

8 Alternatives

This chapter describes alternatives to the proposed Santa Cruz Water Rights Project (Proposed Project), consistent with California Environmental Quality Act (CEQA) Guidelines Section 15126.6. This chapter presents the objectives of the Proposed Project, a summary of its significant environmental impacts, and a description of the alternatives that were considered but eliminated from further consideration, followed by an analysis of the four alternatives evaluated, including the No Project Alternative. A comparison of the four alternatives to the Proposed Project is provided and the environmentally superior alternative is identified.

According to CEQA Guidelines Section 15126.6, an environmental impact report (EIR) shall describe a range of reasonable alternatives to the project or to the location of the project, that would feasibly attain most of the basic objectives of the project and could avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives. This section of the guidelines further requires 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 reasonable 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 while substantially lessening any of the significant effects 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 (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. Under CEQA case law, the concept of feasibility also “encompasses ‘desirability’ to the extent that desirability is based on a reasonable balancing of the relevant economic, environmental, social, and technological factors.” (*City of Del Mar v. City of San Diego* [1982] 133 Cal.App.3d 410, 417; *California Native Plant Society v. City of Santa Cruz* [2009] 177 Cal.App.4th 957.) In assessing the feasibility of alternatives, agency decisionmakers may also take account of the extent to which the alternatives meet or further the agency’s underlying purpose or objectives in considering a proposed project. (*Sierra Club v. County of Napa* [2004] 121 Cal.App.4th 1490, 1506-1509; *Citizens for Open Government v. City of Lodi* [2012] 296 Cal.App.4th 296, 314-315; *In re Bay-Delta Programmatic Environmental Impact Report Coordinated Proceedings* [2008] 43 Cal.4th 1143, 1165, 1166.)

8.1 Project Objectives

As described above, alternatives considered in the EIR should be feasible, and should attain most of the basic project objectives. The project objectives, identified in Chapter 3, Project Description, of this EIR are as follows:

1. Improve the flexibility with which the City operates the water system to facilitate the City's ability to meet drinking water demand while providing flow conditions protective of coho and steelhead.
2. Provide flow conditions that are protective of coho and steelhead within all streams from which the City diverts water, as negotiated with the California Department of Fish and Wildlife (CDFW) and the National Marine Fisheries Service (NMFS) during the preparation of the pending Anadromous Salmonid Habitat Conservation Plan (ASHCP), which is the habitat conservation plan being developed under the federal Endangered Species Act (FESA) and California Endangered Species Act (CESA).
3. To improve the City's limited storage and support the implementation of the City's Water Supply Augmentation Strategy Element 1 (passive recharge of regional aquifers via water transfers and exchanges) and Element 2 (active recharge of regional aquifers via aquifer storage and recovery [ASR]) in order to deliver a safe, adequate, reliable and environmentally sustainable water supply.
4. Facilitate opportunities within the City and regionally for conjunctive use¹ of the City's surface water rights in combination with groundwater, including by addressing significant barriers to implementing conjunctive use due to the place of use associated with the City's water-right permits and licenses to, among other things, assist in implementation of the "Water Transfers/In Lieu Groundwater Recharge" element of the Santa Cruz Mid-County Groundwater Basin Groundwater Sustainability Plan.
5. Provide more options for where and how the City can utilize its existing appropriative water rights.
6. Provide for the underground storage of surface water primarily to support more reliable and improved water supply by allowing the City to use such stored water during dry periods and also to contribute to the protection of groundwater quality from seawater intrusion per the Santa Cruz Mid-County Groundwater Basin Groundwater Sustainability Plan (GSP) and to allow for the implementation of the "Aquifer Storage and Recovery" element of the Santa Cruz Mid-County Groundwater Basin GSP.
7. Remove potential operational constraints on City water rights that do not explicitly recognize direct diversion.
8. Allow additional time for the City to fully reach beneficial use under existing water-right permits at Felton.
9. Improve fish screening at the Felton Diversion and Tait Diversion and improve fish passage at the Felton Diversion. Consideration of fish passage improvements at Tait Diversion would be incorporated into future projects as required.
10. Address reliability and operational deficits at the Tait Diversion and Coast Pump Station to meet other project objectives.
11. Implement state policy favoring integrated regional water management by involving the City and other local agencies in "significantly improving" the "reliability of water supplies" by "diversifying water portfolios, taking advantage of local and regional opportunities, and considering a broad variety of water management strategies," specifically by making more extensive conjunctive use of the surface-water, groundwater and groundwater-storage resources available to the City and, when Agreed Flows and City demands are met,

¹ Conjunctive use refers to a range of actions and projects that provide for the coordinated management of surface water and groundwater supplies to increase total supplies and enhance water supply reliability. Conjunctive use actions and projects can also be used to sustainably manage groundwater supplies.

making excess surface water under the City's surface-water rights available to neighboring agencies who are dependent on overdrafted groundwater basins. (Water Code Section 10531(c).)

12. Consider other related actions or activities that would be foreseeable as a logical part in a chain of contemplated actions should the Proposed Project be approved, including facilities that would provide for ASR, water transfers, and water exchanges.

8.2 Overview of Significant Project Impacts

The range of alternatives studied in the EIR must be broad enough to permit a reasoned choice by decision-makers when considering the merits of the project. The analysis should focus on alternatives that are potentially feasible. Under CEQA, alternatives that are remote or speculative should not be discussed in the analysis of alternative. Furthermore, alternatives should focus on reducing or avoiding significant environmental impacts associated with the project as proposed. As described in Chapter 4, Environmental Setting, Impacts, and Mitigation Measures, the Proposed Project would result in the following significant or potentially significant environmental impacts:

- **Impact BIO-1A: Special-Status Species – Fish.** Construction of the Proposed Project could have a substantial adverse effect on special-status fish, but would not interfere with the movement of special-status fish, reduce the habitat, cause a population to drop below self-sustaining levels, or substantially reduce the number or restrict the range of any special-status fish species.
- **Impact BIO-1B: Special-Status Species – Other Wildlife.** Construction of the Proposed Project could have a substantial adverse effect on other special-status wildlife, but would not interfere substantially with the movement of special-status wildlife, and would not reduce habitat, cause a population to drop below self-sustaining levels, or substantially reduce the number or restrict the range of any special-status wildlife species.
- **Impact BIO-1C: Special-Status Species – Plants.** Construction of the Proposed Project could have a substantial adverse effect on special-status plants, but would not threaten to eliminate a plant community or restrict the range of any special-status plant species.
- **Impact BIO-2: Riparian and Sensitive Vegetation Communities.** Construction of the Proposed Project could have a substantial adverse effect on riparian and sensitive vegetation communities, but would not threaten to eliminate a plant community.
- **Impact BIO-3: Jurisdictional Aquatic Resources.** Construction of the Proposed Project could have a substantial adverse effect on state or federally protected wetlands through direct removal, filling, or hydrological interruption.
- **Impact CUL-1: Historical Built Environment Resources.** Construction of some of the Proposed Project infrastructure components could cause a substantial adverse change in the significance of historical built environment resource.
- **Impact CUL-2: Archaeological Resources and Human Remains.** Construction of Proposed Project infrastructure components could cause a substantial adverse change in the significance of unique archaeological resources or historical resources of an archaeological nature, and/or disturb human remains.
- **Impact CUL-3: Tribal Cultural Resources.** Construction of Proposed Project infrastructure components could cause a substantial adverse change in the significance of a tribal cultural resource.
- **Impact GEO-1: Seismic Hazards.** Construction and operation of the Proposed Project could directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death resulting from seismic ground shaking, landslides, or seismic related ground failure, including liquefaction and associated lateral spreading.

- **Impact GEO-4: Paleontological Resources.** Construction of the Proposed Project could potentially directly or indirectly destroy a unique paleontological resource or site during construction. However, the Proposed Project would not directly or indirectly destroy a unique geological feature.
- **Impact HAZ-2: Upset and Release of Hazardous Materials.** Construction of the Proposed Project could create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.
- **Impact HAZ-3: Hazardous Materials Near Schools.** Construction and operation of the Proposed Project could emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.
- **Impact HYD-2: Decrease Groundwater Supplies, Interfere with Groundwater Recharge, or Conflict with Groundwater Plan.** Construction and operation of the Proposed Project would not decrease groundwater supplies or interfere substantially with groundwater recharge such that sustainable groundwater management of the basin would be impeded. However, the Proposed Project could conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan by potentially affecting local groundwater quality or causing restrictive effects in nearby wells.
- **Impact HYD-3: Alteration to the Existing Drainage Pattern of the Site Area.** Construction and operation of the Proposed Project could substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: (a) result in substantial erosion or siltation on or off site; (b) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off site; (c) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or (d) impede or redirect flood flows.
- **Impact NOI-1: Substantial Permanent Increase in Ambient Noise Levels.** Operation of the Proposed Project would result in generation of a substantial permanent increase in ambient noise levels during long-term operation in the vicinity of one of the programmatic infrastructure components.
- **Impact NOI-2: Substantial Increase in Ambient Noise Levels in Excess of Standards.** Construction of the Proposed Project would result in generation of a substantial temporary increase in ambient noise levels in the vicinity of some project and programmatic infrastructure components in excess of applicable standards established in local general plans or noise ordinances.
- **Impact NOI-2: Substantial Increase in Ambient Noise Levels in Excess of Standards.** Operation of the Proposed Project would result in generation of a substantial permanent increase in ambient noise levels in the vicinity of one of the programmatic infrastructure components in excess of applicable standards.
- **Impact NOI-3: Groundborne Vibration.** Construction of the Proposed Project would result in the potential generation of excessive groundborne vibration or groundborne noise levels.
- **Impact UTL-1: New or Expanded Facilities.** Construction and operation of the Proposed Project would result in new or expanded water facilities that would result in significant impacts, but would not require or result in new or expanded wastewater treatment, storm drainage, electric power, natural gas, or telecommunications facilities or a new sewer trunk line.

Most of the potentially significant impacts listed above can be reduced to less-than-significant levels through incorporation of mitigation measures identified in Chapter 4, Environmental Setting, Impacts, and Mitigation Measures. However, the Proposed Project would have significant and unavoidable impacts with respect to the following impacts, both of which are a result of well drilling activities for the new ASR facilities and the Beltz 9 ASR facility and associated construction noise impacts.

- **Impact NOI-2: Substantial Increase in Ambient Noise Levels in Excess of Standards.** Construction of the Proposed Project would result in generation of a substantial temporary increase in ambient noise levels in the vicinity of some project and programmatic infrastructure components in excess of applicable standards established in local general plans or noise ordinances.
- **Impact UTL-1: New or Expanded Facilities.** Construction and operation of the Proposed Project would result in new or expanded water facilities that would result in significant impacts, but would not require or result in new or expanded wastewater treatment, storm drainage, electric power, natural gas, or telecommunications facilities or a new sewer trunk line.

8.3 Alternatives Considered but Eliminated

This section discusses alternatives that were considered but were eliminated from detailed consideration because they did not meet most of the basic project objectives; were found to be infeasible for technical, environmental, or social reasons; or they did not avoid or substantially lessen significant environmental impacts of the Proposed Project. Section 15126.6(c) of 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 should also 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 (see introduction to this Chapter), or (3) inability to avoid significant environmental impacts.

The City considered 11 alternatives, 7 of which were eliminated from further consideration as explained below. In developing the alternatives, the comments received in response to the EIR Notice of Preparation (NOP) were reviewed and included alternatives to individual project or programmatic components or alternative supplemental water supplies. As a result of the scoping comments received for the Proposed Project and the City's ongoing water supply planning process, the City considered the following alternatives, which were eliminated from further consideration as alternatives to the Proposed Project, as explained below:

1. Modification to Proposed Project Components
 - Alternative Bypass Flows
 - Place of Use (POU) Alternatives
 - Additional Intertie Connections
 - Ranney Collectors (also known as river bank filtration) on the San Lorenzo River
2. Other Water Supply Sources
 - Additional Water Storage and Groundwater Recharge at Inactive Quarries
 - Recycled Water
 - Seawater Desalination

8.3.1 Modifications to Proposed Project Components

8.3.1.1 Alternative Bypass Flows

The State Water Resources Control Board, in its response to the NOP, asked that the EIR include details of the scientific basis or studies completed for determining an appropriate flow regime that would be protective of Central California Coast steelhead (steelhead), Central California Coast coho salmon (coho), and any other applicable fish and wildlife species that may be affected by the flows. The State Water Resources Control Board asked that the baseline instream conditions be clearly described, and any reasonable alternative flow regimes should also be analyzed.

As explained in Section 3.4.2.6, Bypass Requirements (Agreed Flows), and Appendix C, minimum bypass flow requirements comprise a schedule of minimum instream flows (bypass flows²) that would avoid and minimize effects on steelhead and coho due to operation of the City's Laguna Creek, Liddell Spring, Majors Creek, Tait and Felton Diversions, as well as the Loch Lomond Reservoir. The minimum instream flow requirements are those flows needed to maintain habitat for steelhead and coho during all freshwater life stages (migration, spawning, incubation, and rearing) over a range of Hydrologic Condition Types, which are based on the record of cumulative daily average flow by water year (October 1 to September 30).

Early work in developing the City's ASHCP focused on understanding the relationship between flow and habitat quality downstream of each diversion. The goal was to develop instream flow targets through an iterative process that considered both the habitat values of instream flows and the ability of the City to meet its water supply obligations. Instream flow alternatives were modeled using the City's water supply operations model (Confluence® Model) to understand the effect of various flow alternatives on the City's water supply obligations (see Appendix D-2 for additional information about this model). The City also developed a fisheries habitat effects model to analyze the effect that the various flow alternatives would have on coho and steelhead habitat (see Appendix D-3 for additional information about this model). This process was the combined effort of a technical working group convened by the City beginning in 2005 and composed of resource agency personnel representing NMFS and CDFW, City staff, and consultants.

As a result, the City submitted a proposal for instream bypass flows and other conservation measures in June 2012 to the technical working group (see Appendix C). CDFW responded to this proposal with comments and proposed modifications to the flow proposal (see Appendix C), and the City worked to resolve comments provided by CDFW and completed modeling studies of several iterations of the CDFW proposal that ultimately became the proposal known as DFG-5. In 2014, the City Council convened a Water Supply Advisory Committee (WSAC) to engage a multi-disciplinary, stakeholder-driven process that would advise the Council on future water supply development. Based on the information developed through field studies and iterative model runs, the WSAC convened by the City recommended that the City adopt the flow alternative that was the most protective of coho and steelhead (CDFW DFG-5) and develop a new water supply that would make it practicable for the City to provide the flows for these species while meeting its water supply obligations.

Since CDFW DFG-5 was developed, additional instream flow needs were identified by NMFS and CDFW. These were evaluated in the context of water supply reliability and overall biological benefit and ultimately included in the current flow requirements of the Agreed Flows. The City negotiated the long-term minimum bypass flow requirements (Agreed Flows) with CDFW and NMFS as part of the ASHCP process based on species studies and

² A bypass flow refers to requirements that water that would otherwise be diverted instead be bypassed by the diversion and left in the stream.

hydrological modeling for different flow alternatives conducted over the past 15 years, thus arriving at mutually acceptable flows that are more protective of fish species compared to baseline conditions considered in the ASHCP (i.e., unimpaired stream flows prior to City diversions) and 2018 baseline conditions used in this EIR for analysis of the Proposed Project. As discussed in Section 4.3, Biological Resources, the Proposed Project would result in an improvement in habitat conditions for steelhead and coho in most cases, compared to the 2018 baseline condition (see Table 4.3-7), and no significant impacts were identified with regards to effects of the Proposed Project, including Agreed Flows, on fish habitat. As described in Chapter 3, Project Description, a key project objective is to provide flow conditions that are protective of coho and steelhead as negotiated with the CDFW and NMFS during the preparation of the ASHCP. Therefore, consideration of alternative flow regimes was not deemed necessary, as alternative flow regimes have already been studied with the most protective (Agreed Flows) selected, and this potential alternative would not avoid significant impacts as no significant impacts have been identified related to the Proposed Project, which includes the Agreed Flows. Additionally, such alternative bypass flows would potentially conflict with the negotiated Agreed Flows, the implementation of which is a key project objective. Thus, this potential alternative is eliminated from further consideration.

It is also noted that provision of the Agreed Flows would generally require reduced diversions compared to the 2018 baseline from the North Coast sources and from the San Lorenzo River at Tait at certain times and corresponding increased use of stored water from Loch Lomond Reservoir and use of groundwater. This would result in reduced storage in Loch Lomond Reservoir available for use during dry periods. Overall, the implementation of the Agreed Flows would further reduce the City's dry-year water supply reliability over 2018 baseline conditions, as it would further limit the amount of water that the City can divert and, as a result, the other Proposed Project components are proposed to provide a suite of options that can be used conjunctively to provide adequate water supplies during dry-year and multiple dry-year periods. Effects of implementation of the Agreed Flows without the proposed changes to water rights, as requested by the State Water Resources Control Board, is addressed in Section 8.4.2, Alternative 1: Agreed Flows Only Without Other Proposed Project Components.

8.3.1.2 Place of Use Alternatives

The Proposed Project would expand the POUs of the City's pre-1914 and post-1914 appropriative surface-water rights to include all areas served by the City, two local groundwater basins, and the service areas of neighboring water agencies, as shown in Figure 3-3 in Chapter 3, Project Description. A significant barrier to implementing conjunctive use of the City's surface and groundwater sources of supply is existing limits on the POUs for the City's appropriative surface-water rights. The Proposed Project would align the POUs of all of those appropriative water rights to cover the same area and expand those authorized POUs to include the Santa Cruz Mid-County Groundwater Basin, and Santa Margarita Groundwater Basin as well as the service areas of the Soquel Creek Water District (SqCWD), Scotts Valley Water District (SVWD), San Lorenzo Valley Water District (SLVWD), and Central Water District (CWD). Expanded POUs are also necessary for improving the potential for conjunctive use of the region's resources with adjoining water agencies and within the region's groundwater basins, as it would allow implementation of Santa Cruz ASR as a component of the Proposed Project, which could make some additional recovered groundwater available to the City and potentially to the region during drought and critically dry years. Expanded POUs are also necessary to implement the water transfers and exchanges component of the Proposed Project.

Several POU alternatives were considered. Elimination of two local overdrafted groundwater basins and service areas of neighboring water agencies as part of POUs was considered, but eliminated from further consideration because the alternative would not meet the basic project objectives related to supporting the City's Water Supply Augmentation Strategy Elements 1 and 2, that would in turn provide supplies needed as a result of

implementation of the Agreed Flows. In order to implement water transfers and ASR components of the Proposed Project, the City requires modifications to its appropriative rights to include these basins and water suppliers' service areas as POU. This alternative also would preclude opportunities for conjunctive use of surface water and groundwater within the City and region.

Expansion of POU to include additional parties was suggested in a comment on the NOP as a way of providing the operational flexibility to substantially enhance desirable environmental outcomes. As currently proposed, the expanded POU would include all of the City's neighboring water agencies. There are, however, no other neighboring water agencies adjacent to the areas served by the City to include. A similar comment on the NOP was to evaluate the environmental merits of a regional "Universal POU" to include: aquifers, groundwater agencies, the County, public but independent pumpers (e.g., Cabrillo College, University of California, Santa Cruz [UCSC]), future entities as appropriate, private pumpers, and environmentally threatened and/or endangered species habitat. As shown in Figure 3-3 in Chapter 3, Project Description, the expanded POU included as part of the Proposed Project would improve the potential for conjunctive use of the region's resources with adjoining water agencies and within the region's groundwater basins and includes most of the entities noted in the comment. For example, the developed portion of UCSC is within the area served by the City, and Cabrillo College is within the SqCWD service area included in the expanded POU. It should be noted that POU and related expansions are not provided for habitat for environmentally threatened or endangered species; however, the Proposed Project includes amendments of the City's water rights to incorporate the Agreed Flows as bypass flows to protect those species. Additionally, as proposed, the expanded POU as part of the Proposed Project directly relate to the Proposed Project objectives of augmenting the City's water supplies through passive or active groundwater recharge in the areas from which the City obtains its water supplies. Therefore, changes to or expansion of the POU amendments proposed as part of the Proposed Project were eliminated from further consideration.

8.3.1.3 Additional Intertie Connections

Modification of the City's appropriative water rights with the Proposed Project would facilitate the opportunity for potential future water transfers and exchanges with neighboring water agencies, including SVWD, SLVWD, SqCWD, and CWD. Such transfers and exchanges would likely be provided for via agreements with defined terms related to timing, volume of water, water year conditions, return of water, etc., that would be developed between the City and one or more of the neighboring agencies. New or improved interties between the water systems of the City and of neighboring water agencies may be needed to facilitate future water transfers and exchanges once City water rights are modified. The Proposed Project includes various intertie improvements between the City and SVWD, and between the City, SqCWD and CWD. Interconnection of the SVWD and the SLVWD systems has already been constructed and permitted for emergency use. Additional permitting would be required to use the existing intertie for non-emergency use such as could be pursued as part of a potential future water supply transfer and exchange project.

Adding additional intertie connections with Mount Hermon, Trout Gulch Water Mutual Company, and PureSource Water was suggested in a comment on the NOP to enhance conjunctive use. As proposed, the intertie improvements included in the Proposed Project would connect the City to the water service areas of larger water agencies immediately adjacent to the areas served by the City, which would help to achieve the Proposed Project objectives of augmenting the City's water supplies through passive recharge of regional aquifers via water transfers and exchanges. Given the small size of Mount Hermon, Trout Gulch Water Mutual Company, and PureSource Water and the distance from the City's service area, interties to these water agencies are not warranted to meet the Proposed Project objectives. Therefore, additional intertie improvements were eliminated from further consideration.

8.3.1.4 Ranney Collectors/River Bank Filtration in the San Lorenzo River

A comment received on the NOP asked that “Ranney Collectors” be evaluated to augment surface water collection from the San Lorenzo River during large storm events or post-wildland fire events when streamflow turbidity levels are high as a method of increasing security of quality water supply. A Ranney Collector is a patented type of radial collector well used to extract water from a direct connection to a surface water source (e.g., a river) by extending radially under the surface floor (e.g., river bed) and the radial or horizontal wells flow to a conventional well before being pumped to the surface (WSAC 2015). It represents an alternative type of diversion by using a different intake technology and the maximum capacity of these wells would have to comply with the City’s San Lorenzo River water rights and permits at the Tait Diversion and Felton Diversion. Ranney Collectors on the San Lorenzo River were considered by the WSAC as a method of addressing the higher turbidities of winter water that are difficult to treat at the Graham Hill Water Treatment Plant (WSAC 2015). As a result, the City Water Department Capital Improvement Program already includes a River Bank Filtration Study to assess the feasibility of locating new vertical wells along the San Lorenzo River near the Tait Diversion. However, an alternative diversion method would not change any of the Proposed Project components related to water rights modifications, supply augmentation or diversion improvements, which would continue to be proposed despite an alternative method to extract/divert water from the San Lorenzo River. Therefore, this suggestion does not represent an alternative to any of the Proposed Project components and therefore would not have the potential to lessen any of the significant effects of the Proposed Project. As such, Ranney Collectors were eliminated from further consideration as an alternative to the Proposed Project.

8.3.2 Other Water Supply Sources

8.3.2.1 Additional Storage Groundwater Recharge at Inactive Quarries

A comment received on the NOP asked that the EIR evaluate use of “neighboring inactive quarries” for additional water storage and groundwater recharge. The City has evaluated this option in the past as part of the Integrated Water Plan (IWP) process that was undertaken in 1997 with the plan being adopted in 2005. During the IWP planning process, reservoir storage in the Olympia Quarry near Felton was considered to provide additional storage to augment the storage provided by Loch Lomond Reservoir. At the time, numerous technical and institutional issues were identified that caused storage at Olympia Quarry to be deemed not viable. Therefore, it was not considered further by the City (City of Santa Cruz 2011).

A Phase 1 Conjunctive Use and Enhanced Aquifer Recharge study was prepared for the County of Santa Cruz as the initial phase of a long-term feasibility study process to evaluate methods to increase groundwater levels in the southern Santa Margarita Groundwater Basin, primarily to increase water supply reliability in the Scotts Valley area (Kennedy/Jenks Consultants 2011). This was one of fifteen projects funded by a Proposition 50 Integrated Regional Water Management Program Water Bond grant from the State Water Resources Control Board to the Community Foundation of Santa Cruz County (Kennedy/Jenks Consultants 2011). The study considered Hanson Quarry as a preferred site for aquifer-groundwater storage. Currently, SLVWD and the County of Santa Cruz are developing a Conjunctive Use Plan for the San Lorenzo River Watershed to increase stream baseflow for fish and increase reliability of surface and ground water supplies for the SLVWD. Under consideration is injection of excess surface water during wet periods and extraction of groundwater during dry periods in the Olympia area.

The Proposed Project does include new ASR facilities, the location of which are not known at this time. It is possible that future exploration of use of inactive quarries could be considered in the context of a new ASR facility that could be developed in the Santa Margarita Groundwater Basin under the Proposed Project. Thus, the potential use of

inactive quarries in the Santa Margarita Groundwater Basin as a stand-alone separate alternative to the Proposed Project was eliminated from further consideration, as the quarries could be considered as a potential part of the new ASR facilities component.

8.3.2.2 Recycled Water

The SqCWD, in its comments on the NOP, suggested that recycled water be considered as an alternative means of meeting the Agreed Flows and fish enhancements proposed as part of the Proposed Project. According to the SqCWD's comment, this could include, but not be limited to, the use of recycled water for irrigation, purified water for groundwater recharge or reservoir augmentation, and river/creek augmentation. The City's Water Supply Augmentation Strategy includes continued water conservation and the evaluation of additional water supply alternatives including the development of groundwater storage via passive recharge from water transfers and exchanges and active recharge from aquifer storage and recovery (Elements 1 and 2), as identified in Proposed Project Objective #3. Recycled water or desalination is included in Element 3 as a back-up water source. Thus, recycled water is included as a supplemental source to be pursued as Element 3 of the City's Water Supply Augmentation Strategy in the event the groundwater storage strategies described above prove insufficient to meet the goals of cost-effectiveness, timeliness, or yield.

A recycled water facilities planning study was completed in 2018 (Kennedy/Jenks Consultants), and the City initiated a Phase II study, which is being prepared, to refine cost estimates for recycled water alternatives and to understand the long-term utility of recycled water. The 2018 study included recommendations for near-term projects and upgrades that could provide approximately 106 million gallons per year of supplemental water for non-potable customers, including at the City's Wastewater Treatment Facility and adjacent park, as well as customers along Bay Street and UCSC (Kennedy/Jenks Consultants 2018). The study indicated that the City would also explore other reuse opportunities in the mid-term, including groundwater replenishment at the City's Beltz wellfield and a groundwater storage and recovery project in the Santa Margarita Groundwater Basin, and coordination with Pure Water Soquel Project. Other long-term opportunities for direct potable reuse and reservoir augmentation did not demonstrate any real or substantial benefits. These opportunities therefore would be reserved for future consideration if and when appropriate state regulations are established and issues related to reservoir augmentation at Loch Lomond Reservoir can be resolved (e.g. confirming capacity for advanced treated water in the reservoir, demonstrating ability to meet dilution and other parameters) (Kennedy/Jenks Consultants 2018).

In 2019, the City approved an agreement with SqCWD to allow SqCWD to utilize a portion of the treated effluent produced by the City's Wastewater Treatment Facility (WWTF) for groundwater replenishment as part of the Pure Water Soquel project approved by the SqCWD. Pure Water Soquel will pump a portion of secondary effluent water from the City's WWTF to a new Advance Water Purification Facility located in Live Oak where it will undergo standard treatment for groundwater replenishment in the Santa Cruz Mid-County Groundwater Basin. The agreement also included the additional benefit of providing a facility to produce Title 22 recycled water for the City's use at the WWTF. In the future, a portion of that water could be used for irrigation water for La Barranca Park or for a truck fill station (City of Santa Cruz 2020).

The Phase II recycled water feasibility study underway is reviewing several of the mid-term alternatives described above and will be complete at the end of 2021 or early 2022. Therefore, the City is pursuing recycled water as a backup supply if Water Supply Augmentation Strategy Elements 1 and 2, which are the water augmentation components of the Proposed Project, do not meet the City's goals to meet the estimated worst-year gap of 1.2 billion gallon per year for potable water. Additionally, the near-term recycled water projects identified to date would provide

only about 106 million gallons per year of non-potable supply, which would not address the City's estimated potable water demand shortfall during dry periods. Therefore, based on what is known to date about recycled water, this potential alternative would not meet the basic project objectives to deliver a safe, adequate, reliable and environmentally sustainable water supply. For this reason, this alternative was eliminated from further consideration as an alternative to the Proposed Project. However, it remains a part of the Water Supply Augmentation Strategy and will be reconsidered if/when other supply alternatives prove unsuccessful in meeting the demands of the City.

8.3.2.3 Seawater Desalination

The SqCWD, in its comments on the NOP, suggested that desalinated water be considered as an alternative means of meeting the Agreed Flows and fish enhancements proposed as part of the Proposed Project. The City and SqCWD partnered to undertake environmental review for the proposed scwd² Regional Seawater Desalination Project, which involved the construction and operation of a desalination plant and related facilities to provide up to 2.5 million gallons per day of potable water. Between 2007 and 2013, desalination background studies on treatment, brine disposal, energy use, intake design, and offshore geophysical conditions, and other studies were conducted to support the development of the project's Draft EIR, which was released for public review and comment in May 2013. However, the City chose to suspend the pursuit of seawater desalination in late 2013 to allow for a broader public discussion on the topic of water supply for the City, which resulted in the formation of the WSAC and development and adoption of the current Water Supply Augmentation Strategy that the City is pursuing.

A desalination project is one of the elements of the City's Water Supply Augmentation Strategy to meet the system demands during periods of water shortages (Element 3). The WSAC's Water Supply Augmentation Strategy required that all elements be pursued in parallel so that sufficient information would be known about each element to allow for informed decision making on the project(s) to be pursued. As a result, a desalination feasibility update to the scwd² Regional Seawater Desalination Project was completed in 2018 to assess the feasibility, cost, timeline, and approach (Dudek 2018). It considered the construction and operation of a seawater reverse osmosis (SWRO) desalination plant and related facilities to provide up to 3.3 million gallons per day of potable water to the City; a larger capacity project was identified compared to the scwd² Regional Seawater Desalination Project to fill the worst-case supply gap. The study concluded that a desalination project would meet most of the City's WSAC objectives, is technically feasible and could provide sufficient water supply capacity to fill the identified supply-demand gap of 1.2 billion gallons per year during modeled worst-year conditions. It also indicated that, while the project is technically feasible, additional feasibility review of intake methods may be required to determine the feasibility of the subsurface intake approach, which is currently the preferred method under the California Ocean Plan, with which a desalination project must comply. The desalination feasibility study also indicated that a City seawater desalination project would not meet the City's timeliness objective, since it would not be completed and operational by 2025 (Dudek 2018). Therefore, based on what is known to date about seawater desalination, this potential alternative would not meet the basic project objectives to deliver a safe, adequate, reliable and environmentally sustainable water supply. For this reason, this potential alternative to the Proposed Project was eliminated from further consideration as an alternative to the Proposed Project. However, it remains a part of the Water Supply Augmentation Strategy and will be reconsidered if/when other supply alternatives prove unsuccessful in meeting the demands of the City.

8.4 Alternatives Selected for Further Analysis

This section describes the alternatives to the Proposed Project that were selected and analyzed according to CEQA Guidelines Section 15126.6(a) after elimination of some considered alternatives as explained in Section 8.3, Alternatives Considered but Eliminated. The analyzed alternatives, including the No Project Alternative, represent a reasonable range of alternatives to the Proposed Project that would feasibly attain most of the Proposed Project's basic objectives, and would avoid or substantially lessen the significant adverse environmental effects of the Proposed Project, as listed in Section 8.2, Overview of Significant Project Impacts, and described in detail in Chapter 4, Environmental Setting, Impacts, and Mitigation Measures. As most identified impacts of the Proposed Project relate to the actual construction of various project and programmatic infrastructure components, the alternatives selected consider no or reduced infrastructure components.

The following four alternatives, which are summarized in Table 8-1 and described in detail below, were selected for comparative analysis in this EIR:

- **No Project Alternative** – The No Project Alternative are the circumstances under which the Proposed Project does not proceed.
- **Alternative 1** – Agreed Flows only without other Proposed Project components.
- **Alternative 2** – Agreed Flows with all Proposed Project components except there is no place of use expansion, which means that there are no water transfers to neighboring agencies, and that ASR is possible only within the areas served by the City.
- **Alternative 3** – Agreed Flows with all Proposed Project components except ASR.

Additionally, the standard operational and construction practices identified in Chapter 3, Project Description, would apply to Alternatives 1 through 3, where relevant to each alternative.

Table 8-1. Summary of Alternatives

Proposed Project Components	Inclusion of Proposed Project Components in Alternatives			
	<i>No Project Alternative</i>	<i>Alternative 1</i>	<i>Alternative 2</i>	<i>Alternative 3</i>
Agreed Flows	No	Yes	Yes	Yes
Place of Use Expansion	No	No	No	Yes
Other Water Rights Modifications	No	No	Yes	Yes
Aquifer Storage and Recovery	No	No	Yes, but only in areas served by City	No
Water Transfers and Exchanges and Intertie Improvements	No	No	No	Yes
Surface Water Diversion Improvements	No	No	Yes	Yes
Relevant Standard Operational and Construction Practices	No	Yes	Yes	Yes

As indicated in Chapter 3, Project Description and Appendix D, the City has utilized a modeling system comprised of a hydrologic model, a water supply model, and a biological effects model that focuses on coho and steelhead to develop and analyze the Proposed Project. Similar to the Proposed Project, Alternatives 1, 2, and 3 were modeled and compared to the 2018 baseline conditions (also referred to as existing conditions).³ The baseline represents City water rights, water supply operations, and bypass flows that were in place at the time the NOP was released (2018). The City's existing pre-1914 appropriative water rights authorize diversions from several North Coast streams and the City's post-1914 appropriative water rights allow diversions from Newell Creek and the San Lorenzo River under existing water rights licenses and permits (see Chapter 3, Project Description). Water supply operations under the baseline consider existing infrastructure capacities. Bypass flows under the baseline are defined by the interim bypass flow agreement between the City and CDFW, which was included in the April 30, 2018 Tolling Agreement between CDFW and the City of Santa Cruz (see Appendix C for this agreement). All other conditions are based on those existing in 2018. Key modeling results are presented below in Table 8-2, Table 8-3, and Table 8-4 and Figure 8-1 and described in the subsequent analysis.

Table 8-2. Peak-Season Water Supply Shortage (in million gallons)

Worst Drought Years in Historical Record	2018 Baseline Conditions	Proposed Project	Alternative 1	Alternative 2	Alternative 3
1976	843	0	844	0	515
1977	1,170	0	1,179	932	1,166
Total	2,013	0	2,023	932	1,681

Source: Gary Fiske and Associates 2021a.

Note: The No Project Alternative was not modeled and compared to 2018 baseline conditions, given that there are many unknowns associated with this alternative and making the needed assumptions required for modeling would be speculative. Therefore, the No Project Alternative is not reflected in this table.

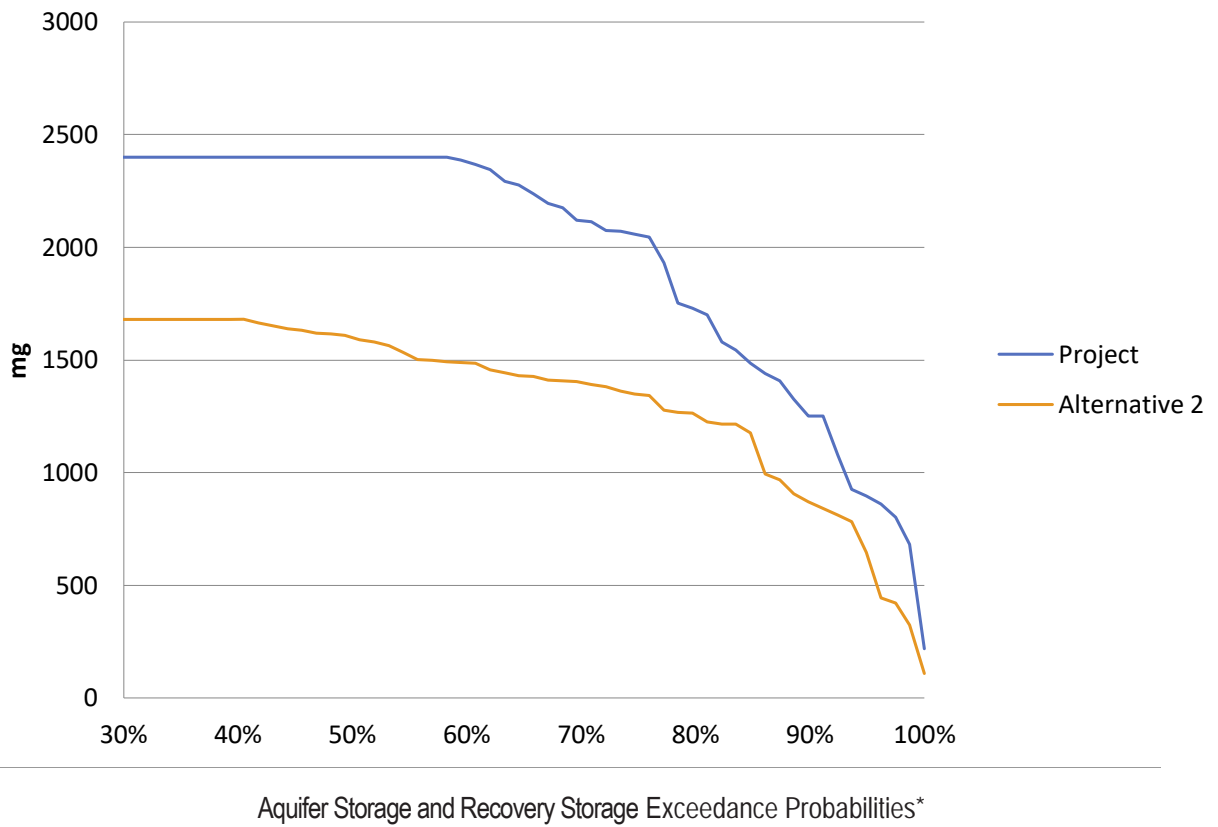
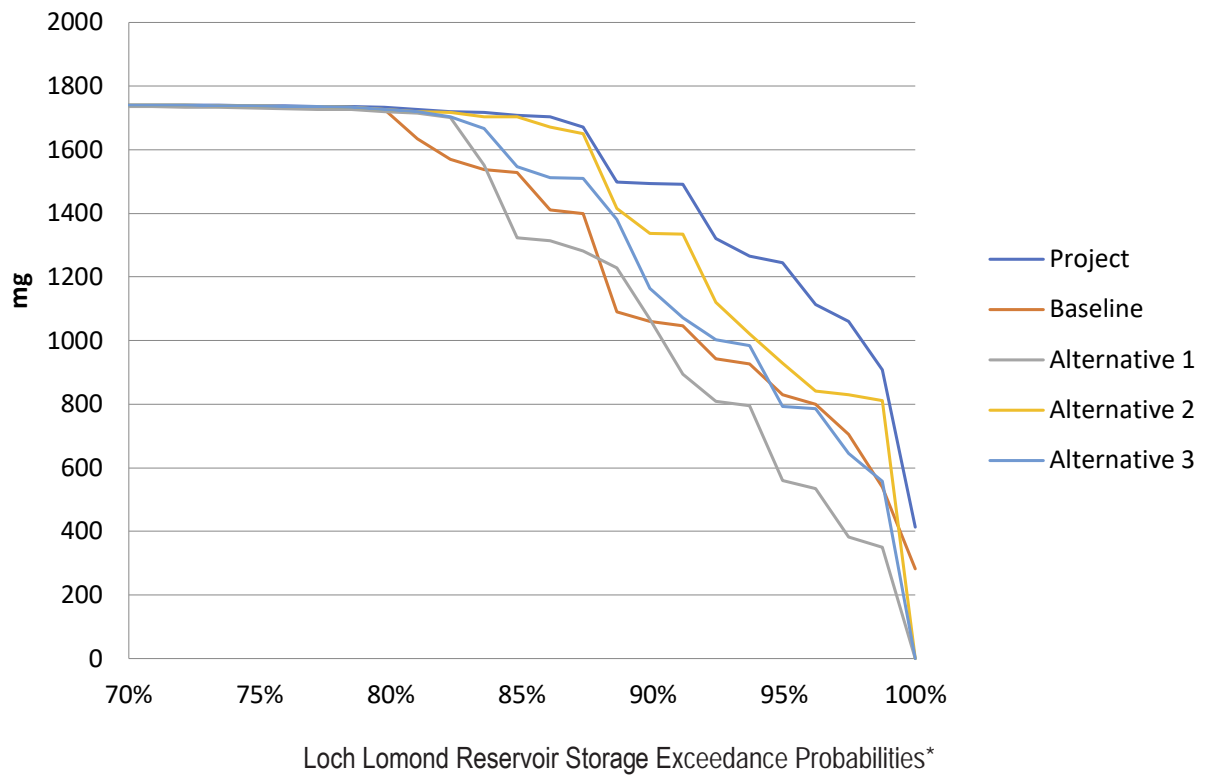
Table 8-3. Percent of Days that Loch Lomond Reservoir Spills (Based on Average of All Years in the Historic Record)

Month	2018 Baseline Conditions	Proposed Project Conditions	Alternative 1	Alternative 2	Alternative 3
Jan	41.4%	53.4%	44.3%	53.2%	51.1%
Feb	60.3%	70.4%	61.5%	69.9%	67.3%
Mar	68.6%	80.0%	70.7%	79.5%	76.6%
Apr	64.5%	76.1%	64.1%	76.0%	75.6%
May	48.8%	76.5%	46.3%	76.3%	75.9%
Jun	18.9%	37.8%	18.9%	37.9%	37.8%
Jul	0.0%	3.6%	0.0%	3.6%	3.6%
Aug	0.0%	0.1%	0.0%	0.1%	0.1%
Sep	0.0%	0.0%	0.0%	0.0%	0.0%
Oct	0.0%	0.0%	0.0%	0.0%	0.0%
Nov	1.5%	4.5%	1.9%	5.4%	3.8%
Dec	14.8%	31.4%	16.9%	31.0%	25.2%

Source: Gary Fiske and Associates 2021b.

Note: The No Project Alternative was not modeled and compared to 2018 baseline conditions, given that there are many unknowns associated with this alternative and making the needed assumptions required for modeling would be speculative. Therefore, the No Project Alternative is not reflected in this table.

³ The No Project Alternative was not modeled and compared to 2018 baseline conditions, given that there are many unknowns associated with this alternative and making the needed assumptions required for modeling would be speculative.



*Exceedance probabilities are the probabilities that the usable storage volume will exceed the y-axis values.

Table 8-4. Percentage of Days that Loch Lomond Reservoir Falls Below Approximately 564 Feet (amsl) (Based on Average of All Years in the Historic Record)

Month	2018 Baseline Conditions	Proposed Project Conditions	Alternative 1	Alternative 2	Alternative 3
Jan	22.2%	9.4%	22.0%	11.3%	18.1%
Feb	15.9%	6.6%	16.3%	9.6%	13.6%
Mar	12.0%	4.5%	13.8%	7.2%	10.2%
Apr	10.9%	2.7%	10.5%	7.6%	9.3%
May	9.5%	3.5%	10.5%	7.6%	9.0%
Jun	10.8%	4.6%	11.4%	8.9%	10.1%
Jul	11.6%	7.1%	12.5%	9.3%	11.4%
Aug	14.0%	8.9%	15.0%	11.4%	12.8%
Sep	21.8%	11.9%	19.5%	13.5%	17.6%
Oct	29.0%	14.8%	26.1%	14.6%	23.7%
Nov	30.4%	13.7%	27.3%	12.9%	23.5%
Dec	26.1%	11.6%	26.0%	12.7%	22.4%

Source: Gary Fiske and Associates 2021b.

Notes: amsl = above mean sea level.

The No Project Alternative was not modeled and compared to 2018 baseline conditions, given that there are many unknowns associated with this alternative and making the needed assumptions required for modeling would be speculative. Therefore, the No Project Alternative is not reflected in this table.

Each alternative is examined for its ability to reduce environmental impacts relative to the Proposed Project and to meet project objectives. Table 8-5 shows each alternative's ability to meet the project objectives, relative to the Proposed Project's ability to fully achieve the objectives. Table 8-6 provides a comparison of impacts of the Proposed Project and the identified alternatives. (Table 8-5 and Table 8-6 are presented at the end of this chapter.)

8.4.1 No Project Alternative

The No Project Alternative is described below, followed by a discussion of its impacts relative to the Proposed Project and its ability to meet the project objectives. As indicated previously, the No Project Alternative was not modeled and compared to 2018 baseline conditions, given that there are many unknowns associated with this alternative and making the needed assumptions required for modeling would be speculative.

8.4.1.1 Description

CEQA Guidelines Section 15126.6(e) generally provides that “[t]he ‘no project’ analysis shall discuss the existing conditions at the time the notice of preparation is 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.” Section 15126(e)(3)(B) provides that, where, as here, a proposed project is something “other than a land use or regulatory plan,” the “No Project” Alternative is “the circumstance under which the project does not proceed.” The purpose of describing and analyzing a No Project Alternative is to allow decision-makers to compare the impacts of approving the Proposed Project with the impacts of not approving the Proposed Project (CEQA Guidelines Section 15126.6[e][1]). “[W]here failure to proceed with the project will not result in preservation of existing environmental conditions, the analysis should

identify the practical result of the project's non-approval and not create and analyze a set of artificial assumptions that would be required to preserve the existing physical environment.” (CEQA Guidelines Section 15126.6[e][3][B]).

The underlying purpose of the Proposed Project is to improve flexibility in operation of the City's water system while enhancing stream flows for local anadromous fisheries. Incorporating the Agreed Flows into all City water rights is necessary to benefit local fisheries, specifically for coho and steelhead, but would further constrain the City's limited surface water supply. Consequently, the City needs to improve operational flexibility of the water system within existing rights, permits, and licenses to allow better use of limited water resources. To do this, the Proposed Project includes modifications to the existing water rights, permits, and licenses to expand the authorized POU, to better utilize existing diversions, to authorize groundwater storage and to extend the City's time to put water to full beneficial use.

Under the No Project Alternative, all conditions are generally based on those existing in 2018 and include existing water rights and existing infrastructure capacities. Unlike the 2018 baseline, however, this alternative cannot rely on the approval of a subsequent interim agreement related to bypass flows, such as is currently in place with CDFW. Additionally, none of the project and programmatic components of the Proposed Project would be implemented, including:

- Water rights modifications, including modifications related to POU, method of diversion, points of diversion and rediversion, underground storage and purpose of use, extension of time, and stream bypass requirements for fish habitat (Agreed Flows).
- Water supply augmentation components, including ASR (new ASR facilities at unidentified locations and Beltz ASR facilities at the existing Beltz well facilities), and water transfers and exchanges, and associated intertie improvements.
- Surface water diversion improvements, including the Felton Diversion fish passage improvements and the Tait Diversion and Coast Pump Station improvements.

The Agreed Flows would not be implemented under the No Project Alternative. While they are currently expected to be required as part of the pending ASHCP (City of Santa Cruz 2021b) and related incidental take permits, which is anticipated to be approved by late 2022 or early 2023, the ASHCP and incidental take permits would not be able to be implemented or committed to under the No Project Alternative. This is because the approval of the Proposed Project is required to ensure the Agreed Flows would be practicable and such approval was a condition precedent for the finalization of the ASHCP and submittal of applications for incidental take permits. Additionally, as noted above, this alternative cannot rely on the approval of a subsequent interim agreement related to bypass flows, such as is currently in place with CDFW, as continuation of the interim agreement related to bypass flows would not be practicable and such agreement would not be renewed. While the final Operations and Maintenance HCP (OMHCP) developed with the USFWS and associated incidental take permit includes minimum bypass flows, these flows do not encompass all life stages and therefore are not as protective as the interim bypass flows and the Agreed Flows (City of Santa Cruz 2021a). As such, delivery of water to customers under the No Project Alternative could lead to conflicts with species protection goals and could lead to enforcement and/or litigation regarding the scope of requirements under the FESA and CESA to avoid take of federally and state-listed species. Additionally, the fish screening at the Felton Diversion and Tait Diversion and fish passage at the Felton Diversion would not be improved under the No Project Alternative.

Under the No Project Alternative, the existing significant barrier to implementing more conjunctive use of the City's sources of supply would remain in place without the proposed water rights modifications related to expansion of POUs, underground storage and points of redirection. Likewise, the barriers to improving conjunctive use of the region's resources with adjoining water agencies and within the region's groundwater basins would also remain. Specifically, ASR and water transfers and exchanges and associated intertie improvements could not be implemented under the No Project Alternative. Additionally, without the other water rights modifications (relating to method of diversion, points of diversion, and extension of time), under the No Project Alternative, the operational flexibility anticipated by the Proposed Project would not be provided, such as the option of diverting water under the existing Felton Diversion water rights at either the Felton Diversion or downstream at the Tait Diversion. Therefore, the No Project Alternative would not provide the ability to divert water under the Felton Permits with or without activation of the Felton Diversion inflatable dam. The No Project Alternative therefore would not help the City to fully utilize the 3,000 acre-feet per year diversion provided under the Felton Permits, and would not allow water to remain in the San Lorenzo River longer, bypassing the Felton Diversion before being diverted at the Tait Diversion and therefore would not provide associated fisheries benefits. Further, under the No Project Alternative, no extension of time would be provided for the City to put all of its 3,000 acre-feet per year entitlement to divert water at the Felton Diversion to full beneficial use. This could result in the City losing some of its authorized diversion amount under the Felton Permits, which the City expects will be needed in the future.

Given the above, the No Project Alternative would not provide for any elements of the Proposed Project that would allow the City to expand its storage capacity to deliver a safe, adequate (i.e., filling the worst-year water supply gap), reliable and environmentally sustainable water supply. As a result, the No Project Alternative would require the City to prioritize and immediately pursue Water Supply Augmentation Strategy Element 3 options (i.e., recycled water or seawater desalination), which are currently considered as back-up water sources, if passive and active recharge solutions identified in Elements 1 and 2 and included in the Proposed Project are not sufficient (see Section 8.3.2.2, Recycled Water, and Section 8.3.2.3, Seawater Desalination).

8.4.1.2 Impact Analysis

Under the No Project Alternative, the Proposed Project would not be implemented, and the project and programmatic infrastructure components would not be constructed. Therefore, the potentially significant impacts associated with constructing and/or operating new or upgraded infrastructure facilities identified in this EIR would not occur (see Table 8-6), including those related to biological resources (Impacts BIO-1A, BIO-1B, BIO-1C, BIO-2, and BIO-3), cultural resources (Impacts CUL-1, CUL-2, and CUL-3), seismic hazards (Impact GEO-1), paleontological resources (Impact GEO-4), hazardous materials release (Impact HAZ-2), conflict with a groundwater plan (Impact HYD-2), alteration to drainage patterns (Impact HYD-3), conversion of farmland or forest land (Impact LU-2), permanent increase in noise (Impact NOI-1), permanent or temporary increase in noise in excess of standards (Impact NOI-2), vibration (Impact NOI-3), and new or expanded facilities (Impact UTL-1). In particular, the significant unavoidable construction noise impact due to well drilling activities for the new ASR facilities and the Beltz 9 ASR facility (Impacts NOI-2 and UTL-1) would not occur with the No Project Alternative. In addition, most of the other impacts related to the Proposed Project (identified as less than significant) would not occur as shown in Table 8-6.

However, the No Project Alternative would also not realize the benefits of the Proposed Project to biological resources due to improved conditions for fish in the San Lorenzo River, Newell Creek and the North Coast streams with the implementation of the Agreed Flows as part of the Proposed Project, and improved fish passage and/or fish screening at the Felton Diversion and Tait Diversion, as described in Section 4.3, Biological Resources (see Impact BIO-1A). Specifically, the No Project Alternative would likely result in a significant and unavoidable impact

for fish as the Agreed Flows would not be implemented and the interim bypass flow agreement with CDFW would not be renewed. The No Project Alternative would also not realize the benefits of the Proposed Project to recreational uses due to increased lake levels at Loch Lomond Reservoir (see Impact REC-2). In contrast to the beneficial impact of the Proposed Project, the No Project Alternative impact on recreational uses at Loch Lomond would be potentially significant and unavoidable, as lake levels are likely to decline over baseline conditions given that the City's reliance on Loch Lomond Reservoir would likely continue to increase over time until an alternative source of water supply is developed (i.e., recycled water or seawater desalination). As the No Project Alternative would not include ASR or water transfers it would not have the potential to contribute sustainability benefits in the Santa Margarita Groundwater Basin and the Santa Cruz Mid-County Groundwater Basin, whereas the Proposed Project would have such potential (see Impact HYD-2). Lastly, the No Project Alternative would not provide additional water supply to meet projected demand in the areas served by the City during currently constrained dry periods (see Impact UTL-2). In contrast to the beneficial impact of the Proposed Project, the No Project Alternative water supply impact would be potentially significant and unavoidable until an alternative source of water supply is developed.

Given that the City's water supply objectives would not be met with the No Project Alternative, the City's likely prioritization and pursuit of recycled water or seawater desalination under Water Supply Augmentation Strategy Element 3 could result in some additional impacts that would not result from the Proposed Project. For example, if seawater desalination were selected, marine biological and hydrological impacts offshore in the Monterey Bay National Marine Sanctuary would likely result, as documented in the Proposed scwd² Regional Seawater Desalination Project Draft Environmental Impact Report (URS 2013). The impacts of various recycled water options would be evaluated if and when one or more of the recycled water options are pursued by the City as part of Element 3 of the Water Supply Augmentation Strategy.

8.4.1.3 Ability to Meet Project Objectives

The No Project Alternative would not meet any of the identified project objectives (see Table 8-5). In particular, the No Project Alternative would not improve the operational flexibility of the City's system, support the implementation of the City's Water Supply Augmentation Strategy Element 1 (passive recharge of regional aquifers via water transfers) and Element 2 (active recharge of regional aquifers via ASR) to deliver a safe, adequate (i.e., filling the worst-year water supply gap), reliable and environmentally sustainable water supply, and meet state policy favoring integrated regional water management (Objectives #1, #3, #7, #8, #11, and #12). The water supply gap would remain under the No Project Alternative (see Table 8-2) and the City would not be able to contribute to regional conjunctive use and groundwater basin recovery in both the Santa Cruz Mid-County Groundwater Basin and the Santa Margarita Groundwater Basin (Objectives #4, #6 and #11). Additionally, the No Project alternative would not meet the objectives related to providing improved/protective conditions for fisheries and would not address operational deficiencies at the Tait Diversion and Coast Pump Station (Objectives #2, #9 and #10).

8.4.2 Alternative 1: Agreed Flows Only Without Other Proposed Project Components

Alternative 1 is described below, followed by a discussion of its impacts relative to the Proposed Project and its ability to meet the project objectives.

8.4.2.1 Description

Alternative 1 consists of implementation of the Agreed Flows, consistent with the Proposed Project. None of the other components of the Proposed Project, as summarized above in the No Project Alternative, would be implemented under Alternative 1 (see Table 8-1). All other conditions are generally based on those existing in 2018 and include existing water rights and existing infrastructure capacities, with the exception that all the City's cumulative infrastructure improvements are also included in the modeling for this Alternative, similar to the Proposed Project. These include improvements related to the Newell Creek Pipeline and the Graham Hill Water Treatment Plant (See Appendix D for additional information about the modeling conditions for Alternative 1).

As for the No Project Alternative, Alternative 1 would not provide for any elements of the Proposed Project that would allow the City to expand its storage capacity to deliver a safe, adequate (i.e., filling the worst-year water supply gap), reliable and environmentally sustainable water supply. As a result, Alternative 1 would require the City to prioritize and immediately pursue Water Supply Augmentation Strategy Element 3 options (recycled water or seawater desalination), which are currently considered as back-up water sources, if passive and active recharge solutions identified in Elements 1 and 2 and included in the Proposed Project are not sufficient (see Sections 8.3.2.2, Recycled Water, and 8.3.2.3, Seawater Desalination).

While Alternative 1 would not meet the project objectives, the State Water Resources Control Board, a responsible agency, requested that such an alternative be evaluated in this EIR, during the scoping period and therefore it is included in this analysis (see Section 2, Introduction, for a summary of the scoping comments received and Appendix A for detailed comments). CEQA encourages lead agencies to include in their Draft EIRs information specifically requested by responsible agencies. (See, e.g., CEQA Guidelines Sections 15082(b) and 15125(d)(1)(C).) Alternative 1 will be helpful to the State Water Resources Control Board as it assesses the City's water rights applications, and should give that agency a better understanding of the water supply benefits and environmental benefits of the components of the Proposed Project not included within Alternative 1.

8.4.2.2 Impact Analysis

Biological Resources

Fisheries Impacts

Based on the modeling included in Appendix D-3, the long-term operational effects of Alternative 1 on habitat conditions for steelhead and coho would be nearly identical to those of the Proposed Project and involve an improvement of habitat conditions for these species relative to baseline conditions, as described in Impact BIO-1A. However, the improvement in habitat effects in Newell Creek downstream of Newell Creek Dam would be less under Alternative 1 than under the Proposed Project or Alternatives 2 and 3. This is because the elements of the Proposed Project like ASR operations that add operational flexibility by providing additional storage and result in higher storage levels in Loch Lomond Reservoir and increased frequency and/or duration of spill, would not occur under Alternative 1 (see Figure 8-1). As a result of less frequent reservoir spills under Alternative 1, habitat values in Newell Creek would show less improvement over the baseline compared to the Proposed Project and Alternatives 2 and 3.

Alternative 1 would have the same negative effects as the Proposed Project (relative to the baseline) to rearing habitat index in wet years for coho in Laguna Creek (a 2.7% decline) (see Appendix D-3, Table 5). Additionally, there would be a 6.2% decline in the adult migration index for coho downstream of the Tait Diversion in critically dry years that would not result from the Proposed Project (see Appendix D-3, Table 5). The decline in the adult migration index for coho downstream of the Tait Diversion in Alternative 1 would likely result from more frequent restrictions on migration bypass flows due to lower storage levels in Loch Lomond Reservoir under Alternative 1 in a limited number of years (see Figure 8-1), as described previously. Under the Agreed Flows, requirements for adult migration bypass flows at the Tait Diversion can be relaxed under low storage levels in Loch Lomond Reservoir from December through March. If Alternative 1 results in more frequent Loch Lomond Reservoir storage levels below the trigger for lower migration bypass flows, bypass flows below the Tait Diversion would be modified more often (see Appendix D-2). The reason the adult migration index for coho can be reduced while the index for steelhead is not is that migration opportunities lost in December can be compensated for by gains in April for steelhead but not for coho, which migrate primarily before March. Provision of adult migration bypass flows in April under the Agreed Flows may also contribute to lower storage levels in Loch Lomond Reservoir in the early winter with Alternative 1 compared to the baseline.

Similar to the Proposed Project, the above habitat effects would not likely be biologically meaningful and would not be considered “substantial” under CEQA standards of significance or meet any of the significance thresholds under CEQA. Specifically, changes of this magnitude would not substantially reduce the habitat of coho, interfere substantially with the movement or migration of coho, cause the coho population to drop below self-sustaining levels, threaten to eliminate coho in Laguna Creek or the San Lorenzo River or, substantially reduce the number or restrict the range of coho. Additionally, as concluded in Appendix D-3, with the implementation of Standard Operational Practice #6 as part of Alternative 1, potential adverse water temperature effects on steelhead and coho due to minor changes in the frequency of reservoir spills would be avoided. Therefore, Alternative 1 would also have a less-than-significant impact on steelhead and coho during operations, but habitat conditions below the Tait Diversion would be somewhat reduced under Alternative 1.

While Alternative 1 would realize some of the benefits of the Proposed Project to biological resources due to improved conditions for fish in the San Lorenzo River, Newell Creek and the North Coast streams with the implementation of the Agreed Flows, this Alternative would not result in improved fish passage and/or fish screening at the Felton Diversion and Tait Diversion (see Impact BIO-1A). Additionally, given that this Alternative would not result in improved fish passage and/or fish screening at these diversions and would not result in intertie improvements, no potentially significant construction impacts on special-status fish associated with these improvements (see Impact BIO-1A) would result and the mitigation measures identified for the Proposed Project to address construction impacts would not be required.

Other Biological Resource Impacts

Other long-term operational impacts of Alternative 1 on other special-status species (Impacts BIO-1B and BIO-1C), riparian and sensitive habitat (Impact BIO-2), jurisdictional aquatic resources (Impact BIO-3), and wildlife movement (Impact BIO-4) are also expected to be less than significant, similar to the Proposed Project given that the difference in residual flows with Alternative 1 would be minimal relative to 2018 baseline conditions. Additionally, no potentially significant impacts would result from Alternative 1 associated with constructing new or upgraded infrastructure components (see Table 8-6), including those related to other special-status species (Impacts BIO-1B and BIO-1C), riparian and sensitive habitat (Impact BIO-2), jurisdictional aquatic resources (Impact BIO-3) and the mitigation measures identified for the Proposed Project would not be required.

Other Impacts

As the Proposed Project's infrastructure components would not be constructed or operated under Alternative 1, the other potentially significant impacts associated with constructing and/or operating new or upgraded infrastructure facilities identified in this EIR would not occur (see Table 8-6), including those related to cultural resources (Impacts CUL-1, CUL-2, and CUL-3), seismic hazards (Impact GEO-1), paleontological resources (Impact GEO-4), hazardous materials release (Impact HAZ-2), conflict with a groundwater plan (Impact HYD-2), alteration to drainage patterns (Impact HYD-3), conversion of farmland or forest land (Impact LU-2), permanent increase in noise (Impact NOI-1), permanent or temporary increase in noise in excess of standards (Impact NOI-2), vibration (Impact NOI-3), and new or expanded facilities (Impact UTL-1). In particular, the significant unavoidable construction noise impact due to well drilling activities for the new ASR facilities and the Beltz 9 ASR facility (Impacts NOI-1 and UTL-1) would not occur with the Alternative 1. In addition, most other impacts related to the Proposed Project (identified as less than significant) would not occur under Alternative 1 as shown in Table 8-6.

However, Alternative 1 would not realize the benefits of the Proposed Project to recreational uses due to increased lake levels at Loch Lomond Reservoir (see Impact REC-2). Notably, conditions in Loch Lomond Reservoir for recreation would likely degrade over baseline conditions given that the City would need to rely on the reservoir more heavily than under 2018 baseline conditions with the Agreed Flows in place and none of the other components of the Proposed Project implemented under Alternative 1. During the recreational use period from March 1 to mid-October, on average there are approximately 12% of days under baseline conditions where a full season of boating and related operations do not occur because lake levels fall below approximately 564 feet amsl in March, at the beginning of the season. In comparison, under Alternative 1, on average there would be approximately 13.8% of days where a full season of boating and related operations would not occur because lake levels fall below approximately 564 feet amsl in March (see Table 8-4). In contrast to the beneficial impact of the Proposed Project, the impact of Alternative 1 on recreational uses at Loch Lomond Reservoir would be potentially significant and unavoidable until an alternative source of water supply is developed (i.e., recycled water or seawater desalination). As Alternative 1 would not include ASR or water transfers it would not have the potential to contribute sustainability benefits in the Santa Margarita Groundwater Basin and the Santa Cruz Mid-County Groundwater Basin, whereas the Proposed Project would have such potential (see Impact HYD-2). Lastly, Alternative 1 would not provide additional water supply to meet projected demand in the areas served by the City during currently constrained dry periods (see Impact UTL-2). In contrast to the beneficial impact of the Proposed Project, the Alternative 1 water supply impact would be potentially significant and unavoidable until an alternative source of water supply is developed.

Given that the City's water supply objectives would not be met with the Alternative 1, the City's likely prioritization and pursuit of recycled water or seawater desalination under Water Supply Augmentation Strategy Element 3 could result in some additional impacts that would not result from the Proposed Project. For example, if seawater desalination were selected, marine biological and hydrological impacts offshore in the Monterey Bay National Marine Sanctuary would likely result, as documented in the Proposed scwd² Regional Seawater Desalination Project Draft Environmental Impact Report (URS 2013). The impacts of various recycled water options would be evaluated if and when one or more of the recycled water options are pursued by the City as part of Element 3.

8.4.2.3 Ability to Meet Project Objectives

While Alternative 1 would technically meet the project objective to provide flow conditions that are protective of coho and steelhead within all streams from which the City diverts water (Agreed Flows) (Objective #2), it is possible that without the other elements of the Proposed Project the City would not be able to comply with the Agreed Flows at certain times and therefore Alternative 1 would only moderately meet this objective. Under Alternative 1, the City would have to rely on surface water sources in Loch Lomond Reservoir more heavily, as compared to the Proposed Project.

Alternative 1 would not meet any of the other identified project objectives (see Table 8-5). In particular, the Alternative 1 would not improve the operational flexibility of the City's system, support the implementation of the City's Water Supply Augmentation Strategy Element 1 (passive recharge of regional aquifers via water transfers) and Element 2 (active recharge of regional aquifers via ASR) to deliver a safe, adequate (i.e., filling the worst-year water supply gap), reliable and environmentally sustainable water supply, and meet state policy favoring integrated regional water management (Objectives #1, #3, #7, #8, #11 and #12). The water supply gap would remain and would likely increase under Alternative 1 (see Table 8-5) and the City would not be able to contribute to regional conjunctive use and groundwater basin recovery in both the Santa Cruz Mid-County Groundwater Basin and the Santa Margarita Groundwater Basin (Objectives #4, #6 and #11). Alternative 1 would also not improve fish screening at the Felton Diversion and Tait Diversion and improve fish passage at the Felton Diversion or address operational deficits at the Tait Diversion and Coast Pump Station (Objectives #9 and #10).

8.4.3 Alternative 2: All Proposed Project Components Except Place of Use Expansion

Alternative 2 is described below, followed by a discussion of its impacts relative to the Proposed Project and its ability to meet the project objectives.

8.4.3.1 Description

Alternative 2 includes most components of the Proposed Project, as summarized above in the No Project Alternative, except there would be no place of use expansion focused on expanding the City's groundwater-storage capacity through a larger number of ASR sites, and on supporting regional water supply reliability in neighboring districts and groundwater basins (see Table 8-1). The place of use for City water rights would still be refined to ensure those rights have consistent POUs.⁴ Alternative 2 would not include water transfers to neighboring water agencies and ASR would be possible only within the areas served by the City (see Figure 3-3 in Chapter 3, Project Description). Therefore, Alternative 2 would include Beltz ASR facilities and potentially new ASR facilities within the areas served by the City. Given the limited area to implement ASR, the modeling considers a reduced injection and extraction capacity, as described in more detail in Appendix D. All other modeling conditions for Alternative 2 are consistent with the Proposed Project.

⁴ The Newell Creek License (License No 9847) still would be inconsistent because its POU includes areas in the upper San Lorenzo Valley and Scotts Valley.

8.4.3.2 Impact Analysis

Biological Resources

Fisheries Impacts

Based on the modeling included in Appendix D-3, the long-term operational effects of Alternative 2 on habitat conditions for steelhead and coho are nearly identical to those of the Proposed Project and involve an improvement of habitat conditions for these species, as described in Impact BIO-1A. Alternative 2 has the same negative effect as the Proposed Project (relative to the baseline) to rearing habitat index in wet years for coho in Laguna Creek (a 2.7% decline) (see Appendix D-3, Table 6). Additionally, there would be a 5.5% decline in the adult migration index for coho downstream of the Tait Diversion in critically dry years that would not result from the Proposed Project (see Appendix D-3, Table 6); this decline is somewhat reduced as compared to Alternative 1. The decline in the adult migration index for coho downstream of the Tait Diversion in Alternative 2 is most likely a result of more frequent restrictions on migration bypass flows due to lower storage levels in Loch Lomond Reservoir under Alternative 2 in early winter in a limited number of years compared to the Proposed Project (see Figure 8-1).

Similar to the Proposed Project, the above habitat effects are not likely to be biologically meaningful and would not be considered “substantial” under CEQA standards of significance or meet any of the significance thresholds under CEQA. Specifically, changes of this magnitude would not substantially reduce the habitat of coho, interfere substantially with the movement or migration of coho, cause the coho population to drop below self-sustaining levels, threaten to eliminate coho in Laguna Creek or the San Lorenzo River or substantially reduce the number or restrict the range of coho. Additionally, as concluded in Appendix D-3, with the implementation of Operational Practice #6 as part of Alternative 2, potential adverse water temperature effects on steelhead and coho due to an increase in frequency of reservoir spills would be avoided. Therefore, Alternative 2 would also have a less-than-significant impact on steelhead and coho during operations, but habitat conditions below the Tait Diversion would be somewhat reduced under Alternative 2 relative to the Proposed Project.

Alternative 2 would realize some of the benefits of the Proposed Project to biological resources due to improved conditions for fish in the San Lorenzo River, Newell Creek and the North Coast streams with the implementation of the Agreed Flows. This Alternative would also result in improved fish passage and/or fish screening at the Felton Diversion and Tait Diversion during operations (see Impact BIO-1A). As Alternative 2 would also include the Tait Diversion and Coast Pump Station improvements, it would result in similar potentially significant construction impacts on special-status fish and would require the same mitigation measures as the Proposed Project (see Impact BIO-1A) to reduce the impacts to less-than-significant levels.

Other Biological Resource Impacts

Other long-term operational impacts of Alternative 2 on other special-status species (Impacts BIO-1B and BIO-1C), riparian and sensitive habitat (Impact BIO-2), jurisdictional aquatic resources (Impact BIO-3), and wildlife movement (Impact BIO-4) are also expected to be less than significant, similar to the Proposed Project given that the difference in residual flows with Alternative 2 would be minimal relative to 2018 baseline conditions. Additionally, the potentially significant impacts associated with constructing new or upgraded infrastructure components with Alternative 2 would be somewhat reduced given that intertie improvements would not be constructed and likely fewer new ASR facilities would be constructed (see Table 8-6). These somewhat reduced potentially significant impacts include those related to other special-status species (Impacts BIO-1B and BIO-1C), riparian and sensitive habitat (Impact BIO-2), and

jurisdictional aquatic resources (Impact BIO-3). Alternative 2 would require the same mitigation measures identified as the Proposed Project to reduce the potentially significant impacts to less-than-significant levels.

Other Impacts

As indicated above, the intertie improvements would not be constructed, and likely fewer new ASR facilities would be constructed under Alternative 2. Therefore, most other potentially significant impacts associated with constructing and/or operating new or upgraded infrastructure facilities identified in this EIR would be somewhat reduced with this Alternative (see Table 8-6), including those related to cultural resources (Impacts CUL-1, CUL-2, and CUL-3), seismic hazards (Impact GEO-1), paleontological resources (Impact GEO-4), hazardous materials release (Impact HAZ-2), conflict with a groundwater plan (Impact HYD-2), conversion of farmland or forest land (Impact LU-2), permanent or temporary increase in noise in excess of standards (Impact NOI-2), vibration (Impact NOI-3), and new or expanded facilities (Impact UTL-1). However, the potentially significant impact associated with alteration of drainage patterns (Impact HYD-3) would be avoided with Alternative 2 as this impact would only result with the City/SVWD intertie and City/SqCWD/CWD intertie components, which would not be constructed. Likewise, the potentially significant impact associated with conversion of farmland and forest land (Impact LU-2) would be avoided with Alternative 2, as this impact would only result with new ASR facilities located in more rural areas, which would not be construction under this alternative. Alternative 2 would require most of the same mitigation measures identified as the Proposed Project to reduce most of the above potentially significant impacts to less-than-significant levels, with the exception of the mitigation measures to address Impact HYD-3 and Impact LU-2. The significant unavoidable construction noise impact due to well drilling activities for the new ASR facilities and the Beltz 9 ASR facility (Impacts NOI-1 and UTL-1) would be somewhat reduced given that there would be fewer new ASR facilities; however, it would remain significant and unavoidable with the Alternative 2. Most other impacts related to the Proposed Project (identified as less than significant) would also be somewhat reduced under Alternative 2 as shown in Table 8-6, given the reduced facility construction and operation.

However, Alternative 2 would not realize the same benefits of the Proposed Project to recreational uses due to increased lake levels at Loch Lomond Reservoir (see Impact REC-2). During the recreational use period from March 1 to mid-October, on average there are approximately 12% of days under baseline conditions where a full season of boating and related operations do not occur because lake levels fall below approximately 564 feet amsl in March, at the beginning of the season. In comparison, under Alternative 2, on average there would be approximately 7.2% of days where a full season of boating and related operations would not occur because lake levels fall below approximately 564 feet amsl in March (see Table 8-4). Similar to the Proposed Project, the impact of Alternative 2 on recreational uses at Loch Lomond Reservoir would also be beneficial given that it would improve conditions for boating compared to existing conditions; however, the improvement under Alternative 2 would be less than for the Proposed Project.

As Alternative 2 would not include water transfers and only limited ASR, it would not have as much of a potential to contribute sustainability benefits in the Santa Cruz Mid-County Groundwater Basin and would not have potential to contribute such benefits in the Santa Margarita Groundwater Basin, whereas the Proposed Project would have such potential (see Impact HYD-2). Lastly, Alternative 2 would not provide as much additional water supply and would therefore not meet projected demand in the areas served by the City during currently constrained dry periods (see Impact UTL-2). In contrast to the beneficial impact of the Proposed Project, the Alternative 2 water supply impact would also likely be potentially significant and unavoidable until an alternative source of water supply is developed; however, the peak-season shortage for Alternative 2 would be less than for Alternatives 1 and 3 (see Table 8-2).

8.4.3.3 Ability to Meet Project Objectives

While Alternative 2 would technically meet the project objective to provide flow conditions that are protective of coho and steelhead within all streams from which the City diverts water (Agreed Flows) (Objective #2), it is possible that without water transfers and less ASR operations the City would not be able to comply with the Agreed Flows at certain times and therefore Alternative 2 would only moderately meet this objective. Under Alternative 2, the City would have to rely on surface water sources in Loch Lomond Reservoir more heavily, as compared to the Proposed Project.

Alternative 2 would fully meet the project objectives regarding removal of operational constraints on City water rights that do not explicitly recognize direct diversion (Objective #7), allowance for additional time for the City to fully reach beneficial use in existing water-rights permits at Felton (Objective #8), and improved fish passage and/or screening at the Felton and Tait Diversions and addressing operational deficiencies at the Tait Diversion and Coast Pump Station (Objectives #9 and #10). However, given that no water transfers and exchanges and intertie improvements, and fewer new ASR facilities would be implemented under Alternative 2, it would only moderately meet objectives related to: improving the operational flexibility of the City's system (Objective #1), supporting the implementation of the City's Water Supply Augmentation Strategy (Objective #3), finding more options for where and how the City can utilize its existing appropriative water rights (Objective #5), providing for underground storage of surface water via ASR in conformance with the Santa Cruz Mid-County GSP (Objective #6), implementing state policy favoring integrated regional water management (Objective #11), and considering other related actions or activities that would be foreseeable if the Proposed Project is approved (Objective #12) (see Table 8-5). Additionally, Alternative 2 would not meet the objective to facilitate opportunities within the City and regionally for conjunctive use of the City's surface water and groundwater (Objective #4), given that water transfers would not be implemented under this alternative.

Given the above, Alternative 2 would not fully support the implementation of the City's Water Supply Augmentation Strategy Element 1 (passive recharge of regional aquifers via water transfers) and Element 2 (active recharge of regional aquifers via ASR) to deliver a safe, adequate (i.e., filling the worst-year water supply gap), reliable and environmentally sustainable water supply (Objective #3). Some amount of water supply gap would remain under Alternative 2 (see Table 8-5) and the City would not be able to contribute as much to regional conjunctive use, as compared to the Proposed Project. While the City could somewhat contribute to groundwater basin recovery in the Santa Cruz Mid-County Groundwater Basin through some ASR operations, but no water transfers to neighboring agencies, it would not contribute to groundwater basin recovery in the Santa Margarita Groundwater Basin under this Alternative, given that new ASR facilities could not be sited outside of the areas served by the City.

8.4.4 Alternative 3: All Proposed Project Components Except Aquifer Storage and Recovery

Alternative 3 is described below, followed by a discussion of its impacts relative to the Proposed Project and its ability to meet the project objectives.

8.4.4.1 Description

Alternative 3 includes most components of the Proposed Project, as summarized above in the No Project Alternative, except there would be no ASR (see Table 8-1). Therefore, Alternative 3 would not include Beltz ASR facilities or other new ASR facilities within or beyond the areas served by the City. Alternative 3 accordingly also

would not include the City obtaining the State Water Resources Control Board's approval of the addition of underground storage supplements on any of its water-right permits or licenses. All other modeling conditions for Alternative 3 are consistent with the Proposed Project.

8.4.4.2 Impact Analysis

Biological Resources

Fisheries Impacts

Based on the modeling included in Appendix D-3, the long-term operational effects of Alternative 3 on habitat conditions for steelhead and coho are nearly identical to those of the Proposed Project and involve an improvement of habitat conditions for these species relative to baseline conditions, as described in Impact BIO-1A. Alternative 3 has the same negative effect as the Proposed Project (relative to the baseline) to rearing habitat index in wet years for coho in Laguna Creek (a 2.7% decline) (see Appendix D-3, Table 7). Additionally, there would be a 4.2% decline in the adult migration index for coho downstream of the Tait Diversion in critically dry years that would not result from the Proposed Project (see Appendix D-3, Table 6); this decline is somewhat reduced as compared to Alternatives 1 and 2. The decline in the adult migration index for coho downstream of the Tait Diversion in Alternative 3 is most likely a result of more frequent restrictions on migration bypass flows due to lower storage levels in Loch Lomond Reservoir under Alternative 3 in early winter in a limited number of years compared to the Proposed Project (see Figure 8-1).

Similar to the Proposed Project, the above habitat effects are not likely to be biologically meaningful and would not be considered "substantial" under CEQA standards of significance or meet any of the significance thresholds under CEQA. Specifically, changes of this magnitude would not substantially reduce the habitat of coho, interfere substantially with the movement or migration of coho, cause the coho population to drop below self-sustaining levels, threaten to eliminate coho in Laguna Creek or the San Lorenzo River or, substantially reduce the number or restrict the range of coho. Additionally, as concluded in Appendix D-3, with the implementation of Operational Practice #6 as part of Alternative 3, potential adverse water temperature effects on steelhead and coho due to an increase in frequency of reservoir spills would be avoided. Therefore, Alternative 3 would also have a less-than-significant impact on steelhead and coho during operations, but habitat conditions below the Tait Diversion would be somewhat reduced under Alternative 3 relative to the Proposed Project.

Alternative 3 would realize some of the benefits of the Proposed Project to biological resources due to improved conditions for fish in the San Lorenzo River, Newell Creek and the North Coast streams with the implementation of the Agreed Flows. This Alternative would also result in improved fish passage and/or fish screening at the Felton Diversion and Tait Diversion during operations (see Impact BIO-1A). As Alternative 3 would also include the Tait Diversion and Coast Pump Station improvements, it would result in similar potentially significant construction impacts on special-status fish and would require the same mitigation measures as the Proposed Project (see Impact BIO-1A) to reduce the impacts to less-than-significant levels.

Other Biological Resource Impacts

Other long-term operational impacts of Alternative 3 on other special-status species (Impacts BIO-1B and BIO-1C), riparian and sensitive habitat (Impact BIO-2), jurisdictional aquatic resources (Impact BIO-3), and wildlife movement (Impact BIO-4) are also expected to be less than significant, similar to the Proposed Project given that the difference in residual flows with Alternative 3 would be minimal relative to 2018 baseline conditions.

Additionally, the potentially significant impacts associated with constructing new or upgraded infrastructure components with Alternative 3 would be somewhat reduced for impacts related to special-status wildlife or nesting birds (Impact BIO-1B), given that no ASR facilities would be constructed with this alternative. All other potentially significant impacts associated with constructing new or upgraded infrastructure components with Alternative 3 would be similar to those of the Proposed Project, as these impacts relate to the intertie improvements and the Felton and Tait Diversion improvements, which would also be implemented under Alternative 3. These potentially significant impacts include those related to other special-status plants species (Impacts BIO-1C), riparian and sensitive habitat (Impact BIO-2), and jurisdictional aquatic resources (Impact BIO-3). Alternative 3 would require the same mitigation measures identified as the Proposed Project to reduce these potentially significant impacts to less-than-significant levels.

Other Impacts

As indicated above, the ASR upgrades and improvements would not be constructed under Alternative 3. Therefore, most other potentially significant impacts associated with constructing and/or operating new or upgraded infrastructure facilities identified in this EIR would be somewhat reduced with this Alternative (see Table 8-6), including those related to cultural resources (Impacts CUL-1, CUL-2, and CUL-3), paleontological resources (Impact GEO-4), hazardous materials release (Impact HAZ-2), alteration to drainage patterns (Impact HYD-3), permanent or temporary increase in noise in excess of standards (Impact NOI-2), vibration (Impact NOI-3), and new or expanded facilities (Impact UTL-1). The potentially significant impact associated with conflict with a groundwater plan (Impact HYD-2) would be avoided with Alternative 3, as this localized impact would only result with ASR facilities, which would not be constructed under this alternative. Likewise, the potentially significant impact associated with conversion of farmland and forest land (Impact LU-2) would be avoided with Alternative 3, as this impact would only result with new ASR facilities. The significant unavoidable construction noise impact due to well drilling activities for the new ASR facilities and the Beltz 9 ASR facility (Impacts NOI-1 and UTL-1) would be avoided under this alternative as no well drilling for these facilities would be required under Alternative 3. Alternative 3 would require most of the same mitigation measures identified as the Proposed Project to reduce the above potentially significant impacts to less-than-significant levels, with the exception of the mitigation measures to address Impact HYD-2 and Impact LU-2.

Potentially significant impacts related to seismic hazards (Impact GEO-1) would be reduced to less than significant under Alternative 3, as this impact relates to ASR facilities, which would not be included in Alternative 3. Therefore, MM-GEO-1 would not be required to reduce this impact. In addition, most other impacts related to the Proposed Project (identified as less than significant) would also be somewhat reduced under Alternative 3 as shown in Table 8-6, given the reduced facility construction and operation.

However, Alternative 3 would not realize the same benefits of the Proposed Project to recreational uses due to increased lake levels at Loch Lomond Reservoir (see Impact REC-2). During the recreational use period from March 1 to mid-October, on average there are approximately 12% of days under baseline conditions where a full season of boating and related operations do not occur because lake levels fall below approximately 564 feet amsl in March, at the beginning of the season. In comparison, under Alternative 3, on average there would be approximately 10.2% of days where a full season of boating and related operations would not occur because lake levels fall below approximately 564 feet amsl in March (see Table 8-4). Similar to the Proposed Project, the impact of Alternative 3 on recreational uses at Loch Lomond Reservoir would also be beneficial given that it would improve conditions for boating compared to existing conditions; however, the improvement under Alternative 3 would be less than for the Proposed Project.

As the Alternative 3 would not include ASR, it would not have as much of a potential to contribute sustainability benefits in the Santa Cruz Mid-County Groundwater Basin and the Santa Margarita Groundwater Basin, whereas the Proposed Project would have such potential (see Impact HYD-2). Lastly, Alternative 3 would not provide as much additional water supply and would therefore not meet projected demand in the areas served by the City during currently constrained dry periods (see Table 8-6) (see Impact UTL-2). In contrast to the beneficial impact of the Proposed Project, the Alternative 3 water supply impact would also likely be potentially significant and unavoidable until an alternative source of water supply is developed.

8.4.4.3 Ability to Meet Project Objectives

While Alternative 3 would technically meet the project objective to provide flow conditions that are protective of coho and steelhead within all streams from which the City diverts water (Agreed Flows) (Objective #2), it is possible that without ASR operations the City would not be able to comply with the Agreed Flows at certain times and therefore Alternative 3 would only moderately meet this objective. Under Alternative 3, the City would have to rely on surface water sources more heavily, as compared to the Proposed Project.

Alternative 3 would fully meet the project objectives regarding facilitating opportunities within the City and regionally for conjunctive use of the City's surface water and groundwater through transfers (Objective #4), removal of operational constraints on City water rights that do not explicitly recognize direct diversion (Objective #7), and improved fish passage and/or screening at the Felton and Tail Diversions and addressing operational deficiencies at the Tait Diversion and Coast Pump Station (Objectives #9 and #10). However, given that no ASR facilities, including Beltz ASR, would be implemented under Alternative 3 it would only moderately meet objectives related to: improving the operational flexibility of the City's system (Objective #1), supporting the implementation of the City's Water Supply Augmentation Strategy (Objective #3), finding more options for where and how the City can utilize its existing appropriative water rights (Objective #5), implementing state policy favoring integrated regional water management (Objective #11) and considering other related actions or activities that would be foreseeable if the Proposed project is approved (Objective #12) (see Table 8-5). Additionally, Alternative 3 would not meet the objective to provide for underground storage of surface water via ASR in conformance with the Santa Cruz Mid-County GSP (Objective #6). Alternative 3 may not meet the objective of allowing for additional time for the City to fully reach beneficial use in existing water-rights permits at Felton. Water diverted at Felton to underground storage via ASR may be an element of maximizing use of the Felton permits (Objective #8).

Given the above, Alternative 3 would not fully support the implementation of the City's Water Supply Augmentation Strategy Element 1 (passive recharge of regional aquifers via water transfers) and Element 2 (active recharge of regional aquifers via ASR) to deliver a safe, adequate (i.e., filling the worst-year water supply gap), reliable and environmentally sustainable water supply (Objective #3). Some amount of water supply gap would remain under Alternative 3 (see Table 8-2) and the City would not be able to contribute as much to regional conjunctive use, as compared to the Proposed Project. While the City could somewhat contribute to groundwater basin recovery in both the Santa Cruz Mid-County Groundwater Basin and the Santa Margarita Groundwater Basin under this Alternative, with the implementation of water transfers that contribution would be limited without ASR facilities.

8.5 Environmentally Superior Alternative

The CEQA Guidelines (Section 15126.6[a]) requires that an EIR's analysis of alternatives identify the "environmentally superior alternative" among all of those considered. In addition, Section 15126.6(e)(2) states that if the environmentally superior alternative is the No Project Alternative, the EIR must also identify an environmentally superior alternative among the other alternatives. Furthermore, Public Resources Code Sections 21002 and 21081 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 economic, legal, social, technological, or other conditions make such mitigation measures or alternatives infeasible.

Table 8-6 presents a comparison of project impacts between the Proposed Project and the alternatives. The No Project Alternative would reduce or avoid impacts to some environmental resources, as would Alternatives 1, 2, and 3. Additionally, the significant unavoidable construction noise impact due to well drilling activities for the new ASR facilities and the Beltz 9 ASR facility (Impacts NOI-1 and UTL-1) would be avoided under the No Project Alternative, and Alternatives 1 and 3 as no well drilling for these facilities would be required under these alternatives. However, none of the alternatives would realize the same benefits of the Proposed Project to recreational uses due to increased lake levels at Loch Lomond Reservoir (see Impact REC-2). Specifically, the beneficial impacts of the Proposed Project related to recreational uses due to increased lake levels at Loch Lomond Reservoir (see Impact REC-2) would be potentially significant and unavoidable for the No Project Alternative and Alternative 1, and while this impact under Alternatives 2 and 3 would also be beneficial, the improvement of conditions for boating under these alternatives would be less than for the Proposed Project. Additionally, the alternatives would not provide sufficient additional water supply to meet projected demand in the areas served by the City during currently constrained dry periods (see Impact UTL-2), and this impact would be potentially significant and unavoidable for all of the alternatives until an alternative source of water supply is developed. Given this, the No Project Alternative is not the environmentally superior alternative and therefore an environmentally superior alternative among the other alternatives does not need to be identified under CEQA Guidelines Section 15126.6(e)(2).

Regardless, the City has concluded that the Proposed Project is the environmentally superior alternative. Most importantly, because none of the alternatives includes the full panoply of the components of the Proposed Project (such as water transfers and ASR) intended to facilitate regional groundwater stabilization and conjunctive use, the Proposed Project has the greatest environmental benefit to regional groundwater conditions. In addition, the Proposed Project would avoid the potentially significant and unavoidable water supply impact of all of the alternatives and the potentially significant and unavoidable recreation impact of the No Project Alternative and Alternative 1 and would reduce all impacts to less-than-significant levels with identified mitigation measures, with the exception of temporary construction noise impacts from ASR well-drilling activities. In the City's judgment, the groundwater benefits of the Proposed Project outweigh in importance the limited significant and unavoidable noise impacts associated with temporary ASR well-drilling activities. Given the enormous importance of stabilizing groundwater basins in California, as the Legislature found in enacting the Sustainable Groundwater Management Act, the City is unable to conclude that the short-term noise impacts of the Proposed Project compel the conclusion that alternatives with fewer or no ASR facilities are environmentally superior to the Proposed Project.

Table 8-5. Ability of Alternatives to Meet Project Objectives

Objective	Proposed Project	No Project Alternative	Alternative 1	Alternative 2	Alternative 3
Objective #1: Improve the flexibility with which the City operates the water system to facilitate the City's ability to meet drinking water demand while providing flow conditions protective of coho and steelhead.	Excellent	Poor	Poor	Moderate	Moderate
Objective #2: Provide flow conditions that are protective of coho and steelhead within all streams from which the City diverts water, as negotiated with CDFW and NMFS during the preparation of the pending ASHCP, which is the habitat conservation plan being developed under the FESA and CESA.	Excellent	Poor	Moderate	Moderate	Moderate
Objective #3: To improve the City's limited storage and support the implementation of the City's Water Supply Augmentation Strategy Element 1 (passive recharge of regional aquifers via water transfers and exchanges) and Element 2 (active recharge of regional aquifers via ASR) in order to deliver a safe, adequate, reliable and environmentally sustainable water supply.	Excellent	Poor	Poor	Moderate	Moderate
Objective #4: Facilitate opportunities within the City and regionally for conjunctive use of the City's surface water rights in combination with groundwater, including by addressing significant barriers to implementing conjunctive use due to the place of use associated with the City's water-right permits and licenses to, among other things, assist in implementation of the "Water Transfers/In Lieu Groundwater Recharge" element of the Santa Cruz Mid-County Groundwater Basin GSP.	Excellent	Poor	Poor	Poor	Excellent
Objective #5: Provide more options for where and how the City can utilize its existing appropriative water rights.	Excellent	Poor	Poor	Moderate	Moderate
Objective #6: Provide for the underground storage of surface water primarily to support more reliable and improved water supply by allowing the City to use such stored water during dry periods and also contribute to the protection of groundwater quality from seawater intrusion per the Santa Cruz Mid-County Groundwater Basin GSP and to allow for the implementation of the "Aquifer Storage and Recovery" element of the Santa Cruz Mid-County Groundwater Basin GSP.	Excellent	Poor	Poor	Moderate	Poor

Table 8 5. Ability of Alternatives to Meet Project Objectives (continued)

Objective	Proposed Project	No Project Alternative	Alternative 1	Alternative 2	Alternative 3
Objective #8: Allow additional time for the City to fully reach beneficial use under existing water-right permits at Felton.	Excellent	Poor	Poor	Excellent	Poor
Objective #9: Improve fish screening at the Felton Diversion and Tait Diversion and improve fish passage at the Felton Diversion. Consideration of fish passage improvements at Tait Diversion would be incorporated into future projects as required.	Excellent	Poor	Poor	Excellent	Excellent
Objective #10: Address reliability and operational deficits at the Tait Diversion and Coast Pump Station to meet other project objectives.	Excellent	Poor	Poor	Excellent	Excellent
Objective #11: Implement state policy favoring integrated regional water management by involving the City and other local agencies in “significantly improving” the “reliability of water supplies” by “diversifying water portfolios, taking advantage of local and regional opportunities, and considering a broad variety of water management strategies,” specifically by making more extensive conjunctive use of the surface-water, groundwater and groundwater-storage resources available to the City and, when Agreed Flows and City demands are met, making excess surface water under the City’s surface-water rights available to neighboring agencies who are dependent on overdrafted groundwater basins. (Water Code Section 10531(c).)	Excellent	Poor	Poor	Moderate	Moderate
Objective #12: Consider other related actions or activities that would be foreseeable as a logical part in a chain of contemplated actions should the Proposed Project be approved, including facilities that would provide for ASR, water transfers, and water exchanges.	Excellent	Poor	Poor	Moderate	Moderate

Notes: ASHCP = Anadromous Salmonid Habitat Conservation Plan; ASR = aquifer storage and recovery; CDFW = California Department of Fish and Wildlife; CESA = California Endangered Species Act; FESA = Federal Endangered Species Act; NMFS = National Marine Fisheries Service.

Table 8-6. Comparison of Impacts from the Alternatives

Environmental Issue	Proposed Project	No Project Alternative	Alternative 1	Alternative 2	Alternative 3
Air Quality					
Impact AIR-1: Conflict with an Applicable Air Quality Plan. <u>Construction and operation</u> of the Proposed Project would result in emissions of criteria pollutants, but would not exceed adopted thresholds of significance and therefore would not conflict with the MBARD's AQMP.	LS	NI	NI	LS ↓	LS ↓
Impact AIR-2: Criteria Pollutant Emissions. <u>Construction and operation</u> of the Proposed Project would result in emissions of criteria pollutants, but would not exceed adopted thresholds of significance, violate any air quality standard or contribute substantially to an existing or projected air quality violation. Therefore, the Proposed Project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard.	LS	NI	NI	LS ↓	LS ↓
Impact AIR-3: Exposure of Sensitive Receptors. <u>Construction and operation</u> of the Proposed Project would not expose sensitive receptors to substantial pollutant concentrations.	LS	NI	NI	LS ↓	LS ↓
Impact AIR-4: Result in Other Emissions Adversely Affecting a Substantial Number of People. <u>Construction and operation</u> of the Proposed Project would not result in other emissions that would adversely affect a substantial number of people.	LS	NI	NI	LS ↓	LS ↓
Impact AIR-5: Cumulative Air Quality Impacts. <u>Construction and operation</u> of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, would not result in a significant cumulative impact related to air quality, with the exception of substantial pollutant concentrations (Significance Standard C), but the Proposed Project's contribution to this impact would not cumulatively considerable.	LS	NI	NI	LS ↓	LS ↓

Table 8 6. Comparison of Impacts from the Alternatives (continued)

Environmental Issue	Proposed Project	No Project Alternative	Alternative 1	Alternative 2	Alternative 3
Biological Resources					
Impact BIO-1A: Special-Status Species – Fish. <u>Construction</u> of the Proposed Project could have a substantial adverse effect on special-status fish, but would not interfere with the movement of special-status fish, reduce the habitat, cause a population to drop below self-sustaining levels, or substantially reduce the number or restrict the range of any special-status fish species.	LSM	NI	LS	LSM ↓	LSM
<u>Operation</u> of the Proposed Project would not have such substantial adverse effects.	LS	SU	LS ↑	LS ↑	LS ↑
Impact BIO-1B: Special-Status Species – Other Wildlife. <u>Construction</u> of the Proposed Project could have a substantial adverse effect on other special-status wildlife, but would not interfere substantially with the movement of special-status wildlife, and would not reduce habitat, cause a population to drop below self-sustaining levels, or substantially reduce the number or restrict the range of any special-status wildlife species.	LSM	NI	NI	LSM ↓	LSM ↓
<u>Operation</u> of the Proposed Project would not have such substantial adverse effects.	LS	LS	LS	LS	LS
Impact BIO-1C: Special-Status Species – Plants. <u>Construction</u> of the Proposed Project could have a substantial adverse effect on special-status plants, but would not threaten to eliminate a plant community or restrict the range of any special-status plant species.	LSM	NI	NI	LSM ↓	LSM ↓
<u>Operation</u> of the Proposed Project would not have such substantial adverse effects.	LS	LS	LS	LS	LS
Impact BIO-2: Riparian and Sensitive Vegetation Communities. <u>Construction</u> of the Proposed Project could have a substantial adverse effect on riparian and sensitive vegetation communities, but would not threaten to eliminate a plant community.	LSM	NI	NI	LSM ↓	LSM ↓
<u>Operation</u> of the Proposed Project would not have such substantial adverse effects.	LS	LS	LS	LS	LS

Table 8 6. Comparison of Impacts from the Alternatives (continued)

Environmental Issue	Proposed Project	No Project Alternative	Alternative 1	Alternative 2	Alternative 3
Impact BIO-3: Jurisdictional Aquatic Resources. <u>Construction</u> of the Proposed Project could have a substantial adverse effect on state or federally protected wetlands through direct removal, filling, or hydrological interruption.	LSM	NI	NI	LSM ↓	LSM ↓
<u>Operation</u> of the Proposed Project would not have such substantial adverse effects.	LS	LS	LS	LS	LS
Impact BIO-4: Wildlife Movement. <u>Construction</u> of the Proposed Project would not interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites.	LS	NI	NI	LS	LS
<u>Operation</u> of the Proposed Project would have no adverse effects.	NI	NI	NI	NI	NI
Impact BIO-5: Cumulative Biological Resources Impacts. <u>Construction</u> of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, could result in a significant cumulative impact related to biological resources, but the Proposed Project's contribution to this impact would not be cumulatively considerable.	LS	NI	NI	LS ↓	LS ↓
<u>Operation</u> of the Proposed Project would not result in a significant cumulative impact.	LS	LS	LS	LS	LS
Cultural Resources and Tribal Cultural Resources					
Impact CUL-1: Historic Built Environment Resources. <u>Construction</u> of some of the Proposed Project infrastructure components could cause a substantial adverse change in the significance of historical built environment resource.	LSM	NI	NI	LSM ↓	LSM ↓
Impact CUL-2: Archaeological Resources and Human Remains. <u>Construction</u> of Proposed Project infrastructure components could cause a substantial adverse change in the significance of unique archaeological resources or historical resources of an archaeological nature, and/or disturb human remains.	LSM	NI	NI	LSM ↓	LSM ↓
Impact CUL-3: Tribal Cultural Resources. <u>Construction</u> of Proposed Project infrastructure components could cause a substantial adverse change in the significance of a tribal cultural resource.	LSM	NI	NI	LSM ↓	LSM ↓

Table 8 6. Comparison of Impacts from the Alternatives (continued)

Environmental Issue	Proposed Project	No Project Alternative	Alternative 1	Alternative 2	Alternative 3
Impact CUL-4: Cumulative Cultural Resource and Tribal Cultural Resource Impacts. <u>Construction</u> of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, could result in a significant cumulative impact related to cultural resources and tribal cultural resources, but the Proposed Project's contribution would not be cumulatively considerable.	LS	NI	NI	LS ↓	LS ↓
Geology and Soils					
Impact GEO-1: Seismic Hazards. <u>Construction and operation</u> of the Proposed Project could directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death resulting from seismic ground shaking, landslides, or seismic related ground failure, including liquefaction and associated lateral spreading.	LSM	NI	NI	LSM ↓	LS
Impact GEO-2: Unstable Geologic Unit or Soils. <u>Construction and operation</u> of the Proposed Project would not cause adverse effects involving landslides or be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Proposed Project, and potentially result in on- or off-site landslide, slope failure/instability, subsidence, or collapse.	LS	NI	NI	LS ↓	LS ↓
Impact GEO-3: Expansive Soil. <u>Construction</u> of Proposed Project infrastructure components may be located on expansive soil, as defined by the 2019 California Building Code, but would not create substantial direct or indirect risks to life or property caused in whole or in part by the Proposed Project's exacerbation of the existing environmental conditions.	LS	NI	NI	LS ↓	LS ↓
Impact GEO-4: Paleontological Resources. <u>Construction</u> of the Proposed Project could potentially directly or indirectly destroy a unique paleontological resource or site during construction. However, the Proposed Project would not directly or indirectly destroy a unique geological feature.	LSM	NI	NI	LSM ↓	LSM ↓

Table 8 6. Comparison of Impacts from the Alternatives (continued)

Environmental Issue	Proposed Project	No Project Alternative	Alternative 1	Alternative 2	Alternative 3
Impact GEO-5: Cumulative Geologic Hazards. <u>Construction and operation</u> of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, could result in a significant cumulative impact related to geology and soils, but the Proposed Project's contribution to this impact would not be cumulatively considerable.	LS	NI	NI	LS ↓	LS ↓
Impact GEO-6: Cumulative Paleontological Resources Impacts. <u>Construction</u> of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, could result in a significant cumulative impact related to paleontological resources, but the Proposed Project's contribution to this impact would not be cumulatively considerable.	LS	NI	NI	LS ↓	LS ↓
Greenhouse Gas Emissions					
Impact GHG-1: Greenhouse Gas Emissions. <u>Construction and operation</u> of the Proposed Project would not generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.	LS	NI	NI	LS ↓	LS ↓
Impact GHG-2: Conflict with an Applicable Greenhouse Gas Reduction Plan. <u>Construction and operation</u> of the Proposed Project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.	LS	NI	NI	LS ↓	LS ↓
Impact GHG-3: Cumulative Greenhouse Gas Impacts. <u>Construction and operation</u> of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, would result in a significant cumulative impact related to greenhouse gas emissions, but the Proposed Project's contribution to this impact would not be cumulatively considerable.	LS	NI	NI	LS ↓	LS ↓
Hazards, Hazardous Materials and Wildfire					
Impact HAZ-1: Routine Transport, Use, Production, or Disposal of Hazardous Materials. <u>Construction and operation</u> of the Proposed Project would require use and transportation of petroleum products and small quantities of hazardous materials but would not result in a significant hazard to the public or environment.	LS	NI	NI	LS ↓	LS ↓

Table 8 6. Comparison of Impacts from the Alternatives (continued)

Environmental Issue	Proposed Project	No Project Alternative	Alternative 1	Alternative 2	Alternative 3
Impact HAZ-2: Upset and Release of Hazardous Materials. <u>Construction</u> of the Proposed Project could create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.	LSM	NI	NI	LSM ↓	LSM ↓
Impact HAZ-3: Hazardous Materials Near Schools. <u>Construction and operation</u> of the Proposed Project could emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.	LSM	NI	NI	LSM ↓	LSM ↓
Impact HAZ-4: Impair Emergency Response. <u>Construction</u> of the Proposed Project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.	LS	NI	NI	LS ↓	LS ↓
Impact HAZ-5: Wildfire Hazards. <u>Construction and operation</u> of the Proposed Project would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires; however, some programmatic components may be located in or near state responsibility areas.	LS	NI	NI	LS ↓	LS ↓
Impact HAZ-6: Cumulative Hazardous Materials and Emergency Response Impacts. <u>Construction and operation</u> of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, would not result in a significant cumulative impact related to routine transport, use, disposal, or accidental release of hazardous materials, or related to interference with an adopted emergency response plan or emergency evacuation plan.	LS	NI	NI	LS ↓	LS ↓
Impact HAZ-7: Cumulative Wildfire Impacts. <u>Construction and operation</u> of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, could result in a significant cumulative impact related to exposing people or structures to a significant risk of loss, injury, or death involving wildland fires, but the Proposed Project's contribution would be less than cumulatively considerable.	LS	NI	NI	LS ↓	LS ↓

Table 8 6. Comparison of Impacts from the Alternatives (continued)

Environmental Issue	Proposed Project	No Project Alternative	Alternative 1	Alternative 2	Alternative 3
Hydrology and Water Quality					
Impact HYD-1: Surface Water Quality Standards and Waste Discharge Requirements. Construction and operation of the Proposed Project would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality. In addition, the Proposed Project would not conflict with or obstruct implementation of a water quality control plan related to surface water.	LS	NI	NI	LS ↓	LS ↓
Impact HYD-2: Decrease Groundwater Supplies, Interfere with Groundwater Recharge, or Conflict with Groundwater Plan. Construction and operation of the Proposed Project would not decrease groundwater supplies or interfere substantially with groundwater recharge such that sustainable groundwater management of the basin would be impeded. However, the Proposed Project could conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan by potentially affecting local groundwater quality or causing restrictive effects in nearby wells.	LSM	NI	NI	LSM ↓	LS
Impact HYD-3: Alteration to the Existing Drainage Pattern of the Site Area. Construction and operation of the Proposed Project could not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: (a) result in substantial erosion or siltation on or off site; (b) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off site; (c) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or (d) impede or redirect flood flows.	LSM	NI	NI	LS	LSM
Impact HYD-4: Flood, Tsunamis, and Seiche Zones. Construction and operation of the Proposed Project in flood hazard, tsunami, or seiche zones would not risk release of pollutants due to project inundation.	LS	NI	NI	LS ↓	LS ↓

Table 8 6. Comparison of Impacts from the Alternatives (continued)

Environmental Issue	Proposed Project	No Project Alternative	Alternative 1	Alternative 2	Alternative 3
Impact HYD-5: Cumulative Hydrology and Water Quality Impacts. <u>Construction and operation</u> of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, would not result in a significant cumulative impact related to hydrology and water quality.	LS	NI	NI	LS ↓	LS ↓
<i>Land Use, Agriculture and Forestry, and Mineral Resources</i>					
Impact LU-1: Conflicts with Land Use Plans, Policies, or Regulations. <u>Construction and operation</u> of the Proposed Project would not conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.	LS	NI	NI	LS ↓	LS ↓
Impact LU-2: Conversion or Loss of Farmland or Forest Land and Conflicts with Zoning for Agricultural Land, Forest Land, or Timberland. <u>Construction</u> of the Proposed Project could convert prime, unique, or important agricultural land to non-agricultural use, convert forest land to non-forest land, conflict with existing zoning for agricultural or timber production uses or conflict with a Williamson Act contract.	LSM	NI	NI	LS	LS
Impact LU-3: Loss of Mineral Resources. <u>Construction</u> of the Proposed Project could potentially result in the location of infrastructure components on lands containing mineral resources in existing quarries; however, the Proposed Project would not result in the loss of availability of a mineral resource.	LS	NI	NI	LS	LS
Impact LU-4: Cumulative Land Use Impacts. <u>Construction and operation</u> of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, would not result in a significant cumulative impact related to conflicts with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.	LS	NI	NI	LS ↓	LS ↓
Impact LU-5: Cumulative Agriculture and Forestry Impacts. <u>Construction</u> of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, would result in a significant cumulative impact related to loss of Farmland and forest land, but the Proposed Project's contribution would not be cumulatively considerable.	LS	NI	NI	LS	LS

Table 8 6. Comparison of Impacts from the Alternatives (continued)

Environmental Issue	Proposed Project	No Project Alternative	Alternative 1	Alternative 2	Alternative 3
Impact LU-6: Cumulative Mineral Resource Impacts. <u>Construction</u> of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, would not result in a significant cumulative impact related to loss of availability of mineral resources.	LS	NI	NI	LS	LS
Noise					
Impact NOI-1: Substantial Permanent Increase in Ambient Noise Levels. <u>Operation</u> of the Proposed Project would result in generation of a substantial permanent increase in ambient noise levels during long-term operation in the vicinity of one of the programmatic infrastructure components.	LSM	NI	NI	LSM	LSM
Impact NOI-2: Substantial Increase in Ambient Noise Levels in Excess of Standards. <u>Construction</u> of the Proposed Project would result in generation of a substantial temporary increase in ambient noise levels in the vicinity of some project and programmatic infrastructure components in excess of applicable standards established in local general plans or noise ordinances.	SU ¹	NI	NI	SU ↓ ¹	LSM
<u>Operation</u> of the Proposed Project would result in generation of a substantial permanent increase in ambient noise levels in the vicinity of one of the programmatic infrastructure components in excess of applicable standards.	LSM	NI	NI	LSM	LSM
Impact NOI-3: Groundborne Vibration. <u>Construction</u> of the Proposed Project would result in the potential generation of excessive groundborne vibration or groundborne noise levels.	LSM	NI	NI	LSM ↓	LSM ↓
Impact NOI-4: Cumulative Noise Impacts. <u>Construction and operation</u> of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, would not result in a significant cumulative impact related to noise and vibration.	LS	NI	NI	LS ↓	LS ↓
Recreation					
Impact REC-1: Conflicts with Existing Recreational Uses. <u>Operation</u> of the Proposed Project would not change or conflict with existing recreational uses.	B	SU	SU	B ↓	B ↓

Table 8 6. Comparison of Impacts from the Alternatives (continued)

Environmental Issue	Proposed Project	No Project Alternative	Alternative 1	Alternative 2	Alternative 3
Impact REC-2: Increased Use of Existing Parks or Recreational Facilities. <u>Operation</u> of the Proposed Project would not increase the use of parks or recreational facilities such that substantial physical deterioration of the facilities would occur or be accelerated.	LS	NI	NI	LS ↓	LS ↓
Impact REC-3: Cumulative Recreation Impacts. <u>Operation</u> of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, would not change or conflict with existing recreational uses, but could increase the use of parks or recreational facilities such that substantial physical deterioration of the facilities would occur or be accelerated. However, the Proposed Project's contribution would not be cumulative considerable.	LS	LS ↑	LS ↑	LS ↑	LS ↑
Transportation					
Impact TRA-1: Conflict with Program, Plan, Ordinance, or Policy Addressing the Circulation System. <u>Construction and operation</u> of the Proposed Project would not conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.	LS	NI	NI	LS ↓	LS ↓
Impact TRA-2: Vehicle Miles Traveled. <u>Construction and operation</u> of the Proposed Project would not conflict or be inconsistent with CEQA Guidelines Section 15064.3, Subdivision (b) or cause an increase in VMT which is greater than 15% below the regional average VMT.	LS	NI	NI	LS ↓	LS ↓
Impact TRA-3: Geometric Design Hazards. <u>Construction and operation</u> of the Proposed Project would not substantially increase hazards due to a geometric design feature or incompatible use.	LS	NI	NI	LS ↓	LS ↓
Impact TRA-4: Emergency Access. <u>Construction</u> of the Proposed Project would not result in inadequate emergency access.	LS	NI	NI	LS ↓	LS ↓
Impact TRA-5: Cumulative Transportation Impacts. <u>Construction and operation</u> of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, would not result in a significant cumulative impact related to transportation.	LS	NI	NI	LS ↓	LS ↓

Table 8 6. Comparison of Impacts from the Alternatives (continued)

Environmental Issue	Proposed Project	No Project Alternative	Alternative 1	Alternative 2	Alternative 3
Utilities and Energy					
Impact UTL-1: New or Expanded Facilities. <u>Construction and operation</u> of the Proposed Project would result in new or expanded water facilities that would result in significant impacts, but would not require or result in new or expanded wastewater treatment, storm drainage, electric power, natural gas, or telecommunications facilities or a new sewer trunk line.	SU ¹	NI	NI	SU ↓ ¹	LSM
Impact UTL-2: Water Supplies. <u>Operation</u> of the Proposed Project would provide sufficient water supplies to serve the Proposed Project and reasonably foreseeable future development during normal, dry, and multiple dry years.	B	SU	SU	SU	SU
Impact UTL-3: Wastewater Treatment Capacity. <u>Operation</u> of the Proposed Project would have adequate wastewater treatment capacity to serve project demand.	LS	NI	NI	LS ↓	LS ↓
Impact UTL-4: Solid Waste Generation. <u>Construction and operation</u> of the Proposed Project would not generate solid waste in excess or state or local standards, or of the capacity of local infrastructure, or impair attainment of solid waste reduction goals.	LS	NI	NI	LS ↓	LS ↓
Impact UTL-5: Compliance with Solid Waste Regulation. <u>Construction and operation</u> of the Proposed Project would comply with federal, state, and local management and reduction statutes and regulations related to solid waste.	LS	NI	NI	LS ↓	LS ↓
Impact UTL-6: Result in Wasteful, Inefficient or Unnecessary Consumption of Energy Resources. <u>Construction and operation</u> of the Proposed Project would not result in wasteful, inefficient, or unnecessary consumption of energy resources.	LS	NI	NI	LS ↓	LS ↓
Impact UTL-7: Conflict with an Applicable Renewable Energy or Energy Efficiency Plan. <u>Construction and operation</u> of the Proposed Project would not result in conflicts with or otherwise obstruct a state or local plan for renewable energy or energy efficiency.	LS	NI	NI	LS ↓	LS ↓

Table 8 6. Comparison of Impacts from the Alternatives (continued)

Environmental Issue	Proposed Project	No Project Alternative	Alternative 1	Alternative 2	Alternative 3
Impact UTL-8: Cumulative Water and Wastewater Impacts. <u>Construction and operation</u> of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, would not result in a significant cumulative impact related to water and wastewater.	LS	NI	NI	LS ↓	LS ↓
Impact UTL-9: Cumulative Landfill Impacts. <u>Construction and operation</u> of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, would not result in a significant cumulative impact related to landfill capacity.	LS	NI	NI	LS ↓	LS ↓
Impact UTL-10: Cumulative Energy Impacts. <u>Construction and operation</u> of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, would not result in a significant cumulative impact related to energy.	LS	NI	NI	LS ↓	LS ↓

Notes: B = beneficial impact; NI = no impact; LS = less than significant; LSM = less than significant with mitigation; SU = significant and unavoidable; ↑ = greater; ↓ = lesser.

¹ The significant unavoidable construction noise impact associated with the Proposed Project (Impact NOI-2), and related impact of new or expanded utilities (Impact UTL-1) would result only from well drilling activities at new ASR facilities and at Beltz 9 ASR facility. The impacts of all other components and construction activities would be either less than significant or less than significant with mitigation.

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