

Appendix L

Traffic Memorandum



July 13, 2020

Mr. Bill Gilmartin
ProVen Management, Inc.
225 3rd Street,
Oakland CA 94607

Traffic Analysis for Rockaway Quarry Reclamation Project

Dear Mr. Gilmartin;

As requested, W-Trans has prepared a traffic analysis relative to the Rockaway Quarry Reclamation in the City of Pacifica. The purpose of this memo is to address the potential effects of truck trips accessing the site, on State Route 1, and in the surrounding area.

Existing Conditions

The study area consists of State Route 1, which runs north-south along the frontage of the project site in the City of Pacifica. State Route 1 is classified as a multilane highway in the project site vicinity and becomes a freeway approximately one-half mile north of the project site, where it connects to Interstate 280 north of Pacifica. Along the project frontage the road has two 12-foot travel lanes in each direction with a concrete median barrier. Annual average daily traffic for State Route 1 near the project site is 54,000 vehicles.

Project Description

The proposed project would import 970,000 cubic yards (cy) of soil into the Rockaway Quarry for the reclamation project. The project would be split into four sub-phases that would occur over a minimum of four years and result in a maximum of 242,500 cy of soil imported per year. West Quarry Parcel is expected to take 48 months to complete, after the Amended Reclamation Plan is approved by the City.

Inbound trucks will come from the north and access the project site from southbound State Route 1 through the Old Quarry Road connection, an existing dirt access road located about one-third mile south of Reina Del Mar Avenue; this access point is currently blocked by large boulders that would be removed as part of the access plan. Vehicles egress from the site would be accommodated at the existing traffic signal at State Route 1/Reina Del Mar Avenue; trucks will turn left onto State Route 1 and return to the north via Interstate 280, see Exhibit 1.

Review of Internal Site Circulation and Access Plan

The *Appendix H, Access Plan* (December 7, 2018) was reviewed for adequacy in terms of sight distance, turning radii, and overall vehicle maneuverability. The truck entrance point on State Route 1 and Old Quarry Road has been reviewed and found to be acceptable for truck turning radii. The gated truck receiving area at the Calera Creek Crossing will provide adequate queue storage for trucks prior to accessing the western portion of the site without affecting circulation on the remainder of the site. There is approximately 1,300 feet for truck queueing between the Caldera Creek Crossing and State Route 1. This is enough room to fit about 26 trucks with plenty of room between each truck.

Based on a review of the sight distance as the quarry roadway enters the parking lot near the Calera Creek Water Recycling Facility, and also the queue space approaching Reina Del Mar, truck circulation on the quarry road is expected to operate acceptably within the site.

Trip Generation

Due to the nature of the project, the size of trucks, and the hours of operation, it was assumed that truck trips would be evenly spaced over the course of the work day for purposes of this analysis. The anticipated trip generation for the proposed project was estimated by converting the amount of soil that will be hauled per year into the number of passenger car equivalent (PCE) trips per peak hour. Trucks used for this type of operation have a capacity ranging from 10 cubic yards (cy) to 14 cy. It was assumed trucks would haul an average of 12 cy of soil per trip. The total number of cubic yards of soil to be moved per year was divided by 12 cy per truck to get the total number of trucks per year. This figure was then multiplied by two to account for each truck arriving at the site, unloading the soil, and then leaving (i.e., one inbound trip and one outbound trip). Next, the total number of truck trips per year were divided by 250 operational days per year to calculate the number of truck trips per day.

The Quarry is anticipated to operate between 7:00 a.m. and 5:00 p.m. Therefore, the truck trips per day were divided by ten hours of operation per day to get truck trips per hour. According to the *Highway Capacity Manual*, Sixth Edition, the PCE for trucks on rolling terrain is 3.0 (i.e., each truck has the effect of three passenger cars on a roadway due to longer start up times at intersections and when making turns). Thus, the number of truck trips per hour was multiplied by three to get the equivalent passenger car trips per hour.

It is anticipated that there will be five employees on-site to run the operation. It was conservatively assumed that all five employees would arrive during the a.m. peak hour and leave during the p.m. peak hour, despite the 7 a.m. start time. The truck trips per hour (converted to PCE trips) plus the employee trips were then added to calculate the total number of peak hour vehicle trips. For a complete summary of the trip generation, see the enclosed Exhibit 1.

Total Project Trip Generation

The expected trip generation potential for the proposed project is indicated in Table 1. Because the amount of imported soil is so similar for each subphase, project trips for each subphase are the same. The proposed project is expected to generate an average of 161 truck trips (483 PCE trips) per day plus 10 employee trips per day, including 16 truck trips (48 PCE trips) during both the a.m. and p.m. peak hours.

Table 1 – Trip Generation Summary														
	Daily Trips		AM Peak Hour						PM Peak Hour					
	Truck	PCE	Truck Trips	PCE Trips	Employee Trips	Total Trips	In	Out	Truck Trips	PCE Trips	Employee Trips	Total Trips	In	Out
West Quarry Parcel														
242,500 cy	161	483	16	48	5	53	29	24	16	48	5	53	24	29
242,500 cy	161	483	16	48	5	53	29	24	16	48	5	53	24	29
242,500 cy	161	483	16	48	5	53	29	24	16	48	5	53	24	29
242,500 cy	161	483	16	48	5	53	29	24	16	48	5	53	24	29

Note: cy = cubic yard; PCE = passenger car equivalent

Traffic Analysis of Truck Routes to/from Pacifica Quarry

All truck deliveries will be made by trucks coming from the north and returning to the north, connecting to Interstate 280. Ingress to the site will be made via the existing access point at Old Quarry Road from southbound State Route 1, about one-third mile south of Reina Del Mar Avenue. Egress will occur via the existing traffic signal at the State Route 1/Reina Del Mar Avenue intersection, with trucks making a left turn onto State Route 1 northbound. No trucks will use

City of Pacifica streets at any time. Other than on-site circulation, trucks will only be on designated truck routes (state highways), and therefore no alternative truck routes will be necessary. There are no at-grade intersections or traffic signals between Reina De Mar Avenue and Interstate 280 that would be affected by project-generated traffic.

Access at Old Quarry Road

As contained in Section 405.2 and Figure 405.2B of the Caltrans *Highway Design Manual* (2018), right-turn storage length is determined in the same manner as left-turn storage length. At unsignalized intersections, such as at the SR 1/Old Quarry Road intersection, storage length is based on the number of turning vehicles likely to arrive in an average two-minute period during a peak hour. The proposed project is expected to generate a maximum of 29 inbound trips during the peak hour, or approximately one trip during an average two-minute period. Of the 29 maximum inbound trips during the peak hour, many of those are anticipated to be made by trucks. Because right turns can be made without stopping, no queuing would be expected, so no storage is necessary; however, adequate length to decelerate would be required.

The posted speed limit on SR 1 near the project site is 45 miles per hour (mph). Under Caltrans guidelines, the speed at which drivers would enter the turn lane can be up to 20 mph lower than the design speed, resulting in vehicles decelerating to 25 mph before entering the turn lane. For this speed reduction, the deceleration length required is 195 feet. There is an existing shoulder in the southbound direction with a width of 10 feet for approximately 245 feet in advance of Old Quarry Road; this space can be used in lieu of a dedicated right-turn lane and would allow deceleration from a speed greater than 25 mph.

Conclusions

- *Appendix H, Access Plan* dated December 78, 2018 has been reviewed and is expected to result in adequate truck circulation.
- The West Parcel is expected to generate an average of 161 truck trips (483 PCE trips) per day, including 16 truck trips (53 PCE trips) during each of the ten hours of daily operation, including the a.m. and p.m. peak hours.
- The existing shoulder on the southbound approach to Old Quarry Road would provide adequate space for deceleration and storage for trips entering the proposed project site.

Thank you for giving W-Trans the opportunity to provide these services. Please call if you have any questions.

Sincerely,



Mark Spencer, PE
Senior Principal

MES/acj/PAC005.L1-7

Enclosures: Exhibit 1, Table 2 Trip Generation Summary- Extended Table

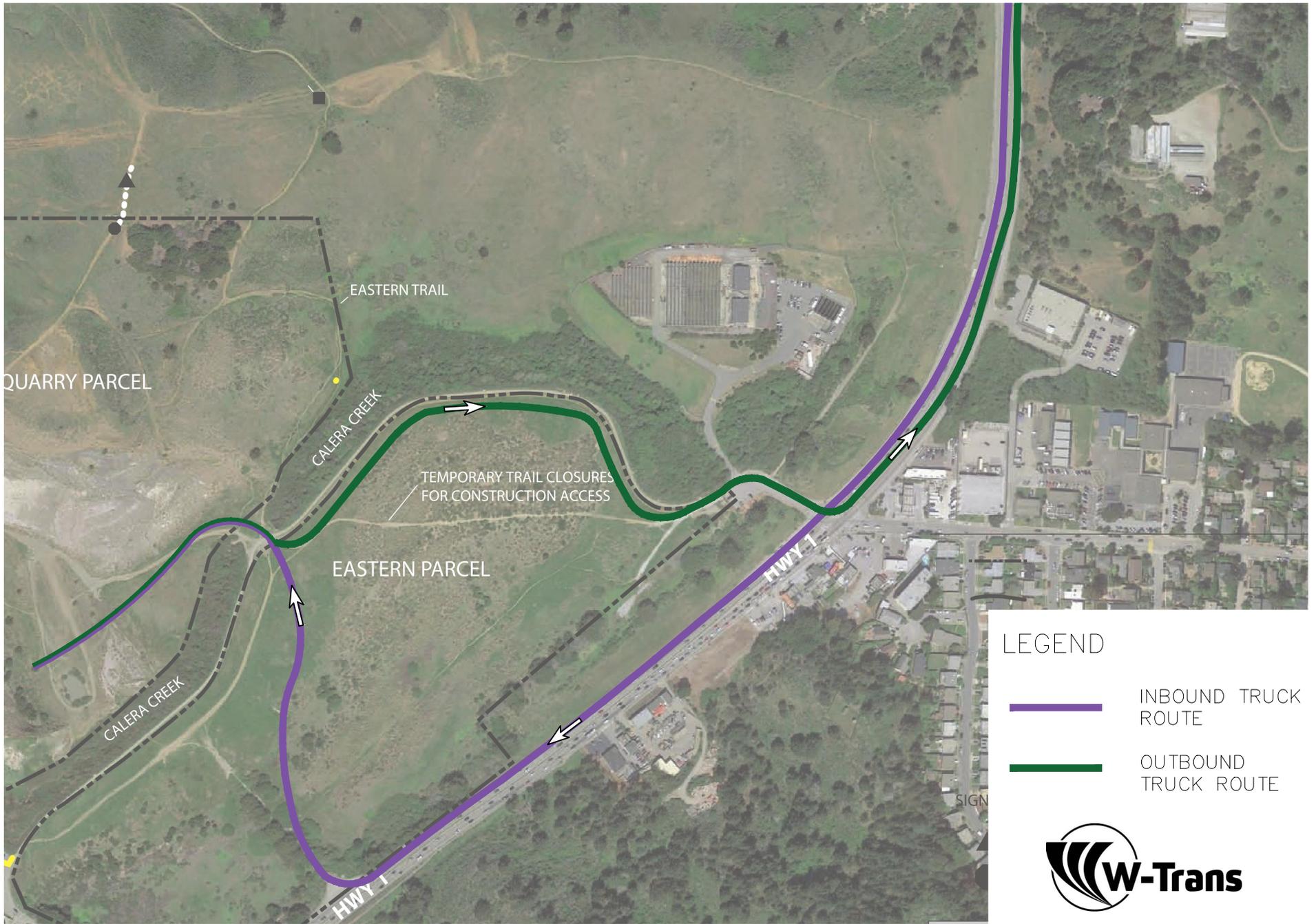


Exhibit 1– Truck Routes

Table 2 – Trip Generation Summary- Extended

Land Use						AM Peak Hour						PM Peak Hour					
Yearly Truck Haul Amount	Inbound Truck Trips/Year	Total truck Trips/Year	Truck Trips/Day	Truck Trips/Hour	Truck Trips	PCE Trips	Employee Trips	Total Trips	In	Out	Truck Trips	PCE Trips	Employee Trips	Total Trips	In	Out	
West Quarry Parcel																	
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	
A	B=A/12	C=B*2	D=C/250	E=D/10	F=E	G=F*3	H	I=G+H	J=G/2+H	K=G/2	L=E	M=L*3	N	O=M+N	P=M/2	Q=M/2+N	
1A: 242,500 cy	20,208	40,416	161	16	16	48	5	53	29	24	16	48	5	53	24	29	
1B: 242,500 cy	20,208	40,416	161	16	16	48	5	53	29	24	16	48	5	53	24	29	
1C: 242,500 cy	20,208	40,416	161	16	16	48	5	53	29	24	16	48	5	53	24	29	
1D: 242,500 cy	20,208	40,416	161	16	16	48	5	53	29	24	16	48	5	53	24	29	

Notes: PCE = Passenger car equivalent; cy = cubic yards¹
 A = Given in "Exhibit F1 Performance Benchmarks for Works," Walsh Engineering August 15.2018; modified in March 2020 for a total of 970,000 CY
 B = Total yearly trucks divided by average size of trucks (12 cy)
 C = Trucks per year multiplied by 2 to account for a truck coming in, dropping dirt off and leaving
 D = 250 working days/year expected
 E = Site expected to operate from 7:00 am – 5:00 pm
 G, M = One truck is equivalent to 3 passenger car trips, Highway Capacity Manual, Sixth Edition Exhibit 12-25
 H = 5 employees expected onsite daily.
 J, Q= All employees expected to arrive during the am peak hour and depart during the pm peak hour
 K, P = PCE trips split between inbound and outbound