

Draft Environmental Impact Report

Santiago Creek Dam Improvement Project

SCH No. 2023050097

Prepared for | Irvine Ranch Water District
Fiona Sanchez, Director of Water Resources
15600 Sand Canyon Avenue
Irvine, California 92618

Prepared by | Psomas
Jennifer Marks, Principal-in-Charge
5 Hutton Centre, Suite 300
Santa Ana, California 92707

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SECTION 1.0 EXECUTIVE SUMMARY

1.1 INTRODUCTION

The environmental impact report (EIR) process, as set forth in the California Environmental Quality Act (CEQA), requires the lead agency to prepare an objective document that fully discloses its analysis of potential environmental impacts and feasible alternatives in order to: (1) inform agency decision makers and the general public of the direct and indirect potentially significant environmental effects of a proposed action; (2) identify feasible or potentially feasible mitigation measures to reduce or eliminate potential significant adverse impacts; and (3) identify and evaluate a reasonable range of alternatives to the proposed project. In accordance with Section 15168 of the CEQA Guidelines (California Code of Regulations, Title 14, Chapter 3, Sections 15000, *et seq.*), this EIR addresses the potential environmental impacts associated with the proposed Project--the Santiago Creek Dam Improvement Project (the "Project").

This EIR includes a detailed description of the proposed Project and the potential physical environmental impacts associated with the implementation of the Project. The Lead Agency, the Irvine Ranch Water District (IRWD), determined that this EIR should analyze all environmental topics, with the exception of agriculture and forest resources, mineral resources, and population and housing, and issued a Notice of Preparation (NOP) on May 4, 2023. The NOP and the comments received during the public review of the NOP are included in Appendix A to this EIR.

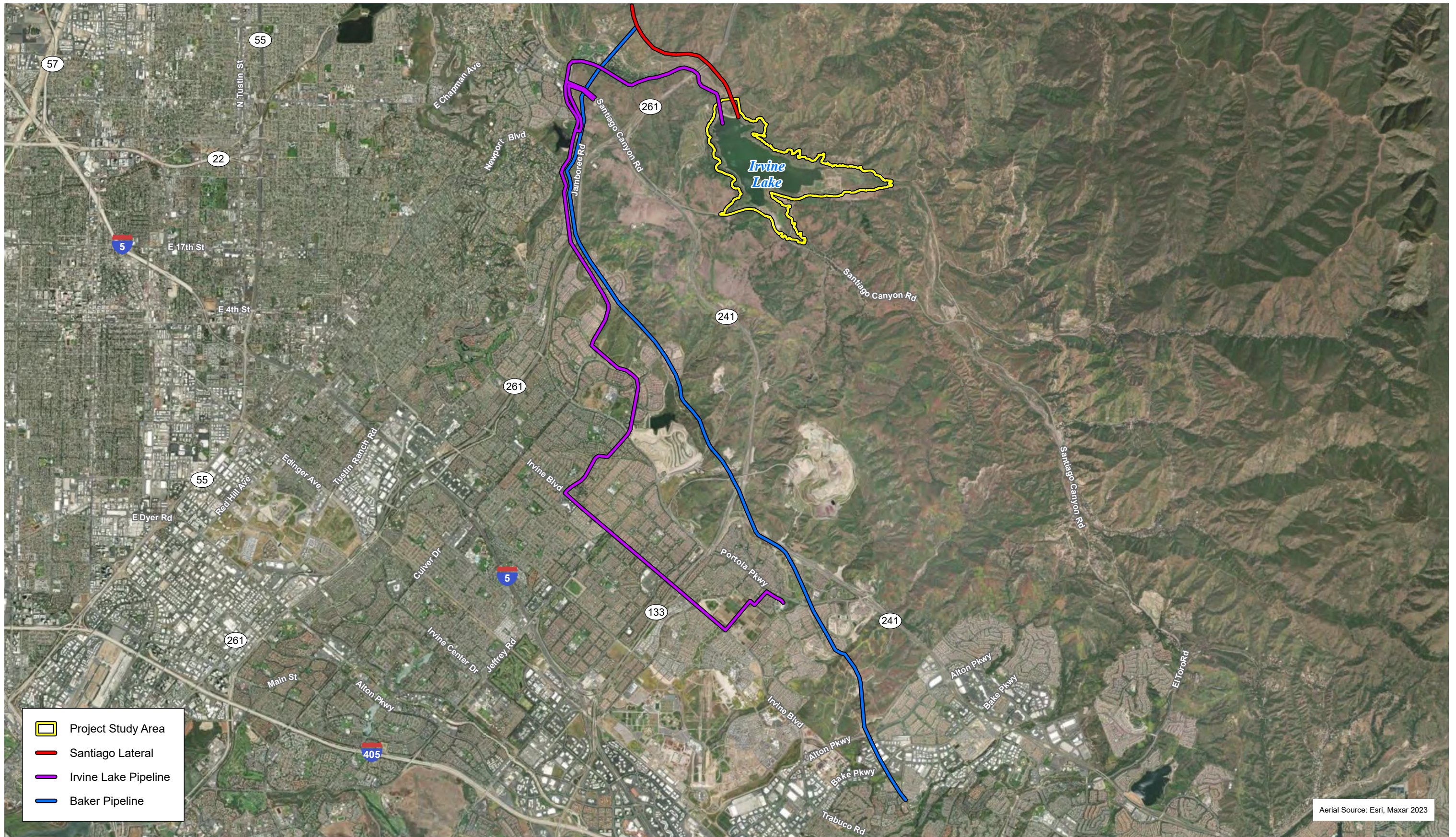
The environmental topics analyzed in detail in Section 4.0, Impact Analysis, of this EIR describe: (1) the physical conditions that existed at the approximate time this EIR's NOP was filed with the California State Clearinghouse (May 4, 2023); (2) the type and magnitude of potential environmental impacts resulting from Project planning, construction, and operation; and (3) if warranted, recommendations for feasible mitigation measures that would reduce or avoid significant adverse environmental impacts potentially caused by the proposed Project. A summary of the proposed Project's significant environmental impacts and the mitigation measures imposed by IRWD on the Project to lessen or avoid those impacts are included in this Executive Summary as Table 1-1. IRWD applies mitigation measures which it determines (1) are feasible and practical for the Project to implement; (2) are feasible and practical for IRWD to monitor and enforce; (3) are legal for IRWD to impose; (4) have an essential nexus to the Project's impacts; and (5) would result in a benefit to the physical environment. CEQA does not require the Lead Agency to analyze an exhaustive list of every imaginable mitigation measure, or measures that are duplicative of mandatory regulatory requirements.

1.2 PROJECT LOCATION

Santiago Creek Dam is located at the northwest end of Irvine Lake in unincorporated Orange County, California. The Project is south of State Route (SR) 261 and east of SR-241 and Santiago Canyon Road. Existing structures include the embankment dam, outlet tower in Irvine Lake, spillway channel, flashboard storage shed, control house/outlet works, energy dissipater structure, dam keeper's house, Irvine Lake pipeline (ILP), and dam access road. The regional and local vicinity of the Project site is depicted on Exhibit 1-1, Regional Location, and Exhibit 1-2¹, Aerial Photograph, respectively.

¹ Only a portion of the pipeline immediately downstream of Irvine Lake is considered the ILP; the majority of the pipeline was previously converted to a recycled water pipeline.

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Aerial Photograph

Santiago Creek Dam Improvement Project

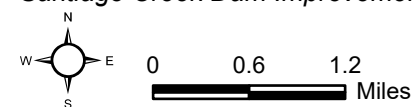


Exhibit 1-2



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1.3 **PROJECT DESCRIPTION SUMMARY**

General elements of each portion of the Project are included below. A more detailed description of the proposed facilities is included in Section 3.0, Project Description.

- The existing outlet tower would be demolished; with the portion of the tower located below the sediment to be filled with concrete and capped with a concrete plug or completely removed. A new inclined outlet structure consisting of a series of inclined concrete footings with metal platforms would be constructed on the left abutment of the dam. Each riser from the structure would include an intake fish screen.
- The proposed inclined inlet/outlet structure would be configured to incorporate the new outlet structure, including new valves and fittings. Water from the lake would enter the new inclined inlet/outlet structure and would convey lake water through an existing conduit under the dam. At the downstream toe of the dam, a new fitting would be installed to bifurcate the flow either to the Irvine Lake Pipeline (ILP) or the emergency outlet pipeline. Water that enters the ILP would reach the IRWD distribution system. Water that enters the emergency outlet pipeline would be released to the creek near the end of the new spillway.
- The existing ILP travels over Santiago Creek and is supported on piers. Historically, this pipeline has washed out during high flow events through the spillway and Santiago Creek. As part of the Project, approximately 1,000 linear feet of the ILP near the dam would be upsized from 36 inches to approximately 54 inches to match the inlet/outlet pipeline coming from the inclined inlet/outlet structure, as well as to increase the capacity of the line and improve the system's hydraulics.
- In addition to the modifications to the existing outlet works, the existing spillway would be demolished and replaced with a new side-channel spillway in a rock cut on the left abutment of the dam.
- A new approximately 12-foot-wide gravel-paved roadway would be constructed to provide access from the dam crest, across the spillway channel, and to the top of the new inlet/outlet structure. A new 160-foot-long steel bridge structure would be constructed to provide vehicle access from the dam crest, across the spillway channel, and to the top of the inlet/outlet structure. The bridge would be approximately 12 feet wide and span the upper portion of the spillway structure. The bridge would be supported on piles located on the left and right side of the spillway structure. The new access road would terminate in a cul-de-sac-type turn-around at the top of the inlet/outlet structure. A shotcrete tie-back wall would be required to cut the proposed roadway into the existing slope without affecting the existing OCWR Santiago Canyon Landfill facilities above.
- A new dam control building located on the dam crest near the spillway structure would be constructed to house the pneumatic system that would operate the valves on the inclined inlet/outlet structure, the lake aeration systems, and the electrical and control equipment. The dam control building would be approximately 60 feet wide by 20 feet deep with a height of approximately 18 feet. The building would have a gable-style roof and would be fire hardened and constructed of non-combustible materials. The height of the interior of the building would allow at least 12 feet of unobstructed clearance.
- The upper portion of the dam would be removed to a depth at least 15 feet below the dam crest. On the downstream side of the embankment, the Project includes removing the dam face, constructing a filter drain system, and encapsulating the filter drain system with embankment shell material which is composed of pervious material.
- The existing dam crest would be widened from 10 feet to between approximately 35 and 45 feet, the dam crest elevation would be raised up approximately one foot, and

improvements would be constructed to ensure vehicular traffic remains on the dam crest road. The paved dam crest would include protective railing on both sides of the road and replacement of piezometers to monitor the performance of the embankment dam. These embankment improvements would require excavations along the toe of the dam to key in the earthwork improvements to the face of the dam.

- The dam crest would also be raised up approximately one foot. This would raise the effective dam crest from an elevation of 811.9 feet to approximately 812.9 feet to meet Department of Safety of Dams (DSOD) freeboard requirements during a Probable Maximum Flood event.
- A new emergency access walkway (at least five feet wide) and stair system would be constructed along the left wall of the new spillway channel to provide access to the inlet/outlet structure and dam crest from the adjacent Santiago Canyon Landfill during a spillway event. The walkway would connect to the proposed inlet/outlet structure access road.
- The existing Southern California Edison (SCE) overhead power lines and power poles would be relocated to the downstream toe of the dam within the Project vicinity. SCE would relocate the existing overhead electrical lines. There would be an approximately 15-foot-wide right-of-way (ROW) easement for long-term maintenance.
- The Project would raise the spillway six feet to 797.9 feet, which is two feet higher than the existing maximum water storage elevation of 795.5 feet. Raising the spillway would allow the dam to impound water up to the 797.9-foot elevation contour year-round, which would allow storage of approximately 1,300 acre-feet of additional water.
- Before beginning construction of the dam improvements, the lake would be dewatered, and an access road would be graded along the edge of the dewatered lakebed to allow construction access between the staging area and the dam structure.
- IRWD would maximize withdrawals from Irvine Lake in the time leading up to construction initiation to minimize the amount required to be dewatered. The dewatering process would combine several methods including dewatering using the valves and outlet tower to allow water to flow downstream, implementing a temporary pumping system, and use of a subgrade dewatering system (e.g., dewatering wells). The temporary pumping system would include diesel driven pumps and temporary above ground piping that would convey the water from the lake to a discharge point along Santiago Creek near the existing Arizona crossing. Dewatering would be used throughout the year as needed to manage the water level during and after storm events and to maintain a dry work environment. IRWD would coordinate downstream releases with impacted agencies and entities.
- Once the lake is dewatered and before the first dry season, the contractor would construct a temporary diversion berm and access ramp. The temporary diversion would provide a physical barrier to protect the work area from seasonal storms and would provide an elevated access road to allow construction equipment to access the downstream side of the dam.
- During construction, concrete crushing would occur in one of the staging areas. Concrete crushing would be expected to occur intermittently for approximately three weeks during the demolition phase of the Project but may also occur at various stages of the Project as concrete is removed from the existing spillway or dam. When feasible, demolished and removed materials would be recycled or reused.
- IRWD may be required to obtain additional geotechnical investigations to support the Project's final design. These investigations would occur during the design phase and may include exploratory test pits, soil borings, packer testing, and/or non-intrusive geologic

investigations and observations. The additional geotechnical investigations would remain within the proposed limits of disturbance defined by the Project, are included in the analysis contained in this EIR, and would be mitigated as part of the overall Project.

1.4 PROJECT OBJECTIVES

Section 15124(b) of the CEQA Guidelines requires “[a] statement of objectives sought by the proposed project. A clearly written statement of objectives helps the lead agency develop a reasonable range of alternatives to evaluate in the EIR and would aid the decision makers in preparing findings or a statement of overriding considerations, if necessary. The statement of objectives should include the underlying purpose of the project.” Not only is a project analyzed in light of its objectives, compatibility with project objectives is one of the criteria used in selecting and evaluating a reasonable range of project alternatives. Clear project objectives simplify the selection process by providing a standard against which to measure project alternatives.

Santiago Creek Dam was completed in 1933 and certified by the State of California, Department of Water Resources (DWR), DSOD. In 2012 and in collaboration with DSOD, IRWD initiated seismic evaluations of the existing outlet tower that resulted in a determination that the free-standing structure was seismically unstable. In 2017, IRWD initiated, at DSOD’s request, a multi-phase spillway condition assessment. The assessment found that the aging spillway is nearing the end of its useful life and the design, while acceptable at the time of construction, does not meet current standards. In 2021, IRWD completed risk analysis on all of its dams as part of its transition to a Risk Informed Decision Making (RIDM) dam safety program and identified an opportunity to enhance the safety of the Santiago Creek Dam embankment by adding a filter drain system.

The primary objective of the proposed Project is the rehabilitation and replacement of the Santiago Creek Dam outlet tower and spillway facilities as well as the modification of the embankment to permit operation of the facilities to provide a long-term water resource benefit. In implementing the proposed Project, IRWD would also obtain the following benefits:

1. Construct new facilities and dam embankment modifications that will meet or exceed the current seismic, safety, and design requirements established by the DSOD, which is the governing State agency associated with this Project;
2. Satisfy IRWD’s operational requirements in the present and the future;
3. Extend the useful life of the facilities;
4. Improve regional water supply reliability; and
5. Minimize impacts to local environmental resources and surrounding property owners.

1.5 PROJECT ALTERNATIVES

Section 15126.6(a) of the CEQA Guidelines requires that “an EIR describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project and evaluate the comparative merits of the alternatives”. Two alternatives have been evaluated. These alternatives are summarized below and discussed and depicted graphically in Section 5.0, Alternatives to the Proposed Project, of this EIR.

The alternatives were developed to avoid or minimize impacts associated with the proposed Project. The summaries of each alternative identify the potentially significant impacts associated with that alternative. Table 5-1, Compatibility Comparison of Alternatives With Project Objectives,

analyzes the compatibility of the alternatives with the proposed Project, and Table 5-2, Comparison of Project Alternatives Impacts to Proposed Project Impacts, provides a summary of alternative impacts as compared to the proposed Project.

1.5.1 ALTERNATIVE 1 – NO PROJECT ALTERNATIVE

This alternative assumes the site would continue to remain in its current state and would not meet current standards. The alternative would also reduce the useful life of the facilities, and reduce water supply reliability. The existing uses on the site would continue with restricted operations. The existing site improvements would remain unchanged, and no structures would be demolished. The No Project Alternative would avoid the following mitigable impacts: Air Quality, Biological Resources, Cultural Resources, Geology and Soils, Hazards and Hazardous Materials, and Tribal Cultural Resources. Additionally, there would be reduced impacts for the following environmental topics: Aesthetics, Energy, Greenhouse Gas Emissions, Hydrology and Water Quality, Land Use and Planning, Public Services, Noise Recreation, Transportation, and Utilities and Service Systems. The No Project Alternative would not meet any of the five Project Objectives.

1.5.2 ALTERNATIVE 2 – PURCHASING WATER ALTERNATIVE

This alternative assumes that IRWD would need to purchase, on average, 5,070-acre feet (AF) of imported supplies each year to meet demands currently met with the Irvine Lake native water supplies. This Alternative would generally have the same impacts as the No Project Alternative. The Purchasing Water Alternative would meet only one of the five Project Objectives.

1.5.3 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

The No Project Alternative (Alternative 1) would have the least impact to the environment because it would not involve any construction or demolition activities, nor would it result in any environmental impacts. This alternative would avoid potentially significant impacts, albeit mitigable, of the proposed Project associated with Air Quality, Biological Resources, Cultural Resources, Geology and Soils, Hazards and Hazardous Materials, and Tribal Cultural Resources. This alternative would not meet any of the Project objectives.

The remaining alternative was, as required by CEQA, compared to the proposed Project when determining the environmentally superior alternative. When evaluating the proposed Project compared to Alternative 2, it may result in reduced impacts in some areas; however, it would result in increased impacts in other areas and would not satisfy the five Project objectives.

Based solely on the potential environmental impacts, Alternative 1, No Project Alternative, would have the greatest reduction in environmental impacts and would be deemed the environmentally superior alternative. However, this alternative would not meet any of the Project objectives. Therefore, as part of the alternative selection process, the Board of Directors will need to balance the environmental impacts of the alternatives and their ability to meet Project objectives. Also, according to Section 15126.6(e)(2) of the CEQA Guidelines, "If the environmentally superior alternative is the 'no project' alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives." Based upon the detailed analysis contained in Section 5.0, Alternatives, of the Draft EIR, the proposed Project would be the next environmentally superior alternative. For further comparison of the alternatives and identification of the environmentally superior alternative, see Section 5.4, Environmentally Superior Alternative.

1.6 ENVIRONMENTAL IMPACT REPORT FOCUS AND EFFECTS FOUND NOT TO BE SIGNIFICANT

In accordance with Section 15063 of the CEQA Guidelines, IRWD prepared a NOP for the proposed Project and distributed it to responsible and interested agencies and to key interest groups. The NOP was distributed to agencies and individuals for a 30-day review period beginning on May 4, 2023 and ending on June 5, 2023. In addition, notices regarding the availability of the NOP were distributed to all property owners and occupants of businesses within 500 feet of the Project site. The NOP was also posted on IRWD's website.

A Scoping Meeting was held on May 16, 2023, at 5 PM at IRWD's Board Room, 15600 Sand Canyon Avenue, in Irvine. IRWD staff were available to answer any questions about the proposed Project. A handout that provided an overview of the proposed Project, the scope of the EIR, and Project schedule was distributed. Comment cards were available for attendees to submit at the meeting or to mail to IRWD staff. There were no attendees, and thus no one signed the sign-in sheet.

A summary of the issues raised in the NOP comment letters is provided in Section 2.4, Environmental Review Process, of this EIR. The NOP and the comments received during the public review of the NOP are included in Appendix A to this EIR. A total of eight comment letters/emails were received during the 30-day NOP review period.

IRWD has determined that the EIR should address the following environmental topics as stand-alone sections.

- Aesthetics
- Air Quality
- Biological Resources
- Cultural Resources
- Energy
- Geology and Soils
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Noise
- Public Services
- Recreation
- Transportation
- Tribal Cultural Resources
- Utilities and Service Systems
- Wildfire

Section 2.4, Environmental Review Process, provides an overview of the EIR review process and a summary of the environmental topics and threshold questions within topical areas that will not receive detailed evaluation in the EIR.

1.7 AREAS OF CONTROVERSY/ISSUES TO BE RESOLVED

Section 15123(b)(3) of the CEQA Guidelines requires that an EIR identify issues to be resolved, including the choice among alternatives and whether or how to mitigate the Project's significant effects on the environment. With respect to the proposed Project, as part of the NOP process, a number of concerns, which have been addressed and/or resolved, were expressed. Following is a summary of concerns raised in response to the NOP, and the Section of the EIR that addresses the concern:

- Biological Direct, Indirect, and Cumulative Impacts: Impacts to special status vegetation (coastal sage scrub, riparian, woodland), jurisdictional resources (U.S. Army Corps of

Engineers [USACE], Regional Water Quality Control Board [RWQCB], California Department of Fish and Wildlife [CDFW]), special status plant and wildlife species (mud nama, Crotch's bumble bee, western spadefoot, least Bell's vireo, and coastal California gnatcatcher); compliance with the County of Orange Central and Coastal Subregion Natural Community Conservation Plan/Habitat Conservation Plan; regulatory permitting; Biological Opinion (U.S. Fish and Wildlife Service [USFWS]) and Incidental Take Permit (CDFW); mitigation and avoidance of Project-related Biological Impacts (Section 4.3, Biological Resources)

- Consistency with the Southern California Association of Governments (SCAG) Plans and Projections (Section 4.10, Land Use and Planning)
- Tribal Cultural Resources (Section 4.15, Tribal Cultural Resources)
- Emergency and Construction Access, Traffic Operations, and Vehicle Miles Traveled (Section 4.14, Transportation)
- Cumulative Impacts (Sections 4.1 through 4.17)
- Hydrology and Hydraulics Impacts (Section 4.9, Hydrology and Water Quality)
- Impacts to Public Service Providers (Section 4.12, Public Services)
- Impacts to Parks and Recreation Facilities (Section 4.13, Recreation)
- Landfill Impacts (Section 4.16, Utilities and Service Systems)
- Wildfire Impacts (Section 4.17, Wildfire)

1.8 CEQA BASELINE

Section 15125 of the CEQA Guidelines requires that the analysis in the EIR compare the potential impacts against the existing conditions. Therefore, the analysis has been conducted with the baseline of current operations at the Santiago Creek Dam.

1.9 SUMMARY OF SIGNIFICANT EFFECTS AND MITIGATION PROGRAM

Table 1-1 presents a summary of the potential environmental effects of the Project; measures to mitigate impacts to the extent feasible; and the expected status of effects following implementation of the mitigation measures. A more detailed evaluation of these issues is presented in Sections 4.1 through 4.17. The level of significance provided in the 'Project Impact' columns is the level of significance prior to mitigation. The column identified as 'Level of Significance After Mitigation' contains the determination whether the mitigation measures would reduce the impact to a level of less than significant.

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TABLE 1-1
SUMMARY OF POTENTIAL IMPACTS, MITIGATION MEASURES AND LEVEL OF SIGNIFICANCE

Threshold of Significance	Project Impacts	Mitigation Measures (MM) / Project Design Features (PDF) / Regulatory Requirements (RR)	Level of Significance After Mitigation
Section 4.1 – Aesthetics			
Threshold 4.1-1 Substantially degrade the existing visual character or quality of public views of the site and its surroundings (Public views are those that are those that are experienced from publicly accessible vantage points). If the project is in an urbanized area, conflict with applicable zoning and other regulations governing scenic quality.	The proposed Project would not substantially degrade the existing visual character or quality of public views of the site and its surroundings. Additionally, the Project would not conflict with applicable zoning and other regulations governing scenic quality. Impacts would be less than significant, and no mitigation is required.	No mitigation is required.	Less Than Significant.
Threshold 4.1-2 Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.	The proposed Project would not create a new source of substantial light or glare which would adversely affect day or nighttime views in the area. Impacts would be less than significant with implementation of PDF AES-1 and PDF AES-2, and no mitigation is required.	PDF AES-1 PDF AES-2 The Project will design and operate lighting for construction, security, or equipment maintenance to conform to the requirements of the Occupational Safety and Health Administration, Code of Federal Regulations (CFR)-29, Standard 1926.56 and any Orange County light pollution regulations. Additionally, the Project will orient lighting to minimize effects to the community and adjacent sensitive habitat areas. To the extent feasible, the Project will direct night lighting away from sensitive native habitats and provide low-sodium or similar lighting equipped with shields to focus light downward.	Less Than Significant.
Section 4.2 – Air Quality			
Threshold 4.2-1 Conflict with or obstruct implementation of the applicable air quality plan.	Based on the analysis presented in Section 4.2, Air Quality, pollutant emissions from the proposed Project would exceed the South Coast Air Quality Management District (SCAQMD) thresholds during construction and would result in a significant impact even with the implementation of mitigation measures and SCAQMD regulatory requirements. Additionally, the Project's construction activities would conflict with the 2022 Air Quality Management Plan's (AQMP's) goal of reducing criteria pollutant emissions. Subsequently, the Project would result in a temporary significant and unavoidable impact related to consistency with the AQMP, pursuant to Threshold 4.2-1.	MM AQ-1 IRWD will require its construction contractor(s) to implement the following measures to minimize nitrogen oxide (NO _x) and volatile organic compound (VOC) emissions during construction: <ul style="list-style-type: none">All off-road diesel-powered construction equipment greater than 50 horsepower will meet U.S. Environmental Protection Agency Tier 4 Final emission standards to the extent that the equipment is available. In addition, all construction equipment will be outfitted with Best Available Control Technology devices certified by the California Air Resources Board. If Tier 4 Final equipment is not available to the best of the construction contractor's understanding, the construction contractor(s) will provide IRWD with documentation showing the reasons for non-availability.Require the use of 2010 and newer diesel haul trucks (e.g., material delivery trucks and soil import/export). If the construction contractor(s) determines that 2010 model year or newer diesel trucks cannot be obtained, trucks that meet USEPA 2007 model year NO_x emissions requirements will be required. If 2007 model year or newer diesel trucks are not available, the construction contractor(s) will provide IRWD with reasonable documentation showing the reasons for non-availability.Construction equipment will be properly serviced and maintained to the manufacturer's applicable standards.	Significant and Unavoidable Impact.

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Threshold of Significance	Project Impacts	Mitigation Measures (MM) / Project Design Features (PDF) / Regulatory Requirements (RR)	Level of Significance After Mitigation
Threshold 4.2-2 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.	Pursuant to Threshold 4.2-2, short-term construction emissions of nonattainment pollutants and their precursors would be cumulatively considerable and would result in a significant and unavoidable impact to regional air quality with implementation of MM AQ-1. Project operations would result in a less than significant impact to regional air quality.	MM AQ-1 as stated above.	Significant and Unavoidable Impact.
Threshold 4.2-3 Expose sensitive receptors to substantial pollutant concentrations.	The proposed Project would not increase congestion or result in a significant impact related to carbon monoxide hotspots. The construction period would be relatively short when compared to a 30- or 70-year exposure period. Additionally, combined with the highly dispersive properties of diesel particulate matter and additional reductions in particulate emissions from newer construction equipment, as required by U.S. Environmental Protection Agency and California Air Resources Board regulations, Project construction would not expose sensitive receptors to substantial emissions of toxic air contaminants. Also, the proposed Project would not have the potential to expose sensitive receptors to substantial toxic air contaminants from stationary or mobile sources. Overall, pursuant to Threshold 4.2-3, impacts would be less than significant, and no mitigation is required.	MM AQ-1 as stated above.	Less Than Significant.
Threshold 4.2-4 Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.	Project-related odors are construction-related, low magnitude, and short-term in nature; no long-term operational odors would result. As such, the proposed Project would have less than significant impact in regard to other emissions, pursuant to Threshold 4.2-4.	PDF AQ-1 Upon the initial dewatering of the reservoir at the start of construction, all exposed organic matter shall be removed from the reservoir by construction crews. Organic matter removal, including removal of plant and animal species, shall occur in accordance with all applicable laws, regulations, and permit conditions.	Less Than Significant.
Section 4.3 – Biological Resources			
Threshold 4.3-1 Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service.	The Project has potential to impact special status plant and wildlife species. Significant or potentially significant impacts were identified for mud nama, Crotch's bumble bee, coastal California gnatcatcher, least Bell's vireo, bald eagle, and roosting bats. Additionally, wildlife using habitat adjacent to the Project could be indirectly impacted by construction noise, night lighting during construction, dust, and invasive plant species. Assuming implementation of PDF-BIO-1 through PDF-BIO-9 and with implementation of MM BIO-1 through MM BIO-7, these impacts would be reduced to less than significant and the potential impacts on special status species would be less than significant, pursuant to Threshold 4.3-1.	PDF-BIO-1 Worker Environmental Awareness Program (WEAP) Training. Prior to the initiation of construction activities, IRWD will retain a qualified Biologist (i.e., Biological Monitor) to provide a WEAP training for construction personnel to review the mitigation measures and permit requirements applicable to the construction phase. The Biological Monitor will require trained personnel to sign the WEAP Log to document that they have been trained and understand the mitigation measures and permit conditions. The Biological Monitor will repeat the WEAP training as-needed for new construction personnel. PDF-BIO-2 Project Limits. Prior to construction, the Project limits will be clearly staked by IRWD or IRWD's Contractor and verified by the Biological Monitor. PDF-BIO-3 Natural Communities Conservation Plan/Habitat Conservation Plan (NCCP/HCP) Construction Minimization Measures. As required by the NCCP/HCP, IRWD will follow standard construction-related minimization measures. These include removal of coastal sage scrub outside the California gnatcatcher breeding season (i.e., February 15 to July 15); pre-construction surveys for coastal California gnatcatchers; identification of coastal sage scrub habitat areas for protection as Environmentally Sensitive Areas (ESAs); and biological monitoring during all clearing of coastal sage scrub. PDF-BIO-4 Tree Protection. To protect western sycamore and coast live oak trees adjacent to Project impact areas, protective fencing will be	Less Than Significant (mud nama, Crotch's bumble bee, coastal California gnatcatcher, least Bell's vireo, bald eagle, and roosting bats).

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		<p>placed around all western sycamore and coast live oak trees located within 50 feet of the impact areas. The tree protection area will be 1.5 times the dripline of the tree. No stockpiling of materials will occur within the tree protection areas. Limbs of western sycamore and coast live oak trees can be pruned to allow construction equipment access. If large branches need to be removed or if more than 10 percent of the total canopy would be affected, pruning will be supervised by a Certified Arborist retained by IRWD.</p> <p>PDF-BIO-5 Nesting Bird Protection. To the extent practicable, vegetation clearing will be conducted during the non-breeding season (i.e., September 16 to January 31). If vegetation clearing will be initiated during the breeding season for nesting birds/raptors (i.e., February 1–September 15), the construction activity will be conducted in compliance with the conditions set forth in the Migratory Bird Treaty Act. IRWD will retain a qualified Biologist to conduct a pre-construction survey for nesting birds and/or raptors within three days prior to clearing of any vegetation or work near existing structures. The nesting bird survey area will include a buffer of 100 feet around the work area for nesting birds and a buffer of 500 feet around the work area for nesting raptors. If an active nest is found, the Biologist will determine the appropriate protective buffer depending on the sensitivity of the species and the nature of the construction activity. The protective buffer will be 25–100 feet for nesting birds; 300–500 feet for special status bird species or nesting raptors; and 0.5 mile for golden eagle or prairie falcon. No work will be conducted in the protective buffer until a qualified Biologist determines that the nest is no longer active. The Biologist will map any nests found during survey efforts and their protective buffers and will provide the map to IRWD and the Contractor.</p> <p>PDF-BIO-6 Speed Limit During Construction. The speed limit on construction access roads will be no more than 20 miles per hour. Signage will be posted throughout the construction areas and at multiple locations along the access road between the dam and the staging area at the upstream end of the lake. “Wildlife crossing” signage will also be posted along the access road between the dam and the staging area at the upstream end of the lake. Signage will be verified by the Biological Monitor.</p> <p>PDF-BIO-7 Night Lighting. Night lighting will be directed away from adjacent habitat areas to the extent practicable. Shielding of night lighting during construction will be incorporated to ensure that ambient lighting is directed away from sensitive habitat areas. Appropriate shielding of night lighting will be verified by the Biological Monitor.</p> <p>PDF-BIO-8 Prevent Spread of Invasive Species. Weed seeds entering the construction area via vehicles will be minimized by requiring construction vehicles to be washed prior to delivery to the Project site. Track-clean or other methods of vehicle cleaning will be used by the construction contractor to prevent weed seeds from entering/exiting the Project site on vehicles. Wattles used for erosion control will be biodegradable and certified as weed-free. Seed mixes and/or hydroseed applied to temporarily disturbed areas will consist of native species local to the Project vicinity. IRWD will retain a qualified Biologist to review and approve the</p>	

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SUMMARY OF POTENTIAL IMPACTS, MITIGATION MEASURES AND LEVEL OF SIGNIFICANCE

Threshold of Significance	Project Impacts	Mitigation Measures (MM) / Project Design Features (PDF) / Regulatory Requirements (RR)	Level of Significance After Mitigation
		<p>seed mix. Use of measures to prevent the spread of invasive species will be verified by the Biological Monitor.</p> <p>PDF-BIO-9 Treatment of Invasive Species. During active construction, IRWD will retain a qualified Biologist to conduct surveys for non-native invasive plant species on the OC Parks target list on a monthly basis. If a target species is observed within 100 feet of the active construction area, IRWD will retain a qualified Contractor to remove and/or treat the non-native invasive plant species and to appropriately dispose of it. The target species will be removed/treated before they set seed.</p> <p>For a period of two years following completion of construction, IRWD will retain a qualified Biologist to conduct surveys for non-native invasive plant species on the OC Parks target list on a quarterly basis. If a target species is observed within 100 feet of the previously disturbed areas, IRWD will retain a qualified Contractor to remove and/or treat the non-native invasive plant species and to appropriately dispose of it. The target species will be removed/treated before they set seed.</p> <p>MM BIO-1A Special Status Plants/Pre-construction Surveys: During the peak blooming season prior to the initiation of construction (within the same year or the spring/summer prior), IRWD will retain a qualified Botanist to conduct a focused survey for mud nama. Although not required, the pre-construction survey will also include intermediate mariposa lily, many-stemmed dudleya, and Coulter's matilija poppy to minimize impacts on these species. The pre-construction survey will focus on these species in the general locations where they were previously observed within the impact area and will including a 100-foot survey buffer. The Botanist will record special status plant locations within the impact area and within 100 feet of the impact area using GPS and will clearly mark locations with pin flags or lathe and flagging. The Botanist will meet in the field with IRWD to discuss whether avoidance of these locations would be feasible (e.g., whether they could be protected within the temporary impact areas).</p> <p>No compensatory mitigation will be required if the locations of intermediate mariposa lily,² many-stemmed dudleya, and Coulter's matilija poppy cannot be avoided. However, IRWD will notify the Natural Communities Coalition (NCC) and allow the NCC to collect seed and/or salvage special status plants that will be impacted by the Project. Seed collection/salvage will be coordinated so that it does not delay the construction schedule.</p> <p>Compensatory mitigation will be required if more than 10 percent of the mud nama locations mapped in 2022 will be impacted, as described below under MM BIO-1B.</p> <p>Following the pre-construction survey and field meeting with IRWD, the Botanist will prepare a Pre-construction Special Status Plant Survey Report to document the results of the pre-construction surveys and will document the special status plant locations that will be avoided during construction. The Botanist</p>	

² The NCCP/HCP covers impacts on this species up to 20 individuals; if more than 20 individuals would be impacted, additional consultation with the resource agencies would be required. However, this is not anticipated to be necessary because only six individuals have been observed in the BSA during focused surveys and only one individual is located in the impact area.

TABLE 1-1
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		<p>will calculate the percent of the mud nama population that will be impacted by comparing the amount of mud nama within the construction impact area to the mud nama locations mapped in 2022. The report will also document that the final engineering plans, coupled with construction avoidance areas, will impact less than 50 percent of the mud nama population mapped in 2022.</p> <p>After the field meeting with IRWD, the Botanists will work with IRWD/Contractor to clearly mark the locations that will be avoided during construction with lathe and flagging, orange snow fencing, stakes and rope, or other suitable fencing until the initiation of construction. During construction, the Biological Monitor will ensure that these areas are protected during construction as described below under MM BIO-1C.</p> <p>MM BIO-1B Mud Nama/Compensatory Mitigation: As described under MM BIO-1A, if compensatory mitigation is required for mud nama (i.e., more than 10 percent of the mud nama locations mapped in 2022 will be impacted by the Project), IRWD will retain a qualified Restoration Biologist to prepare a detailed Mud Nama Mitigation Plan. The Plan will describe collection of seed, salvage of individuals, salvage of soils (i.e., seed bank), and establishment of a new on-site location that will replace the area of mud nama impacted at a minimum 1:1 ratio (i.e., 1 acre impacted to 1 acre replaced). The on-site mitigation areas will provide similar microhabitat, including similar soils and elevation to provide similar inundation frequency to current conditions. The Mud Nama Mitigation Plan shall include the following topics: (1) responsibilities and qualifications of the personnel to implement and supervise the plan; (2) mitigation site selection criteria; (3) site preparation and planting implementation, including pilot studies (if needed); (4) implementation schedule; (5) maintenance plan/guidelines; (6) monitoring plan; (7) performance criteria and contingency planning; and (8) long-term preservation. IRWD will implement the Plan.</p> <p>IRWD will retain a qualified Restoration Biologist/Seed Collector to collect seed, salvage individuals, and salvage soils (i.e., seed bank) from the mud nama during the spring/summer prior to impacts upon this plant. IRWD will ensure that the seed/salvaged individuals/soil will be stored by a qualified Seed Collector in appropriate conditions to maintain the viability of the seed to be used in implementation of the Mud Nama Mitigation Plan.</p> <p>MM BIO-1C Special Status Plants/Biological Monitoring: Before the start of construction, IRWD will retain a qualified Biological Monitor to confirm that the special status plant locations to be avoided are clearly marked with lathe and flagging, orange snow fencing, stakes and rope, or other suitable fencing. The Biological Monitor will post signs to indicate each location as an “Environmentally Sensitive Area” and that no work activities may occur within the fencing. The Biological Monitor will conduct a WEAP training regarding the importance of Environmentally Sensitive Areas. Once Project activities begin, the Biological Monitor will check the fencing/signage weekly to ensure that it stays in place throughout construction activities and will notify IRWD and the construction</p>	

TABLE 1-1
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		<p>contractor immediately if the fencing/signage needs to be repaired.</p> <p>MM BIO-2 Crotch’s Bumble Bee: If the California Department of Fish and Wildlife (CDFW) determines that listing of the Crotch’s bumble bee is not warranted as threatened or endangered under the California Endangered Species Act prior to or during implementation of the Project, this measure will not be required.</p> <p>Until CDFW makes a determination, or if CDFW determines that listing of the Crotch’s bumble bee as threatened or endangered under the California Endangered Species Act is warranted, the following measures will be required.</p> <p>MM BIO-2A Incidental Take Permit: IRWD will obtain an Incidental Take Permit (2081) prior to removal of suitable habitat for Crotch’s bumble bee. IRWD will consult with CDFW to determine the appropriate mitigation to compensate for loss of floral resources associated with the species at a minimum 1:1 ratio of suitable habitat impacted (i.e., 1 acre impacted to 1 acre compensated). Potential compensatory mitigation options include on-site revegetation of temporarily disturbed areas using a seed mix of species preferred by Crotch’s bumble bee at a minimum 1:1 ratio of temporarily impacted areas; payment of an in-lieu mitigation fee to an approved mitigation bank at a minimum 1:1 ratio of permanently impacted areas; long-term preservation of on-site or off-site habitat at a minimum 1:1 ratio of permanently impacted areas; or another strategy as approved by CDFW. Mitigation provided for under MM BIO-3 (Coastal Sage Scrub) may be used towards mitigation for Crotch’s bumble bee.</p> <p>MM BIO-2B Pre-construction Survey: Prior to vegetation clearing or other ground-disturbance during each year of Project construction, IRWD will retain a qualified Biologist to conduct pre-construction focused surveys for active nests of Crotch’s bumble bee following the most current CDFW guidelines³ within 100 feet of Project impact areas with suitable habitat for Crotch’s bumble bee. According to current guidelines (CDFW 2023), the Biologist will conduct three visual surveys during the species’ active period (i.e., April to August). The timing between each visual survey may be reduced to accommodate the construction schedule, as long as the first and last survey are conducted at least one week apart during the active period.</p> <p>If no active nests of Crotch’s bumble bee are observed, vegetation clearing, grading, and ground-disturbance may proceed.</p> <p>If a ground nest is observed, it will be protected in place until it is no longer active as determined by the qualified Biologist retained by IRWD. IRWD will implement applicable protective measures from the Incidental Take Permit for the species (see MM BIO-2A). Potential protective measures may include protective buffers coupled with biological monitoring to avoid take of an active ground nest. The protective buffer will be determined by the</p>	

³ The current guidelines for this species are CDFW 2023; guidelines may be updated as more is learned about this species’ biology.

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		<p>Biologist conducting the pre-construction survey, or as designated in conditions in the Incidental Take Permit.</p> <p>IRWD shall assure that a Letter Report is prepared to document the results of the pre-construction survey and will provide the letter to CDFW within 30 days of the completion of the survey.</p> <p>MM BIO-2C Biological Monitoring: Biological monitoring for Crotch's bumble bee will follow the most current CDFW guidelines at the time of construction. Per current guidelines (CDFW 2023), IRWD will retain a Biological Monitor to be present onsite during vegetation-clearing and/or ground disturbing activities that take place during the Crotch's bumble bee queen flight period (i.e., February to March), colony active period (i.e., April to August), or gyne flight period (i.e., September to October). No biological monitoring will be required for vegetation-clearing or ground-disturbance that occurs from November to January.</p> <p>If a ground nest of Crotch's bumble bee is observed during the monitoring, it will be protected in place until it is no longer active as determined by the qualified Biologist retained by IRWD. IRWD will also implement applicable protective measures from the Incidental Take Permit for the species (see MM BIO-2A). If establishment of a protective buffer and/or avoidance of the nest is not feasible, IRWD and its qualified Biologist will consult with CDFW regarding potential encroachment into the protective buffer that may result in take of Crotch's bumble bee pursuant to MM BIO-2A.</p> <p>MM BIO-3 Coastal Sage Scrub and Coastal California Gnatcatcher: Potential direct and indirect impacts on coastal sage scrub and coastal California gnatcatcher are fully mitigated through IRWD's participation and contribution in the NCCP/HCP Mitigation Program. This participation not only provides mitigation for coastal sage scrub and the coastal California gnatcatcher, but also other Covered Species and Covered Habitats. IRWD will mitigate for impacts on coastal sage scrub and coastal California gnatcatcher through a combination of the following, as approved by U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW): (1) use of IRWD's NCCP/HCP take allocation at a 1:1 ratio for impacted coastal sage scrub; (2) restoration of coastal sage scrub habitat at a minimum 1:1 ratio in areas temporarily disturbed by construction including weeding and three years of restoration monitoring; and/or (3) restoration of coastal sage scrub habitat at an on-site or off-site location at a minimum 1:1 ratio, as described in a Habitat Mitigation and Monitoring Plan (HMMP) in order to preserve IRWD's remaining NCCP/HCP take allocation (if desired by IRWD).</p> <p>If a coastal sage scrub habitat establishment program is selected to mitigate for all or a portion of the impacts, IRWD will prepare a Coastal Sage Scrub HMMP and submit it to the resource agencies for review and approval prior to the initiation of construction activities. The Coastal Sage Scrub HMMP will include the following items: (1) responsibilities and qualifications; (2) performance criteria and contingency planning; (3) site selection; (4) seed materials procurement; (5) wildlife surveys and</p>	

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		<p>protection; (6) site preparation and plant materials installation; (7) schedule; (8) maintenance program; (9) monitoring program; and (10) long-term preservation. IRWD will retain a qualified Restoration Ecologist to prepare the Coastal Sage Scrub HMMP and will retain a qualified Restoration Contractor to implement the HMMP. IRWD will be responsible for implementing the Coastal Sage Scrub HMMP and ensuring that the mitigation program achieves the approved performance criteria.</p> <p>MM BIO-4 Riparian Vegetation and Jurisdictional Permitting: Before the start of construction, IRWD will obtain all necessary permits for impacts to U.S Army Corps of Engineers (USACE), California Department of Fish and Wildlife (CDFW), and/or Regional Water Quality Control Board (RWQCB) jurisdictional areas and will determine the compensatory mitigation needed for the loss of jurisdictional waters and wetlands. Potential compensatory mitigation options will include one or a combination of the following, as determined through consultation with the above-listed resource agencies: (1) establishment of riparian habitat (on site or off site) at a minimum 1:1 ratio for impacted jurisdictional areas; (2) payment to a resource agency approved mitigation bank or regional riparian enhancement program (e.g., invasive species removal) at a minimum 1:1 ratio for impacted jurisdictional areas; and/or (3) preservation of off-site riparian habitat on IRWD lands at a minimum 1:1 ratio for impacted jurisdictional areas.</p> <p>If in-lieu mitigation fees are required, IRWD will pay the in-lieu mitigation fee before the start of construction to a mitigation bank/enhancement program for the replacement of impacted jurisdictional resources.</p> <p>If a riparian habitat establishment program is selected to mitigate for all or a portion of the impacts, IRWD will retain a qualified Restoration Ecologist to prepare a Riparian Habitat Mitigation and Monitoring Plan (HMMP) and will submit it to the resource agencies for review and approval prior to the initiation of construction activities. The Riparian HMMP will include the following items: (1) responsibilities and qualifications; (2) performance criteria and contingency planning; (3) site selection; (4) seed materials procurement; (5) wildlife surveys and protection; (6) site preparation and plant materials installation; (7) schedule; (8) maintenance program; (9) monitoring program; and (10) long-term preservation. IRWS will retain a qualified Restoration Contractor to implement the HMMP. IRWD will be responsible for implementing the Riparian HMMP and ensuring that the mitigation program achieves the approved performance criteria.</p> <p>MM BIO-5 Least Bell’s Vireo: IRWD will consult with USFWS and CDFW under Section 7 of the Federal Endangered Species Act and Section 2080.1 of the California Fish and Game Code to approve the mitigation approach and whether NCCP/HCP Conditional Coverage would be extended to least Bell’s vireo based on the measures below.</p> <p>A. IRWD will obtain concurrence from USFWS and CDFW that the riparian mitigation described in MM BIO4 will provide</p>	

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		<p>appropriate compensatory mitigation for the loss of riparian habitat.</p> <p>B. To the extent feasible, removal of riparian habitat will be conducted during the non-breeding season (i.e., September 16 to March 14) in order to minimize direct impacts on nests of least Bell's vireo. IRWD will retain a qualified Biologist to monitor vegetation clearing of riparian habitat.</p> <p>C. Before starting construction each spring, IRWD will retain a qualified Biologist to survey all habitat within 500 feet of the construction limits for the presence of least Bell's vireo. The Biologist will map any active nests/territories as Environmentally Sensitive Areas on an aerial photograph. IRWD will also ensure that the Biologist prepares a Letter Report and that it is submitted to USFWS and CDFW to document the results of the pre-construction survey within 30 days of completion of the survey.</p> <p>D. IRWD will retain a qualified Biologist to conduct weekly focused surveys during construction to update the location of active least Bell's vireo territories. The Biologist will map new territories as Environmentally Sensitive Areas and will remove inactive Environmentally Sensitive Areas from the map. Once construction is in progress, IRWD will provide Weekly Reports to USFWS and CDFW.</p> <p>E. IRWD will retain a qualified Biologist to establish a 500-foot protective buffer around each least Bell's vireo territory identified during pre-construction or weekly surveys. The Biologist will verify that occupied riparian habitat is protected with lathe and rope, orange snow fencing, or other suitable fencing to provide an adequate buffer from construction work. The Biologist will post signs to indicate that the area is an "Environmentally Sensitive Area" and that no work activities may occur within the fencing. The Biologist will conduct training to educate workers on the importance of Environmentally Sensitive Areas.</p> <p>F. If construction activities need to occur within 500 feet of an active least Bell's vireo territory, IRWD will consult with USFWS and CDFW to determine an appropriate noise reduction strategy. Appropriate noise reduction measures may include, but are not limited to, specifications for equipment type, siting of equipment, and temporary noise barriers. IRWD will retain a qualified Biologist to monitor the installation of any noise reduction measures.</p> <p>G. IRWD will retain a qualified Biologist to conduct daily monitoring when construction activities are conducted within 500 feet of an active least Bell's vireo territory or until the Biologist determines that the individuals are not being impacted by the noise (i.e., the noise measures are established and birds are acclimated to the activities).</p> <p>MM BIO-6 Bald Eagle: IRWD will consult with USFWS and CDFW with regard to the bald eagle to determine whether any regulatory approval is necessary to comply with the California Endangered Species Act and the federal Bald Eagle Act. Because there would</p>	

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		<p>be no direct take of a nest, an informal consultation may be sufficient, but this approach will be confirmed by USFWS and CDFW.</p> <p>USFWS and CDFW will review and approve the monitoring strategy to be used during construction. IRWD will retain a qualified Biologist to visit the bald eagle nest multiple times over the course of the breeding season to determine whether the nest is active and/or to determine the stage of nesting. The Biologist will conduct the first visit in early March to determine whether the nest is active. The Biologist will conduct the second visit in late March or early April to confirm the nesting stage (i.e., presence of eggs/young), or to confirm that the nest is still inactive. If the nest is not active during the first two visits, no additional surveys will be needed. However, if the nest is active, the Biologist will conduct weekly surveys from five weeks post-hatching continuing until the young fledge or May 15, whichever comes last. The Biologist will complete the California Bald Eagle Nesting Territory Survey Form to document the survey results each year. IRWD will ensure that the form is submitted to USFWS and CDFW by September 1 of each year.</p> <p>MM BIO-7 Pre-Construction Bat Surveys: IRWD will retain a qualified Biologist to conduct a pre-construction roosting bat survey (including both day and evening efforts) before construction begins. The day survey will involve inspection of the structures within the impact area to look for signs of bat roosting. The evening survey will involve monitoring each potential roost site for evening emergence, conducting exit counts, and acoustic monitoring (from a half an hour before sunset to no greater than three hours after sunset) near potential roosts within the impact area. If the Biologist determines that bats are actively roosting onsite, IRWD will retain a qualified Biologist to prepare a Project-specific Bat Roost Minimization Plan (BRMP) and will implement the plan. The BRMP will include relevant avoidance and minimization measures based on the survey results. If tree roosting bat species are found to be both foraging and potentially roosting onsite, IRWD will conduct tree removal only during the non-maternity season (September 1 through March 31). When potentially-occupied roost trees are removed, IRWD will implement a phased tree removal method (i.e., leaving the felled tree on the ground for 24-48 hours after the felling to allow any tree-roosting bats to leave). IRWD will avoid all Project-structures proposed for demolition that support an active day-roost until either the roost is no longer active, as determined by a qualified Biologist, or the occupants can be humanely evicted as described in the BRMP. IRWD will retain a qualified Biologist to conduct bat eviction during the fall months outside of the bat maternity season (i.e., September 1 through November 30).</p>	

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Threshold 4.3-2 Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service.	The Project would impact coastal sage scrub, riparian, and woodland habitats. The additional inundation during implementation of the Project would also affect a limited amount of these habitats. With implementation of MM BIO-3, MM BIO-4, and MM BIO-8 these impacts would be less than significant. Therefore, the potential impact on riparian habitats and sensitive natural communities would be less than significant, pursuant to Threshold 4.3-2.	MMs BIO-3 and BIO-4 as stated above. MM BIO-8 Tree Survey/Replacement: Before the start of construction, IRWD will retain a qualified Biologist or Certified Arborist to conduct a tree survey to identify the location and health of western sycamore trees within 100 feet of the Project impact area. To the extent practicable, temporary impact areas will be revised to avoid and minimize effects on western sycamore trees. Standard tree protection measures to fence western sycamores will be recommended for trees within or near the work area (PDF BIO-4). Any western sycamores that are greater than four inches diameter at breast height (dbh) removed by construction will be replaced at no less than a 1:1 ratio. Trees with a dbh of 4 inches to 8 inches will be replaced at a 1:1 ratio with a minimum container size of 15 gallons. Trees with a dbh of greater than 8 inches to 16 inches will be replaced at a 1:1 ratio with a minimum container size of 25 gallons (i.e., 24-inch box). Trees with a dbh of greater than 16 inches to 24 inches will be replaced at a 3:1 ratio with a minimum container size of 25 gallons (i.e., 24-inch box). Trees with a dbh of greater than 24 inches to 36 inches will be replaced at a 5:1 ratio with a minimum container size of 25 gallons (i.e., 24-inch box). Trees with a dbh of greater than 36 inches will be replaced at a 10:1 ratio with a minimum container size of 25 gallons (i.e., 24-inch box). The replacement trees will be replaced either on-site or off-site in a location with appropriate microclimate conditions. The replacement trees will be incorporated into the Coastal Sage Scrub HMMP (described above).	Less Than Significant.
Threshold 4.3-3 Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.	The Project would impact areas within the jurisdiction of the USACE, RWQCB, and CDFW. The Project also may significantly impact water quality during construction. With the implementation of MM BIO-4, these impacts would be less than significant. Therefore, the potential impact on state- and federally- protected wetlands and other jurisdictional resources would be less than significant, pursuant to Threshold 4.3-3.	MM BIO-4 as stated above.	Less Than Significant.
Threshold 4.3-4 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.	Santiago Creek Dam represents an existing barrier to wildlife movement; therefore the Project would not impact wildlife movement along a regional wildlife corridor. However, the Project is located within a NCCP/HCP Reserve and wildlife movement in adjacent areas could be affected by noise, night lighting, and human activity during construction. With the implementation of PDF-BIO-1, PDF-BIO-6, and PDF-BIO-7 impacts would be less than significant under Threshold 4.3-4.	No mitigation is required.	Less Than Significant.
Threshold 4.3-5 Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.	The Project has the potential to affect nesting birds/raptors, which are protected by the Migratory Bird Treaty Act (MBTA) and California Fish and Game Code. With the implementation of standard pre-construction surveys and nesting bird protections (PDF-BIO-5), the impact would be less than significant, and no conflict with applicable requirements would occur pursuant to Threshold 4.3-5.	No mitigation is required.	Less Than Significant.
Threshold 4.3-6 Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan.	The Project is consistent with the NCCP/HCP. With implementation of MM BIO-3 and MM BIO-5, the impact would be reduced to less than significant., No conflict with the NCCP/HCP would occur under Threshold 4.3-6.	MM BIO-3 and MM BIO-5 as stated above.	Less Than Significant.

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Section 4.4 – Cultural Resources			
Threshold 4.4-1 Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5.	The Santiago Creek Dam (P-30-176757) was determined eligible for the California Register of Historical Resources (CRHR) and listed in the CRHR. Although specific aspects of the dam would be modified, it would remain recognizable as an earthen embankment dam and would continue to perform the historic function for which it is eligible. Thus, the Project would not cause a substantial adverse change in the significance of an historical resource, and no mitigation is required.	No mitigation is required.	Less Than Significant.
Threshold 4.4-2 Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5.	The Project has potential to cause a substantial adverse change in the significance of an archaeological resource. However, potential effects would be mitigated to a less than significant level with the implementation of MM CR-1, which requires archaeological monitoring during grading activities within previously undisturbed soils, including geotechnical investigations, and MM CR-2, which identifies treatment of unanticipated discoveries.	MM CR-1 IRWD will retain a certified archaeologist, defined as an archaeologist meeting the Secretary of the Interior’s Standards for professional archaeology, to observe ground-disturbing activities (including but not limited to geotechnical excavations, vegetation removal, grubbing, grading, and excavation) within previously undisturbed soils below fill soils and to salvage and catalogue archaeological resources as necessary. Monitoring will not be required for secondary movement of soils, such as backfilling. The archaeologist will be present at the pre-construction meeting, will establish procedures for archaeological resource surveillance within previously undisturbed soils in coordination with IRWD throughout construction of the proposed Project, and will establish, in cooperation with IRWD, procedures for temporarily halting or redirecting work to permit the sampling, identification, and evaluation of the artifacts as appropriate. The archaeological monitor will have the authority to temporarily halt or divert work away from any discoveries of archaeological resources in order to evaluate the resources pursuant to MM CR-2 . The archaeologist may determine, in consultation with IRWD, to reduce monitoring to spot-checking or eliminate monitoring depending on site conditions observed, such as the presence of fill material, soil stratigraphy, encountering bedrock, or other factors. The archaeological monitor will keep daily logs detailing the types of activities and soils observed, and any discoveries. After monitoring has been completed, the certified archaeologist will prepare a monitoring report that details the results of monitoring. The report will be submitted to IRWD and any Native American groups who request a copy. The certified archaeologist will submit a copy of the final report to the California Historic Resources Information System South Central Coastal Information Center. MM CR-2 If archaeological resources are inadvertently unearthed during excavation activities (within disturbed or undisturbed soils), the contractor will immediately cease all earth-disturbing activities within a 50-foot radius of the area of discovery, and the certified archaeologist and IRWD will be notified immediately. If the certified archaeologist determine the archaeological resources are potentially significant pursuant to CEQA Guidelines Section 15064.5 or California PRC Section 21083.2(g), the archaeologist, in consultation with IRWD and representatives from the tribal governments consulting under AB 52, will determine appropriate treatment, which may include avoidance of the area of the find, data recovery, documentation, testing, reburial, archival review,	Less Than Significant.

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		and/or transfer to the appropriate museum or educational institution, or other appropriate actions. After the find has been appropriately avoided or mitigated, work in the area may resume.	
Threshold 4.4-3 Disturb any human remains, including those interred outside of formal cemeteries.	Pursuant to Threshold 4.4-3, Project activities are not expected to disturb human remains. However, if human remains are encountered during grading activities, RR CR-1 requires that any activity in the area of a potential find be halted, and the Orange County Coroner be notified. Implementation of RR CR-1 would reduce this impact to a less than significant level.	RR CR-1 If human remains are found during ground-disturbing activities, no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains will occur, in accordance with Section 7050.5 of the California Health and Safety Code. The County Coroner will be notified of the discovery immediately. If the County Coroner determines that the remains are or believed to be Native American, s/he will notify the NAHC within 24 hours of the discovery. In accordance with Section 5097.98 of the California Public Resources Code, the NAHC must immediately notify those persons it believes to be the most likely descended from the deceased Native American (i.e., the most likely descendant). The descendants will complete their inspection within 48 hours of being granted access to the site by IRWD. IRWD will discuss and confer with the most likely descendants regarding all reasonable options regarding the descendants' preferences for treatment of the human remains prior to disturbing the site by further construction activity.	Less Than Significant.
Section 4.5 – Energy			
Threshold 4.5-1 Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation.	Based on the analysis presented in Section 4.5, Energy, the Project would not result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation. The Project's impact would be less than significant, and no mitigation is required.	No mitigation is required.	Less Than Significant.
Threshold 4.5-2 Conflict with or obstruct a State or local plan for renewable energy or energy efficiency.	Implementation of the Project would not conflict with or obstruct a State or local plan for renewable energy or energy efficiency. Impacts would be less than significant, and no mitigation is required.	No mitigation is required.	Less Than Significant.
Section 4.6 – Geology and Soils			
Threshold 4.6-1 Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving: i) Strong seismic ground shaking	The Project site is in a seismically active area that would likely experience strong ground shaking during the life of any project developed thereon. However, compliance with existing regulations (2022 California Building Code) would reduce potentially significant impacts associated with strong seismic ground shaking to a less than significant level.	No mitigation is required.	Less Than Significant.
ii) Seismic-related ground failure, including liquefaction	Implementation of the Project would reduce the existing potential for substantial adverse effects to the Santiago Creek Dam involving seismic-related ground failure. There would be a less than significant impacts related to seismic-related ground failure, including liquefaction and lateral spreading, with implementation of engineering design requirements applicable to the Project and no mitigation would be required.	No mitigation is required.	Less Than Significant.

TABLE 1-1
SUMMARY OF POTENTIAL IMPACTS, MITIGATION MEASURES AND LEVEL OF SIGNIFICANCE

Threshold of Significance	Project Impacts	Mitigation Measures (MM) / Project Design Features (PDF) / Regulatory Requirements (RR)	Level of Significance After Mitigation
iii) Landslides	Implementation of the Project would reduce the existing potential for substantial adverse effects to the Santiago Creek Dam involving landslides. There would be a less than significant impact related to landslides, including liquefaction and lateral spreading, with implementation of engineering design requirements applicable to the Project, and no mitigation would be required.	No mitigation is required.	Less Than Significant.
Threshold 4.6-2 Result in substantial soil erosion or the loss of topsoil.	Grading activities would increase the potential for soil erosion and loss of topsoil. With the incorporation of construction BMPs as described in Section 4.9, Hydrology and Water Quality, of this EIR and compliance with applicable laws and regulations (e.g., NPDES Construction General Permit), Project impacts on soil erosion and loss of topsoil would be less than significant. Long-term operation of the Project would also result in less than significant impacts. No mitigation measures are required.	No mitigation is required.	Less Than Significant.
Threshold 4.6-3 Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.	There would be less than significant impacts related to the presence of unstable geologic units with implementation of engineering design requirements applicable to the Project, and no mitigation would be required.	No mitigation is required.	Less Than Significant.
Threshold 4.6-4 Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property.	The on-site soils were determined to have very low or non-existent expansion potential. There would be less than significant impacts related to expansive soils with implementation of engineering design requirements applicable to the Project, and no mitigation would be required.	No mitigation is required.	Less Than Significant.
Threshold 4.6-5 Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.	The Project has a potential to disturb unique paleontological resources during construction. However, potential effects may be mitigated to a less than significant level with the implementation of MM GEO-1, which requires retention of a qualified Paleontologist to observe ground-disturbing activities, including geotechnical investigations, within undisturbed soils and MM GEO-2, which identifies treatment of unanticipated discoveries.	MM GEO-1 Before beginning initial ground-disturbing activities (including but not limited to geotechnical excavations, vegetation removal, grubbing, grading, and excavation), IRWD will retain a paleontologist that meets the 2010 Society of Vertebrate Paleontology standards for paleontology. The paleontologist will observe ground-disturbing activities within previously disturbed or undisturbed soils with high paleontological sensitivity in geological formations, such as the Williams Formation or Pleistocene age alluvium, at the Project site. In the event of discovery, paleontological findings will be salvaged and catalogued by the paleontologist. Monitoring will not be required for secondary movement of soils, such as backfilling. The paleontologist will regularly meet with the contractor to ensure adequate involvement with ground-disturbing activities and will establish procedures for paleontological resource surveillance within previously undisturbed soils in coordination with IRWD throughout construction of the proposed Project. The qualified paleontologist will also establish, in coordination with IRWD, procedures for temporarily halting or redirecting work to permit the sampling, identification, and evaluation of the fossils/unique geological units as appropriate. The paleontological monitor will have the authority to temporarily halt or divert work away from exposed fossils in order to recover the fossil specimens pursuant to MM GEO-2. The paleontologist may determine, in consultation with IRWD, to reduce monitoring to spot-checking or eliminate monitoring depending on site conditions observed, such as the presence of geologic units with low paleontological sensitivity or other factors. The	Less Than Significant.

TABLE 1-1
SUMMARY OF POTENTIAL IMPACTS, MITIGATION MEASURES AND LEVEL OF SIGNIFICANCE

Threshold of Significance	Project Impacts	Mitigation Measures (MM) / Project Design Features (PDF) / Regulatory Requirements (RR)	Level of Significance After Mitigation
		<p>MM GEO-2</p> <p>paleontological monitor will prepare daily logs detailing the types of activities and soils observed and any discoveries. Upon the completion of initial ground-disturbing activities, the paleontologist will prepare a final monitoring and mitigation report to document the results of the monitoring effort.</p> <p>If paleontological resources are inadvertently unearthed during excavation activities, the contractor will immediately cease all earth-disturbing activities within a 50-foot radius of the area of discovery and will contact the paleontologist and IRWD immediately. If the paleontologist determines the paleontological resources are potentially significant under CEQA, the paleontologist, in consultation with IRWD, will determine appropriate actions for treatment. Any significant fossils collected during project-related excavations will be salvaged and prepared to the point of identification following the standards of the Society of Vertebrate Paleontology (2010). Any salvaged fossils will be offered for donation to an accredited repository with a scientific interest in the materials. If no accredited repository accepts the donation, then the fossils may be donated to a local museum, historical society, school, or other institution for educational purposes. After the resource has been appropriately avoided or mitigated, work in the area may resume.</p>	
Section 4.7 – Greenhouse Gas Emissions			
Threshold 4.7-1 Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.	Pursuant to Threshold 4.7-1, the Project would not generate GHG emissions, either directly or indirectly, resulting in a significant impact on the environment. Impacts would be less than significant, and no mitigation is required.	No mitigation is required.	Less Than Significant.
Threshold 4.7-2 Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.	Pursuant to Threshold 4.7-2, the Project would be consistent with and would not conflict with regulations and policies adopted for the purpose of reducing GHG emissions. Impacts would be less than significant, and no mitigation is required.	No mitigation is required.	Less Than Significant.
Section 4.8 – Hazards and Hazardous Materials			
Threshold 4.8-1 Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	A portion of the Project site is located on the former Irvine Park-Army Camp and is currently designated on the Cortese List. With the implementation of MM HAZ-1, which requires IRWD to follow and implement the 3Rs of Explosives Safety – Recognize, Retreat, and Report, impacts would be less than significant.	<p>MM HAZ-1</p> <p>IRWD will require that all construction contractor(s) and their personnel receive, review, and adhere to the guidance published in <i>3Rs Safety Guide, Former Irvine Park-Army Camp, California, Orange County</i>. IRWD will require its construction contractor to provide training to all construction personnel on the implementation and application of the Safety Guide, which includes 1) Recognize that munitions are dangerous; 2) Retreat – do not approach, touch, move or disturb it, but carefully leave the area; and 3) Report immediately what you saw and where you saw it to local law enforcement.</p>	Less Than Significant.

TABLE 1-1
SUMMARY OF POTENTIAL IMPACTS, MITIGATION MEASURES AND LEVEL OF SIGNIFICANCE

Threshold of Significance	Project Impacts	Mitigation Measures (MM) / Project Design Features (PDF) / Regulatory Requirements (RR)	Level of Significance After Mitigation
Threshold 4.8-2 Expose people or structure, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?	The Project site is located within a Very High Fire Hazard Severity Zone (FHSZ) in a State Responsibility Area. The areas surrounding the Project site are also located within a Very High FHSZ, with the exception of a portion of Irvine Lake, which is located within a High FHSZ within an State Responsibility Area. With regulatory compliance measures incorporated, the proposed Project would not exacerbate wildfire risk and impacts would be less than significant. No mitigation is required.	No mitigation is required.	Less Than Significant.
Section 4.9 – Hydrology and Water Quality			
Threshold 4.9-1 Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality.	The proposed Project would not violate any water quality standards and waste discharge requirements, nor would it otherwise substantially degrade water quality, pursuant to Threshold 4.9-1. Water quality-related impacts would be less than significant. No mitigation is required.	No mitigation is required.	Less Than Significant.
Threshold 4.9-2 Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.	The Project would not deplete groundwater supplies or interfere substantially with groundwater recharge. No impacts would occur, pursuant to Threshold 4.9-2. No mitigation is required.	No mitigation is required.	No Impact.
Threshold 4.9-3 Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would: i) result in substantial erosion or siltation on- or off-site; ii) substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner in which would result in flooding on- or off-site; iii) 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. iv) impede or redirect flood flows.	The proposed Project would not alter the existing drainage pattern of the site or area, would not result in substantial erosion or siltation on or off-site, substantially increase the rate or amount of surface runoff in a manner in which would result in flooding on- or off-site, 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 impede or redirect flood flows. Impacts would be less than significant, and no mitigation is required.	No mitigation is required.	Less Than Significant.
Threshold 4.9-4 In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation.	The proposed Project would not introduce any uses that would expose people or structures to the release of pollutants during seiches and flooding due to breaches of the dam. Impacts would be less than significant, and no mitigation is required.	No mitigation is required.	Less Than Significant.
Threshold 4.9-5 Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.	The proposed Project would not conflict with or obstruct implementation of the applicable water quality control plan or sustainable groundwater management plan. Impacts would be less than significant, and no mitigation is required.	No mitigation is required.	Less Than Significant.
Section 4.10 – Land Use and Planning			
Threshold 4.10-1 Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.	The Project would not conflict with any local applicable land use plan, policy, or regulation. Impacts would be less than significant.	No mitigation is required.	Less Than Significant.

**TABLE 1-1
SUMMARY OF POTENTIAL IMPACTS, MITIGATION MEASURES AND LEVEL OF SIGNIFICANCE**

Threshold of Significance	Project Impacts	Mitigation Measures (MM) / Project Design Features (PDF) / Regulatory Requirements (RR)	Level of Significance After Mitigation
Section 4.11 – Noise			
Threshold 4.11-1 Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.	Noise generated during Project construction would not exceed the daytime or nighttime noise thresholds established by the Federal Transit Administration (FTA). For the residential sensitive receptors located approximately two miles to the west, noise levels generated during Project construction would be attenuated by the substantial distances between the Project site and the aforementioned uses. Furthermore, Irvine Lake is surrounded by ridgelines which would also attenuate noise levels. As shown in Table 4.11-5, noise exposure levels are anticipated to range from 31 to 46 A-weighted decibels (dBA) equivalent noise level (L_{eq}) at Irvine Regional Park and are not anticipated to result in a substantial level of noise exposure. Additionally, Project construction would not exceed the 80 dBA L_{eq} daytime and 70 dBA L_{eq} nighttime noise criteria and consequently would not expose Oak Canyon Park and Lakeview Park Camping Area to excessive levels of noise. No camping is allowed at Irvine Lake (OC Parks 2023) so there would be no nighttime noise exposure. No Project-related traffic noise impacts are anticipated. Impacts related to stationary sources of noise would be less than significant, and no mitigation is necessary pursuant to Threshold 4.11-1.	No mitigation is required.	Less Than Significant.
Threshold 4.11-2 Generation of excessive groundborne vibration or groundborne noise levels.	Vibration annoyance and building damage from typical construction activities have the potential to be excessive at nearfield distances of 100 feet or less. Because of the very substantial distances between the Project site and the nearest buildings, vibration-induced annoyance and building damage would not occur. The operations phase of the Project would not involve machinery or activities that generate perceptible levels of vibration. There would be a less than significant impact, and no mitigation is required pursuant to Threshold 4.11-2.	No mitigation is required.	Less Than Significant.
Threshold 4.11-3 For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels.	The Project would not result in exposure of people residing or working in the Project area to excessive aircraft noise levels. Pursuant to Threshold 4.11-3, there would be no impact related to excessive aircraft noise exposure.	No mitigation is required.	Less Than Significant.
Section 4.12 – Public Services			
Threshold 4.12-1 Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services: (i) Fire protection	The Project's temporary construction activities and periodic maintenance activities would only cause an incremental increase in demand on County fire services. No new or physically-altered fire facilities that would result in substantial adverse physical impacts would be required as a result of the Project. Therefore, the impact is less than significant, and no mitigation is required.	No mitigation is required.	Less Than Significant.
(ii) Police protection	The Project would not result in an increased demand for police protection services or result in a significant impact to police response. The Project would replace an existing use that is generating demand for police protection services. The Project would not result in the need for construction of new or physically-altered police facilities to maintain adequate levels of service. Therefore, the impact is considered less than significant, and no mitigation is required.	No mitigation is required.	Less Than Significant.

TABLE 1-1
SUMMARY OF POTENTIAL IMPACTS, MITIGATION MEASURES AND LEVEL OF SIGNIFICANCE

Threshold of Significance	Project Impacts	Mitigation Measures (MM) / Project Design Features (PDF) / Regulatory Requirements (RR)	Level of Significance After Mitigation
Section 4.13 – Recreation			
Threshold 4.13-1 Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.	The proposed Project would not increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated. Less than significant impacts would occur.	No mitigation is required.	Less Than Significant.
Threshold 4.13-2 Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.	The proposed Project would not include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment. No impact would occur.	No mitigation is required.	No Impact.
Section 4.14 – Transportation			
Threshold 4.14-1 Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities.	Project construction and operation would not result in a significant impact. Based on the evaluation included in Section 4.14, Transportation, with compliance with the Traffic Control Plan and County requirements, Project construction impacts would be less than significant. Additionally, it is anticipated that routine inspection and maintenance trips would continue, and no new operational trips would occur with implementation of the proposed Project. Therefore, the potential operation impacts would be less than significant, and no mitigation is required.	No mitigation is required.	Less Than Significant.
Threshold 4.14-2 Conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b).	The Project would not conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b), pursuant to Threshold 4.14-2. No impact would occur, and no mitigation is required.	No mitigation is required.	Less Than Significant.
Threshold 4.14-3 Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).	No impact would occur related to hazards due to a design feature or incompatible uses, pursuant to Threshold 4.14-3. No mitigation is required.	No mitigation is required.	Less Than Significant.
Threshold 4.14-4 Result in inadequate emergency access.	No impact to local or regional emergency access routes would occur, pursuant to Threshold 4.14-4. No mitigation is required.	No mitigation is required.	Less Than Significant.

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SUMMARY OF POTENTIAL IMPACTS, MITIGATION MEASURES AND LEVEL OF SIGNIFICANCE

Threshold of Significance	Project Impacts	Mitigation Measures (MM) / Project Design Features (PDF) / Regulatory Requirements (RR)	Level of Significance After Mitigation
Section 4.15 – Tribal Cultural Resources			
Threshold 4.15-1 Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is: i. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1 (k), or	<p>Potential impacts to archeological resources would be mitigated to a less than significant level with the implementation of MM CR-1, which requires archaeological monitoring during grading activities within previously undisturbed soils, including geotechnical investigations, and MM CR-2, which identifies treatment of unanticipated discoveries. Additionally, the Project would comply with the State requirements pertaining to the protection of human remains by implementing RR CR1.</p> <p>The Santiago Creek Dam Complex (P-30-176757) was determined eligible for the CRHR and listed in the CRHR. However, it would remain recognizable as an earthen embankment dam and would continue to perform the historic function for which it is eligible. Thus, pursuant to Threshold 4.15-1, the Project would not have an impact on a tribal cultural resource that is listed or eligible for listing on the CRHR or a local register.</p>	<p>MM CR-1</p> <p>IRWD will retain a certified archaeologist, defined as an archaeologist meeting the Secretary of the Interior’s Standards for professional archaeology, to observe ground-disturbing activities (including but not limited to geotechnical excavations, vegetational removal, grubbing, grading, and excavation) within previously undisturbed soils below the fill soils and to salvage and catalogue archaeological resources as necessary. Monitoring will not be necessary for secondary movement of soils, such as backfilling. The archaeologist will be present at the pre-construction meeting, will establish procedures for archaeological resource surveillance within previously undisturbed soils in coordination with IRWD throughout construction of the proposed Project, and will establish, in cooperation with IRWD, procedures for temporarily halting or redirecting work to permit the sampling, identification, and evaluation of the artifacts as appropriate. The archaeological monitor will have the authority to temporarily halt or divert work away from any discoveries of archaeological resources in order to evaluate the resources pursuant to MM CR-2. The archaeologist may determine, in consultation with IRWD, to reduce monitoring to spot-checking or eliminate monitoring depending on site conditions observed, such as the presence of fill material, soil stratigraphy, encountering bedrock, or other factors.</p> <p>The archaeological monitor will keep daily logs detailing the types of activities and soils observed, and any discoveries. After monitoring has been completed, the certified archaeologist will prepare a monitoring report that details the results of monitoring. The report will be submitted to IRWD and any Native American groups who request a copy. The certified archaeologist will submit a copy of the final report to the California Historic Resources Information System (CHRIS) South Central Coastal Information Center (SCCIC).</p> <p>MM CR-2</p> <p>If archaeological resources are inadvertently unearthed during excavation activities (within disturbed or undisturbed soils), the contractor will immediately cease all earth-disturbing activities within a 50-foot radius of the area of discovery, and the certified archaeologist and IRWD will be notified immediately. If the certified archaeologist determine the archaeological resources are potentially significant pursuant to CEQA Guidelines Section 15064.5 or California Public Resources Code (PRC) Section 21083.2(g), the archaeologist, in consultation with IRWD and representatives from the tribal governments consulting under AB 52, will determine appropriate treatment, which may include avoidance of the area of the find, data recovery, documentation, testing, reburial, archival review, and/or transfer to the appropriate museum or educational institution, or other appropriate actions. After the find has been appropriately avoided or mitigated, work in the area may resume.</p> <p>RR CR-1</p> <p>If human remains are found during ground-disturbing activities, no further excavation or disturbance of the site or</p>	Less Than Significant.

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Threshold of Significance	Project Impacts	Mitigation Measures (MM) / Project Design Features (PDF) / Regulatory Requirements (RR)	Level of Significance After Mitigation
		<p>any nearby area reasonably suspected to overlie adjacent remains will occur, in accordance with Section 7050.5 of the California Health and Safety Code. The County Coroner will be notified of the discovery immediately. If the County Coroner determines that the remains are or believed to be Native American, s/he will notify the NAHC within 24 hours of the discovery. In accordance with Section 5097.98 of the California Public Resources Code, the NAHC must immediately notify those persons it believes to be the most likely descended from the deceased Native American (i.e., the most likely descendant). The descendants will complete their inspection within 48 hours of being granted access to the site by IRWD. IRWD will discuss and confer with the most likely descendants regarding all reasonable options regarding the descendants' preferences for treatment of the human remains prior to disturbing the site by further construction activity.</p>	
<p>ii. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resource Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.</p>	<p>Potential impacts to tribal cultural resources would be mitigated to a less than significant level with the implementation of MM TCR-1, MM TCR-2, and TCR-3, which detail procedures related to tribal monitoring and protocols for unanticipated discoveries.</p>	<p>MM TCR-1</p> <p>Juaneño Band of Mission Indians, Acjachemen Nation – Belardes Tribal Monitoring.</p> <p>At least one month prior to beginning earthwork activities (i.e. grading, excavation and trenching) related to the existing water line tie-in activities of the proposed project, located at the intersection of Santiago Canyon Road and Haul Road, IRWD will notify the representatives of the Juaneño Band of Mission Indians, Acjachemen Nation - Belardes ("Acjachemen Nation - Belardes") identifying the date of starting earthwork activities. The notification will invite the representative to be present at the project site, and IRWD will further coordinate with the Acjachemen Nation – Belardes for construction monitoring. Acjachemen Nation – Belardes will be provided reasonable access to the project site, at its own expense and in a manner that will not conflict construction activities or cause construction delays to the contractor, to observe these earthwork activities. If Native American artifacts and ancestral human remains related to Acjachemen Nation – Belardes are uncovered during earthwork activities, MM TCR-3 Protocols for Unanticipated Discoveries will be implemented.</p> <p>The Acjachemen Nation – Belardes will document and provide logs to IRWD detailing the time/date of the visit, the outcome of the site visit and detail proposed activities it intends to conduct at the next site visit. The logs will also specifically describe the relevant ground-disturbing activities, the type of construction activities performed, locations of ground-disturbing activities, soil types, cultural-related materials, and any other facts, conditions, materials, or discoveries of significance to the Acjachemen Nation - Belardes. The monitor logs will identify and describe any discovered tribal cultural resources, including but not limited to, Native American cultural and historical artifacts, remains, places of significance, etc., as well as any discovered Native American (ancestral) human remains and burial goods.</p>	<p>Less Than Significant.</p>

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Threshold of Significance	Project Impacts	Mitigation Measures (MM) / Project Design Features (PDF) / Regulatory Requirements (RR)	Level of Significance After Mitigation
		<p>MM TCR-2 Gabrieleno Band of Mission Indians - Kizh Nation Tribal Monitoring.</p> <p>During the AB 52 consultation process, the Gabrieleno Band of Mission Indians - Kizh Nation (Kizh Nation) informed IRWD’s staff that the Gabrieleno tribe has a strong tribal cultural presence in the region from the past, including the project site area. Therefore, there could be Kizh Nation tribal cultural resources present at the project site area and Kizh Nation has requested Native American monitoring of ground disturbing activities. The project site area spans over a vast area and the proposed project would have multiple construction phases with varied activities and schedules. At least one month prior to beginning earthwork activities, IRWD will notify in writing the Native American representatives from the Kizh Nation (tribal representative) of the date of the start of earthwork activities. The tribal representative, at their own expense, and in a manner that does not interfere with earthwork activities, will be allowed to observe subsurface ground disturbing construction activities. Monitoring may include either direct observation of the earthwork activities or the examination of excavated soils prior to disposal for evidence of cultural resources. If Native American artifacts and ancestral human remains are uncovered during earthwork activities, then MM TCR-3 Protocols for Unanticipated Discoveries will be implemented.</p> <p>The Kizh Nation tribal representative will complete daily monitoring logs and provide logs to IRWD detailing the time/date of the visit and the outcome of the site visit and detail proposed activities for their next site visit. The logs will also specifically describe the relevant ground-disturbing activities, the type of construction activities performed, locations of ground-disturbing activities, soil types, cultural-related materials, and any other facts, conditions, materials, or discoveries of significance to the Kizh Nation. The monitor logs will identify and describe any discovered tribal cultural resources, including but not limited to, Native American cultural and historical artifacts, remains, places of significance, etc., as well as any discovered Native American (ancestral) human remains and burial goods.</p> <p>MM TCR-3 Protocols for Unanticipated Discoveries.</p> <p>If a cultural resource is found, all construction activities in the immediate vicinity of the discovery (i.e., not less than the surrounding 50 feet) will cease and will not resume until the discovered cultural resource(s) is assessed by IRWD’s consulting Qualified Archaeologist. If the Qualified Archaeologist determines that the resources may be significant under CEQA, then the Qualified Archaeologist, in consultation with IRWD, will develop an appropriate treatment plan for the resource(s). IRWD will also consult with the Native American tribes or other appropriate Native American representatives in determining appropriate treatment for unearthed cultural resources if the resources are prehistoric or Native American in nature. Under CEQA, preservation in place is the preferred manner of mitigating</p>	

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Threshold of Significance	Project Impacts	Mitigation Measures (MM) / Project Design Features (PDF) / Regulatory Requirements (RR)	Level of Significance After Mitigation
		impacts to archaeological sites. However, if avoidance is infeasible, other appropriate measures will be instituted, which could include, among other options, detailed documentation, or data recovery excavation. Work may proceed on other parts of the project area while mitigation for cultural resources is being carried out.	
Section 4.16 – Utilities and Service Systems			
Threshold 4.16-1 Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which cause significant environmental effects.	The Project would not require or result in the relocation or construction of new or expanded wastewater treatment, storm drainage, natural gas, or telecommunications facilities. The Project would not result in additional demand for water supply. Construction of the Project would require relocation of the existing overhead power lines and power poles in the Project vicinity. This relocation would be completed by SCE prior to construction. The new poles would be placed outside of the construction limits for the Project and are not included as part of this Project. As such, impacts would be less than significant, and no mitigation is required.	No mitigation is required.	Less Than Significant.
Threshold 4.16-2 Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years.	The Project would not result in a significant additional demand for water. Less-than-significant water-related impacts would occur, and no mitigation is required.	No mitigation is required.	Less Than Significant.
Threshold 4.16-3 Result in a determination by the wastewater treatment provider that serves or may service the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments.	The Project would result in a determination by the wastewater treatment provider which serves or may serve the Project that it has adequate capacity to serve the Project's projected demand in addition to the provider's existing commitments. No impacts would occur, and no mitigation is required.	No mitigation is required.	Less Than Significant.
Threshold 4.16-4 Generate solid waste in excess of State or local standards or in excess of the capacity of Local infrastructure, or otherwise impair the attainment of solid waste reduction goals.	The Project would not generate solid waste in excess of State or local standards or in excess of the capacity of local infrastructure or otherwise impair the attainment of solid waste reduction goals. Impacts would be less than significant, and no mitigation is required.	No mitigation is required.	Less Than Significant.
Threshold 4.16-5 Comply with federal, State, and Local Management and reduction statutes and regulations related to solid wastes including the CIWMP (County Integrated Waste Management Plan).	The Project would comply with federal, State, and Local Management and reduction statutes and regulations related to solid waste. No impact would occur, and no mitigation is required.	No mitigation is required.	No Impact.
Section 4.17 – Wildfire			
Threshold 4.17-1 Substantially impair an adopted emergency response plan or emergency evacuation plan.	The proposed Project would not substantially impair an adopted emergency response plan or emergency evacuation plan, as it would not prevent access to the local or regional circulation system and would improve an emergency access walkway in the case of a reservoir spill event with RR WILDF-1 and PDFs WILDF-1 through WILDF-3 incorporated. Therefore, the potential impacts associated with emergency access would be less than significant.	RR WILDF-1 The Project will comply with the general provisions of the California Fire Code relating to fire safety, emergency access, and emergency egress routes. PDF WILDF-1 The Project will comply with the general provisions of the Orange County Fire Authority fire prevention requirements, including prohibiting operation of any stationary equipment, welding equipment, cutting torches, tarpots, or grinding devices from which a spark, fire or flame may originate on or near any forest-covered land, brush covered land, or grass covered land, without: 1. Having an IRWD approved Hot Work Permit; 2. Prior to starting construction activities, soaking around the work area for a distance of 30 feet to reduce fire	Less Than Significant.

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SUMMARY OF POTENTIAL IMPACTS, MITIGATION MEASURES AND LEVEL OF SIGNIFICANCE

Threshold of Significance	Project Impacts	Mitigation Measures (MM) / Project Design Features (PDF) / Regulatory Requirements (RR)	Level of Significance After Mitigation
		<p>spread into wildlands, which shall remain soaked for the duration of the work;</p> <p>3. Maintaining, at a minimum, one serviceable round point shovel with an overall length of not less than forty-six (46) inches and one backpack pump water-type fire extinguisher fully equipped and ready for use at the immediate area during the operation;</p> <p>4. Stopping work when winds are 8 MPH during periods when relative humidity is less than 25%, or a Red Flag condition has been declared or public announcement is made, or when an official sign was caused to be posted by the Orange County Fire Authority or IRWD; or</p> <p>5. Keeping a cell phone nearby and calling 911 immediately in case of a fire.</p> <p>PDF WILDF-2 The Project will comply with the general provisions of the Orange County Fire Authority, including prohibiting operation of either mechanized or non-mechanized equipment during Red Flag Warnings as declared by the Orange County Fire Authority or other jurisdictional agency or IRWD determines hazardous conditions exist and informs the Project Contractor of such.</p> <p>PDF WILDF-3 The Project will comply with the general provisions of the Orange County Fire Authority, including training all construction personnel in the requirements of the Fire Prevention and Response Plan prior to construction. The Plan will outline the responsibilities for prevention, pre-suppression and suppression activities associated with fire hazards for the Project. Additionally, fire safety information shall be disseminated to construction personnel during regular safety meetings and fire management techniques shall be applied during construction.</p>	
Threshold 4.17-2 Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire.	The proposed Project would be surrounded by open space areas, however, it would not exacerbate wildfire risks within the area, as it would incorporate RR WILDF-2, and comply with all applicable regulations including PRC Sections 4427, 4428, 4431, and 4442 and California Division of Occupational Safety and Health Administration. Therefore, the potential impacts associated with slope, prevailing winds, and other factors would be less than significant.	<p>RR WILDF-2 The Project will comply with PRC Sections 4427, 4428, 4431, and 4442, related to the handling of combustible fuels and equipment that can exacerbate fire risks, in addition to fire protection and prevention requirements specified by the California Code of Requirements and California Division of Occupational Safety and Health Administration. This includes various measures such as easy accessibility of firefighting equipment, proper storage of combustible liquids, no smoking in service and refueling areas, and worker training for firefighter extinguisher use.</p>	Less Than Significant.
Threshold 4.17-3 Require installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment.	The proposed Project would not exacerbate wildfire risks within the area as a result of the installation or maintenance of associated infrastructure, as it would comply with all applicable regulations such as California Code of Regulations Title 24, the California Building Code, and the County of Orange Safety Element. Therefore, the potential impacts associated with installation or maintenance of associated infrastructure would be less than significant.	No mitigation is required.	Less Than Significant.

TABLE 1-1
SUMMARY OF POTENTIAL IMPACTS, MITIGATION MEASURES AND LEVEL OF SIGNIFICANCE

Threshold of Significance	Project Impacts	Mitigation Measures (MM) / Project Design Features (PDF) / Regulatory Requirements (RR)	Level of Significance After Mitigation
Threshold 4.17-4 Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage change.	The proposed Project would not expose people or structure to risks subsequent to wildfire, such as flooding or landslides, as it would comply with all applicable regulations during construction and operations. Therefore, the potential impacts associated with wildfire risks such as flooding, and landslides would be less than significant.	No mitigation is required.	Less Than Significant.