December 16, 2024

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VIA EMAIL
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Subject: Updated Noise and Vibration Analysis Technical Memorandum for the Santiago Creek Dam Outlet Tower and Spillway Improvements Project

Dear Mr. Uk:

This Letter Report presents the results of the revised noise and vibration analysis for the proposed Santiago Creek Dam Outlet Tower and Spillway Improvements Project in the County of Orange, California (hereinafter referred to as the "Project"). This analysis addresses the potential noise and vibration impacts associated with the Project in accordance with the California Environmental Quality Act (CEQA) (*California Public Resources Code* §21000 et seq.) and the State CEQA Guidelines (*California Code of Regulations*, Title 14, §15000 et seq.). This updated noise and vibration analysis was prepared in order to include noise generated during a new construction phase in the overall Project construction noise calculations. This new phase would entail the placement of the embankment. This phase would take up to 16 months to complete and would be integrated into the overall Project construction schedule.

PROJECT SETTING AND DESCRIPTION

The proposed Project would include rehabilitation and replacement of the Santiago Creek Dam outlet works and spillway facilities, necessary to address identified seismic and dam safety concerns. The Project involves dewatering, demolition activities, and construction of inlet/outlet works, downstream outlet works, pipelines, ancillary site improvements, and utility relocation. The Project site is located at Santiago Creek Dam at the northwest end of Irvine Lake in Unincorporated Orange County, California. The Project site location is shown on Exhibit 1-1 and 1-2, Regional Location and Local Vicinity, and is described in more detail below.

Noise and Vibration Basics and Terminology

Noise

"Sound" is a vibratory disturbance created by a moving or vibrating source and is capable of being detected. "Noise" is defined as sound that is loud, unpleasant, unexpected, or undesired and may therefore be classified as a more specific group of sounds. The effects of noise on people can include general annoyance; interference with speech communication; sleep disturbance; and, in the extreme, hearing impairment (Caltrans 2013).

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Sound pressure levels are described in units called the decibel (dB). Decibels are measured on a logarithmic scale. A doubling of the energy of a noise source (such as doubling of traffic volume) would increase the noise level by 3 dB. The human ear is not equally sensitive to all frequencies within the sound spectrum. To accommodate this phenomenon, the A-scale was devised. The A-weighted decibel scale (dBA) approximates the frequency response of the average healthy ear when listening to most ordinary everyday sounds and is used in this analysis.

Human perception of noise has no simple correlation with acoustical energy. Due to subjective thresholds of tolerance, the annoyance of a given noise source is perceived very differently from person to person. The most common sounds vary between 40 dBA (very quiet) to 100 dBA (very loud). Normal conversation at 3 feet is approximately 60 dBA, while loud jet engine noises at 1,000 feet equate to 100 dBA, which can cause serious discomfort. Table 1 shows the relationship of various noise levels in dBA to commonly experienced noise events.

TABLE 1
NOISE LEVELS FOR COMMON EVENTS

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	110	Rock Band
Jet fly-over at 300 m (1,000 ft)	100	
Gas lawn mower at 1 m (3 ft)	90	
Diesel truck at 15 m (50 ft) at 80 km/hr (50 mph)	80	Food blender at 1 m (3 ft); garbage disposal at 1 m (3 ft)
Noisy urban area, daytime gas lawn mower at 30 m (100 ft)	70	Vacuum cleaner at 3 m (10 ft)
Commercial area, heavy traffic at 90 m (300 ft)	60	Normal speech at 1 m (3 ft)
Quiet urban daytime	50	Large business office, dishwasher in next room
Quiet urban nighttime	40	Theater, large conference room (background)
Quiet suburban nighttime	30	Library
Quiet rural nighttime	20	Bedroom at night, concert hall (background)
	10	Broadcast/recording studio
Lowest threshold of human hearing	0	Lowest threshold of human hearing
dBA: A-weighted decibels; m: meter; ft: feet; km/hr: kilometers per hour; mph: miles per hour Source: Caltrans 2013.		

Two equal noise sources, when heard together, do not "sound twice as loud" as one of the sources. As stated above, a doubling of noise sources results in a noise level increase of 3 dBA. It is widely accepted that (1) the average healthy ear can barely perceive changes of a 3 dBA increase or decrease, (2) a change of 5 dBA is readily perceptible, and (3) an increase (decrease) of 10 dBA sounds twice (half) as loud (Caltrans 2013).

From the source to the receiver, noise changes both in the level and frequency spectrum. The most obvious change is the decrease in noise level as the distance from the source increases. Sound from a small, localized source (approximating a "point" source) radiates uniformly outward as it travels away from the source in a spherical pattern. For point sources, such as heating, ventilation, and air conditioning (HVAC) units or construction equipment, the sound level attenuates (or drops off) at a rate of 6 dBA for each doubling of distance (i.e., if the noise level is 70 dBA at 25 feet, it is 64 dBA at 50 feet). Vehicle movement on a road makes the source of the sound appear to emanate from a line (line source) rather than

a point when viewed over some time interval. The sound level attenuates or drops off at a rate of 3 dBA per doubling of distance for line sources.

A large object in the path between a noise source and a receiver can significantly attenuate noise levels at that receiver location. The amount of attenuation provided by this "shielding" depends on the size of the object and the frequencies of the noise levels. Natural terrain or landform features as well as man-made features (e.g., buildings and walls) can significantly alter noise exposure levels. For a noise barrier to work, it must be high enough and long enough to block the view from the receiver to a road or to the noise source. Effective noise barriers can reduce outdoor noise levels at the receptor by up to 15 dBA.

Several rating scales (or noise "metrics") exist to analyze effects of noise on a community. These scales include the equivalent noise level (L_{eq}), including L_{max} and L_{min}, which are respectively the highest and lowest A-weighted sound levels that occur during a noise event, and the Community Noise Equivalent Level (CNEL). Average noise levels over a period of minutes or hours are usually expressed as dBA L_{eq}, which is the equivalent noise level for that period of time. The period of time averaging may be specified; for example, $L_{eq(3)}$ would be a three-hour average. Noise of short duration (i.e., substantially less than the averaging period) is averaged into ambient noise during the period of interest. Thus, a loud noise lasting many seconds may have minimal effect on the measured sound level averaged over a one-hour period.

To evaluate community noise impacts, CNEL was developed to account for human sensitivity to nighttime noise. CNEL represents the 24-hour average sound level with a penalty for noise occurring at night. The CNEL computation divides a 24-hour day into three periods: daytime (7:00 AM to 7:00 PM), evening (7:00 PM to 10:00 PM), and nighttime (10:00 PM to 7:00 AM). The evening sound levels are assigned an approximately 5-dBA penalty, and the nighttime sound levels are assigned a 10-dBA penalty prior to averaging with daytime hourly sound levels.

Vibration

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. Vibration is normally associated with activities such as railroads or vibration-intensive stationary sources, but can also be associated with construction equipment such as jackhammers, pile drivers, and hydraulic hammers. Vibration displacement is the distance that a point on a surface moves away from its original static position. The instantaneous speed that a point on a surface moves is described as the velocity, and the rate of change of the speed is described as the acceleration. Each of these descriptors can be used to correlate vibration to human response, building damage, and acceptable equipment vibration levels. During construction of a project, the operation of construction equipment can cause groundborne vibration. During the operational phase of a project, receptors may be subject to levels of vibration that can cause annoyance due to noise generated from vibration of a structure or items within a structure. Analysis of this type of vibration is best measured in velocity and acceleration.

The three main wave types of concern in the propagation of groundborne vibrations are surface or Rayleigh waves, compression or P-waves, and shear or S-waves.

- Surface or Rayleigh waves travel along the ground surface. They carry most of their energy along an expanding cylindrical wave front, similar to the ripples produced by throwing a rock into a lake. The particle motion is more or less perpendicular to the direction of propagation (known as retrograde elliptical).

- Compression or P-waves are body waves that carry their energy along an expanding spherical wave front. The particle motion in these waves is longitudinal, in a push-pull motion. P-waves are analogous to airborne sound waves.
- Shear or S-waves are also body waves, carrying their energy along an expanding spherical wave front. Unlike P-waves, however, the particle motion is transverse, or perpendicular to the direction of propagation.

The peak particle velocity (PPV) or the root mean square (rms) velocity is usually used to describe vibration amplitudes. The PPV is defined as the maximum instantaneous peak of the vibration signal and the rms is defined as the square root of the average of the squared amplitude of the signal. The ppv is more appropriate for evaluating potential building damage and also used fora evaluating human response.

The units for PPV velocity are normally inches per second (in/sec). Often, vibration is presented and discussed in VdB units in order to compress the range of numbers required to describe the vibration. In this study, all PPV velocity levels are in in/sec and all vibration levels are in VdB relative to one microinch per second. The threshold of perception is approximately 0.3 in/sec PPV. Typically, groundborne vibration generated by human activities attenuates rapidly with distance from the source of the vibration. Even the more persistent Rayleigh waves decrease relatively quickly as they move away from the source of the vibration. Manmade vibration problems are, therefore, usually confined to short distances (500 feet or less) from the source.

Construction generally includes a wide range of activities that can generate groundborne vibration. In general, blasting and demolition of structures generate the highest vibrations. Heavy trucks can also generate groundborne vibrations, which vary depending on vehicle type, weight, and pavement conditions. Potholes, pavement joints, discontinuities, differential settlement of pavement, and other anomalies all increase the vibration levels from vehicles passing over a road surface. Construction vibration is normally of greater concern than vibration of normal traffic on streets and freeways with smooth pavement conditions.

EXISTING CONDITIONS

Due to the undeveloped nature of the area proximate to the Project site, the existing noise environment at the Project Site is primarily influenced by traffic noise on nearby roads as well as activities held at the site and events that are regularly held at Oak Canyon Park that occur both during the day and through the evening. The nearest roadways that affect ambient noise levels at the Project site are the Eastern Transportation Corridor Toll Road (State Route 241), State Route 261 (SR-261), and Santiago Canyon Road. At its closest point, the nearest road (SR-241) is more than half a mile from Irvine Lake. As such, ambient noise levels are low and characteristic of rural areas.

Orange County Fire Authority (OCFA) currently uses portions of the proposed staging area for takeoff and landings associated with training and operational activities. During construction of the proposed Project, HeloPods would be designated near the lake for their continued use. In addition, Oak Canyon Park hosts a number of events, including graduation nights, picnics, concerts, athletic events, shows, and other events that may include crowds, music and amplified sound. Based on the 2023 Oak Canyon Park Calendar for 2023, there are approximately 80 scheduled events whose turnout ranges from 150-5,000 attendees. Noise from these existing activities contribute to substantially increasing the ambient noise levels within the area due to amplified speakers for music and announcements, cheering crowds, helicopter noise, music concerts, traffic noise, automobile shows, and other sources. Many of these events last 10 hours a day, and up to 17 days per month with overnight activities.

Noise-Sensitive Receptors

The State of California defines noise-sensitive receptors as those land uses that require serenity or are otherwise adversely affected by noise events or conditions (State of California 2015). Noise-sensitive land uses typically include residences, hospitals, churches, schools, and libraries, which could all be adversely affected by an increase in noise levels. Noise sensitive receptors in the vicinity of each proposed Project Site include residential land uses located approximately 9,500 feet to the west. There are nearby parks which include Oak Canyon Park, Irvine Regional Park, and Irvine Lake.

Regulatory Setting – Noise Criteria

Public agencies have established noise guidelines and standards to protect citizens from potential hearing damage and various other adverse physiological and social effects associated with noise. The Project is located within the County of Orange. For the evaluation of potential noise impacts, this analysis assumes compliance with the noise policies and regulations established by the County of Orange and the Federal Transit Administration.

Federal Transit Administration

The Federal Transit Administration's (FTA) Transit Noise and Vibration Impact Assessment Manual (FTA 2018) has developed construction impact guidelines shown in Table 2.

TABLE 2
CONSTRUCTION NOISE CRITERIA

1-Hour Criteria (L_{eq})		
Land Use	**Day**	**Night**
Residential	90	80
Commercial	100	100
Industrial	100	100
8-Hour Criteria (L_{eq})		
Land Use	**Day**	**Night**
Residential	80	70
Commercial	85	85
Industrial	90	90

There are no construction noise criteria for parks. Residential uses are considered to be the most noise sensitive land use.

County of Orange

According to Section 7-9-20(h) of the Orange County Zoning Code, land owned or leased by the County is not subject to land use regulations of the County, including the Zoning Code, specific plans, and planned communities. However, the County noise standards are applicable to offsite noise-sensitive land uses that would potentially be impacted by noise from the Project construction and operations. For information disclosure purposes pursuant to CEQA, the County's standards, including the policies of the General Plan and the Noise Ordinance, are discussed below.

General Plan

The Noise Element, one of nine elements of the *County of Orange General Plan*, contains official County policies on the conservation and management of resources (County of Orange 2015). The Noise Element defines a Noise Referral Zone as "that area with a total noise environment of 60 decibels Community Noise Equivalent Level (CNEL) or more. The intent of the Noise Referral Zone is to act as a triggering mechanism or flag for development proposals in areas potentially adversely affected by high noise levels. [U]nless it can be shown with certainty that the project is outside the area that has a CNEL of 60 or more decibels, an acoustical analysis report will be required".

The Noise Element states, "A key objective of this Noise Element is to ensure that each County resident's quality of life is not affected adversely by high noise levels". The information from Tables VIII-2 and VIII-3 of the Noise Element, shown as Table 3 in this Section, defines the County's land use/noise compatibility standards. The Noise Element states that these standards apply to "situations where a new use is being proposed that is impacted by an existing noise source" and also "when an existing use is impacted by a new or expanded source of noise". For the latter case, "the project proponent is obliged to mitigate the impacts of the new source of noise".

TABLE 3
ORANGE COUNTY COMPATIBILITY MATRIX FOR LAND USE AND COMMUNITY NOISE EQUIVALENT LEVELS

Type of Use	65+ dB CNEL	60 to 65 dB CNEL
Residential	3a, b, e	2a, e
Commercial	2c	2c
Employment	2c	2c
Open Space		
Local	2c	2c
Community	2c	2c
Regional	2c	2c
Educational Facilities		
Schools (K through 12)	2c, d, e	2c, d, e
Preschool, college, other	2c, d, e	2c, d, e
Places of Worship	2c, d, e	2c, d, e
Hospitals		
General	2a, c, d, e	2a, c, d, e
Convalescent	2a, c, d, e	2a, c, d, e
Group Quarters	1a, b, c, e	2a, c, e
Hotel/Motels	2a, c	2a, c
Accessory Uses		
Executive Apartments	1a, b, e	2a, e
Caretakers	1a, b, c, e	2a, c, e

dB: decibel; CNEL: Community Noise Equivalent Level

EXPLANATION AND DEFINITIONS

Action Required to Ensure Compatibility Between Land Use and Noise From External Sources

1 = Allowed if interior and exterior community noise levels can be mitigated.

2 = Allowed if interior levels can be mitigated.

TABLE 3
ORANGE COUNTY COMPATIBILITY MATRIX FOR LAND USE AND COMMUNITY NOISE EQUIVALENT LEVELS

Type of Use	65+ dB CNEL	60 to 65 dB CNEL
3 = New residential uses are prohibited in areas within the 65-dB CNEL contour from any airport or air station; allowed in other areas if interior and exterior community noise levels can be mitigated. The prohibition against new residential development excludes limited "infill" development within an established neighborhood.		
Standards Required for Compatibility of Land Use and Noise		
a = Interior Standard: CNEL of less than 45 dB (habitable rooms only).		
b = Exterior Standard: CNEL of less than 65 dB in outdoor living areas.		
c = Interior Standard: $L_{eq(h)}$ = 45 to 65 dB interior noise level, depending on interior use.		
d = Exterior Standard: $L_{eq(h)}$ of less than 65 dB in outdoor living areas.		
e = Interior Standard: As approved by the Board of Supervisors for sound events of short duration such as aircraft flyovers or individual passing railroad trains.		
Key Definitions		
Habitable Room – Any room meeting the requirements of the Uniform Building Code or other applicable regulations which is intended to be used for sleeping, living, cooking or dining purposes, excluding such enclosed spaces as closets, pantries, bath or toilet rooms, service rooms, connecting corridors, laundries, unfinished attics, foyers, storage spaces, cellars, utility rooms and similar spaces.		
Interior – Spaces that are covered and largely enclosed by walls.		
$L_{eq(h)}$ – The A-weighted equivalent sound level averaged over a period of "h" hours. An example would be $L_{eq(12)}$ where the equivalent sound level is the average over a specified 12-hour period (such as 7:00 AM to 7:00 PM). Typically, time period "h" is defined to match the hours of operation of a given type of use.		
Outdoor Living Area – Outdoor living area is a term used by the County of Orange to define spaces that are associated with residential land uses typically used for passive private recreational activities or other noise-sensitive uses. Such spaces include patio areas, barbecue areas, jacuzzi areas, and other outdoor areas associated with residential uses; outdoor patient recovery or resting areas associated with hospitals, convalescent hospitals, or rest homes; outdoor areas associated with places of worship which have a significant role in services or other noise-sensitive activities; and outdoor school facilities routinely used for educational purposes which may be adversely impacted by noise. Outdoor areas usually not included in this definition are front yard areas, driveways, greenbelts, maintenance areas, and storage areas associated with residential land uses; exterior areas at hospitals that are not used for patient activities; outdoor areas associated with places of worship and principally used for short-term social gatherings; and outdoor areas associated with school facilities that are not typically associated with educational uses prone to adverse noise impacts (for example, school play yard areas).		
Source: County of Orange 2005 (see Tables VIII-2 and VIII-3 of the Noise Element).		

Noise Ordinance

The County Noise Ordinance is codified as Title 4, Division 6 of the Codified Ordinances of the County of Orange.

(a) The following noise standards, unless otherwise specifically indicated, shall apply to all residential property within a designated noise zone:

TABLE 4
ORANGE COUNTY EXTERIOR NOISE STANDARDS

Noise Zone	Noise Level	Time Period
1	55 dBA	7:00 AM–10:00 PM
	50 dBA	10:00 PM–7:00 AM
dBA: A-weighted decibels Source: County of Orange 2015		

TABLE 5
ORANGE COUNTY INTERIOR NOISE STANDARDS

Noise Zone	Noise Level	Time Period
1	55 dBA	7:00 AM–10:00 PM
	45 dBA	10:00 PM–7:00 AM
dBA: A-weighted decibels Source: County of Orange 2015		

With respect to exterior noise levels, the Noise Ordinance states the following:

(a) In the event the alleged offensive noise consists entirely of impact noise, simple tone noise, speech, music, or any combination thereof, each of the above noise levels shall be reduced by five (5) dB(A).

(b) It shall be unlawful for any person at any location within the unincorporated area of the County to create any noise, or to allow the creation of any noise on property owned, leased, occupied, or otherwise controlled by such person, when the foregoing causes the noise level, when measured on any other residential property, either incorporated or unincorporated, to exceed:

(1) The noise standard for a cumulative period of more than thirty (30) minutes in any hour; or

(2) The noise standard plus five (5) dB(A) for a cumulative period of more than fifteen (15) minutes in any hour; or

(3) The noise standard plus ten (10) dB(A) for a cumulative period of more than five (5) minutes in any hour; or

(4) The noise standard plus fifteen (15) dB(A) for a cumulative period of more than one (1) minute in any hour; or

(5) The noise standard plus twenty (20) dB(A) for any period of time.

(c) In the event the ambient noise level exceeds any of the first four (4) noise limit categories above, the cumulative period applicable to said category shall be increased to reflect said ambient noise level. In the event the ambient noise level exceeds the fifth noise limit category, the maximum allowable noise level under said category shall be increased to reflect the maximum ambient noise level.

With respect to interior standards, the Noise Ordinance states the following:

(a) In the event the alleged offensive noise consists entirely of impact noise, simple tone noise, speech, music, or any combination thereof, each of the above noise levels shall be reduced by five (5) dB(A).

(b) It shall be unlawful for any person at any location within the unincorporated area of the County to create any noise, or to allow the creation of any noise on property owned, leased, occupied, or otherwise controlled by such person, when the foregoing causes the noise level, when measured within any other dwelling unit on any residential property, either incorporated or unincorporated, to exceed:

(1) The interior noise standard for a cumulative period of more than five (5) minutes in any hour; or

(2) The interior noise standard plus five (5) db(A) for a cumulative period of more than one (1) minute in any hour; or

(3) The interior noise standard plus ten (10) db(A) for any period of time.

(c) In the event the ambient noise level exceeds either of the first two (2) noise limit categories above, the cumulative period applicable to said category shall be increased to reflect said ambient noise level. In the event the ambient noise level exceeds the third noise limit category the maximum allowable noise level under said category shall be increased in reflect the maximum ambient noise level.

Section 4-6-7 of the Noise Ordinance exempts the following activities:

(a) Activities conducted on the grounds of any public or private nursery, elementary, intermediate or secondary school or college.

(b) Outdoor gatherings, public dances and shows, provided such events are conducted pursuant to a license issued by the County of Orange pursuant to Title 5 of the Codified Ordinances of the County of Orange.

(c) Activities conducted on any park or playground, provided such park or playground is owned and operated by a public entity.

(d) Any mechanical device, apparatus or equipment used, related to or connected with emergency machinery, vehicle or work.

(e) Noise sources associated with construction, repair, remodeling, or grading of any real property, provided said activities do not take place between the hours of 8:00 p.m. and 7:00 a.m. on weekdays, including Saturday, or at any time on Sunday or a federal holiday.

(i) Noise sources associated with the maintenance of real property, provided said activities take place between 7:00 a.m. and 8:00 p.m. on any day except Sunday or a federal holiday, or between the hours of 9:00 a.m. and 8:00 p.m. on Sunday or a federal holiday.

(j) Any activity to the extent regulation thereof has been preempted by State or federal law.

Regulatory Setting – Vibration

Public agencies have established vibration guidelines and standards to protect citizens and structures from potential structural damage and annoyance and various other adverse physiological and social effects associated with vibration. The Project is located within the County of Orange. For the evaluation of potential vibration impacts, this analysis assumes compliance with the vibration policies and regulations established by the California Department of Transportation (Caltrans).

California Department of Transportation

As is typical of most cities and counties in California, there are no applicable County standards for vibration-induced annoyance or structural damage from vibration. The California Department of Transportation (Caltrans) has adopted vibration damage thresholds, which are shown in Table 6, to assess the potential for structural damage from vibration. The structural damage threshold for "older residential structures" of 0.3 in/sec PPV for continuous/frequent (i.e., intermittent) sources is most applicable to this analysis.

TABLE 6
VIBRATION DAMAGE THRESHOLD CRITERIA

Structure and Condition	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern industrial/commercial buildings	2.0	0.5

PPV: peak particle velocity; in/sec: inch(es) per second

Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

Source: Caltrans 2013.

The Caltrans vibration annoyance thresholds are shown in Table 7. These thresholds are used to assess the potential for a significant vibration impact for human annoyance; and annoyance is evaluated within occupied buildings.

TABLE 7
VIBRATION ANNOYANCE THRESHOLDS

Average Human Response	PPV
Severe	2.0
Strongly perceptible	0.9
Distinctly perceptible	0.24
Barely perceptible	0.035
PPV: peak particle velocity; in/sec: inch(es) per second Source: Caltrans 2013.	

IMPACT ANALYSIS

The following questions correspond to the questions in the Noise section of the Initial Study Checklist in Appendix G of the State CEQA Guidelines.

Question NOI-1 **Would the Project result in 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?**

Construction Noise

Construction noise occurring within the County of Orange is regulated under Section 4-6-7.e of the County Code of Ordinances. This Code exempts construction activities from the noise limits provided "Noise sources associated with construction, repair, remodeling, or grading of any real property, provided said activities do not take place between the hours of 8:00 p.m. and 7:00 a.m. on weekdays, including Saturday, or at any time on Sunday or a Federal holiday." Since construction activities may occur outside of these time periods, a variance will be obtained prior to the start of construction activities.

Construction is anticipated to start in March 2025 and the Project is expected to be completed in three years. During construction, concrete crushing would occur in one of the staging areas, which may include the primary staging area. Concrete crushing would be expected to occur generally during the day but could for approximately 3 weeks during the demolition phase of the Project.

The Project requires that some of the existing site improvements be demolished, or removed and relocated, prior to construction. The following existing features would be demolished or removed:

- Vertical outlet tower and portions of 60-inch outlet conduit
- Significant portions (or possibly all) of the spillway chute and walls
- Spillway bridge and piers
- Portions of the upstream dam embankment concrete facing
- Storage building on dam crest
- Outlet works control building and valve vault
- Outlet works energy dissipator vault
- Portions of the Irvine Lake Pipeline

- Catwalk and stair assembly across Santiago Creek
- Piezometers / Monitoring wells
- Other ancillary equipment, utilities, and facilities

Other activities, such as access road improvements, crest widenings, rock slope stabilization, and installation of erosion control measures would also be carried out prior to construction. All the pre-construction activities are addressed in the noise and vibration analyses.

The Project involves construction of multiple components that include:

- Inlet/Outlet Works
    - Inclined Inlet/Outlet Structure
    - Intake Risers and Platforms
- Downstream Outlet Works
    - Bifurcation Valve Vault
    - Emergency Outlet Valve Vault
- Spillway
- Pipelines
    - Irvine Lake Pipeline Relocation
    - Ancillary site improvements
- Inclined Inlet/Outlet Structure Access Roadway and Bridge
- Dam Control Building
- Existing Dam Crest Raise and Widening
- Emergency Access Walkway and Stairs
- Vehicle Bridge
- Additional Inundation During Operations
- Utility Relocation
- Embankment Mitigation

Primary construction access would be from Santiago Canyon Road and Blue Diamond Haul Road. The primary contractor staging and equipment storage area, as well as the required conventional concrete batch plant and construction trailers, would be located in the large, flat plateau area at the upstream end of the reservoir. The primary onsite construction access/haul road (Blue Diamond) would connect the staging area to the toe of the existing dam within the lakebed after the lake is dewatered. An earthen ramp would be constructed up the right abutment of the existing dam to provide access for construction vehicles to the downstream area to construct the outlet works and spillway stilling basin facilities. To facilitate the construction of the downstream features, a secondary staging area would be located on the downstream toe of the dam near the existing outlet structure building.

Construction of the Project would normally occur 10 hours/day during the wet season (October-April) and 20 hours/day during the dry season (April to November). The County's Code of Ordinances limits "Noise sources associated with construction, repair, remodeling, or grading of any real property, provided said

activities do not take place between the hours of 8:00 p.m. and 7:00 a.m. on weekdays, including Saturday, or at any time on Sunday or a Federal holiday." Because construction activities would occur outside of the hours allowed within the County's Code of Ordinances, a variance would need to be obtained prior to the construction activities.

Construction noise levels for individual construction equipment reported in the Federal Highway Administration's Roadway Construction Noise Model (RCNM) were used to estimate future construction noise levels for the Project (FHWA 2008). Noise levels of construction activities from each component of the Project were assessed based on types, quantity, time frame, and distance relative to noise receptor locations. All construction equipment is anticipated to be fitted with the original equipment manufacturer or manufacturer approved equivalent mufflers or intake silencers to maintain, at minimum, published noise emission levels which were used in the calculation of offsite noise exposure from construction activities.

Typically, estimated construction noise levels are primarily influenced by equipment that produces the highest noise levels and those activities located closest to the receptor of interest. The Project consists of numerous structures that would be distributed over a large Project site. The distance between construction activities and any natural or manmade barriers provides noise attenuation for noise sensitive receptors. Noise levels during construction of each distinct Project component would vary due to the different numbers and types of construction activities/equipment. Table 8, Estimated Construction Noise Levels at Receptors, shows noise exposure levels for each of the four main activity areas associated with the Project. These include the dam area to the northwest of the Project site where the proposed upgrades to the infrastructure would occur, the primary staging area located to the southeast, the Blue Diamond haul route which runs along the southern and western perimeters of the Project's construction area, and the lakebed haul route that extends through the western portion of the lake. Each of these four construction areas were assessed for noise exposure levels at offsite residential areas, nearby parks, and habitats that may contain protected nesting areas. The range in noise exposure levels is due to the varying construction phases and associated distances of these activities that would occur between the Project and each respective noise sensitive receptor.

TABLE 8
ESTIMATED CONSTRUCTION NOISE LEVELS AT RECEPTORS

Construction Phase	Distance from Construction Activities (feet)	Noise Exposure Level (dBA L_{eq})
Construction of Main Dam Structures		
Irvine Regional Park	5,070	31-47
Residences Along Jamboree Road	9,785	25-41
Oak Canyon Park	9,035	41-57
Lakeview Park Camping Area	7,640	42-58
Sensitive Habitat to the South of Dam	140-1,300	49-86
Sensitive Habitat to the North of the Dam	150-1,370	63-84
Sensitive Habitat Near Primary Staging Area	8,300	42-57
Primary Staging Area		
Irvine Regional Park	12,700	32
Residences Along Jamboree Road	16,130	30
Oak Canyon Park	1,000	69
Lakeview Park Camping Area	1,000	69
Nearest Sensitive Habitat	239	82
Blue Diamond Haul Route		
Nearest Sensitive Habitat	100	61
Lakebed Haul Route		
Nearest Sensitive Habitat	41	69

dBA: A-weighted decibels; L_{eq}: Equivalent Noise Level; ft: feet; N/A: not applicable
Source: Noise calculations in Attachment B.

Noise Exposure at Residential Uses

Estimated noise levels at the nearest noise sensitive uses attributable to development of the Project are shown in Table 8. As shown in this Table, Project related construction activities would occur at distances of approximately two miles from existing residential uses located to the west of the Project site. In addition to the substantial distances between the Project site and the nearest developed noise sensitive land uses, Irvine Lake is surrounded by ridgelines which attenuate noise levels. Irvine Lake is at an elevation of approximately 780 feet above sea level (asl), while many of the downstream components of the Project are located at elevations of 660 feet asl. Intervening ridgelines to the east of the dam site rise to elevations of greater than 1,000 feet asl. Noise generated by Project construction would also be attenuated by these ridgelines. As shown in Table8, noise levels are expected to range from 25 to 41 dBA L_{eq} at the exterior areas of the nearest noise sensitive residential uses. Noise exposure from Project construction activities would occur during both daytime and nighttime activities. Noise generated during Project construction would be below the FTA's daytime and nighttime Leq criteria and the County's interior and exterior daytime and nighttime Leq thresholds for residential land uses. Noise exposure levels during noisiest Project construction periods would be approximately 46 dBA CNEL at exterior areas of the nearest residential land uses. Such noise levels would be substantially less than the exterior noise compatibility standard of 65 dBA CNEL. Interior noise exposure levels at these residences would be further reduced by approximately 20 dBA under a windows-closed condition and 12 dBA under a windows-open condition, resulting in interior noise levels less than 45 dBA CNEL. In addition, construction noise from the Project site may not be discernible with traffic noise occurring along the

SR-261 and SR-241. As such, noise impacts from Project related daytime and nighttime construction activities would result in less than significant noise impacts.

Noise Exposure at Nearby Park Uses

The nearest parks located proximate to the Project construction activities include Oak Canyon Park, Irvine Lake, and Irvine Regional Park. Irvine Regional Park is located approximately one mile northwest of the northernmost Project construction activities. Irvine Regional Park is also located such that intervening ridgelines with elevations greater than 1,000 feet provide substantial noise attenuation from the Project's construction activities. As shown in Table 8, construction noise exposure levels are anticipated to range from 31 to 47 dBA L_{eq} at Irvine Regional Park. These relatively low levels of noise exposure would be due to attenuation caused by sound spreading loss and obstruction of the line-of-sight between the Project site and the Irvine Reginal Park.

Irvine Lake would remain open, with the exception of select areas proximate to the Project construction which would be closed for safety reasons. Irvine Lake would also be affected by noise occurring at the Project's construction areas. Noise exposure levels throughout the lake area would be affected by proximity to construction activities. The degree of noise exposure is highly dependent on the proximity of lake users relative to the Project construction activities.

Oak Canyon Park is located approximately 1.7 miles from the Project's dam construction activities. As shown in Table 8, construction noise levels from activities occurring at the dam would be substantially attenuated due to the distance between the dam and the park with noise exposure levels of 41 to 57 dBA L_{eq}. However, Oak Canyon Park is located adjacent to the proposed primary staging area. The primary staging area is anticipated to be used for staging construction management trailers, materials, equipment, conventional concrete batch plant, and the concrete crushing operation. The concrete crushing operation involves the delivery of concrete from demolished structures that would be crushed for use in the concrete batch plant. The concrete batch plant would be supported by haul trucks transporting cement and aggregates as well as concrete trucks transporting concrete for use in the dam improvements. Concrete crushing would be expected to occur generally during the day and intermittently at night for approximately 3 weeks, during the demolition phase of the Project. The park would mostly be exposed to noise associated with activities occurring at the staging area where equipment and materials will be stored, concrete batching activities and concrete crushing activities. Equipment staging is expected to occur during the beginning and end of each work shift when equipment would be either taken out of or returned to the staging area. Material staging would involve the temporary storage of building materials, excavated aggregates, and soil storage piles. The delivery and removal of materials in the staging area would occur throughout the day and would involve haul trucks transporting these materials. With the exception of concrete crushing activities, construction related activities associated with the staging area would occur intermittently. Concrete crushing activities would generally occur during the day but could occur for up to 20 hours a day for a period of approximately three weeks. Concrete crushing activity would be the loudest Project construction activity, generating noise levels of 95 dBA L_{eq} at a distance of 50 feet (DEC 2001) prior to the installation of sound barriers. Assuming that the concrete crusher is located at least 1,000 feet away (this distance has been confirmed by the Applicant), noise exposure levels at Oak Canyon Park are estimated to be 69 dBA L_{eq}. The Federal Transit Administration's (FTA) Transit Noise and Vibration Impact Assessment Manual (FTA 2018) has developed construction impact guidelines shown in Table 9.

TABLE 9
CONSTRUCTION NOISE CRITERIA

1-Hour Criteria (Leq)		
Land Use	**Day**	**Night**
Residential	90	80
Commercial	100	100
Industrial	100	100
8-Hour Criteria (L_{eq})		
Land Use	**Day**	**Night**
Residential	80	70
Commercial	85	85
Industrial	90	90

There are no construction noise criteria for parks. Residential uses are considered to be the most noise sensitive land use. Noise levels of 69 dBA L_{eq} from the staging area 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 to excessive levels of noise.

The Lakeview Park Camping Area would be exposed to similar levels of noise as those at Oak Canyon Park, due to the large distance from the dam site and the proximity to the primary staging area. Noise levels from construction activities at the dam site range from 42 to 58 dBA L_{eq}. This park is proximate to construction activities occurring at the primary staging area and would likewise be exposed to daytime noise from these activities. Noise levels are estimated to be 69 dBA L_{eq} from the primary staging area. Daytime noise exposure of this level would not exceed the daytime noise criterion of 80 dBA L_{eq} established by the FTA. No camping is allowed at Irvine Lake (OC Parks 2023) so there would be no nighttime noise exposure. Noise from project-related construction noise would result in less than significant noise impacts at the Oak Canyon Park and Lakeview Park Camping Area.

Noise Exposure at Nearest Sensitive Habitat

Noise levels within the adjacent sensitive habitat are expected to average 61 dBA. The predominant source of noise that would affect this receptor would be the haul trucks. A more detailed analysis regarding construction noise impacts to biological resources is presented in the Biological Resources section of the EIR. Mitigation has been proposed in that section of the EIR that would reduce any noise impacts to biological resources to levels that are less than significant.

Operational Noise

During the operations phase of the Project, dam operations would continue consistent with operations prior to the infrastructure improvements. Under existing conditions, a small number of vehicle trips are associated with routine inspection and maintenance at the existing dam. 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, because there would be no increase in vehicular trips associated with daily operation of the Project components, no Project related traffic noise impacts are anticipated. New stationary sources of noise are due to small compressors used for aeration within the reservoir. Due to the very large distances between these compressors and offsite noise sensitive land uses and its location within a concrete masonry unit building, noise related to these compressors would be inaudible. Impacts would be less than significant and no mitigation is necessary.

Question NOI-2 Would the project result in generation of excessive groundborne vibration or groundborne noise levels?

Less than Significant Impact. Demolition activities, excavation, infrastructure development, and repaving would occur at the Project site around Irvine Lake. 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.

Question NOI-3 For a project located within the vicinity of a private airstrip or an airport land use plan or, where such plan has not been adopted, within two miles of a public airport or public use airport, would the Project result in exposure of people residing or working in the Project area to excessive noise levels?

No Impact. The Project Site is not located within two miles of a public or private airport. The Project site is located approximately 10 miles northeast of John Wayne Airport. Helicopter operations have historically been conducted at Irvine Lake. Noise associated with these activities are intermittent and generally a substantial distance from workers at the dam. As such, the Project would not result in exposure of people residing or working in the Project area to excessive noise levels. Therefore, there would be no significant impact related to excessive aircraft noise exposure.

MITIGATION MEASURES

No significant noise or vibration impacts would occur from either the construction or operations phases of the Project. As such, no mitigation measures are necessary or recommended.

CUMULATIVE NOISE AND VIBRATION IMPACTS

Cumulative Short Term (Construction) Noise and Vibration Impact

Adverse noise and vibration impacts during construction of the proposed Project would be localized and would occur intermittently for varying periods of time throughout the construction period. Short-term cumulative impacts related to ambient noise and vibration levels could occur if construction associated with the proposed Project as well as surrounding current and future development were to occur simultaneously. Noise or vibration associated with construction of the proposed Project in combination with another project within approximately 500 feet of the Project site boundaries could adversely impact sensitive receptors in the vicinity of the site with a cumulative noise level greater than the noise generated solely at the Project site. Due to the remote location of the Project site, it is not likely that construction activities from other projects within 500 feet of the Project site would occur concurrently with those of the Project. Any construction noise impacts from other concurrent projects located at greater distances than 500 feet from the Project site would be solely due to the other projects. As such, cumulative noise impacts related to construction activities would result in less than significant noise impacts.

Cumulative Long-Term (Operations) Noise Impact

Cumulative traffic noise impacts would not occur due to the minimal vehicle trips required for maintenance of Project facilities and equipment. Stationary sources of machinery noise are minimal and would not result in a substantial increase in ambient noise levels in the local area. Additionally, noise produced during long-term operations would be regulated under the County's Code of Ordinances.

Lastly, the Project's operations are located at such distances that there would not be a substantial increase in noise due to cumulative contributions from other sources. As such, impacts associated with cumulative long-term noise would be less than significant, and no mitigation is required.

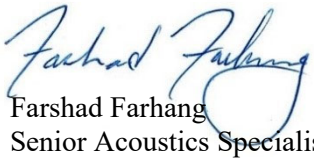
CONCLUSION

The proposed Project was analyzed for potential noise and vibration impacts from both the construction and operational phases. The Project's construction activities would result in less than significant noise impacts to local parks and more distant residential uses. The operations phase of the Project would result in minimal noise levels compared to conditions prior to the development of the Project and would result in less than significant impacts. Groundborne vibration and groundborne noise levels generated during construction would have less than significant impacts due to the very localized nature of vibration transmission and the substantial distances between construction activities and receptors that could be potentially affected. The Project would also not result in the exposure of people residing or working in the Project area to excessive noise levels from private or public airports.

Thank you for the opportunity to assist on this Project. If you have any questions or comments, please contact me at (714) 481-8057.

Sincerely,

PSOMAS



Farshad Farhang
Senior Acoustics Specialist

Attachments: A – Exhibits 1-1 through 1-2 – Regional Location and Local Vicinity
B – Noise Calculations

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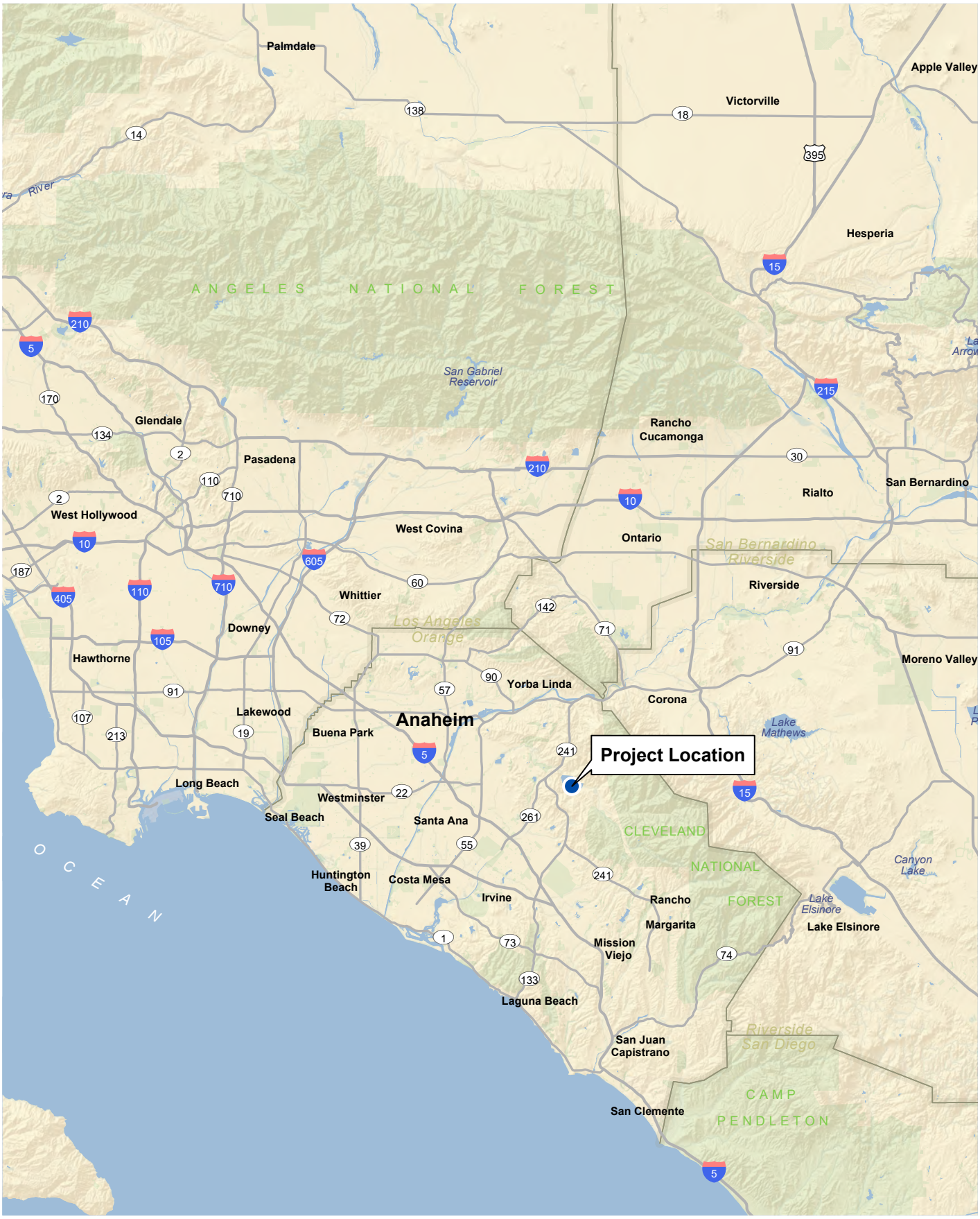
ATTACHMENT A

EXHIBITS 1-1 THROUGH 1-2
REGIONAL LOCATION AND LOCAL VICINITY



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Regional Location

Exhibit 1-1

Santiago Creek Dam Improvements Project

N W E S

0 5 10 Miles

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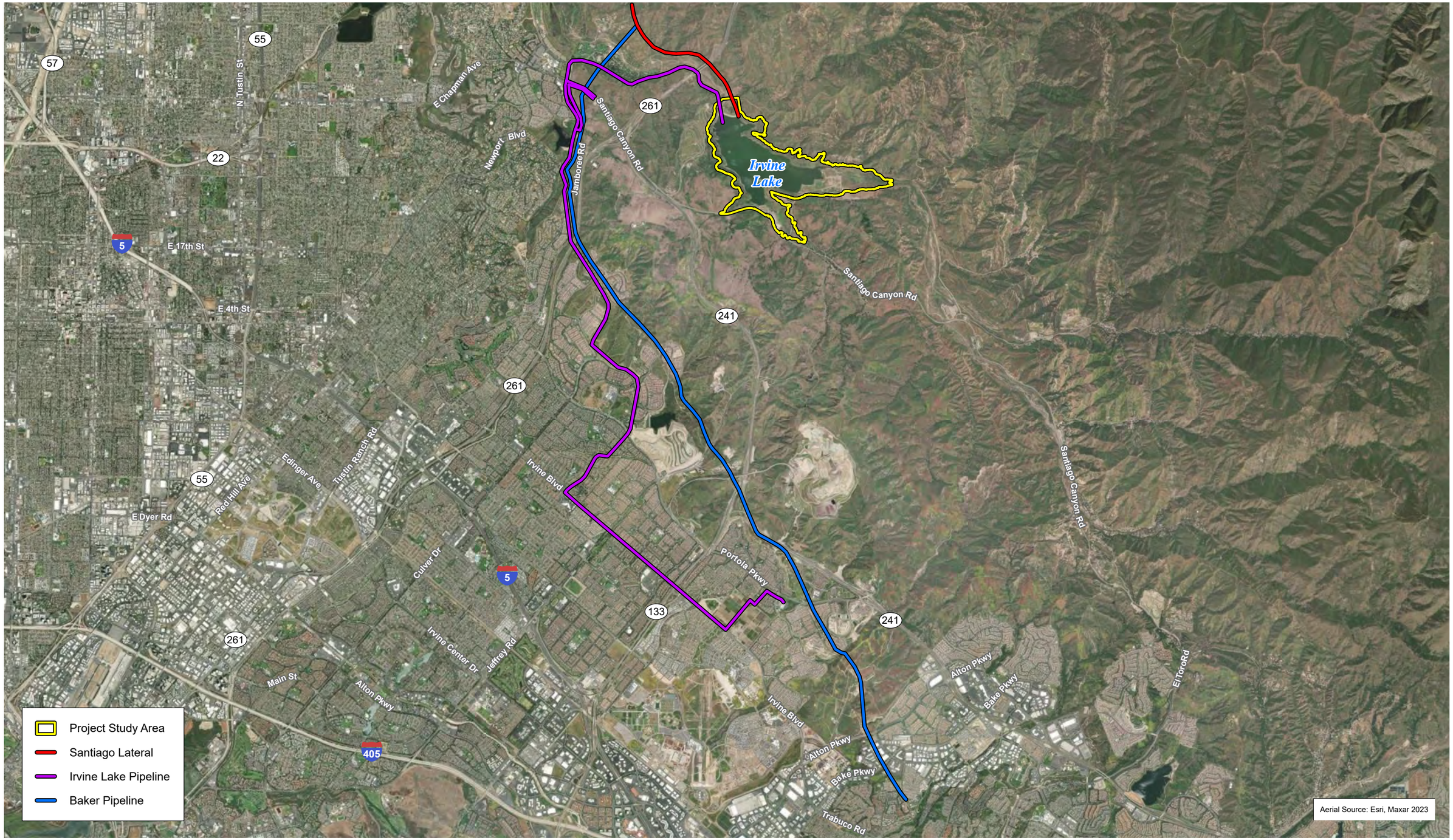

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Aerial Photograph

Exhibit 1-2

Santiago Creek Dam Improvements Project

N W E S

0 0.6 1.2 Miles

PSOMAS

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ATTACHMENT B

NOISE CALCULATIONS

						Receptor 1 - Irvine Regional Park					Receptor 2 - Residences Along Jamboree Road			Receptor 3 - Oak Canyon Park			Receptor 4 - Lakeview Park Camping Area			Receptor 5 - Sensitive Bird Species South of Dam			Receptor 6 - Sensitive Bird Species North of the Dam			Receptor 7 - Sensitive Bird Species Near Primary Staging Area		
Phase Name	Number per Day	Equipment Type	Typical Noise Level 50 ft from Source, dBA	Noise Level 50 ft Multiple Equipment, dBA	Construction Phase Noise Level, dBA	Hard/Soft	Distance	Utilization	Noise Level with Utilization	Noise Level	Hard/Soft	Distance	Noise Level	Hard/Soft	Distance	Noise Level	Hard/Soft	Distance	Noise Level	Hard/Soft	Distance	Noise Level	Hard/Soft	Distance	Noise Level	Hard/Soft	Distance	Noise Level
Part 1 Site Demolition (Excludes Spillway)	1	Excavators	85	85	82	0.00	5070.00	0.40	81	42	0.00	9785.00	36	0.00	9035.00	42	0.00	7640.00	39	0.00	640.00	60	0.00	320.00	66	0.00	8300.00	38
Part 1 Site Demolition (Excludes Spillway)	1	Tractors/Loaders/Backhoes	80	80				0.40	76																		
Part 2 Site Demolition (Excludes Spillway)	1	Excavators	85	85	82	0.00	5070.00	0.40	81	42	0.00	9785.00	36	0.00	9035.00	42	0.00	7640.00	39	0.00	360.00	65	0.00	590.00	61	0.00	8300.00	38
Part 2 Site Demolition (Excludes Spillway)	1	Tractors/Loaders/Backhoes	80	80				0.40	76																		
Spillway Demolition: Existing Spillway Demo	3	Air Compressors	80	85	95	0.00	5070.00	0.40	81	55	0.00	9785.00	49	0.00	9035.00	50	0.00	7640.00	51	0.00	200.00	83	0.00	710.00	72	0.00	8300.00	50
Spillway Demolition: Existing Spillway Demo	4	Concrete/Industrial Saws	90	96				0.20	89																		
Spillway Demolition: Existing Spillway Demo	1	Cranes	88	88				0.16	80																		
Spillway Demolition: Existing Spillway Demo	2	Crushing/Proc. Equipment	89	92				1.00	92																		
Spillway Demolition: Existing Spillway Demo	2	Excavators	85	88				0.40	84																		
Spillway Demolition: Existing Spillway Demo	1	Off-Highway Trucks	84	84				0.40	80																		
Spillway Demolition: Existing Spillway Demo	1	Welders	73	73				0.40	69																		
Spillway Demolition: Crush Concrete Demo	1	Crushing/Proc. Equipment	89	89	91	0.00	5070.00	1.00	89	51	0.00	9785.00	45	0.00	9035.00	46	0.00	7640.00	47	0.00	770.00	67	0.00	240.00	77	0.00	8300.00	46
Spillway Demolition: Crush Concrete Demo	1	Excavators	85	85				0.40	81																		
Spillway Demolition: Crush Concrete Demo	1	Tractors/Loaders/Backhoes	80	80				0.40	76																		
Spillway Demolition: Crush Concrete Demo	2	Off-Highway Trucks	84	87				0.40	83																		
Spillway Demolition: Bridge Pier and Facing Demo	3	Air Compressors	80	85	95	0.00	5070.00	0.40	81	55	0.00	9785.00	49	0.00	9035.00	50	0.00	7640.00	51	0.00	1100.00	68	0.00	290.00	79	0.00	8300.00	50
Spillway Demolition: Bridge Pier and Facing Demo	4	Concrete/Industrial Saws	90	96				0.20	89																		
Spillway Demolition: Bridge Pier and Facing Demo	1	Cranes	88	88				0.16	80																		
Spillway Demolition: Bridge Pier and Facing Demo	2	Crushing/Proc. Equipment	89	92				1.00	92																		
Spillway Demolition: Bridge Pier and Facing Demo	2	Excavators	85	88				0.40	84																		
Spillway Demolition: Bridge Pier and Facing Demo	1	Off-Highway Trucks	84	84				0.40	80																		
Spillway Demolition: Bridge Pier and Facing Demo	1	Welders	73	73				0.40	69																		
Temporary Flood Control Berm	1	Excavators	85	85	88	0.00	5070.00	0.40	81	48	0.00	9785.00	42	0.00	9035.00	43	0.00	7640.00	44	0.00	390.00	70	0.00	1220.00	60	0.00	8300.00	44
Temporary Flood Control Berm	4	Off-Highway Trucks	84	90				0.40	86																		
Temporary Flood Control Berm	1	Rubber Tired Dozers	85	85				0.20	78																		
Temporary Flood Control Berm	1	Rollers	85	85				0.20	78																		
Mobilization	1	Forklifts	85	85	89	0.00	5070.00	0.20	78	49	0.00	9785.00	43	0.00	9035.00	44	0.00	7640.00	45	0.00	660.00	66	0.00	240.00	75	0.00	8300.00	44
Mobilization	1	Tractors/Loaders/Backhoes	80	80				0.40	76																		
Mobilization	2	Off-Highway Trucks	84	87				0.40	83																		
Mobilization	1	Graders	85	85				0.40	81																		
Mobilization	1	Excavators	85	85				0.40	81																		
Mobilization	2	Skid Steer Loaders	80	83				0.40	79																		
Mobilization	1	Cranes	88	88				0.16	80																		
Demobilization	1	Forklifts	85	85	89	0.00	5070.00	0.20	78	49	0.00	9785.00	43	0.00	9035.00	44	0.00	7640.00	45	0.00	660.00	66	0.00	240.00	75	0.00	8300.00	44
Demobilization	1	Tractors/Loaders/Backhoes	80	80				0.40	76																		
Demobilization	2	Off-Highway Trucks	84	87				0.40	83																		
Demobilization	1	Graders	85	85				0.40	81																		
Demobilization	1	Excavators	85	85				0.40	81																		
Demobilization	2	Skid Steer Loaders	80	83				0.40	79																		
Demobilization	1	Cranes	88	88				0.16	80																		
Cleanup	2	Scrapers	85	88	88	0.00	5070.00	0.40	84	48	0.00	9785.00	42	0.00	9035.00	43	0.00	7640.00	44	0.00	660.00	65	0.00	240.00	74	0.00	8300.00	43
Cleanup	3	Rubber Tired Dozers	85	90				0.20	83																		
Cleanup	1	Graders	85	85				0.40	81																		
Cleanup	1	Tractors/Loaders/Backhoes	80	80				0.40	76																		
Allowance for Piping Install	1	Excavators	85	85	83	0.00	5070.00	0.40	81	43	0.00	9785.00	37	0.00	9035.00	38	0.00	7640.00	39	0.00	265.00	69	0.00	310.00	67	0.00	8300.00	39
Allowance for Piping Install	1	Tractors/Loaders/Backhoes	80	80				0.40	76																		
Allowance for Piping Install	1	Skid Steer Loaders	80	80				0.40	76																		
Bypass Pumping Diversion Berm	1	Generator Sets	82	82	79	0.00	5070.00	0.50	79	39	0.00	9785.00	33	0.00	9035.00	34	0.00	7640.00	35	0.00	225.00	66	0.00	1370.00	50	0.00	8300.00	35
Inclined Inlet Structure: Steel Pipe and Appurtenances	1	Rollers	85	85	87	0.00	5070.00	0.20	78	47	0.00	9785.00	41	0.00	9035.00	42	0.00	7640.00	43	0.00	140.00	78	0.00	1210.00	59	0.00	8300.00	42
Inclined Inlet Structure: Steel Pipe and Appurtenances	2	Excavators	85	88				0.40	84																		
Inclined Inlet Structure: Steel Pipe and Appurtenances	1	Tractors/Loaders/Backhoes	80	80				0.40	76																		
Inclined Inlet Structure: Steel Pipe and Appurtenances	1	Welders	73	73				0.40	69																		
Inclined Inlet Structure: Steel Pipe and Appurtenances	1	Cranes	88	88				0.16	80																		
Inclined Inlet Structure: Reinforced Concrete	2	Surfacing Equipment	76	79	90	0.00	5070.00	0.40	75	50	0.00	9785.00	44	0.00	9035.00	45	0.00	7640.00	46	0.00	140.00	81	0.00	1210.00	62	0.00	8300.00	45
Inclined Inlet Structure: Reinforced Concrete	1	Pumps	77	77				0.50	74																		
Inclined Inlet Structure: Reinforced Concrete	2	Cranes	88	91				0.16	83																		
Inclined Inlet Structure: Reinforced Concrete	2	Rough Terrain Forklifts	85	88				0.20	81																		
Inclined Inlet Structure: Reinforced Concrete	2	Generator Sets	82	85				0.50	82																		
Inclined Inlet Structure: Reinforced Concrete	3	Cement and Mortar Mixers	85	90				0.40	86																		
Inclined Inlet Structure: Drilled Foundation Anchors	2	Bore/Drill Rigs	84	87	83	0.00	5070.00	0.20	80	43	0.00	9785.00	37	0.00	9035.00	38	0.00	7640.00	39	0.00	140.00	74	0.00	1210.00	55	0.00	8300.00	39
Inclined Inlet Structure: Drilled Foundation Anchors	1	Skid Steer Loaders	80	80				0.40	76																		
Inclined Inlet Structure: Drilled Foundation Anchors	1	Forklifts	85	85				0.20	78																		
Inclined Inlet Structure: Excavation	1	Excavators	85	85	85	0.00	5070.00	0.40	81	45	0.00	9785.00	39	0.00	9035.00	40	0.00	7640.00	41	0.00	140.00	76	0.00	1210.00	57	0.00	8300.00	41
Inclined Inlet Structure: Excavation	2	Off-Highway Trucks	84	87				0.40	83																		
Inclined Inlet Structure: Stainless Steel Platform	1	Skid Steer Loaders	80	80	83	0.00	5070.00	0.40	76	43	0.00	9785.00	37	0.00	9035.00	38	0.00	7640.00	39	0.00	140.00	74	0.00	1210.00	55	0.00	8300.00	39
Inclined Inlet Structure: Stainless Steel Platform	1	Forklifts	85	85				0.20	78																		
Inclined Inlet Structure: Stainless Steel Platform	1	Cranes	88	88				0.16	80																		
Inclined Inlet Structure: Pneumatic Actuation Control System	1	Skid Steer Loaders	80	80	83	0.00	5070.00	0.40	76	43	0.00	9785.00	37	0.00	9035.00	38	0.00	7640.00	39	0.00	140.00	74	0.00	1210.00	55	0.00	8300.00	39
Inclined Inlet Structure: Pneumatic Actuation Control System	1	Forklifts	85	85				0.20	78																		
Inclined Inlet Structure: Pneumatic Actuation Control System	1	Cranes	88	88				0.16	80																		
Cofferdam Installation and Removal: Install Cofferdam H/King Piles	2	Cranes	88	91	86	0.00	5070.00	0.16	83	46	0.00	9785.00	40	0.00	9035.00	41	0.00	7640.00	42	0.00	470.00	66	0.00	1190.00	58	0.00	8300.00	42
Cofferdam Installation and Removal: Install Cofferdam H/King Piles	1	Rough Terrain Forklifts	85	85				0.20	78																		
Cofferdam Installation and Removal: Install Cofferdam H/King Piles	2	Aerial Lifts	85	88				0.20	81																		
Cofferdam Installation and Removal: Dewatering	2	Generator Sets	82	85	82	0.00	5070.00	0.50	82	42	0.00	9785.00	36	0.00	9035.00	37	0.00	7640.00	38	0.00	470.00	63	0.00	1190.00	54	0.00	8300.00	38
Cofferdam Installation and Removal: Remove Cofferdam H/King Piles	2	Cranes	88	91	86	0.00	5070.00	0.16	83	46		9785.00	40	0.00	9035.00	41	0.00	7640.00	42	0.00	470.00	66	0.00	1190.00	58	0.00	8300.00	42
Cofferdam Installation and Removal: Remove Cofferdam H/King Piles	1	Rough Terrain Forklifts	85	85				0.20	78																		
Cofferdam Installation and Removal: Remove Cofferdam H/King Piles	2	Aerial Lifts	85	88				0.20	81																		
Access Road, Crest Ramp, and Existing Crest Widening: Roadway Excavation	1	Graders	85	85	88	0.00	5070.00	0.40	81	48	0.00	9785.00	42	0.00	9035.00	43	0.00	7640.00	44	0.00	250.00	74	0.00	855.00	63	0.00	8300.00	44
Access Road, Crest Ramp, and Existing Crest Widening: Roadway Excavation	3	Scrapers	85	90				0.40	86																		
Access Road, Crest Ramp, and Existing Crest Widening: Roadway Excavation	1	Rubber Tired Dozers	85	85				0.40	81																		
Access Road, Crest Ramp, and Existing Crest Widening: Imported Fill & CMB Surface Course	1	Off-Highway Trucks	84	84	85	0.00	5070.00	0.40	80	45	0.00	9785.00	39	0.00	9035.00	39	0.00	7640.00	41	0.00	250.00	71	0.00	855.00	60	0.00	8300.00	40
Access Road, Crest Ramp, and Existing Crest Widening: Imported Fill & CMB Surface Course	1	Rubber Tired Dozers	85	85				0.40	81																		
Access Road, Crest Ramp, and Existing Crest Widening: Imported Fill & CMB Surface Course	1	Rollers	85	85				0.20	78																		
Access Road, Crest Ramp, and Existing Crest Widening: CMB Surface Course	1	Graders	85	85	84	0.00	5070.00	0.40	81	43	0.00	9785.00	38	0.00	9035.00	38	0.00	7640.00	40	0.00	250.00	70	0.00	855.00	59	0.00	8300.00	39
Access Road, Crest Ramp, and Existing Crest Widening: CMB Surface Course	1	Tractors/Loaders/Backhoes	80	80				0.40	76																		
Access Road, Crest Ramp, and Existing Crest Widening: CMB Surface Course	1	Rollers	85	85				0.20	78																		
Access Road, Crest Ramp, and Existing Crest Widening: MSE Retaining Wall	1	Excavators	85	85	88	0.00	5070.00	0.40	81	48	0.00	9785.00	42	0.00	9035.00	43	0.00	7640.00	44	0.00	250.00	74	0.00	855.00	63	0.00	8300.00	43
Access Road, Crest Ramp, and Existing Crest Widening: MSE Retaining Wall	2	Off-Highway Trucks	84	87				0.40	83																		
Access Road, Crest Ramp, and Existing Crest Widening: MSE Retaining Wall	1	Rubber Tired Dozers	85	85				0.40	81																		
Access Road, Crest Ramp, and Existing Crest Widening: MSE Retaining Wall	1	Forklifts	85	85				0.20	78																		
Access Road, Crest Ramp, and Existing Crest Widening: MSE Retaining Wall	1	Plate Compactors	82	82				0.20	75																		
Access Road, Crest Ramp, and Existing Crest Widening: MSE Retaining Wall	1	Tractors/Loaders/Backhoes	80	80				0.40	76																		
Access Road, Crest Ramp, and Existing Crest Widening: Metal Beam Guard Rail	1	Skid Steer Loaders	80	80	80	0.00	5070.00	0.40	76	40	0.00	9785.00	34	0.00	9035.00	35	0.00	7640.00	36	0.00	250.00	66	0.00	855.00	55	0.00	8300.00	36
Access Road, Crest Ramp, and Existing Crest Widening: Metal Beam Guard Rail	1	Forklifts	85	85				0.20	78																		
Access Road, Crest Ramp, and Existing Crest Widening: 1.5' Conc Parapet Wall	1	Forklifts	85	85	87	0.00	5070.00	0.20	78	47	0.00	9785.00	41	0.00	9035.00	42	0.00	7640.00	43	0.00	250.00	73	0.00	855.00	62	0.00	8300.00	42
Access Road, Crest Ramp, and Existing Crest Widening: 1.5' Conc Parapet Wall	1	Generator Sets	82	82				0.50	79																		
Access Road, Crest Ramp, and Existing Crest Widening: 1.5' Conc Parapet Wall	1	Skid Steer Loaders	80	80				0.40	76																		
Access Road, Crest Ramp, and Existing Crest Widening: 1.5' Conc Parapet Wall	1	Pumps	77	77				0.50	74																		
Access Road, Crest Ramp, and Existing Crest Widening: 1.5' Conc Parapet Wall	1	Bore/Drill Rigs	84	84				0.20	77																		
Access Road, Crest Ramp, and Existing Crest Widening: 1.5' Conc Parapet Wall	1	Tractors/Loaders/Backhoes	80	80				0.40	76																		
Access Road, Crest Ramp, and Existing Crest Widening: 1.5' Conc Parapet Wall	1	Skid Steer Loaders	80	80				0.40	76																		
Access Road, Crest Ramp, and Existing Crest Widening: 1.5' Conc Parapet Wall	1	Cement and Mortar Mixers	85	85				0.40	81																		
Dam Control Building: Pt 1 CMU Control Building	1	Forklifts	85	85	84	0.00	5070.00	0.20	78	43	0.00	9785.00	38	0.00	9035.00	38	0.00	7640.00	40	0.00	620.00	62	0.00	720.00	60	0.00	8300.00	39
Dam Control Building: Pt 1 CMU Control Building	1	Skid Steer Loaders	80	80				0.40	76																		
Dam Control Building: Pt 1 CMU Control Building	1	Excavators	85	85				0.40	81																		
Dam Control Building: Pt 2 CMU Control Building	1	Forklifts	85	85	84	0.00	5070.00	0.20	78	43	0.00	9785.00	38	0.00	9035.00	38	0.00	7640.00	40	0.00	620.00	62	0.00	720.00	60	0.00	8300.00	39
Dam Control Building: Pt 2 CMU Control Building	1	Skid Steer Loaders	80	80				0.40	76																		
Dam Control Building: Pt 2 CMU Control Building	1	Excavators	85	85				0.40	81																		
Dam Control Building: Reinforced Concrete Foundation	1	Forklifts	85	85	87	0.00	5070.00	0.20	78	47	0.00	9785.00	41	0.00	9035.00	42	0.00	7640.00	43	0.00	620.00	65	0.00	720.00	64	0.00	8300.00	42
Dam Control Building: Reinforced Concrete Foundation	1	Generator Sets	82	82				0.50	79																		
Dam Control Building: Reinforced Concrete Foundation	1	Skid Steer Loaders	80	80				0.40	76																		
Dam Control Building: Reinforced Concrete Foundation	1	Pumps	77	77				0.50	74																		
Dam Control Building: Reinforced Concrete Foundation	1	Bore/Drill Rigs	84	84				0.20	77																		
Dam Control Building: Reinforced Concrete Foundation	1	Tractors/Loaders/Backhoes	80	80				0.40	76																		
Dam Control Building: Reinforced Concrete Foundation	1	Skid Steer Loaders	80	80				0.40	76																		
Dam Control Building: Reinforced Concrete Foundation	1	Cement and Mortar Mixers	85	85				0.40	81																		
Dam Control Building: Metal Frame Roofing	1	Forklifts	85	85	82	0.00	5070.00	0.20	78	42	0.00	9785.00	36	0.00	9035.00	37	0.00	7640.00	38	0.00	620.00	60	0.00	720.00	59	0.00	8300.00	38
Dam Control Building: Metal Frame Roofing	1	Cranes	88	88				0.16	80																		
Dam Control Building: Ancillary Features	1	Forklifts	85	85	82	0.00	5070.00	0.20	78	42	0.00	9785.00	36	0.00	9035.00	37	0.00	7640.00	38	0.00	620.00	60	0.00	720.00	59	0.00	8300.00	38

						Receptor 1 - Irvine Regional Park					Receptor 2 - Residences Along Jamboree Road			Receptor 3 - Oak Canyon Park			Receptor 4 - Lakeview Park Camping Area			Receptor 5 - Sensitive Bird Species South of Dam			Receptor 6 - Sensitive Bird Species North of the Dam			Receptor 7 - Sensitive Bird Species Near Primary Staging Area		
Phase Name	Number per Day	Equipment Type	Typical Noise Level 50 ft from Source, dBA	Noise Level 50 ft Multiple Equipment, dBA	Construction Phase Noise Level, dBA	Hard/Soft	Distance	Utilization	Noise Level with Utilization	Noise Level	Hard/Soft	Distance	Noise Level	Hard/Soft	Distance	Noise Level	Hard/Soft	Distance	Noise Level	Hard/Soft	Distance	Noise Level	Hard/Soft	Distance	Noise Level	Hard/Soft	Distance	Noise Level
Dam Control Building: Ancillary Features	1	Cranes	88	88				0.16	80																		
Downstream Outlet Works Piping and Vault: Structure Excavation Shoring & Excavation	1	Excavators	85	85	87	0.00	5070.00	0.40	81	46	0.00	9785.00	41	0.00	9035.00	41	0.00	7640.00	43	0.00	185.00	75	0.00	1220.00	59	0.00	8300.00	42
Downstream Outlet Works Piping and Vault: Structure Excavation Shoring & Excavation	2	Off-Highway Trucks	84	87				0.40	83																		
Downstream Outlet Works Piping and Vault: Structure Excavation Shoring & Excavation	1	Rubber Tired Dozers	85	85				0.40	81																		
Downstream Outlet Works Piping and Vault: Structure Bkfl	1	Excavators	85	85	86	0.00	5070.00	0.40	81	46	0.00	9785.00	40	0.00	9035.00	41	0.00	7640.00	42	0.00	185.00	75	0.00	1220.00	58	0.00	8300.00	42
Downstream Outlet Works Piping and Vault: Structure Bkfl	1	Tractors/Loaders/Backhoes	80	80				0.40	76																		
Downstream Outlet Works Piping and Vault: Structure Bkfl	1	Plate Compactors	82	82				0.20	75																		
Downstream Outlet Works Piping and Vault: Structure Bkfl	2	Off-Highway Trucks	84	87				0.40	83																		
Downstream Outlet Works Piping and Vault: Reinforced Conc Structures	1	Cranes	88	88	89	0.00	5070.00	0.16	80	49	0.00	9785.00	43	0.00	9035.00	44	0.00	7640.00	45	0.00	185.00	78	0.00	1220.00	61	0.00	8300.00	45
Downstream Outlet Works Piping and Vault: Reinforced Conc Structures	1	Forklifts	85	85				0.20	78																		
Downstream Outlet Works Piping and Vault: Reinforced Conc Structures	1	Generator Sets	82	82				0.50	79																		
Downstream Outlet Works Piping and Vault: Reinforced Conc Structures	1	Skid Steer Loaders	80	80				0.40	76																		
Downstream Outlet Works Piping and Vault: Reinforced Conc Structures	1	Pumps	77	77				0.50	74																		
Downstream Outlet Works Piping and Vault: Reinforced Conc Structures	1	Bore/Drill Rigs	84	84				0.20	77																		
Downstream Outlet Works Piping and Vault: Reinforced Conc Structures	1	Tractors/Loaders/Backhoes	80	80				0.40	76																		
Downstream Outlet Works Piping and Vault: Reinforced Conc Structures	1	Skid Steer Loaders	80	80				0.40	76																		
Downstream Outlet Works Piping and Vault: Reinforced Conc Structures	3	Cement and Mortar Mixers	85	90				0.40	86																		
Downstream Outlet Works Piping and Vault: Piping and Valves	1	Rollers	85	85	87	0.00	5070.00	0.20	78	47	0.00	9785.00	41	0.00	9035.00	42	0.00	7640.00	43	0.00	185.00	76	0.00	1220.00	59	0.00	8300.00	43
Downstream Outlet Works Piping and Vault: Piping and Valves	3	Excavators	85	90				0.40	86																		
Downstream Outlet Works Piping and Vault: Piping and Valves	1	Tractors/Loaders/Backhoes	80	80				0.40	76																		
Downstream Outlet Works Piping and Vault: Piping and Valves	1	Welders	73	73				0.40	69																		
Downstream Outlet Works Piping and Vault: Steel Casing	1	Rollers	85	85	87	0.00	5070.00	0.20	78	47	0.00	9785.00	41	0.00	9035.00	42	0.00	7640.00	43	0.00	185.00	76	0.00	1220.00	59	0.00	8300.00	43
Downstream Outlet Works Piping and Vault: Steel Casing	3	Excavators	85	90				0.40	86																		
Downstream Outlet Works Piping and Vault: Steel Casing	1	Tractors/Loaders/Backhoes	80	80				0.40	76																		
Downstream Outlet Works Piping and Vault: Steel Casing	1	Welders	73	73				0.40	69																		
Downstream Outlet Works Piping and Vault: Ladders and Platforms	1	Forklifts	85	85	82	0.00	5070.00	0.20	78	42	0.00	9785.00	36	0.00	9035.00	37	0.00	7640.00	38	0.00	185.00	71	0.00	1220.00	54	0.00	8300.00	38
Downstream Outlet Works Piping and Vault: Ladders and Platforms	1	Cranes	88	88				0.16	80																		
Downstream Outlet Works Piping and Vault: Dam keeper Residence Water Supply System and Piping	1	Excavators	85	85	83	0.00	5070.00	0.40	81	43	0.00	9785.00	37	0.00	9035.00	38	0.00	7640.00	39	0.00	185.00	72	0.00	1220.00	55	0.00	8300.00	39
Downstream Outlet Works Piping and Vault: Dam keeper Residence Water Supply System and Piping	1	Tractors/Loaders/Backhoes	80	80				0.40	76																		
Downstream Outlet Works Piping and Vault: Dam keeper Residence Water Supply System and Piping	1	Plate Compactors	82	82				0.20	75																		
Downstream Outlet Works Piping and Vault: Dewatering	1	Generator Sets	82	82	79	0.00	5070.00	0.50	79	39	0.00	9785.00	33	0.00	9035.00	34	0.00	7640.00	35	0.00	185.00	68	0.00	1220.00	51	0.00	8300.00	35
Downstream Outlet Works Piping and Vault: ARVs and Valves	1	Excavators	85	85	83	0.00	5070.00	0.40	81	43	0.00	9785.00	37	0.00	9035.00	38	0.00	7640.00	39	0.00	185.00	72	0.00	1220.00	55	0.00	8300.00	39
Downstream Outlet Works Piping and Vault: ARVs and Valves	1	Tractors/Loaders/Backhoes	80	80				0.40	76																		
Downstream Outlet Works Piping and Vault: ARVs and Valves	1	Plate Compactors	82	82				0.20	75																		
Pedestrian Access Walkway, Stairs, Catwalk, Vehicle Ramp: Structure Excavation	1	Excavators	85	85	85	0.00	5070.00	0.40	81	45	0.00	9785.00	39	0.00	9035.00	40	0.00	7640.00	41	0.00	490.00	65	0.00	855.00	60	0.00	8300.00	41
Pedestrian Access Walkway, Stairs, Catwalk, Vehicle Ramp: Structure Excavation	2	Off-Highway Trucks	84	87				0.40	83																		
Pedestrian Access Walkway, Stairs, Catwalk, Vehicle Ramp: Concrete Walkway	1	Cranes	88	88	88	0.00	5070.00	0.16	80	47	0.00	9785.00	42	0.00	9035.00	42	0.00	7640.00	44	0.00	490.00	68	0.00	855.00	63	0.00	8300.00	43
Pedestrian Access Walkway, Stairs, Catwalk, Vehicle Ramp: Concrete Walkway	1	Forklifts	85	85				0.20	78																		
Pedestrian Access Walkway, Stairs, Catwalk, Vehicle Ramp: Concrete Walkway	1	Generator Sets	82	82				0.50	79																		
Pedestrian Access Walkway, Stairs, Catwalk, Vehicle Ramp: Concrete Walkway	1	Skid Steer Loaders	80	80				0.40	76																		
Pedestrian Access Walkway, Stairs, Catwalk, Vehicle Ramp: Concrete Walkway	1	Pumps	77	77				0.50	74																		
Pedestrian Access Walkway, Stairs, Catwalk, Vehicle Ramp: Concrete Walkway	1	Bore/Drill Rigs	84	84				0.20	77																		
Pedestrian Access Walkway, Stairs, Catwalk, Vehicle Ramp: Concrete Walkway	1	Tractors/Loaders/Backhoes	80	80				0.40	76																		
Pedestrian Access Walkway, Stairs, Catwalk, Vehicle Ramp: Concrete Walkway	1	Skid Steer Loaders	80	80				0.40	76																		
Pedestrian Access Walkway, Stairs, Catwalk, Vehicle Ramp: Concrete Walkway	1	Cement and Mortar Mixers	85	85				0.40	81																		
Pedestrian Access Walkway, Stairs, Catwalk, Vehicle Ramp: Bridge	2	Cranes	88	91	87	0.00	5070.00	0.16	83	47	0.00	9785.00	41	0.00	9035.00	42	0.00	7640.00	43	0.00	490.00	67	0.00	855.00	62	0.00	8300.00	43
Pedestrian Access Walkway, Stairs, Catwalk, Vehicle Ramp: Bridge	1	Forklifts	85	85				0.20	78																		
Pedestrian Access Walkway, Stairs, Catwalk, Vehicle Ramp: Bridge	1	Generator Sets	82	82				0.50	79																		
Pedestrian Access Walkway, Stairs, Catwalk, Vehicle Ramp: Bridge	1	Forklifts	85	85				0.20	78																		
Pedestrian Access Walkway, Stairs, Catwalk, Vehicle Ramp: Bridge	1	Cranes	88	88				0.16	80																		
Pedestrian Access Walkway, Stairs, Catwalk, Vehicle Ramp: Roadway Excavation	1	Graders	85	85	88	0.00	5070.00	0.40	81	48	0.00	9785.00	42	0.00	9035.00	43	0.00	7640.00	44	0.00	490.00	68	0.00	855.00	63	0.00	8300.00	44
Pedestrian Access Walkway, Stairs, Catwalk, Vehicle Ramp: Roadway Excavation	3	Scrapers	85	90				0.40	86																		
Pedestrian Access Walkway, Stairs, Catwalk, Vehicle Ramp: Roadway Excavation	1	Rubber Tired Dozers	85	85				0.40	81																		
Pedestrian Access Walkway, Stairs, Catwalk, Vehicle Ramp: Slope Anchors	2	Bore/Drill Rigs	84	87		0.00	5070.00	0.20	80	50	0.00	9785.00	44	0.00	9035.00	44	0.00	7640.00	46	0.00	490.00	70	0.00	855.00	65	0.00	8300.00	45
Pedestrian Access Walkway, Stairs, Catwalk, Vehicle Ramp: Slope Anchors	1	Skid Steer Loaders	80	80				0.40	76																		
Pedestrian Access Walkway, Stairs, Catwalk, Vehicle Ramp: Slope Anchors	1	Forklifts	85	85				0.20	78																		
Pedestrian Access Walkway, Stairs, Catwalk, Vehicle Ramp: Tie Back Wall	2	Bore/Drill Rigs	84	87	89	0.00	5070.00	0.20	80	49	0.00	9785.00	43	0.00	9035.00	44	0.00	7640.00	45	0.00	490.00	69	0.00	855.00	64	0.00	8300.00	44
Pedestrian Access Walkway, Stairs, Catwalk, Vehicle Ramp: Tie Back Wall	1	Skid Steer Loaders	80	80				0.40	76																		
Pedestrian Access Walkway, Stairs, Catwalk, Vehicle Ramp: Tie Back Wall	1	Forklifts	85	85				0.20	78																		
Pedestrian Access Walkway, Stairs, Catwalk, Vehicle Ramp: Tie Back Wall	1	Excavators	85	85				0.40	81																		
Pedestrian Access Walkway, Stairs, Catwalk, Vehicle Ramp: Tie Back Wall	1	Pumps	77	77				0.50	74																		
Pedestrian Access Walkway, Stairs, Catwalk, Vehicle Ramp: Tie Back Wall	1	Air Compressors	80	80				0.40	76																		
Pedestrian Access Walkway, Stairs, Catwalk, Vehicle Ramp: Tie Back Wall	1	Bore/Drill Rigs	84	84				0.20	77																		
Pedestrian Access Walkway, Stairs, Catwalk, Vehicle Ramp: Tie Back Wall	1	Tractors/Loaders/Backhoes	80	80				0.40	76																		
Pedestrian Access Walkway, Stairs, Catwalk, Vehicle Ramp: Tie Back Wall	2	Cement and Mortar Mixers	85	88				0.40	84																		
Spillway Site Excavations	1	Excavators	85	85	89	0.00	5070.00	0.40	81	49	0.00	9785.00	43	0.00	9035.00	44	0.00	7640.00	45	0.00	800.00	65	0.00	600.00	67	0.00	8300.00	45
Spillway Site Excavations	1	Excavators	85	85				0.40	81																		
Spillway Site Excavations	4	Off-Highway Trucks	84	90				0.40	86																		
Spillway Site Excavations	1	Rubber Tired Dozers	85	85				0.40	81																		
Rock Slope Stabilization	2	Bore/Drill Rigs	84	87	89	0.00	5070.00	0.20	80	49	0.00	9785.00	43	0.00	9035.00	44	0.00	7640.00	45	0.00	800.00	65	0.00	600.00	67	0.00	8300.00	44
Rock Slope Stabilization	1	Skid Steer Loaders	80	80				0.40	76																		
Rock Slope Stabilization	1	Forklifts	85	85				0.20	78																		
Rock Slope Stabilization	1	Excavators	85	85				0.40	81																		
Rock Slope Stabilization	1	Pumps	77	77				0.50	74																		
Rock Slope Stabilization	1	Air Compressors	80	80				0.40	76																		
Rock Slope Stabilization	1	Bore/Drill Rigs	84	84				0.20	77																		
Rock Slope Stabilization	2	Cement and Mortar Mixers	85	88				0.40	84																		
Rock Slope Stabilization	1	Tractors/Loaders/Backhoes	80	80				0.40	76																		
RCC Weir Support Block	1	Bore/Drill Rigs	84	84	93	0.00	5070.00	0.20	77	53	0.00	9785.00	47	0.00	9035.00	48	0.00	7640.00	49	0.00	800.00	69	0.00	600.00	71	0.00	8300.00	48
RCC Weir Support Block	3	Pumps	77	82				0.50	79																		
RCC Weir Support Block	1	Plate Compactors	82	82				0.20	75																		
RCC Weir Support Block	1	Cranes	88	88				0.16	80																		
RCC Weir Support Block	4	Generator Sets	82	88				0.50	85																		
RCC Weir Support Block	3	Tractors/Loaders/Backhoes	80	85				0.40	81																		
RCC Weir Support Block	3	Pumps	77	82				0.50	79																		
RCC Weir Support Block	3	Rollers	85	90				0.20	83																		
RCC Weir Support Block	3	Rubber Tired Dozers	85	90				0.40	86																		
RCC Weir Support Block	5	Off-Highway Trucks	84	91				0.40	87																		
Side Channel Control Structure (Zone A): Ogee Weir RCC 7 days per week	1	Bore/Drill Rigs	84	84	93	0.00	5070.00	0.20	77	53	0.00	9785.00	47	0.00	9035.00	48	0.00	7640.00	49	0.00	340.00	76	0.00	1000.00	67	0.00	8300.00	48
Side Channel Control Structure (Zone A): Ogee Weir RCC 7 days per week	3	Pumps	77	82				0.50	79																		
Side Channel Control Structure (Zone A): Ogee Weir RCC 7 days per week	1	Plate Compactors	82	82				0.20	75																		
Side Channel Control Structure (Zone A): Ogee Weir RCC 7 days per week	4	Generator Sets	82	88				0.50	85																		
Side Channel Control Structure (Zone A): Ogee Weir RCC 7 days per week	3	Tractors/Loaders/Backhoes	80	85				0.40	81																		
Side Channel Control Structure (Zone A): Ogee Weir RCC 7 days per week	3	Pumps	77	82				0.50	79																		
Side Channel Control Structure (Zone A): Ogee Weir RCC 7 days per week	3	Rollers	85	90				0.20	83																		
Side Channel Control Structure (Zone A): Ogee Weir RCC 7 days per week	3	Rubber Tired Dozers	85	90				0.40	86																		
Side Channel Control Structure (Zone A): Ogee Weir RCC 7 days per week	1	Cranes	88	88				0.16	80																		
Side Channel Control Structure (Zone A): Ogee Weir RCC 7 days per week	5	Off-Highway Trucks	84	91				0.40	87																		
Side Channel Control Structure (Zone A): Ogee Weir concrete Overlay - CVC	2	Surfacing Equipment	76	79	89	0.00	5070.00	0.40	75	49	0.00	9785.00	44	0.00	9035.00	44	0.00	7640.00	46	0.00	340.00	73	0.00	1000.00	63	0.00	8300.00	45
Side Channel Control Structure (Zone A): Ogee Weir concrete Overlay - CVC	1	Pumps	77	77				0.50	74																		
Side Channel Control Structure (Zone A): Ogee Weir concrete Overlay - CVC	2	Cranes	88	91				0.16	83																		
Side Channel Control Structure (Zone A): Ogee Weir concrete Overlay - CVC	2	Rough Terrain Forklifts	85	88				0.20	81																		
Side Channel Control Structure (Zone A): Ogee Weir concrete Overlay - CVC	2	Generator Sets	82	85				0.50	82																		
Side Channel Control Structure (Zone A): Ogee Weir concrete Overlay - CVC	1	Bore/Drill Rigs	84	84				0.20	77																		
Side Channel Control Structure (Zone A): Ogee Weir concrete Overlay - CVC	2	Cement and Mortar Mixers	85	88				0.40	84																		
Side Channel Control Structure (Zone A): Ogee Weir concrete Overlay - CVC	1	Tractors/Loaders/Backhoes	80	80				0.40	76																		
Side Channel Control Structure (Zone A): Side Channel Reinforced Concrete	2	Surfacing Equipment	76	79	88	0.00	5070.00	0.40	75	48	0.00	9785.00	43	0.00	9035.00	43	0.00	7640.00	45	0.00	340.00	72	0.00	1000.00	62	0.00	8300.00	44
Side Channel Control Structure (Zone A): Side Channel Reinforced Concrete	1	Pumps	77	77				0.50	74																		
Side Channel Control Structure (Zone A): Side Channel Reinforced Concrete	2	Cranes	88	91				0.16	83																		
Side Channel Control Structure (Zone A): Side Channel Reinforced Concrete	2	Rough Terrain Forklifts	85	88				0.20	81																		
Side Channel Control Structure (Zone A): Side Channel Reinforced Concrete	2	Generator Sets	82	85				0.50	82																		
Side Channel Control Structure (Zone A): Side Channel Reinforced Concrete	2	Bore/Drill Rigs	84	87				0.20	80																		
Side Channel Control Structure (Zone A): Side Channel Reinforced Concrete	1	Tractors/Loaders/Backhoes	80	80				0.40	76																		
Wall Type 1 Tieback Wall Left (0+27 to 2+17): CLSM Backfill	1	Skid Steer Loaders	80	80	86	0.00	5070.00	0.40	76	46	0.00	9785.00	40	0.00	9035.00	41	0.00	7640.00	42	0.00	340.00	69	0.00	930.00	61	0.00	8300.00	42
Wall Type 1 Tieback Wall Left (0+27 to 2+17): CLSM Backfill	1	Pumps	77	77				0.50	74																		
Wall Type 1 Tieback Wall Left (0+27 to 2+17): CLSM Backfill	1	Bore/Drill Rigs	84	84				0.20	77																		
Wall Type 1 Tieback Wall Left (0+27 to 2+17): CLSM Backfill	2	Cement and Mortar Mixers	85	88				0.40	84																		
Wall Type 1 Tieback Wall Left (0+27 to 2+17): CLSM Backfill	1	Tractors/Loaders/Backhoes	80	80				0.40	76																		
Wall Type 1 Tieback Wall Left (0+27 to 2+17)\: Work Platform Construction	2	Excavators	85	88	89	0.00	5070.00	0.40	84	48	0.00	9785.00	43	0.00	9035.00	43	0.00	7640.00	45	0.00	340.00	72	0.00	930.00	63	0.00	8300.00	44

						Receptor 1 - Irvine Regional Park					Receptor 2 - Residences Along Jamboree Road			Receptor 3 - Oak Canyon Park			Receptor 4 - Lakeview Park Camping Area			Receptor 5 - Sensitive Bird Species South of Dam			Receptor 6 - Sensitive Bird Species North of the Dam			Receptor 7 - Sensitive Bird Species Near Primary Staging Area		
Phase Name	Number per Day	Equipment Type	Typical Noise Level 50 ft from Source, dBA	Noise Level 50 ft Multiple Equipment, dBA	Construction Phase Noise Level, dBA	Hard/Soft	Distance	Utilization	Noise Level with Utilization	Noise Level	Hard/Soft	Distance	Noise Level	Hard/Soft	Distance	Noise Level	Hard/Soft	Distance	Noise Level	Hard/Soft	Distance	Noise Level	Hard/Soft	Distance	Noise Level	Hard/Soft	Distance	Noise Level
Wall Type 1 Tieback Wall Left (0+27 to 2+17)\: Work Platform Construction	3	Off-Highway Trucks	84	89				0.40	85																		
Wall Type 1 Tieback Wall Left (0+27 to 2+17)\: Work Platform Construction	1	Rubber Tired Dozers	85	85				0.40	81																		
Wall Type 1 Tieback Wall Left (0+27 to 2+17)\: Work Platform Construction	1	Plate Compactors	82	82				0.20	75																		
Wall Type 1 Tieback Wall Left (0+27 to 2+17): Temp Shotcrete Facing	1	Pumps	77	77	86	0.00	5070.00	0.50	74	45	0.00	9785.00	40	0.00	9035.00	40	0.00	7640.00	42	0.00	340.00	69	0.00	930.00	60	0.00	8300.00	41
Wall Type 1 Tieback Wall Left (0+27 to 2+17): Temp Shotcrete Facing	1	Air Compressors	80	80				0.40	76																		
Wall Type 1 Tieback Wall Left (0+27 to 2+17): Temp Shotcrete Facing	1	Skid Steer Loaders	80	80				0.40	76																		
Wall Type 1 Tieback Wall Left (0+27 to 2+17): Temp Shotcrete Facing	1	Bore/Drill Rigs	84	84				0.20	77																		
Wall Type 1 Tieback Wall Left (0+27 to 2+17): Temp Shotcrete Facing	1	Tractors/Loaders/Backhoes	80	80				0.40	76																		
Wall Type 1 Tieback Wall Left (0+27 to 2+17): Temp Shotcrete Facing	1	Skid Steer Loaders	80	80				0.40	76																		
Wall Type 1 Tieback Wall Left (0+27 to 2+17): Temp Shotcrete Facing	1	Cement and Mortar Mixers	85	85				0.40	81																		
Wall Type 1 Tieback Wall Left (0+27 to 2+17): Permanent Reinforced Concrete Facing	2	Surfacing Equipment	76	79	89	0.00	5070.00	0.40	75	49	0.00	9785.00	43	0.00	9035.00	44	0.00	7640.00	45	0.00	340.00	72	0.00	930.00	64	0.00	8300.00	45
Wall Type 1 Tieback Wall Left (0+27 to 2+17): Permanent Reinforced Concrete Facing	1	Pumps	77	77				0.50	74																		
Wall Type 1 Tieback Wall Left (0+27 to 2+17): Permanent Reinforced Concrete Facing	2	Cranes	88	91				0.16	83																		
Wall Type 1 Tieback Wall Left (0+27 to 2+17): Permanent Reinforced Concrete Facing	2	Rough Terrain Forklifts	85	88				0.20	81																		
Wall Type 1 Tieback Wall Left (0+27 to 2+17): Permanent Reinforced Concrete Facing	2	Generator Sets	82	85				0.50	82																		
Wall Type 1 Tieback Wall Left (0+27 to 2+17): Permanent Reinforced Concrete Facing	1	Bore/Drill Rigs	84	84				0.20	77																		
Wall Type 1 Tieback Wall Left (0+27 to 2+17): Permanent Reinforced Concrete Facing	1	Tractors/Loaders/Backhoes	80	80				0.40	76																		
Wall Type 1 Tieback Wall Left (0+27 to 2+17): Permanent Reinforced Concrete Facing	1	Skid Steer Loaders	80	80				0.40	76																		
Wall Type 1 Tieback Wall Left (0+27 to 2+17): Permanent Reinforced Concrete Facing	1	Cement and Mortar Mixers	85	85				0.40	81																		
Wall Type 1 Tieback Wall Left (0+27 to 2+17): Post Tensioned Rock Anchors	2	Bore/Drill Rigs	84	87	85	0.00	5070.00	0.20	80	45	0.00	9785.00	39	0.00	9035.00	40	0.00	7640.00	42	0.00	340.00	69	0.00	930.00	60	0.00	8300.00	41
Wall Type 1 Tieback Wall Left (0+27 to 2+17): Post Tensioned Rock Anchors	1	Skid Steer Loaders	80	80				0.40	76																		
Wall Type 1 Tieback Wall Left (0+27 to 2+17): Post Tensioned Rock Anchors	1	Forklifts	85	85				0.20	78																		
Wall Type 1 Tieback Wall Left (0+27 to 2+17): Post Tensioned Rock Anchors	1	Excavators	85	85				0.40	81																		
Wall Type 1 Tieback Wall Right (0+27 to 2+17): CLSM Backfill	1	Skid Steer Loaders	80	80	88	0.00	5070.00	0.40	76	48	0.00	9785.00	43	0.00	9035.00	43	0.00	7640.00	45	0.00	340.00	72	0.00	930.00	63	0.00	8300.00	44
Wall Type 1 Tieback Wall Right (0+27 to 2+17): CLSM Backfill	1	Pumps	77	77				0.50	74																		
Wall Type 1 Tieback Wall Right (0+27 to 2+17): CLSM Backfill	1	Bore/Drill Rigs	84	84				0.20	77																		
Wall Type 1 Tieback Wall Right (0+27 to 2+17): CLSM Backfill	1	Tractors/Loaders/Backhoes	80	80				0.40	76																		
Wall Type 1 Tieback Wall Right (0+27 to 2+17): CLSM Backfill	1	Skid Steer Loaders	80	80				0.40	76																		
Wall Type 1 Tieback Wall Right (0+27 to 2+17): CLSM Backfill	4	Cement and Mortar Mixers	85	91				0.40	87																		
Wall Type 1 Tieback Wall Right (0+27 to 2+17) Work Platform Construction	2	Excavators	85	88	89	0.00	5070.00	0.40	84	48	0.00	9785.00	43	0.00	9035.00	43	0.00	7640.00	45	0.00	340.00	72	0.00	930.00	63	0.00	8300.00	44
Wall Type 1 Tieback Wall Right (0+27 to 2+17) Work Platform Construction	3	Off-Highway Trucks	84	89				0.40	85																		
Wall Type 1 Tieback Wall Right (0+27 to 2+17) Work Platform Construction	1	Rubber Tired Dozers	85	85				0.40	81																		
Wall Type 1 Tieback Wall Right (0+27 to 2+17) Work Platform Construction	1	Plate Compactors	82	82				0.20	75																		
Wall Type 1 Tieback Wall Right (0+27 to 2+17): Temp Shotcrete Facing	1	Pumps	77	77	86	0.00	5070.00	0.50	74	45	0.00	9785.00	40	0.00	9035.00	40	0.00	7640.00	42	0.00	340.00	69	0.00	930.00	60	0.00	8300.00	41
Wall Type 1 Tieback Wall Right (0+27 to 2+17): Temp Shotcrete Facing	1	Air Compressors	80	80				0.40	76																		
Wall Type 1 Tieback Wall Right (0+27 to 2+17): Temp Shotcrete Facing	1	Skid Steer Loaders	80	80				0.40	76																		
Wall Type 1 Tieback Wall Right (0+27 to 2+17): Temp Shotcrete Facing	1	Bore/Drill Rigs	84	84				0.20	77																		
Wall Type 1 Tieback Wall Right (0+27 to 2+17): Temp Shotcrete Facing	1	Tractors/Loaders/Backhoes	80	80				0.40	76																		
Wall Type 1 Tieback Wall Right (0+27 to 2+17): Temp Shotcrete Facing	1	Skid Steer Loaders	80	80				0.40	76																		
Wall Type 1 Tieback Wall Right (0+27 to 2+17): Temp Shotcrete Facing	1	Cement and Mortar Mixers	85	85				0.40	81																		
Wall Type 1 Tieback Wall Right (0+27 to 2+17): Permanent Reinforced Concrete Facing	2	Surfacing Equipment	76	79	89	0.00	5070.00	0.40	75	49	0.00	9785.00	43	0.00	9035.00	44	0.00	7640.00	45	0.00	340.00	72	0.00	930.00	64	0.00	8300.00	45
Wall Type 1 Tieback Wall Right (0+27 to 2+17): Permanent Reinforced Concrete Facing	1	Pumps	77	77				0.50	74																		
Wall Type 1 Tieback Wall Right (0+27 to 2+17): Permanent Reinforced Concrete Facing	2	Cranes	88	91				0.16	83																		
Wall Type 1 Tieback Wall Right (0+27 to 2+17): Permanent Reinforced Concrete Facing	2	Rough Terrain Forklifts	85	88				0.20	81																		
Wall Type 1 Tieback Wall Right (0+27 to 2+17): Permanent Reinforced Concrete Facing	2	Generator Sets	82	85				0.50	82																		
Wall Type 1 Tieback Wall Right (0+27 to 2+17): Permanent Reinforced Concrete Facing	1	Bore/Drill Rigs	84	84				0.20	77																		
Wall Type 1 Tieback Wall Right (0+27 to 2+17): Permanent Reinforced Concrete Facing	1	Tractors/Loaders/Backhoes	80	80				0.40	76																		
Wall Type 1 Tieback Wall Right (0+27 to 2+17): Permanent Reinforced Concrete Facing	1	Skid Steer Loaders	80	80				0.40	76																		
Wall Type 1 Tieback Wall Right (0+27 to 2+17): Permanent Reinforced Concrete Facing	1	Cement and Mortar Mixers	85	85				0.40	81																		
Wall Type 1 Tieback Wall Right (0+27 to 2+17): Post Tensioned Rock Anchors	2	Bore/Drill Rigs	84	87	85	0.00	5070.00	0.20	80	45	0.00	9785.00	39	0.00	9035.00	40	0.00	7640.00	42	0.00	340.00	69	0.00	930.00	60	0.00	8300.00	41
Wall Type 1 Tieback Wall Right (0+27 to 2+17): Post Tensioned Rock Anchors	1	Skid Steer Loaders	80	80				0.40	76																		
Wall Type 1 Tieback Wall Right (0+27 to 2+17): Post Tensioned Rock Anchors	1	Forklifts	85	85				0.20	78																		
Wall Type 1 Tieback Wall Right (0+27 to 2+17): Post Tensioned Rock Anchors	1	Excavators	85	85				0.40	81																		
Wall Transitions: Left Secant Pile Walls	1	Excavators	85	85	89	0.00	5070.00	0.40	81	49	0.00	9785.00	43	0.00	9035.00	44	0.00	7640.00	46	0.00	600.00	68	0.00	760.00	66	0.00	8300.00	45
Wall Transitions: Left Secant Pile Walls	1	Cranes	88	88				0.16	80																		
Wall Transitions: Left Secant Pile Walls	1	Excavators	85	85				0.40	81																		
Wall Transitions: Left Secant Pile Walls	1	Forklifts	85	85				0.20	78																		
Wall Transitions: Left Secant Pile Walls	1	Skid Steer Loaders	80	80				0.40	76																		
Wall Transitions: Left Secant Pile Walls	1	Bore/Drill Rigs	84	84				0.20	77																		
Wall Transitions: Left Secant Pile Walls	1	Tractors/Loaders/Backhoes	80	80				0.40	76																		
Wall Transitions: Left Secant Pile Walls	1	Skid Steer Loaders	80	80				0.40	76																		
Wall Transitions: Left Secant Pile Walls	2	Cement and Mortar Mixers	85	88				0.40	84																		
Wall Transitions: Right Secant Pile Wall	2	Excavators	85	88	89	0.00	5070.00	0.40	84	49	0.00	9785.00	43	0.00	9035.00	44	0.00	7640.00	46	0.00	600.00	68	0.00	760.00	66	0.00	8300.00	45
Wall Transitions: Right Secant Pile Wall	1	Cranes	88	88				0.16	80																		
Wall Transitions: Right Secant Pile Wall	1	Forklifts	85	85				0.20	78																		
Wall Transitions: Right Secant Pile Wall	1	Skid Steer Loaders	80	80				0.40	76																		
Wall Transitions: Right Secant Pile Wall	1	Bore/Drill Rigs	84	84				0.20	77																		
Wall Transitions: Right Secant Pile Wall	1	Tractors/Loaders/Backhoes	80	80				0.40	76																		
Wall Transitions: Right Secant Pile Wall	1	Skid Steer Loaders	80	80				0.40	76																		
Wall Transitions: Right Secant Pile Wall	2	Cement and Mortar Mixers	85	88				0.40	84																		
Right Closure Wall: Work Platform Construction	1	Excavators	85	85	87	0.00	5070.00	0.40	81	47	0.00	9785.00	41	0.00	9035.00	42	0.00	7640.00	43	0.00	600.00	65	0.00	760.00	63	0.00	8300.00	42
Right Closure Wall: Work Platform Construction	2	Off-Highway Trucks	84	87				0.40	83																		
Right Closure Wall: Work Platform Construction	1	Rubber Tired Dozers	85	85				0.40	81																		
Right Closure Wall: Work Platform Construction	1	Plate Compactors	82	82				0.20	75																		
Right Closure Wall: Secant Pile Wall	1	Excavators	85	85	89	0.00	5070.00	0.40	81	49	0.00	9785.00	43	0.00	9035.00	44	0.00	7640.00	46	0.00	600.00	68	0.00	760.00	66	0.00	8300.00	45
Right Closure Wall: Secant Pile Wall	1	Cranes	88	88				0.16	80																		
Right Closure Wall: Secant Pile Wall	1	Excavators	85	85				0.40	81																		
Right Closure Wall: Secant Pile Wall	1	Forklifts	85	85				0.20	78																		
Right Closure Wall: Secant Pile Wall	1	Skid Steer Loaders	80	80				0.40	76																		
Right Closure Wall: Secant Pile Wall	1	Bore/Drill Rigs	84	84				0.20	77																		
Right Closure Wall: Secant Pile Wall	1	Tractors/Loaders/Backhoes	80	80				0.40	76																		
Right Closure Wall: Secant Pile Wall	1	Skid Steer Loaders	80	80				0.40	76																		
Right Closure Wall: Secant Pile Wall	2	Cement and Mortar Mixers	85	88				0.40	84																		
Right Closure Wall: Backfill Concrete	1	Skid Steer Loaders	80	80	88	0.00	5070.00	0.40	76	47	0.00	9785.00	42	0.00	9035.00	42	0.00	7640.00	44	0.00	600.00	66	0.00	760.00	64	0.00	8300.00	43
Right Closure Wall: Backfill Concrete	1	Pumps	77	77				0.50	74																		
Right Closure Wall: Backfill Concrete	1	Bore/Drill Rigs	84	84				0.20	77																		
Right Closure Wall: Backfill Concrete	1	Tractors/Loaders/Backhoes	80	80				0.40	76																		
Right Closure Wall: Backfill Concrete	1	Skid Steer Loaders	80	80				0.40	76																		
Right Closure Wall: Backfill Concrete	3	Cement and Mortar Mixers	85	90				0.40	86																		
Wall Type 2 - Left: Leveling Concrete	1	Skid Steer Loaders	80	80	86	0.00	5070.00	0.40	76	46	0.00	9785.00	40	0.00	9035.00	41	0.00	7640.00	42	0.00	600.00	65	0.00	765.00	62	0.00	8300.00	42
Wall Type 2 - Left: Leveling Concrete	1	Pumps	77	77				0.50	74																		
Wall Type 2 - Left: Leveling Concrete	1	Bore/Drill Rigs	84	84				0.20	77																		
Wall Type 2 - Left: Leveling Concrete	2	Cement and Mortar Mixers	85	88				0.40	84																		
Wall Type 2 - Left: Leveling Concrete	1	Tractors/Loaders/Backhoes	80	80				0.40	76																		
Wall Type 2 - Left: 1 Inch Concrete Wall	2	Surfacing Equipment	76	79	89	0.00	5070.00	0.40	75	49	0.00	9785.00	43	0.00	9035.00	44	0.00	7640.00	45	0.00	600.00	67	0.00	765.00	65	0.00	8300.00	45
Wall Type 2 - Left: 1 Inch Concrete Wall	1	Pumps	77	77				0.50	74																		
Wall Type 2 - Left: 1 Inch Concrete Wall	2	Cranes	88	91				0.16	83																		
Wall Type 2 - Left: 1 Inch Concrete Wall	2	Rough Terrain Forklifts	85	88				0.20	81																		
Wall Type 2 - Left: 1 Inch Concrete Wall	2	Generator Sets	82	85				0.50	82																		
Wall Type 2 - Left: 1 Inch Concrete Wall	1	Bore/Drill Rigs	84	84				0.20	77																		
Wall Type 2 - Left: 1 Inch Concrete Wall	1	Tractors/Loaders/Backhoes	80	80				0.40	76																		
Wall Type 2 - Left: 1 Inch Concrete Wall	1	Skid Steer Loaders	80	80				0.40	76																		
Wall Type 2 - Left: 1 Inch Concrete Wall	1	Cement and Mortar Mixers	85	85				0.40	81																		
Wall Type 2 - Left: 2.5 Inch Concrete Wall	2	Surfacing Equipment	76	79	89	0.00	5070.00	0.40	75	48	0.00	9785.00	43	0.00	9035.00	43	0.00	7640.00	45	0.00	600.00	67	0.00	765.00	65	0.00	8300.00	44
Wall Type 2 - Left: 2.5 Inch Concrete Wall	1	Pumps	77	77				0.50	74																		
Wall Type 2 - Left: 2.5 Inch Concrete Wall	2	Cranes	88	91				0.16	83																		
Wall Type 2 - Left: 2.5 Inch Concrete Wall	2	Rough Terrain Forklifts	85	88				0.20	81																		
Wall Type 2 - Left: 2.5 Inch Concrete Wall	1	Generator Sets	82	82				0.50	79																		
Wall Type 2 - Left: 2.5 Inch Concrete Wall	1	Bore/Drill Rigs	84	84				0.20	77																		
Wall Type 2 - Left: 2.5 Inch Concrete Wall	1	Tractors/Loaders/Backhoes	80	80				0.40	76																		
Wall Type 2 - Left: 2.5 Inch Concrete Wall	1	Skid Steer Loaders	80	80				0.40	76																		
Wall Type 2 - Left: 2.5 Inch Concrete Wall	1	Cement and Mortar Mixers	85	85				0.40	81																		
Wall Type 2 - Left: Concrete Footing	2	Surfacing Equipment	76	79	89	0.00	5070.00	0.40	75	49	0.00	9785.00	43	0.00	9035.00	44	0.00	7640.00	45	0.00	600.00	67	0.00	765.00	65	0.00	8300.00	45
Wall Type 2 - Left: Concrete Footing	1	Pumps	77	77				0.50	74																		
Wall Type 2 - Left: Concrete Footing	2	Cranes	88	91				0.16	83																		
Wall Type 2 - Left: Concrete Footing	2	Rough Terrain Forklifts	85	88				0.20	81																		
Wall Type 2 - Left: Concrete Footing	2	Generator Sets	82	85				0.50	82																		
Wall Type 2 - Left: Concrete Footing	1	Bore/Drill Rigs	84	84				0.20	77																		
Wall Type 2 - Left: Concrete Footing	1	Tractors/Loaders/Backhoes	80	80				0.40	76																		

						Receptor 1 - Irvine Regional Park					Receptor 2 - Residences Along Jamboree Road			Receptor 3 - Oak Canyon Park			Receptor 4 - Lakeview Park Camping Area			Receptor 5 - Sensitive Bird Species South of Dam			Receptor 6 - Sensitive Bird Species North of the Dam			Receptor 7 - Sensitive Bird Species Near Primary Staging Area		
Phase Name	Number per Day	Equipment Type	Typical Noise Level 50 ft from Source, dBA	Noise Level 50 ft Multiple Equipment, dBA	Construction Phase Noise Level, dBA	Hard/Soft	Distance	Utilization	Noise Level with Utilization	Noise Level	Hard/Soft	Distance	Noise Level	Hard/Soft	Distance	Noise Level	Hard/Soft	Distance	Noise Level	Hard/Soft	Distance	Noise Level	Hard/Soft	Distance	Noise Level	Hard/Soft	Distance	Noise Level
Wall Type 2 - Left: Concrete Footing	1	Skid Steer Loaders	80	80				0.40	76																		
Wall Type 2 - Left: Concrete Footing	1	Cement and Mortar Mixers	85	85				0.40	81																		
Wall Type 2 - Left: Backfill	1	Graders	85	85	90	0.00	5070.00	0.40	81	50	0.00	9785.00	44	0.00	9035.00	45	0.00	7640.00	46	0.00	600.00	68	0.00	765.00	66	0.00	8300.00	46
Wall Type 2 - Left: Backfill	1	Excavators	85	85				0.40	81																		
Wall Type 2 - Left: Backfill	2	Rollers	85	88				0.20	81																		
Wall Type 2 - Left: Backfill	5	Off-Highway Trucks	84	91				0.40	87																		
Wall Type 2 - Left: Backfill	1	Off-Highway Trucks	84	84				0.40	80																		
Wall Type 2 - Left: Reinforced Concrete Wall	2	Surfacing Equipment	76	79	89	0.00	5070.00	0.40	75	49	0.00	9785.00	43	0.00	9035.00	44	0.00	7640.00	45	0.00	600.00	67	0.00	765.00	65	0.00	8300.00	45
Wall Type 2 - Left: Reinforced Concrete Wall	1	Pumps	77	77				0.50	74																		
Wall Type 2 - Left: Reinforced Concrete Wall	2	Cranes	88	91				0.16	83																		
Wall Type 2 - Left: Reinforced Concrete Wall	2	Rough Terrain Forklifts	85	88				0.20	81																		
Wall Type 2 - Left: Reinforced Concrete Wall	2	Generator Sets	82	85				0.50	82																		
Wall Type 2 - Left: Reinforced Concrete Wall	1	Bore/Drill Rigs	84	84				0.20	77																		
Wall Type 2 - Left: Reinforced Concrete Wall	1	Tractors/Loaders/Backhoes	80	80				0.40	76																		
Wall Type 2 - Left: Reinforced Concrete Wall	1	Skid Steer Loaders	80	80				0.40	76																		
Wall Type 2 - Left: Reinforced Concrete Wall	1	Cement and Mortar Mixers	85	85				0.40	81																		
Wall Type 2 - Left: Footing Rock Anchors and Backfill	2	Bore/Drill Rigs	84	87	91	0.00	5070.00	0.20	80	51	0.00	9785.00	45	0.00	9035.00	46	0.00	7640.00	47	0.00	600.00	69	0.00	765.00	67	0.00	8300.00	46
Wall Type 2 - Left: Footing Rock Anchors and Backfill	1	Skid Steer Loaders	80	80				0.40	76																		
Wall Type 2 - Left: Footing Rock Anchors and Backfill	1	Forklifts	85	85				0.20	78																		
Wall Type 2 - Left: Footing Rock Anchors and Backfill	1	Graders	85	85				0.40	81																		
Wall Type 2 - Left: Footing Rock Anchors and Backfill	1	Excavators	85	85				0.40	81																		
Wall Type 2 - Left: Footing Rock Anchors and Backfill	2	Rollers	85	88				0.20	81																		
Wall Type 2 - Left: Footing Rock Anchors and Backfill	6	Off-Highway Trucks	84	92				0.40	88																		
Wall Type 2 - Wall Right: Leveling Concrete	2	Surfacing Equipment	76	79	89	0.00	5070.00	0.40	75	49	0.00	9785.00	43	0.00	9035.00	44	0.00	7640.00	45	0.00	600.00	67	0.00	765.00	65	0.00	8300.00	45
Wall Type 2 - Wall Right: Leveling Concrete	1	Pumps	77	77				0.50	74																		
Wall Type 2 - Wall Right: Leveling Concrete	2	Cranes	88	91				0.16	83																		
Wall Type 2 - Wall Right: Leveling Concrete	2	Rough Terrain Forklifts	85	88				0.20	81																		
Wall Type 2 - Wall Right: Leveling Concrete	2	Generator Sets	82	85				0.50	82																		
Wall Type 2 - Wall Right: Leveling Concrete	1	Bore/Drill Rigs	84	84				0.20	77																		
Wall Type 2 - Wall Right: Leveling Concrete	1	Tractors/Loaders/Backhoes	80	80				0.40	76																		
Wall Type 2 - Wall Right: Leveling Concrete	1	Skid Steer Loaders	80	80				0.40	76																		
Wall Type 2 - Wall Right: Leveling Concrete	1	Cement and Mortar Mixers	85	85				0.40	81																		
Wall Type 2 - Wall Right: 1 Inch Wall	2	Surfacing Equipment	76	79	89	0.00	5070.00	0.40	75	49	0.00	9785.00	43	0.00	9035.00	44	0.00	7640.00	45	0.00	600.00	67	0.00	765.00	65	0.00	8300.00	45
Wall Type 2 - Wall Right: 1 Inch Wall	1	Pumps	77	77				0.50	74																		
Wall Type 2 - Wall Right: 1 Inch Wall	2	Cranes	88	91				0.16	83																		
Wall Type 2 - Wall Right: 1 Inch Wall	2	Rough Terrain Forklifts	85	88				0.20	81																		
Wall Type 2 - Wall Right: 1 Inch Wall	2	Generator Sets	82	85				0.50	82																		
Wall Type 2 - Wall Right: 1 Inch Wall	1	Bore/Drill Rigs	84	84				0.20	77																		
Wall Type 2 - Wall Right: 1 Inch Wall	1	Tractors/Loaders/Backhoes	80	80				0.40	76																		
Wall Type 2 - Wall Right: 1 Inch Wall	1	Skid Steer Loaders	80	80				0.40	76																		
Wall Type 2 - Wall Right: 1 Inch Wall	1	Cement and Mortar Mixers	85	85				0.40	81																		
Wall Type 2 - Wall Right: 2.5 Inch Wall	2	Surfacing Equipment	76	79	89	0.00	5070.00	0.40	75	49	0.00	9785.00	43	0.00	9035.00	44	0.00	7640.00	45	0.00	600.00	67	0.00	765.00	65	0.00	8300.00	45
Wall Type 2 - Wall Right: 2.5 Inch Wall	1	Pumps	77	77				0.50	74																		
Wall Type 2 - Wall Right: 2.5 Inch Wall	2	Cranes	88	91				0.16	83																		
Wall Type 2 - Wall Right: 2.5 Inch Wall	2	Rough Terrain Forklifts	85	88				0.20	81																		
Wall Type 2 - Wall Right: 2.5 Inch Wall	2	Generator Sets	82	85				0.50	82																		
Wall Type 2 - Wall Right: 2.5 Inch Wall	1	Bore/Drill Rigs	84	84				0.20	77																		
Wall Type 2 - Wall Right: 2.5 Inch Wall	1	Tractors/Loaders/Backhoes	80	80				0.40	76																		
Wall Type 2 - Wall Right: 2.5 Inch Wall	1	Skid Steer Loaders	80	80				0.40	76																		
Wall Type 2 - Wall Right: 2.5 Inch Wall	1	Cement and Mortar Mixers	85	85				0.40	81																		
Wall Type 2 - Wall Right: Concrete Footing	2	Surfacing Equipment	76	79	89	0.00	5070.00	0.40	75	49	0.00	9785.00	43	0.00	9035.00	44	0.00	7640.00	45	0.00	600.00	67	0.00	765.00	65	0.00	8300.00	45
Wall Type 2 - Wall Right: Concrete Footing	1	Pumps	77	77				0.50	74																		
Wall Type 2 - Wall Right: Concrete Footing	2	Cranes	88	91				0.16	83																		
Wall Type 2 - Wall Right: Concrete Footing	2	Rough Terrain Forklifts	85	88				0.20	81																		
Wall Type 2 - Wall Right: Concrete Footing	2	Generator Sets	82	85				0.50	82																		
Wall Type 2 - Wall Right: Concrete Footing	1	Bore/Drill Rigs	84	84				0.20	77																		
Wall Type 2 - Wall Right: Concrete Footing	1	Tractors/Loaders/Backhoes	80	80				0.40	76																		
Wall Type 2 - Wall Right: Concrete Footing	1	Skid Steer Loaders	80	80				0.40	76																		
Wall Type 2 - Wall Right: Concrete Footing	1	Cement and Mortar Mixers	85	85				0.40	81																		
Wall Type 2 - Wall Right: Backfill	1	Graders	85	85	90	0.00	5070.00	0.40	81	50	0.00	9785.00	44	0.00	9035.00	45	0.00	7640.00	46	0.00	600.00	68	0.00	765.00	66	0.00	8300.00	46
Wall Type 2 - Wall Right: Backfill	1	Excavators	85	85				0.40	81																		
Wall Type 2 - Wall Right: Backfill	2	Rollers	85	88				0.20	81																		
Wall Type 2 - Wall Right: Backfill	6	Off-Highway Trucks	84	92				0.40	88																		
Wall Type 3 - Left: Roller Compacted Concrete	1	Bore/Drill Rigs	84	84	93	0.00	5070.00	0.20	77	53	0.00	9785.00	47	0.00	9035.00	48	0.00	7640.00	49	0.00	970.00	67	0.00	400.00	75	0.00	8300.00	48
Wall Type 3 - Left: Roller Compacted Concrete	3	Pumps	77	82				0.50	79																		
Wall Type 3 - Left: Roller Compacted Concrete	1	Plate Compactors	82	82				0.20	75																		
Wall Type 3 - Left: Roller Compacted Concrete	1	Cranes	88	88				0.16	80																		
Wall Type 3 - Left: Roller Compacted Concrete	4	Generator Sets	82	88				0.50	85																		
Wall Type 3 - Left: Roller Compacted Concrete	3	Tractors/Loaders/Backhoes	80	85				0.40	81																		
Wall Type 3 - Left: Roller Compacted Concrete	3	Pumps	77	82				0.50	79																		
Wall Type 3 - Left: Roller Compacted Concrete	3	Rollers	85	90				0.20	83																		
Wall Type 3 - Left: Roller Compacted Concrete	3	Rubber Tired Dozers	85	90				0.40	86																		
Wall Type 3 - Left: Roller Compacted Concrete	5	Off-Highway Trucks	84	91				0.40	87																		
Wall Type 3 - Left: CVC Facing	2	Surfacing Equipment	76	79	90	0.00	5070.00	0.40	75	50	0.00	9785.00	45	0.00	9035.00	45	0.00	7640.00	47	0.00	970.00	65	0.00	400.00	72	0.00	8300.00	46
Wall Type 3 - Left: CVC Facing	1	Pumps	77	77				0.50	74																		
Wall Type 3 - Left: CVC Facing	2	Cranes	88	91				0.16	83																		
Wall Type 3 - Left: CVC Facing	2	Rough Terrain Forklifts	85	88				0.20	81																		
Wall Type 3 - Left: CVC Facing	2	Generator Sets	82	85				0.50	82																		
Wall Type 3 - Left: CVC Facing	1	Bore/Drill Rigs	84	84				0.20	77																		
Wall Type 3 - Left: CVC Facing	1	Tractors/Loaders/Backhoes	80	80				0.40	76																		
Wall Type 3 - Left: CVC Facing	5	Skid Steer Loaders	80	87				0.40	83																		
Wall Type 3 - Left: CVC Facing	2	Cement and Mortar Mixers	85	88				0.40	84																		
Wall Type 3 - Right: Roller Compacted Concrete	1	Bore/Drill Rigs	84	84	93	0.00	5070.00	0.20	77	53	0.00	9785.00	47	0.00	9035.00	48	0.00	7640.00	49	0.00	970.00	67	0.00	400.00	75	0.00	8300.00	48
Wall Type 3 - Right: Roller Compacted Concrete	3	Pumps	77	82				0.50	79																		
Wall Type 3 - Right: Roller Compacted Concrete	1	Plate Compactors	82	82				0.20	75																		
Wall Type 3 - Right: Roller Compacted Concrete	1	Cranes	88	88				0.16	80																		
Wall Type 3 - Right: Roller Compacted Concrete	4	Generator Sets	82	88				0.50	85																		
Wall Type 3 - Right: Roller Compacted Concrete	3	Tractors/Loaders/Backhoes	80	85				0.40	81																		
Wall Type 3 - Right: Roller Compacted Concrete	3	Pumps	77	82				0.50	79																		
Wall Type 3 - Right: Roller Compacted Concrete	3	Rollers	85	90				0.20	83																		
Wall Type 3 - Right: Roller Compacted Concrete	3	Rubber Tired Dozers	85	90				0.40	86																		
Wall Type 3 - Right: Roller Compacted Concrete	5	Off-Highway Trucks	84	91				0.40	87																		
Wall Type 3 - Right: CVC Facing	2	Surfacing Equipment	76	79	90	0.00	5070.00	0.40	75	50	0.00	9785.00	44	0.00	9035.00	45	0.00	7640.00	46	0.00	970.00	64	0.00	400.00	72	0.00	8300.00	45
Wall Type 3 - Right: CVC Facing	1	Pumps	77	77				0.50	74																		
Wall Type 3 - Right: CVC Facing	2	Cranes	88	91				0.16	83																		
Wall Type 3 - Right: CVC Facing	2	Rough Terrain Forklifts	85	88				0.20	81																		
Wall Type 3 - Right: CVC Facing	2	Generator Sets	82	85				0.50	82																		
Wall Type 3 - Right: CVC Facing	1	Bore/Drill Rigs	84	84				0.20	77																		
Wall Type 3 - Right: CVC Facing	1	Tractors/Loaders/Backhoes	80	80				0.40	76																		
Wall Type 3 - Right: CVC Facing	1	Skid Steer Loaders	80	80				0.40	76																		
Wall Type 3 - Right: CVC Facing	2	Cement and Mortar Mixers	85	88				0.40	84																		
Wall Type 3 - Right: Backfill	1	Graders	85	85	90	0.00	5070.00	0.40	81	50	0.00	9785.00	44	0.00	9035.00	45	0.00	7640.00	46	0.00	970.00	64	0.00	400.00	72	0.00	8300.00	46
Wall Type 3 - Right: Backfill	1	Excavators	85	85				0.40	81																		
Wall Type 3 - Right: Backfill	2	Rollers	85	88				0.20	81																		
Wall Type 3 - Right: Backfill	6	Off-Highway Trucks	84	92				0.40	88																		
Stilling Basin: RCC	1	Bore/Drill Rigs	84	84	93	0.00	5070.00	0.20	77	53	0.00	9785.00	47	0.00	9035.00	48	0.00	7640.00	49	0.00	970.00	67	0.00	400.00	75	0.00	8300.00	48
Stilling Basin: RCC	3	Pumps	77	82				0.50	79																		
Stilling Basin: RCC	1	Plate Compactors	82	82				0.20	75																		
Stilling Basin: RCC	1	Cranes	88	88				0.16	80																		
Stilling Basin: RCC	4	Generator Sets	82	88				0.50	85																		
Stilling Basin: RCC	3	Tractors/Loaders/Backhoes	80	85				0.40	81																		
Stilling Basin: RCC	3	Pumps	77	82				0.50	79																		
Stilling Basin: RCC	3	Rollers	85	90				0.20	83																		
Stilling Basin: RCC	3	Rubber Tired Dozers	85	90				0.40	86																		
Stilling Basin: RCC	5	Off-Highway Trucks	84	91				0.40	87																		
Stilling Basin: Upstream/Downstream CVC Facing	2	Surfacing Equipment	76	79	90	0.00	5070.00	0.40	75	50	0.00	9785.00	44	0.00	9035.00	45	0.00	7640.00	46	0.00	970.00	64	0.00	400.00	72	0.00	8300.00	45
Stilling Basin: Upstream/Downstream CVC Facing	1	Pumps	77	77				0.50	74																		
Stilling Basin: Upstream/Downstream CVC Facing	2	Cranes	88	91				0.16	83																		
Stilling Basin: Upstream/Downstream CVC Facing	2	Rough Terrain Forklifts	85	88				0.20	81																		

						Receptor 1 - Irvine Regional Park					Receptor 2 - Residences Along Jamboree Road			Receptor 3 - Oak Canyon Park			Receptor 4 - Lakeview Park Camping Area			Receptor 5 - Sensitive Bird Species South of Dam			Receptor 6 - Sensitive Bird Species North of the Dam			Receptor 7 - Sensitive Bird Species Near Primary Staging Area		
Phase Name	Number per Day	Equipment Type	Typical Noise Level 50 ft from Source, dBA	Noise Level 50 ft Multiple Equipment, dBA	Construction Phase Noise Level, dBA	Hard/Soft	Distance	Utilization	Noise Level with Utilization	Noise Level	Hard/Soft	Distance	Noise Level	Hard/Soft	Distance	Noise Level	Hard/Soft	Distance	Noise Level	Hard/Soft	Distance	Noise Level	Hard/Soft	Distance	Noise Level	Hard/Soft	Distance	Noise Level
Stilling Basin: Upstream/Downstream CVC Facing	2	Generator Sets	82	85				0.50	82																		
Stilling Basin: Upstream/Downstream CVC Facing	1	Bore/Drill Rigs	84	84				0.20	77																		
Stilling Basin: Upstream/Downstream CVC Facing	1	Tractors/Loaders/Backhoes	80	80				0.40	76																		
Stilling Basin: Upstream/Downstream CVC Facing	1	Skid Steer Loaders	80	80				0.40	76																		
Stilling Basin: Upstream/Downstream CVC Facing	2	Cement and Mortar Mixers	85	88				0.40	84																		
Stilling Basin: Basin Steps	2	Surfacing Equipment	76	79	90	0.00	5070.00	0.40	75	50	0.00	9785.00	44	0.00	9035.00	45	0.00	7640.00	46	0.00	970.00	64	0.00	400.00	72	0.00	8300.00	45
Stilling Basin: Basin Steps	1	Pumps	77	77				0.50	74																		
Stilling Basin: Basin Steps	2	Cranes	88	91				0.16	83																		
Stilling Basin: Basin Steps	2	Rough Terrain Forklifts	85	88				0.20	81																		
Stilling Basin: Basin Steps	2	Generator Sets	82	85				0.50	82																		
Stilling Basin: Basin Steps	1	Bore/Drill Rigs	84	84				0.20	77																		
Stilling Basin: Basin Steps	1	Tractors/Loaders/Backhoes	80	80				0.40	76																		
Stilling Basin: Basin Steps	1	Skid Steer Loaders	80	80				0.40	76																		
Stilling Basin: Basin Steps	2	Cement and Mortar Mixers	85	88				0.40	84																		
Stilling Basin: Chute Blocks	2	Surfacing Equipment	76	79	90	0.00	5070.00	0.40	75	50	0.00	9785.00	44	0.00	9035.00	45	0.00	7640.00	46	0.00	970.00	64	0.00	400.00	72	0.00	8300.00	45
Stilling Basin: Chute Blocks	1	Pumps	77	77				0.50	74																		
Stilling Basin: Chute Blocks	2	Cranes	88	91				0.16	83																		
Stilling Basin: Chute Blocks	2	Rough Terrain Forklifts	85	88				0.20	81																		
Stilling Basin: Chute Blocks	2	Generator Sets	82	85				0.50	82																		
Stilling Basin: Chute Blocks	1	Bore/Drill Rigs	84	84				0.20	77																		
Stilling Basin: Chute Blocks	1	Tractors/Loaders/Backhoes	80	80				0.40	76																		
Stilling Basin: Chute Blocks	1	Skid Steer Loaders	80	80				0.40	76																		
Stilling Basin: Chute Blocks	2	Cement and Mortar Mixers	85	88				0.40	84																		
Stilling Basin: Dentated Sill	2	Surfacing Equipment	76	79	90	0.00	5070.00	0.40	75	50	0.00	9785.00	44	0.00	9035.00	45	0.00	7640.00	46	0.00	970.00	64	0.00	400.00	72	0.00	8300.00	45
Stilling Basin: Dentated Sill	1	Pumps	77	77				0.50	74																		
Stilling Basin: Dentated Sill	2	Cranes	88	91				0.16	83																		
Stilling Basin: Dentated Sill	2	Rough Terrain Forklifts	85	88				0.20	81																		
Stilling Basin: Dentated Sill	2	Generator Sets	82	85				0.50	82																		
Stilling Basin: Dentated Sill	1	Bore/Drill Rigs	84	84				0.20	77																		
Stilling Basin: Dentated Sill	1	Tractors/Loaders/Backhoes	80	80				0.40	76																		
Stilling Basin: Dentated Sill	1	Skid Steer Loaders	80	80				0.40	76																		
Stilling Basin: Dentated Sill	2	Cement and Mortar Mixers	85	88				0.40	84																		
Spillway Slab Construction: RCC Foundation Support Block	1	Bore/Drill Rigs	84	84	93	0.00	5070.00	0.20	77	53	0.00	9785.00	47	0.00	9035.00	48	0.00	7640.00	49	0.00	800.00	69	0.00	600.00	71	0.00	8300.00	48
Spillway Slab Construction: RCC Foundation Support Block	6	Pumps	77	85				0.50	82																		
Spillway Slab Construction: RCC Foundation Support Block	1	Plate Compactors	82	82				0.20	75																		
Spillway Slab Construction: RCC Foundation Support Block	1	Cranes	88	88				0.16	80																		
Spillway Slab Construction: RCC Foundation Support Block	4	Generator Sets	82	88				0.50	85																		
Spillway Slab Construction: RCC Foundation Support Block	3	Tractors/Loaders/Backhoes	80	85				0.40	81																		
Spillway Slab Construction: RCC Foundation Support Block	3	Rollers	85	90				0.20	83																		
Spillway Slab Construction: RCC Foundation Support Block	3	Rubber Tired Dozers	85	90				0.40	86																		
Spillway Slab Construction: RCC Foundation Support Block	5	Off-Highway Trucks	84	91				0.40	87																		
Spillway Slab Construction: Spillway Chute Slab	2	Surfacing Equipment	76	79	90	0.00	5070.00	0.40	75	50	0.00	9785.00	44	0.00	9035.00	45	0.00	7640.00	47	0.00	800.00	66	0.00	600.00	69	0.00	8300.00	46
Spillway Slab Construction: Spillway Chute Slab	1	Pumps	77	77				0.50	74																		
Spillway Slab Construction: Spillway Chute Slab	2	Cranes	88	91				0.16	83																		
Spillway Slab Construction: Spillway Chute Slab	2	Rough Terrain Forklifts	85	88				0.20	81																		
Spillway Slab Construction: Spillway Chute Slab	2	Generator Sets	82	85				0.50	82																		
Spillway Slab Construction: Spillway Chute Slab	1	Bore/Drill Rigs	84	84				0.20	77																		
Spillway Slab Construction: Spillway Chute Slab	1	Tractors/Loaders/Backhoes	80	80				0.40	76																		
Spillway Slab Construction: Spillway Chute Slab	1	Skid Steer Loaders	80	80				0.40	76																		
Spillway Slab Construction: Spillway Chute Slab	3	Cement and Mortar Mixers	85	90				0.40	86																		
Spillway Slab Construction: Stilling Basin Slab	2	Surfacing Equipment	76	79	90	0.00	5070.00	0.40	75	50	0.00	9785.00	44	0.00	9035.00	45	0.00	7640.00	47	0.00	800.00	66	0.00	600.00	69	0.00	8300.00	46
Spillway Slab Construction: Stilling Basin Slab	1	Pumps	77	77				0.50	74																		
Spillway Slab Construction: Stilling Basin Slab	2	Cranes	88	91				0.16	83																		
Spillway Slab Construction: Stilling Basin Slab	2	Rough Terrain Forklifts	85	88				0.20	81																		
Spillway Slab Construction: Stilling Basin Slab	2	Generator Sets	82	85				0.50	82																		
Spillway Slab Construction: Stilling Basin Slab	1	Bore/Drill Rigs	84	84				0.20	77																		
Spillway Slab Construction: Stilling Basin Slab	1	Tractors/Loaders/Backhoes	80	80				0.40	76																		
Spillway Slab Construction: Stilling Basin Slab	1	Skid Steer Loaders	80	80				0.40	76																		
Spillway Slab Construction: Stilling Basin Slab	3	Cement and Mortar Mixers	85	90				0.40	86																		
Spillway Slab Construction: Zone B	2	Bore/Drill Rigs	84	87	83	0.00	5070.00	0.20	80	43	0.00	9785.00	37	0.00	9035.00	38	0.00	7640.00	39	0.00	800.00	59	0.00	600.00	62	0.00	8300.00	39
Spillway Slab Construction: Zone B	1	Skid Steer Loaders	80	80				0.40	76																		
Spillway Slab Construction: Zone B	1	Forklifts	85	85				0.20	78																		
Spillway Slab Construction: Zone C	2	Bore/Drill Rigs	84	87	83	0.00	5070.00	0.20	80	43	0.00	9785.00	37	0.00	9035.00	38	0.00	7640.00	39	0.00	800.00	59	0.00	600.00	62	0.00	8300.00	39
Spillway Slab Construction: Zone C	1	Skid Steer Loaders	80	80				0.40	76																		
Spillway Slab Construction: Zone C	1	Forklifts	85	85				0.20	78																		
Spillway Drains and Cleanouts: Wall Drains & Cleanouts	1	Excavators	85	85	82	0.00	5070.00	0.40	81	42	0.00	9785.00	36	0.00	9035.00	37	0.00	7640.00	39	0.00	800.00	58	0.00	600.00	61	0.00	8300.00	38
Spillway Drains and Cleanouts: Wall Drains & Cleanouts	1	Skid Steer Loaders	80	80				0.40	76																		
Spillway Drains and Cleanouts: Longitudinal Drains & Cleanouts	1	Excavators	85	85	82	0.00	5070.00	0.40	81	42	0.00	9785.00	36	0.00	9035.00	37	0.00	7640.00	39	0.00	800.00	58	0.00	600.00	61	0.00	8300.00	38
Spillway Drains and Cleanouts: Longitudinal Drains & Cleanouts	1	Skid Steer Loaders	80	80				0.40	76																		
Spillway Drains and Cleanouts: Transverse Drains & Cleanouts	1	Excavators	85	85	82	0.00	5070.00	0.40	81	42	0.00	9785.00	36	0.00	9035.00	37	0.00	7640.00	39	0.00	800.00	58	0.00	600.00	61	0.00	8300.00	38
Spillway Drains and Cleanouts: Transverse Drains & Cleanouts	1	Skid Steer Loaders	80	80				0.40	76																		
Spillway Drains and Cleanouts: Drain Gravel	1	Tractors/Loaders/Backhoes	80	80	84	0.00	5070.00	0.40	76	44	0.00	9785.00	38	0.00	9035.00	39	0.00	7640.00	41	0.00	800.00	60	0.00	600.00	63	0.00	8300.00	40
Spillway Drains and Cleanouts: Drain Gravel	1	Rubber Tired Dozers	85	85				0.40	81																		
Spillway Drains and Cleanouts: Drain Gravel	1	Off-Highway Trucks	84	84				0.40	80																		
Spillway Drains and Cleanouts: Filter Sand	1	Tractors/Loaders/Backhoes	80	80	84	0.00	5070.00	0.40	76	44	0.00	9785.00	38	0.00	9035.00	39	0.00	7640.00	41	0.00	800.00	60	0.00	580.00	63	0.00	8300.00	40
Spillway Drains and Cleanouts: Filter Sand	1	Rubber Tired Dozers	85	85				0.40	81																		
Spillway Drains and Cleanouts: Filter Sand	1	Off-Highway Trucks	84	84				0.40	80																		
Surface Ditch from Landfill: Excavation	1	Excavators	85	85	82	0.00	5070.00	0.40	81	42	0.00	9785.00	36	0.00	9035.00	37	0.00	7640.00	39	0.00	870.00	57	0.00	580.00	61	0.00	8300.00	38
Surface Ditch from Landfill: Excavation	1	Skid Steer Loaders	80	80				0.40	76																		
Surface Ditch from Landfill: Drop Structures	1	Excavators	85	85	82	0.00	5070.00	0.40	81	42	0.00	9785.00	36	0.00	9035.00	37	0.00	7640.00	39	0.00	870.00	57	0.00	580.00	61	0.00	8300.00	38
Surface Ditch from Landfill: Drop Structures	1	Skid Steer Loaders	80	80				0.40	76																		
Surface Ditch from Landfill: Ditch Lining	1	Excavators	85	85	86	0.00	5070.00	0.40	81	46	0.00	9785.00	40	0.00	9035.00	41	0.00	7640.00	42	0.00	870.00	61	0.00	580.00	64	0.00	8300.00	41
Surface Ditch from Landfill: Ditch Lining	1	Skid Steer Loaders	80	80				0.40	76																		
Surface Ditch from Landfill: Ditch Lining	1	Cranes	88	88				0.16	80																		
Surface Ditch from Landfill: Ditch Lining	1	Tractors/Loaders/Backhoes	80	80				0.40	76																		
Surface Ditch from Landfill: Ditch Lining	1	Forklifts	85	85				0.20	78																		
Downstream Apron: Concrete Apron	1	Forklifts	85	85	88	0.00	5070.00	0.20	78	47	0.00	9785.00	42	0.00	9035.00	42	0.00	7640.00	44	0.00	1300.00	59	0.00	150.00	78	0.00	8300.00	43
Downstream Apron: Concrete Apron	1	Generator Sets	82	82				0.50	79																		
Downstream Apron: Concrete Apron	1	Skid Steer Loaders	80	80				0.40	76																		
Downstream Apron: Concrete Apron	1	Tractors/Loaders/Backhoes	80	80				0.40	76																		
Downstream Apron: Concrete Apron	1	Skid Steer Loaders	80	80				0.40	76																		
Downstream Apron: Concrete Apron	1	Cement and Mortar Mixers	85	85				0.40	81																		
Downstream Apron: Concrete Apron	1	Cranes	88	88				0.16	80																		
Downstream Apron: Concrete Apron	1	Pumps	77	77				0.50	74																		
Downstream Apron: Concrete Apron	1	Bore/Drill Rigs	84	84				0.20	77																		
Downstream Apron: Zone C	2	Bore/Drill Rigs	84	87	83	0.00	5070.00	0.20	80	43	0.00	9785.00	37	0.00	9035.00	38	0.00	7640.00	39	0.00	1300.00	55	0.00	150.00	74	0.00	8300.00	39
Downstream Apron: Zone C	1	Skid Steer Loaders	80	80				0.40	76																		
Downstream Apron: Zone C	1	Forklifts	85	85				0.20	78																		
Downstream Apron: Riprap Apron	1	Excavators	85	85	86	0.00	5070.00	0.40	81	46	0.00	9785.00	40	0.00	9035.00	41	0.00	7640.00	42	0.00	1300.00	57	0.00	150.00	76	0.00	8300.00	41
Downstream Apron: Riprap Apron	1	Tractors/Loaders/Backhoes	80	80				0.40	76																		
Downstream Apron: Riprap Apron	2	Dumpers/Tenders	84	87				0.40	83																		
Downstream Apron: Riprap Bedding	1	Excavators	85	85	86	0.00	5070.00	0.40	81	46	0.00	9785.00	40	0.00	9035.00	41	0.00	7640.00	42	0.00	1300.00	57	0.00	150.00	76	0.00	8300.00	41
Downstream Apron: Riprap Bedding	1	Tractors/Loaders/Backhoes	80	80				0.40	76																		
Downstream Apron: Riprap Bedding	2	Dumpers/Tenders	84	87				0.40	83																		
Furnish and Install Electrical / Controls and Instrumentation	1	Forklifts	85	85	84	0.00	5070.00	0.20	78	43	0.00	9785.00	38	0.00	9035.00	38	0.00	7640.00	40	0.00	620.00	62	0.00	715.00	61	0.00	8300.00	39
Furnish and Install Electrical / Controls and Instrumentation	1	Skid Steer Loaders	80	80				0.40	76																		
Furnish and Install Electrical / Controls and Instrumentation	1	Excavators	85	85				0.40	81																		
Furnish and Install Aeration System	1	Forklifts	85	85	84	0.00	5070.00	0.20	78	43	0.00	9785.00	38	0.00	9035.00	38	0.00	7640.00	40	0.00	320.00	67	0.00	1330.00	55	0.00	8300.00	39
Furnish and Install Aeration System	1	Skid Steer Loaders	80	80				0.40	76																		
Furnish and Install Aeration System	1	Excavators	85	85				0.40	81																		
Part 1 Furnish and Install Erosion Control Measures	1	Skid Steer Loaders	80	80	82	0.00	5070.00	0.40	76	42	0.00	9785.00	36	0.00	9035.00	37	0.00	7640.00	39	0.00	775.00	58	0.00	600.00	61	0.00	8300.00	38
Part 1 Furnish and Install Erosion Control Measures	1	Excavators	85	85				0.40	81																		
Part 2 Furnish and Install Erosion Control Measures	1	Skid Steer Loaders	80	80	82	0.00	5070.00	0.40	76	42	0.00	9785.00	36	0.00	9035.00	37	0.00	7640.00	39	0.00	775.00	58	0.00	600.00	61	0.00	8300.00	38
Part 2 Furnish and Install Erosion Control Measures	1	Excavators	85	85				0.40	81																		
Part 3 Furnish and Install Erosion Control Measures	1	Skid Steer Loaders	80	80	82	0.00	5070.00	0.40	76	42	0.00	9785.00	36	0.00	9035.00	37	0.00	7640.00	39	0.00	775.00	58	0.00	600.00	61	0.00	8300.00	38
Part 3 Furnish and Install Erosion Control Measures	1	Excavators	85	85				0.40	81																		
Embankment Mitigation	4	Rubber Tired Dozers	85	91	92	0.00	5070.00	0.40	87	52	0.00	9785.00	46	0.00	9035.00	47	0.00	7640.00	49	0.00	775.00	68	0.00	600.00	71	0.00	8300.00	48
Embankment Mitigation	2	Excavators	85	88				0.40	84																		
Embankment Mitigation	2	Graders	85	88				0.40	84																		

						Receptor 1 - Irvine Regional Park					Receptor 2 - Residences Along Jamboree Road			Receptor 3 - Oak Canyon Park			Receptor 4 - Lakeview Park Camping Area			Receptor 5 - Sensitive Bird Species South of Dam			Receptor 6 - Sensitive Bird Species North of the Dam			Receptor 7 - Sensitive Bird Species Near Primary Staging Area		
Phase Name	Number per Day	Equipment Type	Typical Noise Level 50 ft from Source, dBA	Noise Level 50 ft Multiple Equipment, dBA	Construction Phase Noise Level, dBA	Hard/Soft	Distance	Utilization	Noise Level with Utilization	Noise Level	Hard/Soft	Distance	Noise Level	Hard/Soft	Distance	Noise Level	Hard/Soft	Distance	Noise Level	Hard/Soft	Distance	Noise Level	Hard/Soft	Distance	Noise Level	Hard/Soft	Distance	Noise Level
Embankment Mitigation	2	Tractors/Loaders/Backhoes	80	83				0.40	79																		
Embankment Mitigation	4	Dumpers/Tenders	84	90				0.40	86																		
Embankment Mitigation	3	Plate Compactors	82	87				0.40	83																		
Note: A new phase was added to the Project. This phase includes the mitigated placement of the embankment. The type and amount of construction equipment that would be utilized during this new phase was obtained from the Applicant and the Project team.																											