D. Cumulative Effects

D.1 Introduction

Preparation of a cumulative impact analysis is required under both NEPA and CEQA. NEPA identifies three types of potential impacts: direct, indirect, and cumulative. "Cumulative impact" is the impact on the environment that results from the incremental impact of the proposed action (Project) when considered with other past, present, and reasonably foreseeable future actions regardless of which agency (federal or non-federal) or person undertakes such other actions.

Cumulative effects can result from individually minor but collectively significant actions taking place over a period (40 CFR §1508.7). Under NEPA, both context and intensity are considered. Among other considerations when considering intensity is "[w]hether the action is related to other actions with individually minor but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts" (40 CFR §1508.27[b][7]). Additionally, the Council on Environmental Quality (CEQ) recommends that agencies "look for present effects of past actions that are, in the judgment of the agency, relevant and useful because they have a significant cause-and-effect relationship with the direct and indirect effects of the proposal for agency action and its alternatives."

Under the CEQA Guidelines, "a cumulative impact consists of an impact which is created as a result of the combination of the project evaluated in the EIR together with other projects causing related impacts" (14 CCR §15130[a][1]). An EIR must discuss cumulative impacts if the incremental effect of a project, combined with the effects of other projects is "cumulatively considerable" (14 CCR §15130[a]). Such incremental effects are to be "viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects" (14 CCR §15164[b][1]). Together, these projects comprise the cumulative scenario which forms the basis of the cumulative impact analysis. Both the severity of impacts and the likelihood of their occurrence are to be reflected in the cumulative discussion, "but the discussion need not provide as great detail as is provided for the effects attributable to the project alone. The discussion of cumulative impacts shall be guided by standards of practicality and reasonableness, and shall focus on the cumulative impact to which the identified other projects contribute rather than the attributes of other projects which do not contribute to the cumulative impact" (14 CCR §15130[b]). This includes the requirement that an environmental impact report (EIR) take into account all "past, present, and reasonably foreseeable future projects" (CEQA Guidelines §§15355[b], 15130[b][1][A]).

The cumulative analysis must be in sufficient detail to be useful to the decision maker in deciding whether, or how, to alter a project to lessen cumulative impacts. Most of the projects listed in the cumulative projects table below (Table D-1) have been, are, or will be required to undergo their own independent environmental review under CEQA, NEPA, or both. Any contribution from the Project to the overall cumulative impact that is cumulatively considerable (i.e., has a significant incremental effect) would be required to be reduced, avoided, or minimized through the application and implementation of mitigation measures. The net effect of these mitigation measures is assumed to be a general lessening of the potential for a contribution to cumulative impacts. The key consideration is whether the remaining physical change or effect on the environment represents an adverse environmental impact.

D.2 Methodology

The list of cumulative projects provided in Table D-1 and shown in Figure D-1 includes projects completed, in the process of construction, or currently under review within a geographic area sufficiently large enough to provide a reasonable basis for evaluating cumulative impacts. Past, current, and future actions are discussed in Section D.3, if they are closely related in either time or location to the Project. The area over which the cumulative scenario is evaluated may vary by resource, because the nature and range of potential effects vary by resource (e.g., air quality impacts tend to disperse over a large area or region while biological impacts are typically more location specific). This spatial area is identified as the geographic scope for the analysis of cumulative impacts related to a particular resource.

The analysis of cumulative effects considers a number of variables including geographic (spatial) limits, time (temporal) limits, and the characteristics of the resource being evaluated. The geographic scope of the analysis is based on the nature of the geography surrounding the Project and the characteristics and properties of each resource and the region to which they apply. In addition, each project in a region will have its own implementation schedule, which may or may not coincide or overlap with the Project's schedule. This is a consideration for short-term impacts from the Project. However, in order to reflect the greatest potential for combined impacts, the cumulative analysis assumes that all projects in the cumulative scenario are constructed or operating during the construction and operating lifetime of the Project.

D.3 Applicable Cumulative Projects

Existing and future projects identified with a potentially cumulative impact were under the jurisdiction of the USDA Forest Service, Palmdale Water District (PWD), California Department of Transportation, County of Los Angeles, and the City of Palmdale. Table D-1 contains a full list of applicable cumulative projects and Figure D-1 shows the location of these projects relative to the Project. For each cumulative project, the following information is listed in Table D-1: the map identification number, responsible agency, project name, location, status, description, timeframe and distance from the Project. A few projects have been highlighted below the table to provide greater detail on the cumulative scenario.

Table D-1. Cumulative Project List

Map ID #	Responsible Agency	Project Name	Location	Status	Description	Timeframe	Distance from Project (miles)
Federal							
1	USDA Forest Service	Williamson Rock and Pacific Crest Trail	Near the confluence of Cooper Canyon and Little Rock Creek, partially within the Pleasant View Ridge Wilderness, north of Highway 2.	Public Comment Period on the Notice of Intent Completed	Proposed activities include seasonal and long term closures, and construction of a trail, trail bridge, barriers, and minor improvements to staging areas and trailheads.	Future Project	11
State							
2	CalTrans	High Desert Corridor	A new multimodal link between SR-18 in San Bernardino County and SR-14 in Los Angeles County connecting Palmdale, Lancaster, Adelanto, Victorville, Hesperia, and Apple Valley.	Public Review of Draft EIR/EIS	The California Department of Transportation is proposing to construct a new freeway/expressway connecting the City of Palmdale in Los Angeles County with the town of Apple Valley in San Bernardino County. The proposed freeway/expressway is approximately 63 miles long.	Future Project	7
Regional							
3	Palmdale Water District	Little Rock Creek Groundwater Recharge and Recovery Project	Upper Little Rock Creek; Near the California Aqueduct and travels generally in a northerly direction.		This groundwater recharge project utilizes existing active natural channel system and a series of shallow recharge basins in the adjacent floodplain, to recharge the groundwater.	Present	2
4	Palmdale Water District	Littlerock Dam	Little Rock Creek in Los Angeles County, CA, located 5 miles south of Palmdale.	Complete	The construction of Littlerock Dam & Reservoir was completed in 1924 with a water storage capacity of 4,200-acre feet. In 1994, the downstream side of the dam was reinforced and the spillway was raised to increase the storage capacity of the reservoir to 3,500 acre feet, or 1.1 billion gallons, of water.	Past Project	0
Local							
5	County of Los Angeles	Project Number: 89-003-(5)	Southwest corner of Pearblossom Highway and 47th Street East, Palmdale	Application Submittal Review	A mixed use development consisting of single-family and multi-family residences, commercial buildings, parks and recreation, a fire station, senior apartment housing, and a school site.	Future Project	4
6	City of Palmdale	Vulcan Materials Company: Conditional Use Permit (CUP) 08-01	The existing building and facilities are addressed as 6851 East Avenue T.	Approved	A request to permit and modify the existing surface mining operation.	Current Project	4

Table D-1. Cumulative Project List

Map ID #	Responsible Agency	Project Name	Location	Status	Description	Timeframe	Distance from Project (miles)
7	City of Palmdale	JV Aggregate Processing, LLC: CUP 08-08 Time Extension (TE)	The proposed mining site is located at the northeast corner of 75th Street East and the alignment of Avenue R (approximately 1,700 feet south of Palmdale Boulevard).	Approved	A two-year discretionary time extension to previously approved CUP 08-08.	Current Project	6
8	City of Palmdale	Robertson's Ready Mix, Ltd: CUP 05-22 and Reclamation Plan 90-1 Minor Modification (MM)	The mining site is located at the southeast corner of 75th Street East and the alignment of Avenue R (approximately 2,700 feet south of Palmdale Boulevard).	Approved	A request to modify the existing surface mining operation.	Current Project	6
9	City of Palmdale	Mr. Jack Barbacovi (Applicant): CUP 14-007	At the southeast corner of Avenue T and 70th Street East (7005 E. Pearblossom Highway)	Public Hearing	A request to establish a motorcross track on 55 acres of previously mined land.	Current Project	3
10	City of Palmdale	Holliday Rock Company, Inc: CUP 13-020	The mining site is located on the north side of Avenue T and south of the alignment of Avenue S between 70 Street East and the alignment of 80th Street East. The existing mining operation is comprised of four separate parcels in a flag lot shape, transected by Union Pacific Rail Road tracks. The existing building and facilities are addressed as 7311 East Avenue T.	Public Hearing	A request to permit and modify the existing surface mining operation.	Current Project	4
11	City of Palmdale	Holliday Rock Co., Inc: CUP 96-4 MM	Located on the north side of Avenue T east of 77th Street East within the Holliday Rock Company, Inc. surface mining facility.	Approved	A proposal to establish and operate a hot mix asphalt plant on approximately 2.5 acres zoned QR (Quarry and Reclamation).	Current Project	4

Source: Aspen Environmental Group, 2005. County of Los Angeles, 2014. California Department of Transportation, 2014. Palmdale Water District, 2014. USDA Forest Service, 2014. City of Palmdale, 2000; 2008; 2010; 2012; 2014a; 2014b.

D.3.1 Past Projects

D.3.1.1 Littlerock Dam (Palmdale Water District)

The effects of past actions warrant consideration in the analysis of the cumulative effects of a proposal for agency action. CEQ interprets NEPA and CEQ's NEPA regulations on cumulative effects as requiring analysis and a concise description of the identifiable present effects of past actions to the extent that they are relevant and useful in analyzing whether the reasonably foreseeable effects of the agency proposal for action and its alternatives may have a continuing, additive, and significant relationship to those effects. However, NEPA analyses are not required to routinely list and separately analyze all individual past actions within the cumulative effects analysis area. Only those past actions that are relevant and useful because of their cause and effect relationship with the resources of concern should be included. Generally, an adequate cumulative effects analysis can be focused on the aggregate effects of past actions without delving into the historical details of individual past actions.

For this analysis, the following is a general description of the past actions that could combine with the Project to result in cumulative effects. Littlerock Reservoir is approximately 100 acres in size, and is located on Little Rock Creek. The Reservoir is contained by Littlerock Dam, which was originally constructed in 1924 to control flooding and to provide a water source to local communities. The Dam underwent a strengthening project in 1993 and 1994, which included a new spillway to increase the capacity of the Reservoir and to improve public safety (i.e., from a reduction in water depth flowing over the spillway).

Prior to construction of the Dam, Little Rock Creek was likely in a state of dynamic sediment equilibrium (Aspen Environmental Group, 2005). The Dam altered the hydraulics of the creek such that it could no longer transport sediment through the Reservoir. Over time, sediment deposition in the Reservoir contributes to a substantial reduction in its water storage capacity, which has necessitated the Project.

D.3.2 Current Projects

D.3.2.1 Vulcan Materials Company: CUP 08-01 (City of Palmdale)

A Conditional Use Permit (CUP) 08-01 was requested to modify the existing Vulcan Materials Company surface mining operation. The modifications consist of the following items:

- Obtain a CUP issued by the City of Palmdale for compliance with the requirements of Section 22.02.C. and Article 72, Quarry and Reclamation (Zone QR) of the Palmdale Zoning Ordinance;
- Add 38.66 acres for a total of 664.76 acres of mining and operations area;
- Add a future rail load-out and rail spur for transport of material;
- Allow 24-hour operations for the facility as a part of the CUP;
- Add a future access tunnel with a conveyor to transport material under Avenue T;
- Permit the future upgrade, modernization and/or replacement of an existing concrete batch plant and lightweight concrete batch plant with a total production of 300,000 cy per year; and
- Revise Reclamation Plan 88-1 under administrative approval to reflect the requested modifications and to comply with the current requirements of the Surface Mining and Reclamation Act (SMARA).

D.3.2.2 JV Aggregate Processing, LLC: CUP 08-08 Time Extension (TE) (City of Palmdale)

JV Aggregate requested a two-year time extension to previously approved CUP 08-08. The original request consists of establishing a new sand and gravel surface mining operation on 27.5 acres. It includes the following: a) hours of operation up to 24 hours per day, Monday through Saturday; b) annual production of 240,000 cubic yards of material, c) processing and crushing of recycled concrete and asphalt, and d) ongoing processing and crushing of recycled concrete and asphalt upon completion of mining activities and any required reclamation.

D.3.2.3 Robertson's Ready Mix, Ltd: CUP 05-22 and Reclamation Plan (RP) 90-1 Minor Modification (MM) (City of Palmdale)

Robertson's Ready Mix has proposed changes to the existing surface mining operation. The modifications consist of the following:

- Obtain a CUP issued by the City of Palmdale for compliance with the requirements of Section 22.02.C. and Article 72, Quarry and Reclamation (QR) of the Palmdale Zoning Ordinance;
- Add 44.5 acres of mining area for a total of 324 acres of mining and operations area;
- Add a future concrete products plant;
- Add a future asphalt concrete plant;
- Add a future lime marination plant;
- Add a future recycling plant; and
- Revise the Reclamation Plan under administrative approval to reflect the requested modifications and to comply with the current requirements of the SMARA.

D.3.2.4 CUP 14-007 (City of Palmdale)

CUP 14-007 proposes to establish a motocross track on 55 acres of mined land within the existing quarry operated by Granite Construction Company. The existing mining site extends from Avenue T on the north to Pearblossom Highway to the south and is addressed as 7005 Pearblossom Highway. This Project would be located within 55 acres already mined at a depth of approximate 70 feet. Operation of the motocross track would occur between the hours of 8:00 a.m. to 7:00 p.m.

D.3.2.5 CUP 13-020 (City of Palmdale)

CUP 13-020 requests approval for modifications to the existing Antelope Valley Quarry and Plant surface mining operation (CA Mine ID #91-19-0002). The changes consist of the following items:

- Obtain a CUP issued by the City of Palmdale for compliance with the requirements of Section 22.02.C. and Article 72, Quarry and Reclamation (Zone QR) of the Palmdale Zoning Ordinance;
- Mining, crushing, screening, sorting, loading, washing, weighing and transporting rock, sand, and gravel in accordance with the allowances and limits of the Antelope Valley Air Quality Management District (AVAQMD) operating permits;
- Production of ready mix concrete and hot mix asphalt in accordance with the allowance and limits of the AVAQMD operating permits;
- Receipt and production of recycled construction demolition materials (concrete, asphalt and similar materials);

- Permit 24 hour operation of the above listed uses and activities;
- Storage of diesel and gasoline in accordance with the allowances and limits of the AVAQMD operating permits; and
- Revise Reclamation Plan 89-1 under administrative approval to reflect the requested modifications and to comply with the current requirements of the SMARA.

D.3.2.6 Holliday Rock Co., Inc.: CUP 96-4 MM (City of Palmdale)

CUP 96-4 Major Modification establishes the operation of a hot mix asphalt plant on approximately 2.5 acres zoned QR (Quarry and Reclamation), which would be sited within the existing 313.24-acre Holliday Rock Company, Inc. sand and gravel surface mining operation located at 7747 East Avenue T.

D.3.3 Future Projects

D.3.3.1 High Desert Corridor Project (California Department of Transportation)

The High Desert Corridor Project would entail construction of a new multimodal link between SR-18 in San Bernardino County and SR-14 in Los Angeles County. It would connect Palmdale, Lancaster, Adelanto, Victorville, Hesperia, and Apple Valley. The project would be implemented in three segments: the Antelope Valley segment, the High Desert segment, and the Victor Valley segment. The two segments nearest to the Project are the Antelope Valley Segment and the High Desert Segment.

The Antelope Valley Segment would stretch from SR-14 to 100th Street East, parallel with and near Avenue P-8, in Palmdale. This 10-mile-long segment would accommodate ultimate expansion to four lanes in each direction plus a high-speed passenger rail line. New local interchanges are currently proposed at 20th Street East, 30th Street East, 50th Street East, and 90th Street East. Viaduct structures would be constructed between Division Street and 10th Street East and over Little Rock Wash. There would be several required grade separations at freeway crossings. New frontage roads would be built to maintain local accessibility where street closures are required. The existing partial interchange at SR-14/Rancho Vista Boulevard would be closed, and a full interchange would be constructed at 10th Street West to provide better weaving distance with the direct connector ramps of the SR-14/High Desert Corridor interchange.

The High Desert Segment would begin at 100th Street East and continue to US 395. This 26-mile-long segment would extend from Palmdale to Adelanto, running in a west-east direction parallel and south of Palmdale Boulevard. The freeway would be three lanes in each direction, with ROW acquired to support an ultimate facility of four lanes in each direction plus a high-speed passenger rail line. New local interchanges are currently proposed at Longview Road, 170th Street, 210th Street, and 240th Street in Los Angeles County, and Oasis Road, Sheep Creek Road, and Caughlin Road in San Bernardino County. Freeway grade separations (i.e., overcrossings or undercrossings) are also proposed. Two of the build alternatives would include constructing this segment as a toll facility.

Recognizing the High Desert Corridor as a multipurpose corridor with potential to connect to the expanding regional rail system, the Project may include a center-median High Speed Rail (HSR) feeder service between Palmdale and Victorville. This feeder service would connect the XpressWest System (a planned HSR service from Victorville to Las Vegas) with Metrolink at the Palmdale Transportation Center (39000 Clock Tower Plaza Drive East) and a planned future California HSR stop at Palmdale.

D.3.3.2 Multi-Use Development (County of Los Angeles: Project 89-003-[5])

This project consists of a mixed-use district development that includes single-family and multi-family residences, commercial buildings, parks and recreation, a fire station, senior apartment housing, and a school site. Specifically, the project would create 32 single-family lots, 12 commercial lots, 10 multi-family lots, 8 open space/recreation lots, 8 mixed-use/live-work lots, 5 public facility lots, 1 RV parking/storage lot, 1 private school lot, and 1 private street lot on 82.5 acres, with 1 remainder lot on 3.81 acres.

D.3.3.3 Little Rock Creek Groundwater Recharge and Recovery Project (Palmdale Water District)

The Groundwater Recharge Project is proposed to be a run-of river recharge project, utilizing the existing active natural channel system and a series of shallow recharge basins in the adjacent floodplain.

The proposed Groundwater Recharge Project could consist of the following:

- State Water Project and other imported waters would be discharged from the East Branch of the State Water Project aqueduct where the aqueduct crosses Little Rock Creek. Imported water would be conveyed in the active channel of Little Rock Creek toward the project endpoint located about nine miles downstream of the aqueduct.
- Imported water recharge would occur when capacity exists in the East Branch of the aqueduct, primarily in the winter time over a period of 90 to 120 days. Recharge could occur at other times of the year, provided that there is surplus State Water available or when surplus capacity in the aqueduct is available to convey non-State Water to the recharge project.

The project would be expanded as follows if the desired recharge cannot be accomplished in the active channel within the project area or if recycled water recharge is included in the recharge project:

- A diversion works would be constructed in the active channel just upstream of Palmdale Boulevard to split the remaining discharge in Little Rock Creek such that the imported water discharge remaining in Little Rock Creek can completely recharge in the active channel in the Project area.
- The diverted imported water would be conveyed to shallow off-channel basins constructed adjacent to the active channel and within the floodplain. Imported water diverted into these basins would recharge completely within the Project area.
- The off-channel basins would be constructed in a strip of land parallel to the active channel. A feeder channel would be constructed from the diversion works at Palmdale Boulevard and run along the west side of the off-channel basins. The feeder channel would convey imported water from the Little Rock Creek diversion to individual off-channel basins.
- The imported water discharge to Little Rock Creek would be modulated to ensure that all the imported water discharged to Little Rock Creek would be completely recharged in the active channel and off-channel basins in the Project area.

Recycled water recharge would be accomplished by conveying recycled water to the off-channel basins in the project area. Dilution pursuant to the Department of Public Health Draft CCR Title 22 regulations would be provided by imported water recharge in the same facilities and groundwater underflow.

The recharge and recovery capacities of the project are expected to be about 43,000 acre-feet per year and 14,000 acre-feet per year, respectively. Preliminary groundwater modeling studies have

demonstrated that the recharge project would substantially reduce drawdown in PWD's service area and areas surrounding the Project. The recharge project would increase piezometric levels in the southern part of the subsidence area and provide regional benefits, including the reduction of subsidence in the central part of the Antelope Valley. For these reasons, the other State Water Project contractors in the Antelope Valley, the Antelope Valley East Kern Water Agency, and the Littlerock Irrigation District have endorsed this project, and would likely be partners in its implementation.

D.4 Cumulative Effects of the Project

D.4.1 Air Quality and Climate Change

D.4.1.1 Spatial and Temporal Boundaries

The Project is located within the Northern Los Angeles County portion of the Mojave Desert Air Basin (MDAB). For Air Quality, the geographic extent of the cumulative impact area remains within the MDAB and within the jurisdiction of the Antelope Valley Air Quality Management District (AVAQMD). The Project area is more than 15 miles south and west of the borders with the nearest jurisdictions and is separated from the South Coast Air Basin (SCAB) by the San Gabriel Mountains. A small amount of traffic could occur in other areas, such as construction employees that may commute from the SCAB or construction equipment that may need to be hauled to the site from the SCAB or San Joaquin Valley; however, these minimal traffic emissions are not considered to be of a magnitude to create cumulative air quality impacts in areas other than within the MDAB near the Project site. Therefore, the cumulative impacts could extend over the entire Project area at Littlerock Reservoir along the haul routes and near the sediment storage sites located north of the Reservoir.

The identification of cumulative projects for air quality typically ranges from within one mile of a project to as far as six miles or more from a project.[1] For localized cumulative impacts to occur, the Project's emissions would have to combine with other nearby projects to create impacts to local receptors. The effect of downwind dispersion eliminates the potential for Project-level significant cumulative air quality impacts over areas larger than a few miles. Considering the ground level type of emissions sources and emissions magnitudes for the Project, only projects located within one mile of the Reservoir site, sediment haul routes, and sediment disposal sites are considered projects that with the Project could cause cumulative impacts. Therefore, the projects listed in Table D-1 that are within one mile of the Project and its sediment transportation routes will be evaluated as those that could potentially create cumulatively significant impacts.

The Project's construction impacts are forecast to last for 7 to 12 years, during the summer or late summer and early fall, while the annual maintenance emissions are only forecast annually thereafter for less than two months each year during late summer/early fall. Only projects that have ongoing air quality emissions occurring concurrently with the Project's emissions, which occur during the daytime annually during the summer/fall period from 2017 and beyond, have the potential for creating cumulative air quality impacts, since significant air quality cumulative impacts can only occur from emission sources that are active at the same time.

[1] Many local air quality jurisdictions provide no guidance regarding the distance for the selection of cumulative projects, as is the case with the AVAQMD CEQA guidance documents. However, other jurisdictions and agencies use specific radius for specific analysis. The SCAQMD has approved CEQA analyses that have used a one-mile radius for cumulative project identification, while the California Energy Commission uses a six-mile radius for operating emissions cumulative impact evaluation for power plants.

Several of the impacts evaluated in Section C.2 are Project-specific or regulation-specific impacts and so cannot have cumulative effects. The impacts that will not be evaluated further in this section are Impacts AQ-1 (Project Construction and Operation would conflict with the approved AVAQMD Air Quality Management Plans), AQ-5 (The Project's Construction or Operations Emissions within the Angeles National Forest would exceed Applicable General Conformity Thresholds), and AQ-7 (The Project would conflict with Angeles National Forest Air Quality Strategies).

Additionally, the numeric AVAQMD emissions thresholds are project-specific thresholds and do not apply to cumulative projects that would not be co-located. Therefore, the evaluation in regards to cumulative air quality impacts addressed qualitatively below are Impacts AQ-2 (The Project's Construction Emissions Would Exceed AVAQMD Significance Criteria) and AQ-3 (The Project's Operation Emissions Would Exceed AVAQMD Significance Criteria).

Climate change is a long-term global impact, not a direct localized impact; and because the direct environmental effect of an increase in GHG emissions is the increase in global temperatures, which in turn has numerous indirect effects on the environment and humans, the area of influence for GHG emissions impacts associated with the Project would be global. However, those cumulative global impacts would be manifested as impacts on resources and ecosystems in California. Additionally, as the Climate Change/GHG analysis provided in Section C.2 concerns these cumulative global impacts, there is no separate cumulative impacts analysis performed for Climate Change.

D.4.1.2 Cumulative Effects of the Project

The potential for cumulative impacts during Project construction and maintenance are limited as the bulk of the Project emissions occur at the reservoir site and there are no cumulative projects with significant air quality impacts near the reservoir site within the Angeles National Forest (ANF). Existing emission sources are considered part of the existing ambient background cumulative condition. Past development and population growth within and surrounding the City of Palmdale near the Project site have increased the possibility that new projects would contribute to increased air pollutant emissions within the MDAB. The MDAB in the area of the Project route is nonattainment for the State 1-hour and federal 8-hour ozone standards and the State 24-hour PM10 standard. The Project area is designated as attainment/unclassified for the federal and State PM2.5, carbon monoxide, nitrogen dioxide, and sulfur dioxide ambient air quality standards. Long-term trends in reduced emissions of ozone precursors, specifically NO_x and VOCs, have led to reduced ozone formation in the Project area, and reduced transport of ozone from the adjoining SCAB and San Joaquin Valley Air Basin. However, the area continues to exceed the State 1-hour and federal 8-hour ozone standards. Additionally, while there is an overall gradual downward trend for PM10 concentrations, there has been little or no progress since 1993. As such, any increase in emissions of ozone precursors and particulate matter (and particulate matter precursors) would cause adverse Air Quality impacts.

Construction activities associated with the Project's sediment removal phase would result in PM10 emissions that exceed the AVAQMD regional daily emission thresholds, but all other pollutant emissions are below the AVAQMD daily emissions thresholds, and all pollutant emissions are well below the AVAQMD annual emissions thresholds. For cumulative assessment purposes the potential existence of nearby concurrent cumulative projects could add to the Project's adverse air pollutant emissions impacts. The cumulative projects, listed in Table D-1 and shown in Figure D-1, include no projects within a mile of the reservoir site, approximately six projects that may be within one mile of the primary sediment storage site and one project within one mile of the alternative sediment storage site. The Project would include Standard Project Commitments (SPCs) that include fugitive dust and construction

equipment tailpipe emissions control (SPCs AQ-1 through AQ-5) and the other cumulative projects emissions would be also be required to have emissions controls to various degrees. The exact air pollutant emissions increases, or decreases, that may occur from the projects on the cumulative project's list are not known. However, the Project would create a source of aggregate/sand that would offset the mining that may otherwise occur at several of these cumulative projects. The combined effect of the air pollutant emissions from the Project and other cumulative projects' construction and/or operation (Impact AQ-2 and AQ-3) would be minor.

Construction activities associated with the Project would expose sensitive receptors in the populated areas along the sediment haul route and nearby the sediment disposal site to small amounts of air toxics emissions (diesel particulate matter [DPM]). However, there are no sensitive receptors located near the main emissions area, which is the reservoir site. The air toxic emissions impacts from the Project would be very low at any one given sensitive receptor location (Impact AQ-4), and would not be of a magnitude to notably contribute to a cumulative impact.

Construction equipment and operations, and the excavation and removal of reservoir sediments, may create temporary and mildly objectionable odors. These odors, in any significant strength, would generally be limited to the reservoir site. Since there is at least one mile from the reservoir site to populated areas, odors would not affect a substantial number of people. To have the potential to combine with odors from the Project, odor-generating activities from other projects would have to occur concurrently, occur in very close proximity with the odor-generating activities of the Project, and result in a cumulatively worse odor condition. However, none of the projects described in Table D-1 are near the reservoir or appear to have associated significant odor causing activities. The Project would not likely contribute to a cumulative odor impact (Impact AQ-6).

CEQA Significance Conclusion

Due to the physical separation of other cumulative projects from the main emissions source area for the Project, the incremental effect of the Project's air pollutant emissions when combined with the construction and/or operation emissions from other projects would be considered less than significant (Class III). Given that the air toxic emissions impacts from the Project would be very low at any one given sensitive receptor location, they would not be of a magnitude to contribute a significant incremental effect to cumulative health impacts. The Project's contribution to cumulative air quality impacts would not be cumulatively considerable.

D.4.1.3 Cumulative Effects of Alternative 1

The cumulative impacts from Alternative 1 would be similar to those of the Project, with two main differences. First, the emissions from the sediment excavation phase of the alternative would be lower than that of the Project and therefore would be less likely to contribute towards a cumulative effect on air quality. Second, the sediment excavation phase would be longer which would cause extended air quality impacts in later years prior to the end of the sediment excavation phase. However, all of the maximum daily and annual air pollutant emissions from this alternative would either be the same or less than the maximum emissions determined for the Project, thereby contributing a similar or smaller incremental effect towards a cumulative air quality impact.

CEQA Significance Conclusion

As described for the Project, Alternative 1 would not contribute an incremental effect on air quality emission impacts, health impacts, and odor impacts that would be cumulatively considerable. Alternative 1's cumulative contribution would be less than significant (Class III).

D.4.1.4 Cumulative Effects of the No Action/No Project Alternative

For most of the Project life, the No Action/No Project Alternative would not create direct air quality impacts, as there would be no activities performed to create air pollutant emissions. However, with this alternative the dam would fill with sediment over time and at some point it may need to be removed. At that time the amount of work required to remove the dam and the sediment behind the dam, and to restore Little Rock Creek, would be much greater than any of the activities noted for the Project. It is unclear when this may happen and if off-road and on-road equipment may be significantly less polluting than they are now or are forecast to be in the near future, but given the much greater level of effort to remove the dam and the much larger amount of sediment to be removed, those activities could contribute towards short-term, cumulative air pollutant emissions.

Additionally, the loss of this water resource would create the potential for indirect air quality impacts. However, the magnitude and location of the indirect air pollutant emissions related to the additional transport of water are highly speculative; therefore, no specific conclusions can be made in regards to the cumulative impact potential for the indirect emissions from the No Action/No Project Alternative.

CEQA Significance Conclusion

Air pollutant emissions from the No Action/No Project Alternative could contribute a significant and unavoidable incremental effect on cumulative air emissions (Class I). However, similar to the Project, the toxic emissions and odor emissions from future dam removal activities would be minimal and would not be expected to have a cumulatively considerable incremental effect on health impacts or odor impacts. The No Action/No Project Alternative's cumulative contribution to health and odor impacts would be less than significant (Class III).

D.4.2 Biological Resources

The Project is located in a biogeographic transition zone between coastal mountains and the Mojave Desert ecoregion. The combination of desert scrub, juniper woodland, and riparian communities and the unique geological and tectonic conditions (i.e., San Andreas rift zone, Little Rock Creek, and the San Gabriel Mountains), create and maintain contact zones between coastal ranges and desert regions. Some of the species found in the Project area are of significant taxonomic and evolutionary value, including least Bell's vireo and arroyo toad.

Historically, the high desert has been subject to disturbance from farming, grazing, mining, water diversion, military land uses, and infrastructure development. In many instances the conversion of natural lands through human disturbance has resulted in the displacement of native species, the restriction of regional movement corridors, and the loss of genetic diversity. Development in the western Mojave Desert has substantially altered native land forms and adversely affected native wildlife. The expansion of population centers in the Antelope Valley and ongoing renewable energy projects has resulted in the loss of open space and the degradation of natural areas that historically supported populations of unique or rare species. Construction of the Littlerock Dam fundamentally altered the existing watershed and essential stream processes necessary for the survival of species such

as arroyo toads. The expansion of the Dam in 1992 increased storage of the Reservoir and further altered the quality and quantity of riparian habitat and associated species at the Reservoir.

On National Forest System (NFS) lands, ongoing and historic activities that have affected biological resources include major flood control and water diversion projects, electrical utility corridors, road construction and maintenance, mining, firefighting, and routine improvements to existing facilities such as repairs to fences, pipelines, government facilities, and water storage reservoirs. Reasonably foreseeable changes to biological resources in the ANF include improvements to and expansion of existing facilities and infrastructure (including roads), as well as the establishment of additional resources or facilities. Existing wilderness areas in the ANF would continue to be protected from development and expanded if possible (for instance, through the conversion of an Inventoried Roadless Area under consideration for wilderness designation to a designated Wilderness Area). In addition, a large portion of the ANF has been designated a National Monument which would further protect biological resources on the Forest.

Large-scale land conversion in the Antelope Valley coupled with the projects in the cumulative project list was considered in the evaluation of cumulative impacts for the Project. Because the Project would result in the permanent loss of natural lands (i.e., the 47th Street sediment disposal area and a small area at Rocky Point) this analysis considers whether the Project, after the application of SPCs, would contribute to the cumulative significant loss and degradation of habitat for plants and wildlife, including arroyo toad, desert tortoise, Mohave ground squirrel, Swainson's hawk, burrowing owl, least Bell's vireo, and other special-status species.

D.4.2.1 Spatial and Temporal Boundaries

The area of cumulative effect for biological resources varies by a species' life history, mobility, distribution, and specific range in the Project area. The "geographic scope" of the analysis of cumulative impacts to biological resources refers to the area within which cumulative impacts are likely to occur. For the Project, the majority of the cumulative effects analysis makes a broad, regional evaluation of the impacts of existing and reasonably foreseeable future projects that threaten plant communities and wildlife within 20 miles of the Project area. For desert tortoise, Swainson's hawk, and Mohave ground squirrel, this analysis of cumulative effects considers the range of the species in the western Mojave Desert. For other biological resources, including arroyo toad and riparian communities, the watershed boundaries were used in consideration of the ongoing protection of these resources in the ANF.

D.4.2.2 Cumulative Effects of the Project

Vegetation

The Project would result in 11.6 acres of permanent and 65.3 acres of temporary disturbance to vegetation and unvegetated landforms including riparian woodlands, herbaceous wetland, unvegetated lake bottom, and sandy wash. Approximately 5.8 acres of juniper woodland and 5.5 acres of disturbed habitat would be lost at the 47th Street disposal site. Past and foreseeable future actions in the Project area would result in considerable loss of native vegetation, particularly to desert communities such as creosote bush scrub and possibly juniper woodlands. The loss of desert scrub communities in combination with reasonably foreseeable projects would contribute to the cumulative loss of vegetation in the region (Impact BIO-1). Implementation of SPC BIO-1a (Provide Restoration/Compensation for Impacts to Native Vegetation Communities), SPC BIO-1b (Worker Environmental Awareness Program), SPC HYDRO-1 (Fill From Reservoir Excavation Will Not Be Placed in Stream Channels), and SPC WQ-1

(Prepare Spill Response Plan) would reduce the Project's contribution to cumulative impacts on vegetation.

Construction of the grade control structure and sediment removal activities would result in soil disturbance that could introduce or spread weeds to the Project area, haul roads, or sediment disposal sites. The spread of existing weeds or the introduction of new weed populations that occur from the Project could combine with effects from other past and reasonably foreseeable projects in the region to contribute to cumulative impacts in the region (Impact BIO-2). Implementation of SPC BIO-2 (Prepare and Implement a Weed Control Plan), SPC BIO-1a (Provide Restoration/Compensation for Impacts to Native Vegetation Communities), and SPC BIO-1b (Worker Environmental Awareness Program) would reduce the Project's contribution to cumulative impacts from the spread of weeds.

Habitat-Related Impacts to Wildlife

Common wildlife in the region has been subject to extensive disturbance from habitat loss and direct mortality. Ongoing development, including the Project, would continue to remove habitat and contribute to cumulative impacts to wildlife in the region (Impact BIO-3). Implementation of SPC BIO-1a (Provide Restoration/Compensation for Impacts to Native Vegetation Communities), SPC BIO-1b (Worker Environmental Awareness Program), and SPC BIO-2 (Prepare and Implement a Weed Control Plan) would reduce the Project's contribution to cumulative impacts to common wildlife.

Impacts to vegetation, as identified under Impact BIO-1, would remove habitat for birds in the region, and when combined with past and reasonably foreseeable projects would contribute to the loss of nesting birds or raptors (Impact BIO-4). Implementation of SPC BIO-4 (Conduct Pre-Construction Surveys and Monitoring for Breeding Birds), SPC BIO-1b (Worker Environmental Awareness Program), and required dust control measures would reduce the Project's contribution to cumulative impacts to nesting birds.

Threatened and Endangered Plant Species

Listed plant populations are not expected to occur in the Project area, and therefore the Project would not contribute to the cumulative loss of sensitive plants in the region (Impact BIO-5).

Threatened and Endangered Wildlife

Arroyo toads have been documented at the upstream edge of the Project area and may be subject to habitat loss or mortality. Past actions such as the construction of Littlerock Dam and natural events including droughts and fire have resulted in considerable cumulative effects to arroyo toads in the region (Impact BIO-6). Implementation of SPC BIO-6a (Conduct Surveys and Implement Avoidance Measures), SPC BIO-6b (Conduct Clearance Surveys and Construction Monitoring), SPC BIO-6c (Seasonal Surveys During Water Deliveries), SPC BIO-1a (Provide Restoration/Compensation for Impacts to Native Vegetation Communities), SPC BIO-1b (Worker Environmental Awareness Program), SPC BIO-2 (Prepare and Implement a Weed Control Plan), SPC Hydro-1 (Fill From Reservoir Excavation Will Not Be Placed in Stream Channels), SPC WQ-1 (Prepare Spill Response Plan), and required dust measures would reduce the Project's contribution to the cumulative loss of arroyo toad.

Threatened and Endangered Reptiles

Desert tortoise has been subject to extensive habit loss in the western Mojave Desert from residential development, agriculture, military actions, and infrastructure development. Populations of desert tortoise in the Mojave Desert are thought to be declining (USFWS, 2011). The proposed 47th Street East

sediment disposal site was characterized as supporting moderate- to high-quality desert tortoise habitat; however, desert tortoise has not been detected on the Project site and has a low potential to occur. Therefore the Project would not contribute to the cumulative loss of desert tortoise in the region.

Threatened or Endangered Fish

There are no known threatened or endangered fish in the Littlerock Reservoir, Little Rock Creek, or the proposed sediment disposal areas. Threatened or endangered fish are not expected to be affected by the Project.

Threatened, Endangered, or Fully Protected Birds

California condors have not been observed at the Project site but are known from the ANF and western Antelope Valley. Loss of foraging habitat and the conversion of natural lands which support large mammals and other prey items has adversely affected this species. Condors are not expected to frequent semi-natural lands around Palmdale but may occur in the foothills of the ANF. The Project, when combined with past and reasonably foreseeable projects, would contribute to the cumulative loss of condor habitat in the region (Impact BIO-7). Implementation of SPC BIO-7 (Monitor Construction and Remove Trash and Microtrash), SPC BIO-1a (Provide Restoration/Compensation for Impacts to Native Vegetation Communities), SPC BIO-1b (Worker Environmental Awareness Program), and SPC BIO-2 (Prepare and Implement a Weed Control Plan) would reduce the Project's contribution to cumulative impacts to condor.

The primary effect of past and foreseeable projects on southwestern willow flycatchers, least Bell's vireos, and yellow-billed cuckoos is the loss of riparian habitat and the introduction or spread of brown headed cow birds, a known nest parasite (Impact BIO-8). Most of the Project's impacts to native vegetation or landforms would be temporary, and habitat would be replaced through restoration along the Reservoir. Implementation of SPC BIO-8 (Conduct Protocol Surveys for Least Bell's Vireo and Avoid Occupied Habitat), SPC BIO-1a (Provide Restoration/Compensation for Impacts to Native Vegetation Communities), SPC BIO-1b (Worker Environmental Awareness Program), SPC BIO-2 (Prepare and Implement a Weed Control Plan), SPC AQ-2 (Fugitive Dust Controls), and SPC AQ-5 (Reduce Off-Road Vehicle Speeds) would reduce the Project's contribution toward cumulative impacts to these species.

Approximately 5.8 acres of juniper woodland habitat which could be used as foraging for the Swainson's hawk would be lost at the 47th Street disposal site (Impact BIO-9). The Project, when combined with past and reasonably foreseeable projects including a proposed housing development, would contribute to the cumulative loss of habitat for this species in the region. Implementation of SPC BIO-9 (Conduct Pre-Construction Surveys for Swainson's Hawks), SPC BIO-1a (Provide Restoration/Compensation for Impacts to Native Vegetation Communities), SPC BIO-2 (Prepare and Implement a Weed Control Plan), SPC AQ-2 (Fugitive Dust Controls), and SPC AQ-5 (Reduce Off-Road Vehicle Speeds) would reduce the Project's contribution to habitat loss to this species.

The Project would not remove or alter foraging habitat for bald eagles and would not contribute to cumulative impacts in the region. The anticipated loss of habitat for golden eagles from the Project, when combined with past and reasonably foreseeable projects including a proposed housing development, would contribute to the cumulative loss of habitat for this species in the region (Impact BIO-10). Implementation of SPC BIO-4 (Conduct Pre-Construction Surveys and Monitoring for Breeding Birds), SPC BIO-8 (Conduct Protocol Surveys for Least Bell's Vireo and Avoid Occupied Habitat), SPC BIO-9 (Conduct Pre-Construction Surveys for Swainson's Hawks), SPC BIO-1a (Provide Restoration/Compensation for Impacts to Native Vegetation Communities), SPC BIO-2 (Prepare and

Implement a Weed Control Plan), SPC AQ-2 (Fugitive Dust Controls), and SPC AQ-5 (Reduce Off-Road Vehicle Speeds) would reduce the Project's contribution to habitat loss for golden eagles.

Threatened, Endangered, or Fully Protected Mammals

Ringtail, a fully protected species in California, has not been observed in the Project area but likely occurs throughout the ANF. The loss of riparian areas or access to water adversely affects this species. Although temporary, the Project would contribute to the cumulative habitat loss for this species (Impact BIO-11). Implementation of SPC BIO-11 (Conduct Focused Surveys for Ringtail and Avoid Denning Areas), SPC BIO-1a (Restoration/Compensation for Impacts to Native Vegetation Communities), SPC BIO-1b (Worker Environmental Awareness Program), SPC BIO-2 (Prepare and Implement a Weed Control Plan), SPC AQ-2 (Fugitive Dust Controls), and SPC AQ-5 (Reduce Off-Road Vehicle Speeds) would reduce the Project's contribution to habitat loss for the ringtail.

Special-Status Plants

Sensitive plants in the region have been subject to widespread habitat loss from development and habitat degradation from the spread of invasive plant species. The Project's contribution to habitat loss for sensitive plants in combination with past and reasonably foreseeable projects would contribute to cumulative impacts to these species (Impact BIO-12). Implementation of SPC BIO-5 (Conduct Preconstruction Surveys for Sensitive Plants and Avoid Occurrences of Listed Plants), SPC BIO-1a (Provide Restoration/Compensation for Impacts to Native Vegetation Communities), SPC BIO-1b (Worker Environmental Awareness Program), and SPC BIO-2 (Prepare and Implement a Weed Control Plan) would reduce the Project's contribution to cumulative impacts to sensitive plants.

Special-Status Invertebrates

Large-scale habitat conversion and disruption of natural stream flows has adversely affected the shoulderband snail and the San Emigdio blue butterfly throughout the region. The Project's contribution to habitat loss in combination with past and reasonably foreseeable projects would contribute to cumulative impacts to these species (Impact BIO-13). Implementation of SPC BIO-1a (Provide Restoration/Compensation for Impacts to Native Vegetation Communities), SPC BIO-1b (Worker Environmental Awareness Program), SPC BIO-2 (Prepare and Implement a Weed Control Plan), SPC AQ-2 (Fugitive Dust Controls), and SPC AQ-5 (Reduce Off-Road Vehicle Speeds) would reduce the Project's cumulative impacts to these species.

Special-Status Reptiles and Amphibians

Past projects including the construction of the Littlerock Dam have adversely affected the southwestern pond turtle. Although limited in scale, the Project's contribution to habitat loss in combination with past and reasonably foreseeable projects would contribute to cumulative impacts to this species (Impact BIO-14). Implementation of SPC BIO-14 (Conduct Surveys for Southwestern Pond Turtle and Implement Monitoring, Avoidance, and Minimization Measures) which includes clearance surveys for southwestern pond turtles prior to vegetation or sediment removal, relocation of stranded or displaced animals, and construction monitoring. SPC BIO-1a (Provide Restoration/Compensation for Impacts to Native Vegetation Communities), SPC BIO-1b (Worker Environmental Awareness Program), SPC BIO-2 (Prepare and Implement a Weed Control Plan), SPC AQ-2 (Fugitive Dust Controls), and SPC AQ-5 (Reduce Off-Road Vehicle Speeds) would reduce the Project's cumulative impacts to the southwestern pond turtle.

The region-wide loss of riparian vegetation and the disruption of natural stream hydrology has substantially altered habitat for the two-striped garter snake and Coast Range newt. Although limited in scale, the Project's contribution to habitat loss in combination with past and reasonably foreseeable projects would contribute to cumulative impacts to these species (Impacts BIO-15 and BIO-16). Implementation of SPC BIO-15 (Conduct Surveys for Two-Striped Garter Snakes and Implement Monitoring, Avoidance, and Minimization Measures), SPC BIO-16 (Conduct Surveys for Coast Range Newts and Implement Monitoring, Avoidance, and Minimization Measures), SPC BIO-1a (Provide Restoration/Compensation for Impacts to Native Vegetation Communities), SPC BIO-1b (Worker Environmental Awareness Program), SPC BIO-2 (Prepare and Implement a Weed Control Plan), SPC BIO-6c (Seasonal Surveys During Water Deliveries), SPC HYDRO-1 (Fill From Reservoir Excavation Will Not Be Placed in Stream Channels), SPC WQ-1 (Prepare Spill Response Plan), SPC AQ-2 (Fugitive Dust Controls), and SPC AQ-5 (Reduce Off-Road Vehicle Speeds) would reduce the Project's cumulative impacts to the two-striped garter snake and Coast Range newt.

Terrestrial herpetofauna occupy a wide range of habitat in the Project area including desert scrub and riparian areas. Because of ongoing habitat loss, the Project's contribution to habitat loss in combination with past and reasonably foreseeable projects would contribute to cumulative impacts to these species (Impact BIO-17). Implementation of SPC BIO-17 (Conduct Surveys for Terrestrial Herpetofauna and Implement Monitoring, Avoidance, and Minimization Measures), SPC BIO-1a (Provide Restoration/Compensation for Impacts to Native Vegetation Communities), SPC BIO-1b (Worker Environmental Awareness Program), SPC BIO-2 (Prepare and Implement a Weed Control Plan), SPC HYDRO-1 (Fill From Reservoir Excavation Will Not Be Placed in Stream Channels), SPC WQ-1 (Prepare Spill Response Plan), SPC WQ-2 (Prepare a Storm Water Pollution Prevention Plan [SWPPP]), SPC AQ-2 (Fugitive Dust Controls), and SPC AQ-5 (Reduce Off-Road Vehicle Speeds) would reduce the Project's contribution to cumulative impacts to these species.

Other Species of Special Concern

Burrowing owls were not detected in the Project area but may be a periodic visitor to the proposed 47th Street sediment disposal site. This species has been subject to widespread habitat loss in the western Mojave Desert. Because of ongoing habitat loss, the Project's contribution to habitat loss in combination with past and reasonably foreseeable projects would contribute to cumulative impacts to this species (Impact BIO-18). The Project would also contribute to cumulative impacts from habitat fragmentation and edge effects, noise and lighting, increased road kills, increased risk of fire from weed invasion and increased ignition sources (vehicles on Cheseboro Road). Implementation of SPC BIO-18 (Conduct Protocol Surveys for Burrowing Owls), SPC BIO-4 (Conduct Pre-Construction Surveys and Monitoring for Breeding Birds), SPC BIO-8 (Conduct Protocol Surveys for Least Bell's Vireo and Avoid Occupied Habitat) SPC BIO-9 (Conduct Pre-Construction Surveys for Swainson's hawks), SPC BIO-1a (Provide Restoration/Compensation for Impacts to Native Vegetation Communities), SPC BIO-1b (Worker Environmental Awareness Program), SPC BIO-2 (Prepare and Implement a Weed Control Plan), SPC AQ-2 (Fugitive Dust Controls), and SPC AQ-5 (Reduce Off-Road Vehicle Speeds) would reduce the Project's contribution to cumulative impacts to burrowing owl.

Impacts to vegetation would remove habitat for birds designated as Forest Service Sensitive and California Species of Special Concern in the region, and would contribute to the decline in available nest sites and foraging habitat. The Project, when combined with past and reasonably foreseeable projects, would contribute to cumulative impacts to these species (Impact BIO-19). Implementation of SPC BIO-4 (Conduct Pre-Construction Surveys and Monitoring for Breeding Birds), SPC BIO-8 (Conduct Protocol Surveys for Least Bell's Vireo and Avoid Occupied Habitat), SPC BIO-9 (Conduct Pre-Construction Surveys

for Swainson's Hawks), SPC BIO-18 (Conduct Surveys for Burrowing Owls and Implement Monitoring, Avoidance, and Minimization Measures), SPC BIO-1a (Provide Restoration/Compensation for Impacts to Native Vegetation Communities), SPC BIO-1b (Worker Environmental Awareness Program), SPC BIO-2 (Prepare and Implement a Weed Control Plan), SPC AQ-2 (Fugitive Dust Controls), and SPC AQ-5 (Reduce Off-Road Vehicle Speeds) would reduce the Project's contribution to cumulative impacts to these species.

Special-Status Mammals

Across the region, bats have been subject to loss of roost and foraging sites because of the degradation of riparian habitat and loss of groundwater. Because of ongoing habitat loss, the Project's contribution to habitat loss in combination with past and reasonably foreseeable projects would contribute to cumulative impacts to bats (Impact BIO-20). The Project would also cumulatively increase the risk of vehicles strikes along Cheseboro Road during early morning and dusk. Implementation of SPC BIO-20 (Survey for Maternity Colonies or Hibernaculum for Roosting Bats), SPC BIO-1a (Provide Restoration/Compensation for Impacts to Native Vegetation Communities), SPC BIO-1b (Worker Environmental Awareness Program), SPC BIO-2 (Prepare and Implement a Weed Control Plan), SPC AQ-2 (Fugitive Dust Controls), and SPC AQ-5 (Reduce Off-Road Vehicle Speeds) would reduce the Project's contribution to cumulative impacts to bats.

The Project area likely supports a variety of small cryptic special-status mammals, which have been subject to extensive habitat loss and degradation in the western Mojave Desert and the foothills of the San Gabriel Mountains. Because of ongoing habitat loss, the Project's contribution to habitat loss in combination with past and reasonably foreseeable projects would contribute to cumulative impacts to these species (Impact BIO-21). Implementation of SPC BIO-1a (Provide Restoration/Compensation for Impacts to Native Vegetation Communities), SPC BIO-1b (Worker Environmental Awareness Program), SPC BIO-2 (Prepare and Implement a Weed Control Plan), SPC AQ-2 (Fugitive Dust Controls), and SPC AQ-5 (Reduce Off-Road Vehicle Speeds) would reduce the Project's contribution to cumulative impacts to these species.

Desert kit fox and American badger have been subject to extensive habitat loss in the western Mojave Desert and the foothills of the San Gabriel Mountains. Because of ongoing habitat loss, the Project's contribution to habitat loss in combination with past and reasonably foreseeable projects would contribute to cumulative impacts to these species (Impact BIO-22). Implementation of SPC BIO-22 (Conduct Surveys for American Badger and Desert Kit Fox and Avoid During the Breeding Season), SPC BIO-1a (Provide Restoration/Compensation for Impacts to Native Vegetation Communities), SPC BIO-1b (Worker Environmental Awareness Program), SPC BIO-2 (Prepare and Implement a Weed Control Plan), SPC AQ-2 (Fugitive Dust Controls), and SPC AQ-5 (Reduce Off-Road Vehicle Speeds) would reduce the Project's contribution to cumulative impacts to these species.

Bighorn sheep are periodic visitors to the Reservoir. Historically this species likely ranged along the lower foothills of the San Gabriel Mountains and conducted intermountain movement across the desert valleys. Ongoing development in the region has disrupted movement and fragmented habitat. The Project's contribution to habitat loss in combination with past and reasonably foreseeable projects would contribute to cumulative impacts to these species (Impact BIO-23). Should sheep occur in the Project area, vehicle traffic would add to cumulative impacts from disturbance or mortality from collisions with vehicles. Implementation of SPC BIO-1b (Worker Environmental Awareness Program), SPC BIO-2 (Prepare and Implement a Weed Control Plan), SPC AQ-2 (Fugitive Dust Controls), SPC AQ-5 (Reduce Off-Road Vehicle Speeds), SPC FIRE-1 (Curtailment of Activities), SPC FIRE-2 (Preparation of a

Fire Plan), and SPC FIRE-3 (Spark Arrester Requirements) would reduce the Project's contribution to cumulative impacts to this species.

Construction of the Littlerock Dam, water diversions, and large-scale development have substantially altered the hydrology of the region. Although the Project itself would result in a minor loss of jurisdictional features, the Project would contribute to cumulative impacts in the region (Impact BIO-24). Implementation of SPC BIO-1a (Provide Restoration/Compensation for Impacts to Native Vegetation Communities), SPC BIO-1b (Worker Environmental Awareness Program), SPC BIO-2 (Prepare and Implement a Weed Control Plan), SPC AQ-2 (Fugitive Dust Controls), SPC AQ-5 (Reduce Off-Road Vehicle Speeds), SPC HYDRO-1 (Fill From Reservoir Excavation Will Not Be Placed in Stream Channels), and SPC WQ-1 (Prepare Spill Response Plan) would reduce the Project's contribution to cumulative impacts to jurisdictional waters.

There are no known bird or bat migratory corridors that would be directly impeded by the Project, and the Project would not contribute to the cumulative loss of established wildlife migratory corridors in the region (Impact BIO-25).

Although the Project would result in adverse impacts to Management Indicator Species (MIS), the affected area would be limited 65 acres or less (See Table C.3-12). MIS would also be affected by other projects such as Williamson Rock and Pacific Crest Trail Projects, fuels treatments, and special use permitted activities that would likely continue over the life of the Project. These cumulative projects would result in unknown acreages of habitat loss for MIS. While a large portion of the ANF has been proposed as a National Monument, which would increase protection for NFS lands, construction of the Littlerock Dam, water diversions, and mining have already affected MIS on NFS lands. The Project would contribute to cumulative impacts on MIS in the region (Impact BIO-26). Implementation of SPC BIO-1a (Provide Restoration/Compensation for Impacts to Native Vegetation Communities), SPC BIO-1b (Worker Environmental Awareness Program), SPC BIO-2 (Prepare and Implement a Weed Control Plan), SPC BIO-4 (Conduct Pre-Construction Surveys and Monitoring for Breeding Birds), SPC BIO-6a (Conduct Surveys and Implement Avoidance Measures), SPC BIO-6b (Conduct Clearance Surveys and Construction Monitoring), and SPC BIO-6c (Seasonal Surveys During Water Deliveries) would reduce the Project's contribution to cumulative impacts to MIS.

CEQA Significance Conclusion

The Project's contribution to biological resource impacts (i.e., Impacts BIO-1 through BIO-26), in combination with past and reasonably foreseeable projects, would be cumulatively considerable. Each of the cumulative impact discussions for Impact BIO-1 through Impact BIO-26 describes the SPCs that would be implemented to minimize the incremental adverse effects of the Project. With incorporation of the identified SPCs, the Project's contribution to cumulative impacts to biological resources would be reduced to a level that is less than significant (Class II).

D.4.2.3 Cumulative Effects of Alternative 1

Alternative 1 would result in the same cumulative impacts to biological resources as the proposed Project. The incremental effect of Alternative 1 on cumulative biological resource impacts is identical to the discussion for the Proposed Action/Project above.

D.4.2.4 Cumulative Effects of the No Action/No Project Alternative

Under the No Action/No Project Alternative, cumulative impacts to biological resources would not occur. If the Dam becomes unstable and must be removed, cumulative biological resource impacts

would be greater and encompass a wider area compared to the Project. While it is unknown what other cumulative projects may occur in the future, it is likely that these projects would contribute to cumulative impacts that are similar to Impacts BIO-1 through BIO-26 described for the Project.

CEQA Significance Conclusion

If Dam removal were to occur under the No Action/No Project Alternative, the incremental effect of potential impacts to biological resources would be greater than the Project-related impacts described above. Cumulative biological resource impacts associated with future removal of the Dam would be significant and unavoidable (Class I).

D.4.3 Cultural Resources

D.4.3.1 Spatial and Temporal Boundaries

The geographic scope for the analysis of cumulative impacts on cultural resources encompasses projects within 11 miles of the Project. This is a relatively wide geographic scope because most impacts to cultural resources occur on the site of the resource itself through physical disturbance or encroachment. The proximity of these resources to the Project would be of interest only to the extent that proximity would considerably affect the context or integrity of the resource.

Within 11 miles of the Project, there are currently at least 11 past, present, and future projects that would disturb a total of more than 3,000 acres. As well, linear utility and transportation projects within 11 miles of the Project are anticipated to have impacts along a total of more than 30 miles. Table D-1 provides a list of specific projects that are considered in the cultural cumulative scenario by jurisdiction and their location to the Project.

D.4.3.2 Cumulative Effects of the Project

The Project would not impact significant known archaeological resources; however, there is a potential for unanticipated and previously unidentified cultural resources to be present within the Project area (Impact C-1). This potential is considered to be low and the Project would implement SPC CUL-1 to monitor during excavation of previously undisturbed soils and SPC CUL-2 to treat previously unidentified cultural resources (see Appendix A), thus reducing the Project's contribution to cumulative impacts.

In addition, the other projects identified in Table D-1 would also be expected to have mitigation measures that would reduce potential impacts on archeological resources, but impacts could remain even after mitigation. Federally licensed projects, such as the Williamson Rock and Pacific Crest Trail Project and the Littlerock Dam Project, would require, or have required, compliance with Section 106 of the National Historic Preservation Act to consider and resolve adverse effects to significant cultural resources. Likewise, compliance with CEQA for projects such as the Little Rock Creek Groundwater Recharge and Recovery Project, the Vulcan Materials Company CUP 08-01 Project, the Motorcross Track CUP 14-007 Project, and the Holliday Rock Co., Inc. CUP 96-4 Project would be expected to reduce impacts on archaeological resources, but impacts could remain adverse. Given the lack of identified cultural resources in the Project area, the Project would not have the potential to combine with impacts from past, present, or future projects to result in a cumulative impact to historical and archaeological resources.

With regard to disturbance of human remains, the Project could contribute an incremental effect to cumulative impacts within the region (Impact C-2). Although no human remains have been identified within the Project area, there is a very low potential for their discovery during Project construction. In

the unlikely event of an accidental discovery of human remains during Project construction, SPC CUL-3 (Unidentified Human Remains Discovery Procedures) would be implemented to reduce impacts (see Appendix A). Nonetheless, the effect would be considered adverse under federal regulations.

CEQA Significance Conclusion

With regard to previously undetected cultural resources, the Project would not contribute an incremental impact within the region that would be cumulatively considerable (Class III). However, the Project would have the potential to combine with impacts from past, present, or future projects to result in a significant and unavoidable cumulative impact to human remains (Class I).

D.4.3.3 Cumulative Effects of Alternative 1

Cumulative cultural resource impacts are the same for Alternative 1 as for the Project. The analysis provided above for the Project applies equally to this alternative.

D.4.3.4 Cumulative Effects of the No Action/No Project Alternative

Under the No Action/No Project Alternative, the Project would not be implemented. The impacts associated with the Project and Alternative 1 would not occur, and the No Action/No Project Alternative would not contribute to a cumulative cultural resource impact.

D.4.4 Geology and Soils

D.4.4.1 Spatial and Temporal Boundaries

Impacts related to the exposure of people or structures to potential substantial adverse effects due to seismic or geologic hazards would be limited to the Project area, including Littlerock Reservoir and Littlerock Dam, the potential sand and gravel pits and PWD disposal areas, and the haul route between the reservoir and the disposal areas. Therefore, the Project area is the limit of the geologic hazards cumulative analysis. This same spatial boundary would apply to slope instability and slope failure. The cumulative analysis for soil erosion includes the Project area as well as any area downstream of the Project area.

Cumulative impacts for geology and soils are assessed based on consideration of past, current, and future development, and are not limited to the projects listed in Table D-1.

D.4.4.2 Cumulative Effects of the Project

No structures would be built under the Project. Therefore no structures would be exposed to geologic hazards, and no cumulative impact for exposure of structures to geologic hazards would occur. The exposure of people to geologic hazards would be limited to the Project area. Although other projects exist very near to the potential disposal sites (such as active mining operations near to the potential sand and gravel disposal pits or a proposed mixed-use development near to the PWD disposal site), the exposure of people to geologic hazards under the Project would contribute a negligible incremental cumulative effect (Impact G-1).

Standard Project Commitments would ensure that unstable slope conditions would not be produced under the Project. Conformance with existing laws, including the Clean Water Act, would ensure that no off-site erosion would occur under the Project. Other projects, both within the Project area and downstream of the Project area, would include soil-disturbing activities. Examples of these projects

include active mining operations and new highway construction. Soil disturbance under the Project/Action would contribute a negligible incremental cumulative effect (Impact G-2).

CEQA Significance Conclusion

The Project would not create an incremental impact to seismic or geologic hazards that would be cumulatively considerable (Class III).

D.4.4.3 Cumulative Effects of Alternative 1

Cumulative effects of Alternative 1 are the same as described above for the Project. No cumulatively considerable impacts would result from construction and operation of Alternative 1.

D.4.4.4 Cumulative Effects of the No Action/No Project Alternative

No impacts would occur under the No Action/No Project Alternative. This alternative would not contribute towards a cumulative impact to seismic or geologic hazards.

D.4.5 Hazards and Public Safety

D.4.5.1 Spatial and Temporal Boundaries

The area of potential cumulative effects is defined as a 0.5-mile buffer around Littlerock Reservoir and Littlerock Dam, the potential sediment disposal sites, and the haul route between the reservoir and the disposal sites. Because the Project would not transport significant quantities of hazardous materials, this cumulative analysis area defines the spatial extent of potential cumulative effects with respect to risk of upset.

Cumulative impacts for hazards and public safety are assessed based on consideration of past, current, and future development, and are not limited to the projects listed in Table D-1.

D.4.5.2 Cumulative Effects of the Project

Although other projects in the area of potential cumulative effects could result in accidental spills of hazardous waste that could contaminate water resources or expose the public to hazardous materials, the Project would result in negligible impacts with respect to releases of hazardous waste (Impact HAZ-1). Similarly, the Project impacts related to risk to public health (such as Valley Fever or unsafe highway conditions) are negligible (Impacts HAZ-3 and HAZ-5). The sediment in Littlerock Reservoir is not known to harbor the fungus associated with Valley Fever, and fugitive dust would be minimized in conformance with existing air quality regulations. Increased truck traffic would be limited to the haul route between the reservoir and the disposal sites, and would not substantially alter the existing traffic conditions. These impacts would not combine with adverse effects from similar projects to form a cumulative impact.

CEQA Significance Conclusion

The Project would result in negligible impacts with respect to releases of hazardous waste and other risks to public health. The incremental effect of the Project's contribution to cumulative impacts would not be significant (Class III).

D.4.5.3 Cumulative Effects of Alternative 1

The cumulative impacts from Alternative 1 would be identical to the Project.

D.4.5.4 Cumulative Effects of the No Action/No Project Alternative

No impacts associated with hazards and public safety would occur under the No Action/No Project Alternative. This alternative would not contribute an incremental adverse effect in combination with other cumulative projects.

D.4.6 Hydrology

D.4.6.1 Spatial and Temporal Boundaries

All groundwater impacts related to the Project would occur within and be limited to the Antelope Valley Groundwater Basin. The Antelope Valley Groundwater Basin, and in particular the Pearland subunit of the Antelope Valley Groundwater Basin, is therefore the limit of the groundwater cumulative analysis. Surface water impacts would be limited to the watershed area of the Rosamond Dry Lake, which is therefore the limit of cumulative analysis for surface water impacts. Temporal limits are as described for each impact in the text below.

Cumulative impacts for water resources are assessed based on consideration of all past, current and future development, and are not limited to the projects listed in Table D-1.

D.4.6.2 Cumulative Effects of the Project

The overall impact of groundwater withdrawal in the Antelope Valley from past projects has been significant, and has resulted in land subsidence in some areas (USGS, 1998). However, the Pearland subunit is documented to rebound well from pumping effects during wet runoff years. Further, since the purpose of the Project is water supply for the PWD, which obtains 40 percent of its water from groundwater pumping in the Antelope Valley, groundwater pumping could be reduced by a compensating amount equivalent to the increase in surface water use from the reservoir. The Project would increase the capacity of a water source that is an alternative to groundwater, and would therefore not contribute to a greater use of groundwater supplies (Impact H-1). The Project is considered to have a negligible incremental effect on the depletion of groundwater levels at this time.

Flow pattern alterations from excavation and construction of the grade control structure within Littlerock Reservoir would be limited to the reservoir and would have no effect outside the reservoir that could contribute to an overall cumulative impact (Impact H-2). Flow patterns on the pit disposal site would not be affected by the Project, and the Project would not contribute an incremental adverse impact that would combine with the impacts from other projects. Temporary disposal of material at the PWD disposal site would be placed such that it would not disturb flow patterns. With best management practices required by existing regulations, the Project's incremental impact to erosion and siltation would be minimal.

As the Project would increase the flood control capacity of the Reservoir, it would not increase the potential for flooding (Impact H-3). Completion of the Project would create a beneficial and long-term effect on reducing the potential for future flooding.

CEQA Significance Conclusion

Given the Project's negligible effect on groundwater levels and flow patterns, and the use of best management practices to minimize effects on erosion and siltation, the Project would not contribute an incremental impact on hydrology and groundwater that would be cumulatively considerable (Class III).

D.4.6.3 Cumulative Effects of Alternative 1

Cumulative effects of Alternative 1 are the same as described above for the Project.

D.4.6.4 Cumulative Effects of the No Action/No Project Alternative

Groundwater withdrawal in the Antelope Valley from past projects is considered significant due to land subsidence and dramatic declines in groundwater levels (USGS, 1998). The No Action/No Project Alternative would increase future reliance on groundwater, therefore contributing to an incremental and adverse impact to groundwater levels (Impact H-1).

Given that no excavation and construction of a grade control structure would occur within the Reservoir under the No Action/No Project Alternative, this alternative would not contribute an incremental effect to existing flow patterns (Impact H-2).

Urbanization generally results in increased flooding due to increased impervious areas causing increased flood peaks and flood volumes. As future development occurs in the Antelope Valley, the future potential for flooding is expected to become cumulatively worse. The No Action/No Project Alternative, by eventually eliminating flood storage in Littlerock Reservoir, would increase the potential for flooding (Impact H-3). The incremental effect of the No Action/No Project Alternative to future flooding would be adverse.

CEQA Significance Conclusion

The No Action/No Project Alternative would increase future reliance on groundwater and would increase the potential for future flooding. This alternative's incremental contribution to a cumulative impact would be significant and unavoidable (Class I).

D.4.7 Noise

D.4.7.1 Spatial and Temporal Boundaries

The geographic area of analysis for cumulative impacts to noise is generally limited to areas within approximately 0.5 mile of a work site, including the haul truck routes. This area is defined as the geographic extent of the cumulative noise analysis because temporary construction and haul truck noise impacts would be localized. At distances greater than 0.5 mile, impulse noise may be briefly audible and steady construction noise would attenuate such that the level of noise would blend in with background noise levels.

Ground vibrations dissipate more rapidly than noise levels, limiting the geographic extent of ground vibration to the immediate vicinity of the vibration source. As noted in Section C.8, the geographic extent of potentially significant ground vibrations seldom extends more than 500 feet from the source of the vibrations. Vibration along the haul routes has increased over time with increased roadway use and heavy truck trips that generate localized vibrations.

Based on the geographic extent defined above, the following cumulative project was identified as applicable to the noise analysis:

- Map ID #5, County of Los Angeles mixed use development project located on the southwest corner of Pearblossom Highway and 47th Street East, approximately 0.5 mile north of the PWD site.

This cumulative project is identified, as discussed below, because cumulative projects identified in Table D-1 within the quarry boundaries are not applicable to noise with respect to impacting adjacent noise sensitive receptors. Furthermore, because this cumulative project is greater than 500 feet away, there is no potential for cumulative vibration impacts.

D.4.7.2 Cumulative Effects of the Project

Noise in the Reservoir has likely been steady over time, with the main noise source during low water periods being use of the area for off-highway vehicle (OHV) recreational activities. Along the haul routes and near the PWD site, continued residential development and traffic growth is slowly changing the quiet desert area such that ambient noise levels existing today are higher than would have occurred prior to such development, especially during daytime hours when traffic and human activity are greatest. Cumulative projects identified in Table D-1 would not overlap with temporary noise within the Reservoir or along proposed haul truck routes where existing residential receptors exist and are not regularly subjected to truck traffic.

No residential receptors are located within 0.5 mile of the quarry sediment disposal locations. While cumulative project Map ID #9 (motocross track) may generate noise levels outside normal daytime quarry operations, sediment disposal activities within the quarries would occur within normal quarry operating hours and would not expose receptors to noise. Project activities would also have no cumulative contribution to noise within the quarries in combination with other projects identified within the quarries (Map IDs #6-8, 10, and 11 in Table D-1). Therefore, the Project would not contribute to cumulative noise within the quarries. The potential for cumulative impacts is limited to temporary noise from periodic activities occurring at the PWD sediment staging location that may impact adjacent residential receptors (Impacts N-1 and N-3).

Construction of the County of Los Angeles mixed use development project (Map ID #5) would be located 0.5 mile north of the PWD site and could occur concurrently with sediment removal activities. Therefore, cumulative consideration is given with respect to temporary noise impacts that could occur to the residential area on 43rd Street East, adjacent to the west of both sites. These residences are located within the City of Palmdale, which does not have any applicable exterior noise standards for temporary construction noise. However, a 75 dBA threshold is utilized (similar to that in Section C.8). Project activities within the PWD site are expected to attenuate to exterior noise levels less than 52-61 dBA Lmax at the nearest residential structure exterior (approximately 900 feet away). Construction noise from this cumulative development project would also be expected to attenuate similarly. Therefore, where cumulative construction noise would be greatest (at residences between the two sites, approximately 1,320 feet away), temporary noise from either project would attenuate to below 60 dBA Lmax.

While periodic activities at the PWD site could combine with this cumulative project (only if activities overlap), any increase in ambient daytime noise levels are considered negligible, with the Project's contribution not considered adverse. Furthermore, SPCs NOI-1 (Prepare a Construction Noise Complaint and Vibration Plan) and NOI-2 (PWD Site Buffer Requirements) would be implemented as part of the Project and would reduce the Project's contribution to cumulative noise to the maximum extent feasible.

CEQA Significance Conclusion

While periodic activities at the PWD site could combine with identified cumulative projects (only if activities overlap), any increase in ambient daytime noise levels are considered negligible. With the inclusion of the SPCs described above, the Project's incremental contribution to a cumulative noise impact would be less than significant (Class III).

D.4.7.3 Cumulative Effects of Alternative 1

The cumulative effects of Alternative 1 with respect to noise would be similar to the impacts described above for the proposed Project. By starting the initial sediment removal period on July 1 (annually), instead of after Labor Day, the potential for overlapping temporary noise would be slightly increased. However, Alternative 1 would slightly reduce the amount of daily mobile noise that would contribute to an overall cumulative effect.

CEQA Significance Conclusion

As described for the proposed Project, periodic activities from Alternative 1 at the PWD site that combine with other identified projects would have a negligible contribution to the overall cumulative noise effect. With the inclusion SPCs NOI-1 (Prepare a Construction Noise Complaint and Vibration Plan) and NOI-2 (PWD Site Buffer Requirements), the alternative's incremental contribution to a cumulative noise impact would be less than significant (Class III).

D.4.7.4 Cumulative Effects of the No Action/No Project Alternative

Under the No Action/No Project Alternative, any noise generating activities would not occur until well into the future when the Reservoir became filled with sediment. As discussed in Section C.8, it is unknown what specific activities would occur outside the Reservoir. At such a time when the Reservoir would become filled with sediment, the cumulative projects identified within Table D-1 would be completed and any operational noise would be integrated into the ambient noise conditions of their surrounding area. While noise producing activities are likely associated with eventual Dam removal activities that may occur under the No Action/No Project Alternative, any contribution to cumulative noise is unknown but would be temporary.

CEQA Significance Conclusion

The noise levels that may be generated from future projects in combination with the construction noise associated with future Dam removal is speculative. The contribution of the No Action/No Project Alternative to cumulative noise levels would be short-term and therefore would be considered less than significant (Class III).

D.4.8 Recreation and Land Use

D.4.8.1 Spatial and Temporal Boundaries

The geographical area for a cumulative analysis of recreation and land use impacts is defined by the land uses that are located within 0.5 mile of the proposed truck routes and sediment storage and disposal sites, as well as recreational resources within five miles of the Project area. Project impacts to existing land uses would be localized, as they are associated with the adverse effects of noise, emissions, and traffic from numerous truck trips and construction equipment that would be concentrated along the proposed routes and at the proposed storage/disposal sites. In contrast, public closure of recreational

resources within five miles of the Project could contribute to adverse cumulative effects on recreation. As Project impacts to land use and recreation would be short-term (i.e., during proposed construction and maintenance phases), cumulative impacts would be associated with the adverse effects from other projects within the timeframe of Project activities.

D.4.8.2 Cumulative Effects of the Project

None of the projects described in Section D.3 or listed in Table D-1 would preclude or disturb an existing recreational resource during the proposed closure of the Reservoir (Impact L-1). The construction of other Projects may adversely affect existing residences along the proposed truck routes and sediment storage/disposal sites, such as the construction of a mixed-use development in Los Angeles County along 47th Street East and Pearblossom Highway (see Table D-1, Map ID #5). This proposed mixed-use development may create nuisance impacts to nearby residences that are similar to the Project (i.e., truck traffic, noise, and construction equipment emissions), and that may affect the same existing land uses impacted by the Project (Impact L-2). If construction of the County's mixed-use development project were to occur during the construction or maintenance phases of the Project, the Project would contribute to a cumulative disturbance of existing land uses.

CEQA Significance Conclusion

If the construction and maintenance phases of the Project were to occur concurrently with the construction of the County's mixed-used development project (see Table D-1, Map ID #5), the incremental disturbance effect of the Project to adjacent land uses would be cumulatively considerable. Adverse cumulative impacts resulting from the Project would be reduced through the Project's SPCs, including SPC AQ-1 (Limit Engine Idling), SPC AQ-2 (Fugitive Dust Controls), SPC AQ-3 (Off-Road Engine Specifications), SPC AQ-4 (On-Road Engine Specifications), SPC AQ-5 (Reduce Off-Road Vehicle Speeds), and SPC NOI-1 (Prepare a Construction Noise Complaint and Vibration Plan). However, given the proximity of existing residences to the truck routes and sediment storage/disposal sites, and the proximity of other proposed development to these same land uses, the Project's contribution to a cumulative land use disturbance would be significant and unavoidable (Class I).

D.4.8.3 Cumulative Effects of Alternative 1

The cumulative impacts from Alternative 1 would be identical to the Project.

D.4.8.4 Cumulative Effects of the No Action/No Project Alternative

Given that proposed construction and maintenance activities would not occur under the No Action/No Project Alternative, this alternative would not contribute to short-term cumulative impacts to existing recreational resources (Impact L-1), nor would it create a cumulative disturbance to existing residences or other adjacent land uses (Impact L-2). However, future No Action/No Project activities that may involve demolishing the Dam and removing 2.8 million cubic yards of sediment and concrete would contribute to a cumulative land use disturbance if they were concurrent with the construction of other projects in the vicinity of the proposed truck routes and disposal sites.

At this time, there are no foreseeable closures to recreational facilities that could contribute to a cumulative long-term degradation of a recreational resource (Impact L-3).

CEQA Significance Conclusion

If the No Action/No Project Alternative includes the future removal of the Dam and accumulated sediment, this alternative could contribute to a cumulative disturbance of existing residences. Any construction and removal activities that were to occur concurrently with the construction of other projects in the vicinity of proposed truck routes and disposal sites would create an incremental adverse effect to adjacent land uses that would be cumulatively considerable. The alternative's cumulative impact would be significant and unavoidable (Class I).

D.4.9 Transportation and Traffic

D.4.9.1 Spatial and Temporal Boundaries

For the purposes of the cumulative analysis of transportation impacts, only other projects that make a contribution to traffic along the same roadways utilized as the Project are considered (refer to Section C.10). During all phases of the Project, roadway segments where related trips would combine with cumulative projects could experience appreciable increases in traffic. Therefore, the study area for cumulative impacts includes other projects that might contribute traffic to the same intersections and street segments. A wide variety of activities and development contribute to the cumulative traffic conditions including residential, commercial, and industrial development in the local area. Therefore, all projects identified in Table D-1 have been considered with respect to this cumulative traffic analysis.

D.4.9.2 Cumulative Effects of the Project

As discussed in Section C.10, the traffic analysis for the Project is completed for future years 2022 and 2027 for both the initial and ongoing sediment removal phases of the Project. These future Project conditions include cumulative traffic volume growth as part of the future baseline. The Project traffic analysis is a cumulative analysis with respect to additional traffic volumes generated by the cumulative projects identified in Table D-1 on study area roadway segments and intersections.

As shown in Table C.10-10, Project traffic would have an adverse contribution to cumulative traffic at the intersection of Pearblossom Highway and Avenue T during the afternoon peak period. Project contribution to this intersection during this peak period would result in an LOS D delay. As shown in Table C.10-11, the Project would not contribute an adverse number of daily operational trips during ongoing sediment removal activities after the Reservoir design capacity has been restored. However, the Project would contribute an adverse incremental effect to cumulative traffic impacts during the initial sediment removal phase (Impact T-1). This impact would be reduced with the implementation of Mitigation Measure T-1 and SPC TRA-1. It should be noted that the implementation of cumulative project #2 (High Desert Corridor Freeway) is expected to reduce the traffic volumes on Pearblossom Highway. However, to ensure the most conservative analysis has been prepared, Tables C.10-10 and C.10-11 do not assume any reduction in traffic volumes on Pearblossom Highway under both future year 2022 and 2027 scenarios.

With regard to a cumulative impediment to emergency vehicle access, the implementation of Mitigation Measure T-1 and SPC TRA-1 would minimize the Project's cumulative contribution (Impact T-2). All future development that may generate traffic on study area roadway segments would be subject to Caltrans and other applicable regulations pertaining to vehicle weight and oversize vehicle trips. Additional development of the County of Los Angeles, particularly expansion of the existing mining quarries (as identified in Table D-1) would generate the use of large oversized trucks on public roadways and highways that would continue roadway wear and damage (Impact T-3). However, each individual

project would require Caltrans and other approvals and permits pertaining to these issues. The implementation of SPC TRA-2 (Pavement Rehabilitation – Public or National Forest Roadways) would minimize the Project's contribution to cumulative roadway damage impacts to the degree feasible.

CEQA Significance Conclusion

During the initial sediment removal phase, the Project would contribute an incremental effect to traffic impacts that, when combined with the potential traffic impacts of other projects, would be cumulatively considerable (Class I). With regard to the Project's incremental effect on emergency vehicle access and roadway damage, the implementation of Mitigation Measure T-1 and SPCs TRA-1 and TRA-2 would reduce the Project's cumulative contribution to a less than significant level (Class II).

D.4.9.3 Cumulative Effects of Alternative 1

The cumulative effects of Alternative 1 with respect to transportation and traffic would be similar to that described above for the Project. By starting the initial sediment removal period on July 1 (annually), instead of after Labor Day and reducing the number of daily truck trips, the contribution to cumulative impacts on traffic delay would be reduced for Alternative 1. However, the contribution to cumulative impacts from traffic associated with sediment transport in subsequent years, conflicts with emergency access, and roadway damage would be similar or identical to that described above for the proposed Project. The inclusion of Mitigation Measure T-1 and SPCs TRA-1 and TRA-2, would further reduce cumulative impacts from Alternative 1.

CEQA Significance Conclusion

During the initial sediment removal phase, Alternative 1 would contribute an incremental effect to traffic impacts that, when combined with the potential traffic impacts of other projects, would be cumulatively considerable (Class I). With regard to Alternative 1's incremental effect on emergency vehicle access and roadway damage, the implementation of Mitigation Measure T-1 and SPCs TRA-1, and TRA-2 would reduce the cumulative contribution to a less than significant level (Class II).

D.4.9.4 Cumulative Effects of the No Action/No Project Alternative

Under the No Action/No Project Alternative, any traffic-generating activities would not occur until well into the future when the Reservoir became filled with sediment. As discussed in Section C.10, it is unknown what specific activities would occur outside the Reservoir. At such a time when the Reservoir would become filled with sediment, the cumulative projects identified within Table D-1 would be completed and integrated into the existing traffic conditions of their surrounding area. While traffic generation would occur should eventual Dam removal be required as part of the No Action/No Project Alternative, any contribution to cumulative traffic impacts is speculative. If removal of the Dam were to occur under the alternative, associated construction activities would have an adverse contribution to cumulative traffic impacts.

CEQA Significance Conclusion

If future removal of the Dam were to occur under the No Action/No Project Alternative, the alternative's incremental effect on traffic impacts during dam removal and excavation activities would be cumulatively considerable and unavoidable (Class I).

D.4.10 Visual Resources

D.4.10.1 Spatial and Temporal Boundaries

The geographic area of analysis for cumulative impacts to visual resources is limited to areas within approximately 0.5 mile of a site where visual change would occur. This area is defined as the geographic extent of the cumulative visual analysis because the Project's permanent visual changes occur at or below surface grade. At distances greater than 0.5 mile, visual changes would blend in with existing views and topography.

Based on the geographic extent defined above, the following cumulative project was identified as applicable to the visual resource analysis:

- Map ID #5, County of Los Angeles mixed use development project located on the southwest corner of Pearblossom Highway and 47th Street East, approximately 0.5 mile north of the PWD site.

This sole project is identified, as discussed below, because cumulative projects within the quarry boundaries are not applicable to visual resources with respect to impacting viewsheds of sensitive receptors.

D.4.10.2 Cumulative Effects of the Project

The visual quality of the Reservoir has remained steady over time, with the main change in visual appearance being tree removal. Along the haul routes and near the PWD site, continued residential development and traffic growth is changing the once desert area to a more urbanized landscape. Haul trucks would occur on existing roadways and not create a new source of visual contrast. No residential receptors are located within 0.5 mile of the quarry sediment disposal locations. Furthermore, sediment disposed at the quarry would either be placed below surface grade to backfill exhausted mining pits or stockpiled with sand and rock mined at the quarry. Such activities would not contribute to a cumulative visual impact when considered in conjunction with cumulative Map IDs #6 through 11 in Table D-1.

The potential for cumulative impacts is limited to periodic activities occurring at the PWD sediment staging location that may impact adjacent public views. Construction of the County of Los Angeles mixed use development project (Map ID #5) would be located 0.5 mile north of the PWD site and would increase overall visual sense of urbanized developed in the area. Project activities within the PWD site would be temporary, but include the presence of heavy equipment and removal of vegetation within the northeast corner of the property only.

While periodic activities at the PWD site could combine with this cumulative project, the Project's contribution to cumulative impacts are not considered adverse because the temporary storage of sediment and presence of construction equipment does not change the overall open space feel of the site (Impact V-1). While the cumulative project (Map ID #5) would result in permanent visual changes from public views at adjacent roadways and residences, the Project would not result in permanent visual contrast.

CEQA Significance Conclusion

Given that proposed Project activities at the PWD site would not result in permanent impacts to the visual landscape, the Project would not contribute an incremental effect to an overall cumulative impact on visual resources. Cumulative impacts to visual resources would be less than significant (Class III).

D.4.10.3 Cumulative Effects of Alternative 1

The cumulative visual impacts of Alternative 1 would be similar or identical to that described above for the proposed Project. By starting the initial sediment removal period on July 1 (annually), instead of after Labor Day, the number of days where activities may occur at the PWD site could be slightly increased. However, the overall potential for visual contrast would not be altered. Therefore, Alternative 1 would not contribute to a cumulative visual contrast and would not result in long-term adverse impacts.

CEQA Significance Conclusion

Alternative 1 would not result in permanent impacts to the visual landscape. The alternative's incremental effect to a cumulative impact on visual resources would be less than significant (Class III).

D.4.10.4 Cumulative Effects of the No Action/No Project Alternative

Under the No Action/No Project Alternative, visual change would occur slowly within the Reservoir as it fills with sediment. As discussed in Section C.11, it is unknown what specific activities would occur outside the Reservoir. At such a time when the Reservoir would become filled with sediment, the cumulative projects identified within Table D-1 would be completed and incorporated into the ambient visual conditions of their surrounding area. While visual contrast of some level is likely associated with eventual construction activities of the No Action/No Project Alternative, any contribution to cumulative visual change is speculative but would likely be temporary.

CEQA Significance Conclusion

In the event that the Dam would be removed, the No Action/No Project Alternative would contribute to a cumulative impact on visual resource. The alternative's incremental effect to a cumulative impact on visual resources would be short-term, and at this time would be expected to be less than significant (Class III).

D.4.11 Water Quality and Resources

D.4.11.1 Spatial and Temporal Boundaries

The area of potential cumulative effects for water quality and resources is defined as the Project area, including Littlerock Reservoir and Littlerock Dam, the potential sand and gravel pits and PWD disposal areas, and the haul route between the reservoir and the disposal areas. Additionally, this cumulative effects analysis includes any area downstream of the Project area as well as the upstream contributing area for Littlerock Reservoir, which is defined as the Rock Creek Hydrologic Area. For groundwater, the area of potential cumulative effects is defined as the Antelope Valley Groundwater Basin.

Cumulative impacts for water quality and resources are assessed based on consideration of past, current, and future development, and are not limited to the projects listed in Table D-1.

D.4.11.2 Cumulative Effects of the Project

It is possible that other projects within the area of potential cumulative effects could violate water quality standards or waste discharge requirements, or contaminate groundwater through the introduction or mobilization of pollutants. Examples of projects that could result in these potential

impacts include active mining operations and new highway construction. However, the incremental effects associated with the Project for water quality degradation are negligible.

CEQA Significance Conclusion

The Project would not contribute an incremental effect on either surface or ground water quality that would be cumulatively considerable (Class III).

D.4.11.3 Cumulative Effects of Alternative 1

The cumulative impacts from Alternative 1 would be identical to the Project.

D.4.11.4 Cumulative Effects of the No Action/No Project Alternative

No impacts associated with water quality would occur under the No Action/No Project Alternative. This alternative would not contribute an incremental adverse effect in combination with other cumulative projects.

D.4.12 Wildfire Prevention and Suppression

D.4.12.1 Spatial and Temporal Boundaries

The geographic area for a cumulative analysis of wildfire prevention and suppression is defined by the direct and indirect protection zones that encompass the Reservoir, as well as the high fire hazard areas (i.e., Fire Zone 4, Additional Brush Fire Hazards Areas) that are traversed by the Project. The aforementioned areas are susceptible to wildfire given their climate, type of vegetation found, and topography (see Section C.13). The Project's impacts on wildfire prevention and suppression would be short-term in that they would only occur during the proposed construction and maintenance phases (e.g., accidental vegetation fire from equipment; temporary impediment to fire-fighting crews from equipment and dump trucks). Other projects that may be constructed in this defined geographic area during the Project's construction and maintenance activities could create similar impacts wildfire prevention and suppression that may contribute to an adverse cumulative effect.

D.4.12.2 Cumulative Effects of the Project

Impacts to wildfire prevention and suppression could occur from construction of other projects in the defined geographic area for the wildfire cumulative analysis (see discussion above). Other projects that may create construction-related impacts similar to the Project include the mixed-use development in Los Angeles County along 47th Street East and Pearblossom Highway (see Table D-1, Map ID #5) and the improvement project for Williamson Rock and the Pacific Crest Trail (see Table D-1, Map ID #1).

The identified cumulative projects may require the use of construction equipment along public roadways that could interfere with wildfire suppression activities (Impact WF-1). Construction activities or personnel affiliated with other projects could also inadvertently start a vegetation fire (Impact WF-2). Any disturbance to the surrounding vegetation that would result from these other Projects may contribute to a future fuel-vegetation matrix with an increased ignition potential and rate of fire spread (Impact WF-3).

Potential conflicts to wildfire prevention and suppression from other identified projects in the geographic area would be similar to the Project. If construction of the County's mixed-use development project or the Williamson Rock and Pacific Crest Trail improvements were to occur during the

construction or maintenance phases of the Project, the Project would contribute an incremental adverse effect to the overall cumulative impact to wildfire suppression activities.

CEQA Significance Conclusion

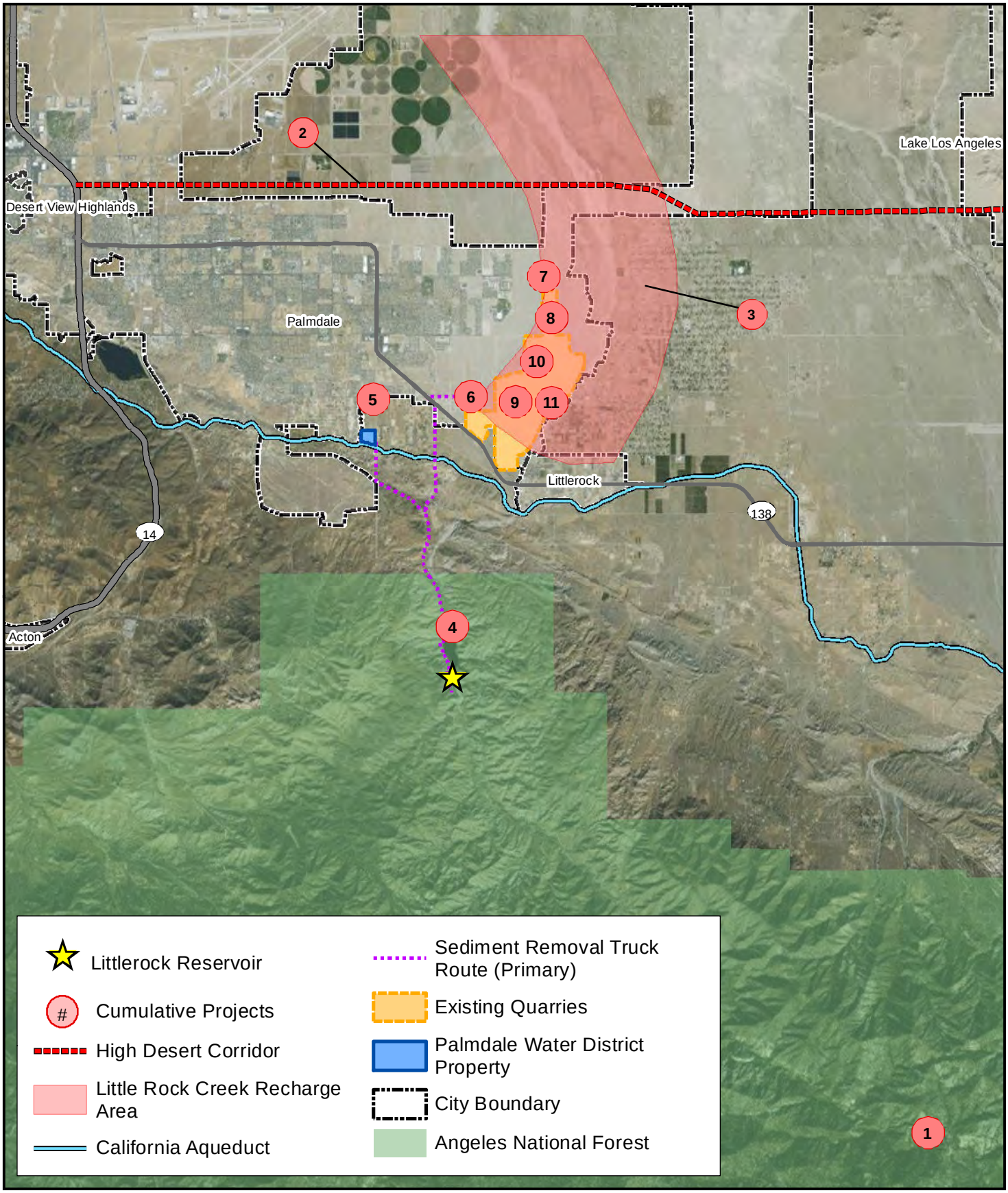
In order to avoid adverse impacts, the Project would implement SPC FIRE-1 (Curtailment of Activities) to temporarily halt Project construction in the event of a fire or during extreme weather conditions, as well as SPCs FIRE-2 (Preparation of a Fire Plan) and FIRE-3 (Spark Arrester Requirements) to avoid a Project-related vegetation fire. The Project would also implement SPCs BIO-1a (Provide Restoration/Compensation for Impacts to Native Vegetation Communities) and BIO-2 (Prepare and Implement a Weed Control Plan) to minimize effects on native flora. With implementation of SPCs FIRE-1, FIRE-2, FIRE-3, BIO-1a, and BIO-2, the incremental impact of the Project on wildfire prevention and suppression would be reduced to a level that is less than significant (Class II).

D.4.12.3 Cumulative Effects of Alternative 1

The cumulative impacts from Alternative 1 would be identical to the Project.

D.4.12.4 Cumulative Effects of the No Action/No Project Alternative

The No Action/No Project Alternative would not involve the use of construction equipment at the Reservoir, nor would it introduce a temporary workforce that would need to be trained in fire prevention behavior and protocols. Under this alternative, there would be no new activities at the Reservoir that may result in a vegetation fire; expose communities, firefighters, personnel, or natural resources to an increased wildfire risk; or alter the existing fuel-vegetation matrix. Given that the No Action/No Project Alternative would not affect wildfire prevention and suppression activities, this alternative would not contribute to a cumulative impact.



0 1.5 3 Miles

Cumulative Projects

Littlerock Reservoir Sediment Removal Project

Figure D-1

May 2016