

C.10 Transportation and Traffic

This section focuses only on the proposed action (Project) potential to adversely impact capacity of the existing street system, impede the flow of emergency service vehicles, and damage roadways during construction of the Project. Potential impacts related to changes in air traffic patterns, and adopted policies, plans, or programs supporting alternative transportation were found to not require analysis in this EIS/EIR.

C.10.1 Affected Environment

The affected environment for the Project includes roadways and parking areas within the Angeles National Forest (ANF) accessing the Reservoir, as well as public roadways utilized by construction workers and the hauling of sediment materials to the disposal site(s). Haul truck travel routes and roadways that provide access to the Project site are shown in Figure B-1. A description of these roadways follows:

- **Cheseboro Road from ANF boundary to Pearblossom Highway.** Cheseboro Road is a two lane north-south roadway that extends south from Pearblossom Highway to the Angeles National Forest entrance. It continues south into the Angeles National Forest to provide access to Littlerock Reservoir. The posted speed limit along Cheseboro Road is 55 miles per hour and no passing is allowed along most of the roadway. This stretch of Cheseboro Road contains a bridge crossing of the California Aqueduct.
- **Pearblossom Highway between Cheseboro Road and Avenue T.** Pearblossom Highway is a four lane east-west roadway located approximately four miles north of Littlerock Reservoir. At its intersection with Fort Tejon Road, Pearblossom Highway turns to the southeast and becomes a part of State Route 138. The intersection of Pearblossom Highway and Cheseboro Road is unsignalized.
- **Avenue T between Pearblossom Highway and Quarries.** Avenue T is a two lane east-west roadway. The intersection of Avenue T and Pearblossom Highway is signalized with a dedicated right turn lane from westbound Pearblossom Highway onto Avenue T. The posted speed limit on Avenue T is 55 miles per hour.
- **Barrel Springs Road between Cheseboro Road and 47th Street.** Barrel Springs Road is a two lane roadway that intersects with Cheseboro Road approximately two miles north of Littlerock Reservoir and runs in a northwesterly direction to Pearblossom Highway. The posted speed limit on Barrel Springs Road is 55 miles per hour and passing is allowed.
- **47th Street between Barrel Springs Road and PWD sediment disposal property.** 47th Street East is a two lane north-south roadway that runs generally parallel to Cheseboro Road approximately one mile to the west of Cheseboro Road. The posted speed limit on 47th Street Road is 45 miles per hour and passing is allowed. This stretch of 47th Street contains a bridge crossing of the California Aqueduct.

The existing roadway characteristics and traffic conditions for each of the study area roadways are summarized in Table C.10-1. The data in this table were obtained from field reconnaissance, the traffic volume websites of Caltrans and the Los Angeles County Department of Public Works, and the City of Palmdale's "Traffic Volume Map." This data represents the most currently available traffic volume data and is considered representative of current traffic conditions on study area roadways.

Roadway	Jurisdiction	Lanes	Average Daily Traffic Volume
Cheseboro Road	Los Angeles County City of Palmdale (north of Ave T-8) U.S. Forest Service (inside Angeles National Forest)	2	1,400 – north of Mt. Emma Rd 380 – south of Mt. Emma Rd
Pearblossom Highway	Caltrans	4	19,600 – south of Ave T
Avenue T	City of Palmdale	2	14,400
Barrel Springs Road	Los Angeles County	2	1,140
47th Street East	Los Angeles County	2	430

Source: Los Angeles County Department of Public Works, Caltrans Traffic Census, City of Palmdale's "Traffic Volume Map"

There are four key intersections in the study area that could potentially be affected by the Project. These intersections and the type of traffic control currently in place at each intersection are listed below:

- Cheseboro Road at Barrel Springs Road (stop sign on Barrel Springs Road)
- Cheseboro Road at Pearblossom Highway (stop sign on Cheseboro Road)
- Pearblossom Highway at Avenue T (4-way signal with a dedicated right turn lane from westbound Pearblossom Highway to eastbound Avenue T)
- Barrel Springs Road at 47th Street East (stop signs on 47th Street East)

The levels of service (LOS) at these intersections for the morning and afternoon peak hours were determined using the intersection capacity utilization (ICU) methodology. LOS is a qualitative indicator of an intersection's operating conditions that is used to represent various degrees of congestion and delay. It is measured from LOS A (excellent conditions) to LOS F (extreme congestion), with LOS A through D considered to be acceptable. The level of service is based on the ICU value, which is a comparison of the traffic volumes passing through the intersection to the overall capacity of the intersection. The relationship between the ICU value and the level of service at an intersection is shown in Table C.10-2.

ICU Value	LOS
0.00 to 0.60	A
> 0.60 to 0.70	B
> 0.70 to 0.80	C
> 0.80 to 0.90	D
> 0.90 to 1.00	E
> 1.00	F

Source: FHWA, 2014

These four study area intersections were analyzed to determine their existing operation conditions during the morning and afternoon peak hours. Based on the existing peak hour traffic volumes, the turning movement counts, and the existing number of lanes at each intersection, the LOS has been determined at each intersection, as summarized in Table C.10-3. As shown, all study area intersections currently operate at LOS A during the peak periods.

Intersection	ICU Value & LOS	
	A.M. Peak Hour ¹	P.M. Peak Hour ²
Cheseboro Road/Barrel Springs Road	0.182 – A	0.176 – A
Cheseboro Road/Pearblossom Highway	0.302 – A	0.481 – A
Pearblossom Highway/Avenue T	0.640 – B	0.738 – A
Barrel Springs Road/47 th Street East	0.209 – A	0.175 – A

Source: Garland Associates, 2014

Notes:

1 - 7:00 a.m. to 9:00 a.m.

2 - 4:00 p.m. to 6:00 p.m.

C.10.2 Regulatory Framework

The roadway network within the study area that would serve as an access system for the Project is within the jurisdiction of four public agencies: the U.S. Forest Service, Caltrans, Los Angeles County, and the City of Palmdale. These agencies are responsible for the operation and maintenance of the study area roadways. Table C.10-4 provides a list of plans and policies that are applicable to surface transportation, and includes a discussion of the Project’s consistency with each plan or policy. The Project’s consistency with the Forest Plan is discussed in Section C.9.2 (Recreation and Land Use).

Table C.10-4. Consistency with Applicable Transportation Plans and Policies		
Plan/Policy	Consistency	Explanation
California Vehicle Code		
California Vehicle Code (CVC), division 2, chapter 2.5; div. 6, chap. 7; div. 13, chap. 5; div. 14.1, chap. 1 & 2; div. 14.8; div. 15 (DMV 2014) includes regulations pertaining to licensing, size, weight, and load of vehicles operated on highways.	Yes	SPC TRA-1 requires preparation of a Traffic Control Plan, which shall identify the need for any oversize vehicle, weight restriction, or encroachment permits.
Los Angeles County 2035 Draft General Plan Mobility Element		
Policy M 4.7: Maintain a minimum LOS D, where feasible; however, allow LOS below D on a case by case basis in order to further other General Plan goals and policies, such as those related to environmental protection, infill development, and active transportation.	Yes	As discussed in Section C.10.4, LOS D would be maintained during Project activities at all study area intersections utilizing the utilizing the ICU Methodology.
City of Palmdale General Plan Circulation Element		
Policy C1.4.1: Strive to maintain a Level of Service (LOS) C or better to the extent practical; in some circumstances, a LOS D may be acceptable for a short duration during peak periods.	Yes	As discussed in Section C.10.4, LOS D would be maintained during Project activities at all study area intersections utilizing the utilizing the ICU Methodology. The LOS at the intersection of Cheseboro Road and Pearblossom Highway is LOS with and without the Project. Furthermore, adverse impacts to without project LOS conditions would occur only temporarily (during annual sediment removal period only) and during the afternoon peak period.

Source: DMV, 2014; County of Los Angeles, 2014; City of Palmdale, 1994

C.10.2.1 Federal

- **Title 49, Code of Federal Regulations (CFR).** Title 49, CFR, Subtitle B governs the transportation of oversize vehicles, those transporting the types of materials defined as hazardous, and the marking of the transportation vehicles. Any operations oversize vehicles and those transporting hazardous materials would be required to comply with the regulations, including guidelines set forth by the Federal Motor Carrier Safety Administration.

C.10.2.2 State

- **California Vehicle Code (CVC).** CVC, division 2, chapter 2.5; div. 6, chap. 7; div. 13, chap. 5; div. 14.1, chap. 1 & 2; div. 14.8; div. 15 (DMV, 2014) includes regulations pertaining to licensing, size, weight, and load of vehicles operated on highways; safe operation of vehicles; and the transportation of hazardous materials.

- **Caltrans Guide for the Preparation of Traffic Impact Studies (TIS).** The following criteria are a starting point in determining when a TIS is needed (Caltrans, 2002):
 - Generates over 100 peak hour trips assigned to a State highway facility.
 - Generates 50 to 100 peak hour trips assigned to a State highway facility – and, affected State highway facilities are experiencing noticeable delay; approaching unstable traffic flow conditions (LOS “C” or “D”).
 - Generates 1 to 49 peak hour trips assigned to a State highway facility – and, affected State highway facilities are experiencing significant delay; unstable or forced traffic flow conditions (LOS “E” or “F”).

C.10.2.3 Local

- **County of Los Angeles General Plan.** Both the approved General Plan (1974) and public review draft of the 2035 General Plan (2014) were reviewed for transportation goals and policies applicable to the Project (County of Los Angeles 1974 and 2014a). The 2035 Draft General Plan contains the following applicable policy pertaining to LOS performance standards (County of Los Angeles, 2014):
 - **Policy M 4.7:** Maintain a minimum LOS D, where feasible; however, allow LOS below D on a case by case basis in order to further other General Plan goals and policies, such as those related to environmental protection, infill development, and active transportation.
- **City of Palmdale General Plan.** A review of the Palmdale General Plan Circulation and Environmental Resources Elements identified the following applicant General Plan policies pertaining to LOS performance standards (City of Palmdale, 1994):
 - **Policy C1.4.1:** Strive to maintain a Level of Service (LOS) C or better to the extent practical; in some circumstances, a LOS D may be acceptable for a short duration during peak periods.

C.10.3 Issues Identified During Scoping

Table C.10-5 below provides a list of transportation and traffic-related issues raised during the public scoping period for the EIS/EIR [see Appendix E (Scoping Summary Report)]. Issues are listed by agency or members of the public providing comment. The table also includes a brief discussion the applicability of each issue to the environmental analysis and where that issue is addressed in the EIS/EIR.

Table C.10-5. Scoping Issues Relevant to Transportation and Traffic	
Comment	Consideration in the EIS/EIR
County of Los Angeles Department of Public Works	
Requests submittal of a traffic impact analysis to Public Works for review and approval, which should include Traffic Index calculations for all proposed haul routes.	Section C.10.4 provides a quantitative traffic analysis for review utilizing the ICU Methodology, Highway Capacity Manual Unsignalized Intersection Methodology, and against the applicable Congestion Management Plan
City of Palmdale	
A traffic impact study is required to: <ul style="list-style-type: none"> • Address the impacts of additional trips from this project on the City street network, which has the potential for severe wear and tear of City streets; • Address the level of service of those intersections along each proposed delivery route and mitigate impacts as necessary; and • Address and mitigate any impacts on the structural sections of the existing roads along the proposed delivery routes. 	Section C.10.4 provides a quantitative traffic analysis for review utilizing the ICU Methodology, Highway Capacity Manual Unsignalized Intersection Methodology, and against the applicable Congestion Management Plan. Impact Criterion TRA3 (and Impact T-3) analyzes the potential for significant damage to public roadways. Mitigation Measures are proposed, as applicable, within Section C.10.4 and Standard Project Commitments related to traffic and road damage are provided in Appendix A.

C.10.4 Environmental Consequences

Significance Criteria. The following significance criteria for transportation and traffic were derived from applicable regulations and performance standards identified in Section C.10.2 (Regulatory Framework) and knowledge of the proposed haul truck routes utilized during sediment removal. Impacts of the Project or alternatives would be considered significant and would require mitigation if:

- Criterion TRA1: Exceed, either individually or cumulatively, a level of service objective or other roadway performance standard established by Caltrans, Los Angeles County, or City of Palmdale for study area roadway segments and intersections.
- Criterion TRA2: Impede emergency vehicle access.
- Criterion TRA3: Result in significant damage to public roadways.

Impact Assessment Methodology. The general objective of the traffic impact analysis is to evaluate the impacts of the Project on the roadways necessary to access the Reservoir and those proposed as routes for sediment disposal. The traffic analysis addresses the temporary increase in vehicle trips on Cheseboro Road, Pearblossom Highway, Barrel Springs Road, 47th Street East, and Avenue T generated by annual temporary Project activities.

During construction of the grade control structure, vehicle trips will primarily be from initial delivery of equipment and daily trips from construction workers. During the initial and ongoing excavation of sediment, a number of vehicles would be traveling to and from the Project site, including trucks delivering equipment to the site, trucks transporting sediment away from the Reservoir, and construction worker commute trips to and from the site. The traffic volumes associated with initial sediment activities were estimated and then added to the existing traffic volumes of the utilized roadway network. With and without project scenarios are compared to applicable Caltrans, Los Angeles County, and City of Palmdale performance standards for utilized roadway segments and critical intersections. This phase of the Project is utilized for analysis because it represents worst-case traffic volumes of the Project.

C.10.4.1 Proposed Action/Project

Direct and Indirect Effects Analysis

Exceed, either individually or cumulatively, a level of service objective or other roadway performance standard established by Caltrans, Los Angeles County, or City of Palmdale for study area roadway segments and intersection (Criterion TRA1)

During construction of the grade control structure, vehicle trips will primarily be from initial delivery of equipment and daily trips from construction workers. During the initial and ongoing excavation of sediment, a number of vehicles would be traveling to and from the Project site, including trucks delivering equipment to the site, trucks transporting sediment away from the site, and construction workers' vehicles commuting to and from the site. The traffic volumes associated with these activities were estimated for each phase of Project activities. These estimated volumes were then added to the baseline traffic volumes and the impacts on the utilized roadway network were evaluated. Similarly, the traffic volumes associated with the annual sediment removal program were estimated for peak activity levels and the traffic impacts were evaluated.

The trip generation characteristics are based on work force estimates and quantities of material that would be transported to and from the site on a typical day of construction during times of peak

construction activity. Project generated traffic was added to the existing and projected future baseline traffic volumes on the affected roadways and a comparative analysis was conducted of traffic volumes and levels of service with and without the Project. The analysis addresses existing traffic conditions and two future baseline scenarios: 2022 and 2027. The year 2022 represents the mid-point of the initial sediment removal phase (which is expected to occur from 2017 to 2027), while the year 2027 represents the initial year of the ongoing operation and maintenance sediment removal activities. The before-and-after traffic conditions are evaluated for each of these analysis scenarios.

Trip Generation. The following represents the maximum daily trip generation of the Project for each activity:

- During construction of the grade control structure, it is estimated that the construction activities would generate a total of 30 employee trips per day and six (6) truck trips per day (also shown in Table B-1).
- During the initial sediment excavation phase, activities would generate approximately 70 employee trips per day and 480 truck trips per day (also shown in Table B-2). As the sediment excavation activities would generate substantially more traffic than the construction of the grade control structure, the traffic impact analysis is based on the levels of traffic that would be generated by the excavation activities.
- During ongoing operation and maintenance (O&M), sediment excavation and other O&M activities would generate approximately 180 truck trips per day (also shown in Table B-3).

The levels of Project-generated traffic during the initial excavation phase are summarized in Table C.10-6. For the employee commuter trips, it has been assumed that each of the 30 employees would generate one inbound trip and that five outbound trips would also occur during the morning peak hour. The outbound trips account for drop-offs and other miscellaneous trips during the peak hour. For the afternoon peak hour it was assumed that there would be five inbound trips and 30 outbound trips. It was also assumed that there would be 10 additional auto/light-duty vehicle trips throughout the day.

Table C.10-6 indicates that the Project would generate a total of 560 vehicle trips per day, 75 trips during the morning peak hour (50 inbound and 25 outbound), and 75 trips during the afternoon peak hour (25 inbound and 50 outbound). It was assumed for the analysis that total truck trips per day would be spread out evenly over a 12-hour working day.

Time Period	Project Generated Traffic		
	Trucks	Autos/Light-Duty Vehicles	Total
Daily Traffic			
Round Trips	240	40	280
One-way Trips	480	80	560
AM Peak Hour			
Inbound	20	30	50
Outbound	20	5	25
Total	40	35	75
PM Peak Hour			
Inbound	20	5	25
Outbound	20	30	50
Total	40	35	75

To quantify the increases in traffic that would occur on each affected roadway segment and at each study area intersection as a result of the Project, the site-generated traffic was geographically distributed onto the roadway network using the following assumptions.

- The distribution for the automobile/light-duty vehicle traffic would be 20 percent on Barrel Springs Road, 35 percent on Pearblossom Highway, 35 percent on State Route 138, and 10 percent on 47th Street East. All automobile/light-duty vehicles accessing the Reservoir would utilize Cheseboro Road.
- The truck route to and from the sediment disposal site would run along Cheseboro Road, Pearblossom Highway, and Avenue T. During annual sediment removal, 94 percent of haul truck trips would utilize this route (450 total daily trips, or 225 round trips).
- Based on a maximum limit of 10,000 cubic yards of sediment transported to the PWD site per year, only 6 percent of annual haul truck traffic would travel along Barrel Springs Road and 47th Street East (30 total daily trips, or 15 round trips) to access this site.

Using the generated traffic volumes shown in Table C.10-6 and the geographical distribution assumptions outlined above, the volumes of Project traffic on each access street and at each study area intersection were determined for the traffic impact analysis.

The levels of Project-generated traffic during the ongoing operation and maintenance (O&M) sediment removal phase are summarized in Table C.10-7.

Time Period	Project Generated Traffic		
	Trucks	Autos/Light-Duty Vehicles	Total
Daily Traffic			
Round Trips	90	15	105
One-way Trips	180	30	210
AM Peak Hour			
Inbound	8	10	18
Outbound	8	2	10
Total	16	12	28
PM Peak Hour			
Inbound	8	2	10
Outbound	8	10	18
Total	16	12	28

Baseline Traffic Volumes. The existing traffic volumes represent peak hour traffic counts that were taken at the study area intersections in September, 2014. The year 2022 traffic volumes were projected by applying an expansion factor of 17.4 percent to the existing traffic volumes and the year 2027 traffic volumes were projected by applying an expansion factor of 24.8 percent to the existing traffic volumes. These expansion factors were derived from Exhibit D-1, “General Traffic Volume Growth Factors,” of the Los Angeles County Congestion Management Program (Los Angeles County Metropolitan Transportation Authority, 2010).

Impact T-1: Exceed, either individually or cumulatively, an established level of service standard for roadways, highways, and intersections utilized by the Project

Los Angeles County Intersection Capacity Utilization (ICU) Methodology. Based on the Los Angeles County “Traffic Impact Analysis Report Guidelines” (Los Angeles County Department of Public Works, January 7, 1997), an impact is considered adverse if the Project related increase in the volume/capacity

ratio or ICU value equals or exceeds the thresholds shown below in Table C.10-8. If the Project’s contribution would exceed these values, then the Project would result in an increase in traffic which would be substantial in relation to the existing traffic load and capacity of the street system.

Pre-Project		Project Increase In ICU Value
LOS	ICU Value	
C	0.71 to 0.80	0.04 or more
D	0.81 to 0.90	0.02 or more
E/F	0.91 or more	0.01 or more

Source: Los Angeles County, 1997

Initial Sediment Excavation Phase. The before-and-after ICU values and levels of service at the four study area intersections are shown in Table C.10-9 for the morning and afternoon peak hours for the existing conditions scenario for the initial sediment excavation phase.

Intersection	Existing Conditions (2014)	Existing Plus Project	Increase in ICU
Chesebro Road/Barrel Springs Road AM Peak Hour PM Peak Hour	0.182 – A 0.176 – A	0.227 – A 0.210 – A	0.045 0.034
Chesebro Road/Pearblossom Highway AM Peak Hour PM Peak Hour	0.302 – A 0.481 – A	0.346 – A 0.531 – A	0.044 0.050
Pearblossom Highway/Avenue T AM Peak Hour PM Peak Hour	0.640 – B 0.725 – C	0.644 – B 0.756 – C	0.004 0.031
47th Street E/Barrel Springs Rd AM Peak Hour PM Peak Hour	0.209 – A 0.175 – A	0.214 – A 0.176 – A	0.005 0.001

It should be noted that the traffic volumes and level of service calculations summarized in Table C.10-9 would be temporary (after Labor Day to approximately December 15) and incorporate the assumption that the sediment hauling trucks would have a passenger car equivalency (PCE) factor of 2.0. This adjustment factor accounts for the assumption that a haul truck would utilize the same amount of intersection capacity as two automobiles (passenger cars). The PCE factors are applied to trucks in the ICU calculations because trucks are physically larger than automobiles and have slower acceleration rates.

As shown in Table C.10-9, none of the intersections would be adversely impacted by temporary annual Project traffic during the initial sediment excavation phase for the existing conditions scenario.

The ICU values and levels of service at the four study area intersections are shown in Table C.10-10 for the morning and afternoon peak hours for the year 2022 scenario with and without the Project for the initial sediment excavation phase.

Table C.10-10. Project Impact on Intersection Levels of Service – Year 2022 as Baseline			
Intersection	2022 Without Project	2022 With Project	Increase in ICU
Cheseboro Road/Barrel Springs Road AM Peak Hour PM Peak Hour	0.195 – A 0.188 – A	0.240 – A 0.223 – A	0.045 0.035
Cheseboro Road/Pearblossom Highway AM Peak Hour PM Peak Hour	0.335 – A 0.548 – A	0.381 – A 0.597 – A	0.046 0.049
Pearblossom Highway/Avenue T AM Peak Hour PM Peak Hour	0.732 – C 0.835 – D	0.737 – C 0.864 – D	0.005 0.029
47th Street E/Barrel Springs Rd AM Peak Hour PM Peak Hour	0.229 – A 0.189 – A	0.234 – A 0.191 – A	0.005 0.002

Note: **Bold** represents an adverse impact

As shown in Table C.10-10, one intersection would be adversely impacted by temporary annual Project traffic during the initial sediment excavation phase for the year 2022 scenario. The intersection of Pearblossom Highway at Avenue T would operate at an ICU value of 0.835 and LOS D during the afternoon peak hour without the Project and at an ICU value of 0.864 and LOS D during the afternoon peak hour with the Project. As the Project-related increase in the ICU value would be 0.29, the Project’s impacts would be adverse according to the Los Angeles County guidelines. Mitigation Measure T-1 (Restrict Haul Truck Movements during PM Peak Period) would be utilized, as feasible, to reduce this impact.

Ongoing Operations and Maintenance Sediment Removal. The Project’s impacts during the annual maintenance activities would be less when compared to the impacts described above for the initial sediment excavation phase. The volume of traffic would be less (180 daily truck trips versus 480 during the initial excavation phase) and the duration of impacts would be shorter.

The ICU values and levels of service at the four study area intersections are shown in Table C.10-11 for the morning and afternoon peak hours for the year 2027 scenario with and without the Project. The impact analysis for this scenario is based on the traffic volumes generated during the ongoing operation and maintenance phase of the Project.

Table C.10-11. Project Impact on Intersection Levels of Service – Year 2027 as Baseline			
Intersection	2027 Without Project	2027 With Project	Increase in ICU
Cheseboro Road/Barrel Springs Road AM Peak Hour PM Peak Hour	0.201 – A 0.192 – A	0.218 – A 0.207 – A	0.017 0.015
Cheseboro Road/Pearblossom Highway AM Peak Hour PM Peak Hour	0.352 – A 0.576 – A	0.373 – A 0.594 – A	0.021 0.018
Pearblossom Highway/Avenue T AM Peak Hour PM Peak Hour	0.772 – C 0.881 – D	0.774 – C 0.891 – D	0.002 0.010
47th Street E/Barrel Springs Rd AM Peak Hour PM Peak Hour	0.236 – A 0.193 – A	0.239 – A 0.194 – A	0.003 0.001

As shown in Table C.10-11, none of the intersections would be adversely impacted by temporary annual Project-generated traffic during the ongoing operation and maintenance sediment removal phase.

The Los Angeles County “Traffic Impact Analysis Report Guidelines” (LACDPW, 1997) have significance criteria for the analysis of two-lane roadways. The criteria show the acceptable percentage increase thresholds for peak hour traffic volumes on the affected roadways. The criteria are applicable only to two-lane roadways that operate at LOS C, D, E, and F. If the roadways operate at LOS A or B, then the significance thresholds are not applicable. The two-lane roadway segments in the study area are Cheseboro Road, Barrel Springs Road, 47th Street E, and Avenue T, all of which operate at LOS A based on the two-lane roadway capacity values (as opposed to the intersection LOS values). The Project would not, therefore, have an adverse impact based on the two-lane roadway criteria.

Highway Capacity Manual Unsignalized Intersection Methodology. While the LOS analysis summarized in Tables C.10-9, C.10-10, and C.10-11 indicates that the Project would not result in an adverse impact at the intersection of Cheseboro Road and Pearblossom Highway, this conclusion is based on ICU and LOS values that represent the physical capacity of the intersection as a whole. While this methodology is consistent with the Los Angeles County guidelines for traffic impact studies, it does not account for the types of traffic control that are in place at each intersection; i.e., traffic signals or stop signs. Additional analysis has been conducted, therefore, to determine if the intersections that are controlled by stop signs could adequately accommodate the projected truck movements without excessive delays.

The analysis indicated that the delays at the stop sign on Cheseboro Road at Pearblossom Highway would be excessive because the vehicles waiting at the stop sign to turn left from northbound Cheseboro Road onto Pearblossom Highway would operate at LOS F during the afternoon peak period. During the afternoon peak hour, vehicles at the stop sign (including the Project-generated traffic) would have an average delay of 350 seconds for the year 2022 scenario, which is greater than five minutes per vehicle, and 190 seconds for the year 2027 scenario, which is greater than three minutes per vehicle. This calculation is based on the unsignalized intersection methodology from the *Highway Capacity Manual* (TRB, 2010). As the Project would result in LOS F conditions at this intersection, the impact would be adverse. The other unsignalized intersections along the haul routes would operate at acceptable levels of service and the Cheseboro Road/Pearblossom Highway intersect would operate at acceptable levels of service during the morning peak hour.

As traffic conditions at the Pearblossom Highway/Cheseboro Road intersection would be unacceptable, the Project would result in an adverse impact at this location unless mitigation were incorporated. Although the installation of a traffic signal would alleviate the traffic delays, signalization would not be warranted or feasible in conjunction with the Project. Mitigation Measure T-1 (Restrict Haul Truck Movements during PM Peak Period) would be utilized, as feasible, to reduce this impact.

Congestion Management Program: The “Guidelines for CMP Transportation Impact Analysis,” which is Appendix D of the Congestion Management Program for Los Angeles County (Los Angeles County Metropolitan Transportation Authority, 2010), indicate that a traffic analysis shall address all CMP arterial monitoring intersections where the Project would add 50 or more trips during the weekday peak hour and any mainline freeway monitoring locations where the Project would add 150 or more trips in either direction during the peak hour. The CMP arterial roadway nearest to the Project site is State Route 138, which runs along Fort Tejon Road and Pearblossom Highway, and the intersection of Pearblossom Highway at Avenue T is a designated CMP arterial monitoring intersection. As summarized above, the Project would not result in a change in the LOS values during the morning or afternoon peak hours as the intersection would remain at LOS B, C, or D for the various analysis scenarios. The CMP guidelines indicate that an intersection would be significantly impacted if a project would result in an increase in the ICU value of 0.02 or greater at an intersection that is projected to operate at LOS F. The Project would not,

therefore, result in a significant impact at this intersection according to the CMP guidelines because the LOS values would remain at LOS B, C, or D.

With regard to freeways, the nearest freeway is the Antelope Valley Freeway (State Route 14). As the Project would generate a maximum of 75 vehicle trips during the peak hours, the Project would not add 150 or more trips to a freeway segment. As the Project's impacts are well below the thresholds cited above, the Project would not exceed a level of service standard established by the county congestion management agency.

Mitigation for Impact T-1

MM T-1 Restrict Haul Truck Movements during PM Peak Period. Implement a haul truck schedule that requires trucks to avoid traveling along the Cheseboro Road–Pearblossom Highway–Avenue T haul route during the afternoon peak period, i.e., from 4:00 to 6:00 p.m., to the extent feasible. The alternative route to be utilized is Cheseboro Road, Barrel Springs Road, 47th Street E, Pearblossom Highway, and Avenue T.

SPCs Applicable to Impact T-1

SPC TRA-1 (Prepare Traffic Control Plan)

CEQA Significance Conclusion

The primary conclusions of the transportation and traffic analysis is that initial sediment removal (to restore the Reservoir design capacity) would result in a significant impact at the intersection of Cheseboro Road and Pearblossom Highway during the afternoon peak hours using both the ICU Methodology and unsignalized intersection methodology from the *Highway Capacity Manual*. This impact could be mitigated by prohibiting/limiting truck hauling activities during the afternoon peak periods. The impact would be reduced to the maximum extent feasible with the incorporation of Mitigation Measure T-1 and SPC TRA-1. While a significant impact would occur if trucks utilize this section of the proposed haul route during the afternoon peak period, the implementation of this mitigation and SPCs would result in less than significant impacts at this study area intersection (Class II).

Impede emergency vehicle access (Criterion TRA2)

Impact T-2: Result in inadequate emergency response

The Project could potentially result in impacts relative to emergency access because the presence of large trucks along the haul routes. The impacts would be adverse if trucking activities would restrict access to adjacent land uses or along travel routes with no suitable alternative access. These impacts would be less than significant because of the implementation of SPC TRA-1, which is described in Appendix A. Furthermore, while the Project would generate traffic resulting in unacceptable levels of service and delays at the intersection of Cheseboro Road and Pearblossom Highway during the afternoon peak period (slowing down emergency access flow during this peak period only), this impact would be mitigated to the extent feasible by Mitigation Measure T-1.

Mitigation for Impact T-2

MM T-1 (Restrict Haul Truck Movements during PM Peak Period)

SPCs Applicable to Impact T-2

SPC TRA-1 (Prepare Traffic Control Plan)

CEQA Significance Conclusion

Potential impacts to emergency access would be less than significant with the implementation of SPC TRA-1 and Mitigation Measure T-1 as part of the Project (Class II).

Result in significant damage to public roadways (Criterion TRA3)

Impact T-3: Project truck trips result in significant damage to public roadways

The repetitive movement of dump trucks along the roadways that would be used as haul routes between the reservoir and the sediment disposal sites could potentially result in pavement damage on the affected roadways. As discussed in Section B.2.5.1, at the completion of grade control structure construction and annual sediment removal activities, PWD would restore all internal Reservoir access roads, parking areas, and travel paths to equal or better conditions as they existed prior to activity commencement. SPC TRA-2 ensures any roadway damage within the ANF is corrected immediately following all activities.

Public roadways that would be used as haul routes are as follows:

- Cheseboro Road between the Angeles National Forest boundary and Pearblossom Highway
- Pearblossom Highway between Cheseboro Road and Avenue T
- Avenue T between Pearblossom Highway and the mining pits/quarries to the east
- Barrel Springs Road between Cheseboro Road and 47th Street E
- 47th Street E between Barrel Springs Road and PWD property north of the California Aqueduct
- Additional route segment of 47th Street E between PWD property and Pearblossom Highway and Pearblossom Highway to Avenue T during the afternoon peak period (under implementation of Mitigation Measure T-1)

The trucking activities could result in pavement damage such as ruts, cracks, potholes, etc., which would require pavement maintenance and rehabilitation to restore the roadways to their pre-Project condition. SPC TRA-2 ensures any roadway damage within public roads is corrected immediately following all activities.

SPCs Applicable to Impact T-3

SPC TRA-2 (Pavement Rehabilitation – Public or National Forest Roadways)

CEQA Significance Conclusion

Roadway damage, both within the ANF and along the haul routes on public roadways, would occur with implementation of the Project. With the implementation of SPC TRA-2, these impacts would be less than significant (Class III).

C.10.4.2 Alternative 1: Reduced Sediment Removal Intensity Alternative

Direct and Indirect Effects Analysis

Exceed, either individually or cumulatively, a level of service objective or other roadway performance standard established by Caltrans, Los Angeles County, or City of Palmdale for study area roadway segments and intersection (Criterion TRA1)

Impact T-1: Exceed, either individually or cumulatively, an established level of service standard for roadways, highways, and intersections utilized by the Project.

With regard to the traffic/transportation impacts of Alternative 1 as compared to the Project, Alternative 1 would generate fewer truck trips on a daily basis and during the peak periods for the initial sediment removal activities; however, the duration of this phase would be extended to an estimated 13 years (as compared to 7 to 12 years for the Project). The number of dump trucks hauling the sediment would be reduced to six trucks, as compared to 16 trucks for the Proposed action, and the maximum number of truck trips per day would be reduced to 180 trips (90 round trips), as compared to 480 trips (240 round trips) for the Proposed action.

The comparative levels of traffic that would be generated during the initial excavation phase for the Project and Alternative 1 are summarized in Table C.10-12.

Table C.10-12. Comparison of Generated Traffic During Initial Sediment Removal Phase			
Time Period	Generated Traffic – Alternative 1 vs. Project		
	Trucks	Autos/Light-Duty Vehicles	Total
Daily Traffic			
Round Trips	90 (240)	15 (40)	105 (280)
One-way Trips	180 (480)	30 (80)	210 (560)
AM Peak Hour			
Inbound	11 (20)	10 (30)	21 (50)
Outbound	11 (20)	2 (5)	13 (25)
Total	22 (40)	12 (35)	34 (75)
PM Peak Hour			
Inbound	11 (20)	2 (5)	13 (25)
Outbound	11 (20)	10 (30)	21 (50)
Total	22 (40)	12 (35)	34 (75)

The impacts of Alternative 1 on the levels of service at the study area intersections would be less than what was shown for the Project in Table C.10-10 during the initial sediment removal phase because of the reduced volumes of site-generated traffic. The traffic analysis for the Project indicates no significant adverse impact at any of the intersections during the morning peak hour and an adverse impact at one intersection during the afternoon peak hour based on the ICU analysis methodology. The adverse impact at the intersection of Pearblossom Highway and Avenue T for the Project would not occur for Alternative 1 because the increase in the ICU value would be below the significance threshold. Although the Project’s impacts on traffic delay at the stop sign on northbound Cheseboro Road at Pearblossom Highway would be reduced for Alternative 1 as compared to the Project, this alternative would still result in an adverse delay compared to baseline conditions during the afternoon peak period.

The traffic impacts for the ongoing annual O&M sediment removal activities would be the same for Alternative 1 as that of the Project, as shown in Table C.10-11.

Mitigation for Impact T-1

MM T-1 (Restrict Haul Truck Movements during PM Peak Period)

SPCs Applicable to Impact T-1

SPC TRA-1 (Prepare Traffic Control Plan)

CEQA Significance Conclusion

Alternative 1 impacts at the intersection of Pearblossom Highway and Avenue T would be less than significant. While a significant impact would occur on northbound Cheseboro Road at Pearblossom Highway during the afternoon peak period, the implementation of this mitigation and SPCs would result in less than significant impacts at this study area intersection (Class II).

Impede emergency vehicle access (Criterion TRA2)

Impact T-2: Result in inadequate emergency response

The reduction in daily traffic volumes of large trucks along the haul routes would reduce impacts relative to emergency access. However, Alternative 1 increases the duration of sediment removal every year by starting in July. The impacts would remain adverse if trucking activities would restrict access to adjacent land uses or along travel routes with no suitable alternative access. These impacts would be less than significant because of the implementation of SPC TRA-1, which is described in Appendix A. Furthermore, while the Project would continue to generate traffic volumes resulting in unacceptable delays at the intersection of Cheseboro Road and Pearblossom Highway during the afternoon peak period (slowing down emergency access flow during this peak period only), this impact would be mitigated to the extent feasible by Mitigation Measure T-1 and SPC TRA-1.

Mitigation for Impact T-2

MM T-1 (Restrict Haul Truck Movements during PM Peak Period)

SPCs Applicable to Impact T-2

SPC TRA-1 (Prepare Traffic Control Plan)

CEQA Significance Conclusion

Potential impacts to emergency access would be less than significant with the implementation of SPC TRA-1 and Mitigation Measure T-1 as part of Alternative 1 (Class II).

Result in significant damage to public roadways (Criterion TRA3)

Impact T-3: Project truck trips result in significant damage to public roadways

While the number of trucks would be reduced on an annual basis, the total number of truck trips needed to restore the Reservoir to design capacity would be the same. Therefore, Alternative 1 merely slows the potential for roadway damage during this phase by extending the initial sediment removal phase over more years. The trucking activities of Alternative 1 could result in identical pavement damage such as ruts, cracks, potholes, etc., when compared to the Project, which would require pavement

maintenance and rehabilitation to restore the roadways to their pre-Project condition. SPC TRA-2 ensures any roadway damage within public roads is corrected immediately following all activities.

SPCs Applicable to Impact T-3

SPC TRA-2 (Pavement Rehabilitation – Public or National Forest Roadways)

CEQA Significance Conclusion

Roadway damage, both within the ANF and along the haul routes on public roadways, would occur with implementation of Alternative 1. With the implementation of SPC TRA-2, these impacts would be less than significant (Class III).

C.10.4.3 Alternative 2: No Action/No Project Alternative

Direct and Indirect Effects Analysis

Under the No Action/No Project Alternative, sediment removal activities would not occur and sediment would continue to accumulate upstream of Littlerock Dam at an annual average rate of 38,000 cubic yards per year. PWD would not undertake any activities to remove sediment. Therefore, no traffic would be generated by any activities proposed under either the Project or Alternative 1.

In the event sediment buildup led to safety issues and required demolition/removal of the Dam, construction activities (and related truck trips) are expected to be greater than that of the Project or Alternative 1. Truck trips involved with the removal of 2.8 million cubic yards of sediment and dam debris would be greater in intensity and would likely require many additional years when compared to the Project or Alternative 1.

In the event the Reservoir became filled with sediment and the Dam/Reservoir were left untouched, it is likely some downstream flood-control channeling would need to be constructed. If necessary, minor traffic volumes would be generated during temporary construction activities that likely would be similar in levels to that occurring during grade control construction.

CEQA Significance Conclusion

Under a scenario where 2.8 million cubic yards of sediment and the Dam debris would need to be removed, traffic generated during construction activities would likely result in significant unavoidable impacts. While such a determination is speculative, the possibility exists. Therefore, traffic impacts of the No Action/No Project Alternative are considered significant and unavoidable for this scenario (Class I). During such a scenario, measures similar to SPC TRA-1 would be required to ensure emergency vehicle access and flow to result in less than significant impacts (Class III). Furthermore, the movement of 2.8 million cubic yards of sediment and debris would likely damage public roadways requiring extensive repaving mitigation similar to SPC TRA-2 to result in less than significant impacts (Class III).

C.10.5 Impact Significance Summary

Table C.10-13 summarizes the direct and indirect environmental impacts of the proposed Action and the alternatives on transportation and traffic. Refer to Section C.10.4 for the entire environmental analysis and the full text of recommended mitigation measures.

Table C.10-13. Summary of Impacts and Mitigation Measures – Transportation and Traffic					
Impact	Impact Significance				Mitigation Measures/SPC
	Proposed Action	Alt. 1	Alt. 2: No Action	NFS Lands¹	
T-1: Exceed, either individually or cumulatively, an established level of service standard for roadways, highways, and intersections utilized by the Project	Class II	Class II	Class I (sediment removal scenario) Class III (no sediment removal scenario)	No	Mitigation Measure T-1 (Restrict Haul Truck Movements during PM Peak Period) SPC TRA-1 (Prepare Traffic Control Plan)
T-2: Result in inadequate emergency response	Class II	Class II	Class III	Yes	Mitigation Measure T-1 (Restrict Haul Truck Movements during PM Peak Period) SPC TRA-1 (Prepare Traffic Control Plan)
T-3: Project truck trips result in significant damage to public roadways	Class III	Class III	Class III	Yes	SPC TRA-2 (Pavement Rehabilitation – Public or National Forest Roadways)

Notes:

1 - Indicates whether this impact is applicable to National Forest System lands.