbance to the channel bed and banks. Appropriately-tired vehicles, either tracked or wheeled, shall be used depending on the situation.	Implementation actions are outlined in the BMP, which will be included as a Construction Specification.	• City responsible for inclusion of measure in Construction Specifications and periodic inspection during implementation. • Contractor is responsible for implementation.	• Include measure in construction specs. • Implement during construction. • Periodic inspection during construction to ensure no violations.	
General Habitat Protection				
BMP-18. When working in or adjacent to the active stream channel (i.e., construction of the culvert crossing and NCP crossing), avoid disturbance of retained riparian vegetation to the maximum extent practicable.	Implementation actions are outlined in the BMP, which will be included as a Construction Specification.	• City responsible for inclusion of measure in Construction Specifications and periodic inspection during implementation • Contractor is responsible for implementation.	• Include measure in construction specs. • Implement during construction. • Periodic inspection during construction to ensure no violations.	
BMP-19. Restore all temporarily disturbed natural communities/areas by replanting native vegetation using a vegetation mix appropriate for the site.	Implementation actions are outlined in the BMP	• City responsible for replanting.	• Upon completion of construction.	
BMP-20. Require decontamination of any vessels, including tools and equipment, prior to entering the Reservoir and Newell Creek, to prevent introduction of invasive species into the Reservoir.	Implementation actions are outlined in the BMP, which will be included as a Construction Specification.	• City responsible for inclusion of measure in Construction Specifications and periodic inspection during	• Include measure in construction specs. • Implement during construction.	

Mitigation Measure	Implementation Actions	Monitoring / Reporting Responsibility	Timing Requirements	Reporting Requirements & Verification of Compliance
		implementation. • Contractor is responsible for implementation.	• Periodic inspection during construction to ensure no violations.	
Dewatering				
BMP-21. Prior to the start of work or during the installation of water diversion structures, native aquatic vertebrates shall be captured in the work area and transferred to another reach as determined by a qualified biologist. Capture and relocation of aquatic native vertebrates is not required at individual project sites when site conditions preclude reasonably effective operation of capture gear and equipment, or when the safety of the biologist conducting the capture may be compromised.	Implementation actions are outlined in the BMP, which.	• City responsible for hiring qualified biologist to be present during dewatering and to implement capture and relocation plan if needed.	• Biologist to be present during installation of coffer dam and dewatering.	
BMP-22. When work in a flowing stream is unavoidable, the work area will be isolated from the stream. This may be achieved by diverting the entire streamflow around the work area by a pipe or open channel. Coffer dams shall be installed both upstream and downstream of the work areas at locations determined suitable based on site specific conditions, including proximity to the construction zone and type of construction activities being conducted. Coffer dam construction shall be adequate to prevent seepage to the maximum extent feasible into or from the work area. Where feasible, water diversion techniques shall allow stream flows to gravity flow around or through the work site. If gravity flow is not feasible, stream flows may be pumped around the work site using pumps and screened intake hoses. Sumps or basins may also be used to collect water, where appropriate (e.g., in channels with low flows). The work area will remain isolated from flowing water until any necessary erosion protection is in place. All water shall be discharged in a non-erosive manner (e.g. gravel or vegetated bars, on hay bales, on plastic, on concrete, or in storm drains when equipped with filtering devices, etc.).	Implementation actions are outlined in the BMP, which will be included as a Construction Specification.	• City responsible for inclusion of measure in Construction Specifications and periodic inspection during implementation. • Contractor is responsible for implementation.	• Include measure in construction specs. • Implement during construction when work in flowing stream is unavoidable. • Pre-construction inspection to confirm measures are in place. • Periodic inspection during construction to ensure no violations.	

Mitigation Measure	Implementation Actions	Monitoring / Reporting Responsibility	Timing Requirements	Reporting Requirements & Verification of Compliance
BMP-23. If a bypass will be of open channel design, the berm confining the channel may be constructed of material from the channel.	Implementation actions are outlined in the BMP, which will be included as a Construction Specification.	• City responsible for inclusion of measure in Construction Specifications. • Contractor is responsible for implementation, if needed.	• Include measure in construction specs. • Implement during construction if needed.	
BMP-24. Diversions shall maintain ambient flows below the diversion, and waters discharged below the project site shall not be diminished or degraded by the diversion. All imported materials placed in the channel to dewater the channel shall be removed when the work is completed. Dirt, dust, or other potential discharge material in the work area will be contained and prevented from entering the flowing channel. Normal flows shall be restored to the affected stream as soon as is feasible and safe after completion of work at that location.	Implementation actions are outlined in the BMP, which will be included as a Construction Specification.	• City responsible for inclusion of measure in Construction Specifications. • Contractor is responsible for implementation. • City is responsible for periodic and post-construction inspection to ensure all imported materials are removed.	• Include measure in construction specs. • Implement during construction. • Periodic inspection to confirm compliance with the measure. • Post-construction inspection.	
BMP-25. To the extent that stream bed design changes are not part of the project, the stream bed, including any low-flow channel, will be returned to as close to pre-project condition as possible unless the pre-existing condition was detrimental to channel condition as determined by a qualified biologist or hydrologist.	Implementation actions are outlined in the BMP, which will be included as a Construction Specification.	• City responsible for inclusion of measure in Construction Specifications. • Contractor is responsible for implementation. • City is responsible for post-construction inspection	• Include measure in construction specs. • Implement during construction. • Post-construction inspection.	
BMP-26. All temporary diversion structures and the supportive material shall be removed as soon as reasonably possible, but no more than 72 hours after work is completed.	Implementation actions are outlined in the BMP, which will be included as a Construction Specification.	• City responsible for inclusion of measure in Construction Specifications. • Contractor is responsible for implementation. • City is responsible for post-construction inspection to ensure all imported materials are removed.	• Include measure in construction specs. • Implement during construction. • Post-construction inspection.	

Mitigation Measure	Implementation Actions	Monitoring / Reporting Responsibility	Timing Requirements	Reporting Requirements & Verification of Compliance
BMP-27. Temporary fills, such as for access ramps, diversion structures, or cofferdams, shall be completely removed upon finishing the work.	Implementation actions are outlined in the BMP, which will be included as a Construction Specification.	• City responsible for inclusion of measure in Construction Specifications. • Contractor is responsible for implementation. • City is responsible for post-construction inspection to ensure all imported materials are removed.	• Include measure in construction specs. • Implement during construction. • Post-construction inspection.	
Others				
BMP-28. In the event that archaeological resources (sites, features, or artifacts) are exposed during construction activities for the proposed Project, all construction work occurring within 100 feet of the find shall immediately stop until a qualified archaeologist, meeting the Secretary of the Interior's Professional Qualification Standards, can evaluate the significance of the find. The archaeologist will determine whether additional study is warranted. Should it be required, the archaeologist may install temporary flagging around a resource to avoid any disturbances from construction equipment. Depending upon the significance of the find under CEQA (14 California Code of Regulations Section 15064.5(f); Public Resources Code Section 21082), the archaeologist may record the find to appropriate standards (thereby addressing any data potential) and allow work to continue. If the archaeologist observes the discovery to be potentially significant under CEQA, additional treatment may be required.	Implementation actions are outlined in the BMP, which will be included as a Construction Specification.	• City responsible for inclusion of measure in Construction Specifications. • Contractor is responsible for implementation.	• Include measure in construction specs. • Implement during construction.	
BMP-29. In accordance with Section 7050.5 of the California Health and Safety Code, if potential human remains are found, the lead agency staff and the County Coroner must be immediately notified of the discovery. The coroner would	Implementation actions are outlined in the BMP, which will be included as a Construction Specification.	• City responsible for inclusion of measure in Construction Specifications. • Contractor is responsible for	• Include measure in construction specs. • Implement during construction.	

Mitigation Measure	Implementation Actions	Monitoring / Reporting Responsibility	Timing Requirements	Reporting Requirements & Verification of Compliance
provide a determination within 48 hours of notification. No further excavation or disturbance of the identified material, or any area reasonably suspected to overlie additional remains, can occur until a determination has been made. If the County Coroner determines that the remains are, or are believed to be, Native American, the coroner would notify the Native American Heritage Commission (NAHC) within 24 hours. In accordance with Public Resources Code Section 5097.98, the NAHC must immediately notify those persons it believes to be the Most Likely Descendant (MLD) from the deceased Native American. Within 48 hours of this notification, the MLD would recommend to the lead agency her/his preferred treatment of the remains and associated grave goods.		implementation.		
BMP-30. Notify adjacent property owners of nighttime construction schedules. A "Construction Noise Coordinator" will be identified. The contact number for the Construction Noise Coordinator will be included on notices distributed to neighbors regarding planned nighttime construction activities. The Construction Noise Coordinator will be responsible for responding to any local complaints about construction noise. When a complaint is received, the Construction Noise Coordinator shall notify the City within 48 hours of the complaint, determine the cause of the noise complaint, and implement as possible reasonable measures to resolve the complaint, as deemed acceptable by the City.	Implementation actions are outlined in the mitigation measure, and the measure will be included as a Construction Specification.	• City responsible for inclusion of measure in Construction Specifications. • Contractor is responsible for implementation.	• Include measure in construction specs. • Implement during construction. .	
BMP-31. A qualified biologist shall conduct a training-educational session for project construction personnel prior to any mobilization-construction activities within the Project site to inform personnel about species that may be present. The training shall consist of basic identification of special status species that may occur on or near the Project site and their habitat, their basic habits, how they may be encountered in the	Implementation actions are outlined in the mitigation measure.	City responsible for hiring qualified biologist or trained designee to conduct monitoring.	Implement at the onset of mobilization-construction and when new construction personnel arrive at the site.	

Mitigation Measure	Implementation Actions	Monitoring / Reporting Responsibility	Timing Requirements	Reporting Requirements & Verification of Compliance
work area, and procedures to follow when they are encountered. The training will include a description of the project boundaries; general provisions of the Migratory Bird Treaty Act, California Fish and Game Code, and federal and state Endangered Species Acts; the necessity for adhering to the provision of these regulations; and general measures for the project to protect special-status species, including breeding birds and their nests. Any personnel joining the work crew later shall receive the same training before beginning work.				

Table 9-1: Summary of Mitigation Sequence

Mitigation – BMP Number	Activity	City				Notes
		City Staff or Representative	Biologist	Other Monitor	Contractor	
1. Include in Construction Specifications						City staff review specs
BIO-1A-1	Calendar Restrictions on work in creek-only June 15-Nov 1	✓				
BIO-1C-1	Installation of special-status species exclusion fencing	✓				Locations determined by biologist
BIO-2-1	Installation of riparian vegetation protective fencing	✓				Locations determined by biologist
BIO-3-3	Installation of protective fencing for jurisdictional aquatic resources not impacted	✓				Locations determined by biologist
FOR-2-3	Protection of retained trees as specified in Tree Protection Plan	✓				
FOR-2-44	Prevent spread of plant pathogens.	✓				
HAZ-1B-1	Spoils testing	✓				
HAZ-1B-2	Spoils testing	✓				
HAZ-2A-1	Concrete truck washout area location/containment specification	✓				
HAZ-2A-2	Equipment servicing requirements	✓				
HAZ-2A-3	Prepare and implement spill contingency/containment plan	✓				
HAZ-2B-1	Determine protective equipment requirements for workers	✓				
HYDRO-4-1	Develop/maintain construction access roads to minimize erosion	✓				
HYDRO-4-2	Field inspection of roads and drainage system	✓				
BMP-1	Erosion control	✓				
BMP-2	Stockpile containment	✓				
BMP-3	Erosion control measures during rainy period.	✓				
BMP-4	Dust controls	✓				
BMP-5	Limit level of road use	✓				
BMP-6	Newell Creek water quality protection measures	✓				
BMP-7	Reservoir water quality protection measures	✓				
BMP-8	Storage of spoils and other materials	✓				
BMP-9	Creek setbacks for fueling areas	✓				
BMP-10	Reservoir setbacks for fueling areas	✓				
BMP-11	Hazardous material storage	✓				
BMP-12	Prevent equipment leaks	✓				
BMP-13	Concrete controls	✓				
BMP-14	Trash management	✓				
BMP-15	Avoid activities in channel	✓				
BMP-16	In-channel controls	✓				
BMP-17	Appropriate equipment use in channel	✓				
BMP-18	Avoid disturbance to retained riparian vegetation	✓				
BMP-20	Decontamination of vessels	✓				

Table 9-1: Summary of Mitigation Sequence

Mitigation – BMP Number	Activity	City				Notes
		City Staff or Representative	Biologist	Other Monitor	Contractor	
BMP-22	Coffer dam specs	✓				
BMP-23	Bypass specification	✓				
BMP-24	Bypass flows, removal of imported materials, and channel restoration	✓				
BMP-25	Restore channel conditions	✓				
BMP-26, 27	Removal in-stream structures and temporary fill	✓				
BMP-28, 29	Archaeological resources provisions if discovered during construction	✓				
BMP-30	Noise Coordinator	✓				
2. Pre-construction Plans and Approvals						
BIO-1A-2	Fish-Aquatic Species Rescue and Relocation Plan	✓				
BIO-1B-1	Fish Relocation and Rescue Plan – approved with ACOE permit	✓				
BIO-1C-2	CDFW-approved biologists for relocation; western pond turtle	✓	✓			
BIO-1C-3, 4	CDFW-approved biologists for relocation-salamanders	✓	✓			
BIO-1C-5	CDFW approved woodrat nest removal if nests found	✓	✓			Only if nests are found
BIO-1D-1	Plant mitigation plan if plants found during blooming season	✓	✓			Only if woodland woollythreads are found
BIO-2-2	Riparian mitigation plan – approved as part of permits	✓	✓			
BIO-2-2, 3-1	Review final plans for avoidance of riparian and wetland areas unless approved under permits	✓				
BIO-3-2	Jurisdictional aquatic resources mitigation plan – approved as part of permits	✓	✓			
BIO-8-1	Turbidity Monitoring Plan	✓				
CUL-5-1	Paleontological Resources Impact Mitigation Program	✓				
FOR-2-3	Tree Protection Plan	✓				
HAZ-2A-3	Spill Contingency/containment Plan				✓	
HAZ-2B-1	Determine PPE requirements				✓	
3. Pre-construction Biological Surveys and/or Reviews						City or designee to hire qualified biologist
BIO-1B-1	FYLF pre-construction survey	✓	✓			Begin in spring 2019
BIO-1C-1	Determine location of special-status species exclusion fencing	✓	✓			
BIO-1C-2	Western pond pre-construction survey; potential relocation	✓	✓			5 days - At sites specified in MM
BIO-1C-3	SC black salamander pre-construction survey	✓	✓			48 hours
BIO-1C-4	Calif giant salamander pre-construction survey	✓	✓			48 hours
BIO-1C-5	SF dusky-footed woodrat preconstruction survey	✓	✓			15 days – tree trimming/removal
BIO-1C-6	Special status bats pre-construction survey and buffer recommendations, if needed	✓	✓			

Table 9-1: Summary of Mitigation Sequence

Mitigation – BMP Number	Activity	City				Notes
		City Staff or Representative	Biologist	Other Monitor	Contractor	
BIO-1D-1	Protocol woolythreads plant survey and mitigation requirements if needed	✓	✓			Staging Areas 5-7 during blooming March-July
BIO-2-1	Determine location of riparian vegetation protective fencing	✓	✓			
BIO-3-3	Determine location of jurisdictional aquatic resources fencing	✓	✓			
BIO-4-1	Pre-construction nesting bird survey	✓	✓			Feb 1-Aug 31 for tree removal, ground disturbance
BIO-4-2	Bald eagle pre-construction survey and construction recommendations if necessary	✓	✓			Feb-July for tree removal, ground disturbance
4. Installation Prior to Construction Start						
BIO-1C-1	Installation of special-status species exclusion fencing		✓		✓	Locations determined by biologist
BIO-1C-5	Removal of woodrat nests if found		✓			
BIO-2-1	Installation of riparian vegetation protective fencing		✓		✓	Locations determined by biologist
BIO-3-3	Installation of jurisdictional aquatic resource protective fencing		✓		✓	Locations determined by biologist
HAZ-2A-1	Concrete wash-out area in place				✓	Prior to concrete being poured
HYDRO-4-1	Construction access road installation/inspection				✓	
BMP-1	Erosion control fences, fiber rolls or bales				✓	
BMP-6 & 7	Newell Creek and Reservoir water quality protection measures				✓	
5. Pre-construction Trainings/Inspections						
CUL-5-1	Paleontological worker training	✓		✓		Training as specified in measure
BMP-31	Worker biological training	✓	✓			Training as specified in measure
HYDRO-4-2	Field inspection of roads and drainage system			✓		Pre-construction inspection
BMP-1	Erosion control in place inspection			✓		Pre-construction inspection
BMP-2	Stockpile containment in place			✓		Pre-construction inspection
BMP-3	Erosion control measures during rainy period.			✓		Pre-construction inspection
BMP-4	Dust controls			✓		Pre-construction inspection
BMP-6	Newell Creek water quality protection measures-silt curtain in place			✓		Pre-construction inspection
BMP-7	Reservoir water quality protection measures-silt curtain in place			✓		Pre-construction inspection
BMP-8	Storage of spoils and other materials sites – sediment control measures in place			✓		Pre-construction inspection
BMP-9	Creek setbacks for fueling areas			✓		Pre-construction inspection
BMP-11	Hazardous material storage sites contained and spill kits onsite			✓		Pre-construction inspection
BMP-13	Concrete controls in place			✓		Pre-construction inspection
BMP-14	Trash management measures in place			✓		Pre-construction inspection
BMP-16	In-channel controls			✓		Pre-construction inspection
BMP-22	Coffer dam installation			✓		Pre-construction inspection

Table 9-1: Summary of Mitigation Sequence

Mitigation – BMP Number	Activity	City				Notes
		City Staff or Representative	Biologist	Other Monitor	Contractor	
6. Implement During Construction						
BIO-1A-1	No work in creek channel except June 15-Nov 1				✓	
FOR-2-3	Protection of retained trees as specified in Tree Protection Plan				✓	
FOR-2-4	Measures to prevent spread of plant pathogens				✓	
HAZ-1B-1	Excavated spoils soil testing before off-site disposal				✓	
HAZ-1B-2	Excavated spoils soil testing before off-site disposal				✓	
HAZ-2A-1	Utilize concrete wash-out areas				✓	
HAZ-2A-2	Equipment inspection and servicing				✓	
HAZ-2A-3	Spill contingency/containment plan measures onsite/in place				✓	
HAZ-2B-1	Worker protective equipment				✓	
HYDRO-4-1	Access road construction to minimize erosion				✓	
BMP-1	Erosion control				✓	
BMP-2	Stockpile containment				✓	
BMP-3	Erosion control measures during rainy periods				✓	
BMP-4	Dust controls				✓	
BMP-5	Road use restrictions/controls as needed during rainy season	✓				
BMP-6	Newell Creek water quality protection measures				✓	
BMP-7	Reservoir water quality protection measures				✓	
BMP-8	Storage of spoils and other materials				✓	
BMP-9	Creek setbacks for fueling areas				✓	
BMP-10	Reservoir setbacks for fueling areas				✓	
BMP-11	Hazardous material storage				✓	
BMP-12	Prevent equipment leaks				✓	
BMP-13	Concrete controls				✓	
BMP-14	Trash management				✓	
BMP-15	Avoid activities in channel				✓	
BMP-16	In-channel controls				✓	
BMP-17	Appropriate equipment use in channel				✓	
BMP-18	Avoid disturbance to retained riparian vegetation				✓	
BMP-20	Decontamination of vessels				✓	
BMP-22	Coffer dam specs				✓	
BMP-23	Bypass specification				✓	
BMP-24	Bypass flows, removal of imported materials				✓	
BMP-25	Restore channel conditions				✓	

Table 9-1: Summary of Mitigation Sequence

Mitigation – BMP Number	Activity	City				Notes
		City Staff or Representative	Biologist	Other Monitor	Contractor	
BMP-26, 27	Removal in-stream structures and temporary fill				✓	
BMP-28, 29	Archaeological resources provisions if discovered during construction				✓	
BMP-30	Notify property owners of night construction schedules; identify Construction Noise Coordinator	✓				
BMP-31	Worker biological training	✓	✓			Training for new personnel
7. Construction Biological Monitoring						
BIO-1A-2	Biologist present during dewatering; fish relocation		✓			During dewatering
BIO-1B-1	FYLF daily monitoring-creek, spillway, seepage channel		✓			Daily, March - Sept
BIO-1C-3	SC black salamander daily monitoring; possible relocation		✓			Daily, during initial ground disturbance
BIO-1C-4	Calif giant salamander		✓			Daily, during initial ground disturbance
BMP-21	Aquatic vertebrates capture and relocation		✓			Prior to installation of creek coffer dams
8. Construction Monitoring						
BIO-1A-1	No work in creek except June 15-Nov 1			✓		Periodic inspection
BIO-1C-1	Inspect exclusion fencing		✓			Periodic inspection
BIO-2-1	Inspect riparian and jurisdictional protective fencing		✓			Periodic inspection
BIO-3-3	Inspect riparian and jurisdictional protective fencing		✓			Periodic inspection
BIO-8-1	Turbidity sampling				✓	Per Turbidity Monitoring Plan
CUL-5-1	Paleontological monitoring			✓		Spot check once a week for 5 weeks during staging area excavation, for 2 days during first week of tunnel excavation, and several intermittent checks thereafter
FOR-2-3	Tree protection monitoring			✓		Per tree protection plan
HAZ-2A-1	Concrete truck washout area location/containment			✓		Periodic inspection
HAZ-2A-2	Verify equipment inspection			✓		Periodic inspection
HAZ-2A-3	Verify spill contingency plan implementation			✓		Periodic Inspection
HYDRO-4-1	Inspect access roads to verify erosion minimization			✓		Periodic inspection
HYDRO-4-2	Roads and drainage inspections and maintenance				✓	Prior to rainy season and during rainfall events greater than 2 inches
BMP-1	Erosion control measures in place			✓		Periodic Inspection
BMP-2	Stockpile containment in place			✓		Periodic inspection
BMP-3	Runoff controls in place			✓		Periodic Inspection
BMP-5	Access road condition			✓		Periodic inspection
BMP-6, 7	Newell Creek and Reservoir water quality protection measures			✓		Periodic Inspection
BMP-8	Spoils disposal sites contained			✓		Periodic inspection
BMP-9, 10	Setbacks maintained for storage of heavy equipment			✓		Periodic inspection

Table 9-1: Summary of Mitigation Sequence

Mitigation – BMP Number	Activity	City				Notes
		City Staff or Representative	Biologist	Other Monitor	Contractor	
BMP-11	Hazardous material storage			✓		Periodic inspection
BMP-12	Prevent equipment leaks			✓		Periodic Inspection
BMP-13	Concrete controls			✓		Periodic inspection
BMP-14	Trash management			✓		Periodic inspection
BMP-15	Avoid activities in channel			✓		Periodic inspection
BMP-16	In-channel controls			✓		Periodic Inspection
BMP-17	Appropriate equipment use in channel			✓		Periodic inspection
BMP-18	Avoid disturbance to retained riparian vegetation			✓		Periodic inspection
BMP-22	Coffer dam in place			✓		Periodic Inspection
BMP-23	Bypass specification			✓		Periodic inspection
BMP-24	Bypass flows, removal of imported materials			✓		Periodic inspection
9. Post-Construction Measures						
FOR-2-1	Replant trees in temporarily disturbed areas where planting would meet goals of Draft Watershed Lands Management Plan	✓				Prepare planting plan prior to completion of construction
FOR-2-2	Implement forest management measures as specified	✓				
BMP-19	Replanting disturbed natural communities	✓				
BMP-24, 25	Restore in-channel conditions				✓	
BMP-26	Removal temporary channel structures				✓	Within 72 hours of completion of in-channel work
BMP-27	Remove temporary fill				✓	
10. Long-Term Implementation						
BIO-2-2	Riparian mitigation plan implementation	✓				
BIO-3-2	Wetland mitigation plan implementation	✓				