Appendix H
Noise Report

Noise Technical Report
for the
Paseo Montril Project
City of San Diego, California
No. 658273

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Acronyms and Abbreviations

Acronym/Abbreviation	Definition
a.k.a.	Also known as
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
City	City of San Diego
CNEL	Community Noise Equivalent Level
CNMP	construction noise management plan
dB	decibel
dBA	A-weighted decibel
FTA	Federal Transit Administration
GSF	Gross square foot
ips	inches per second
L_{dn}	day–night average noise level
L_{eq}	equivalent noise level
L_{max}	maximum sound level
L_{min}	minimum sound level
Paseo Montril	proposed project
NACO	Noise abatement control officer
PPV	peak particle velocity
RCNM	Roadway Construction Noise Model
SDMC	San Diego Municipal Code
SLM	Sound level meter
SPL	Sound pressure level
ST	Short-term

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1 Introduction and Background

This technical noise report evaluates the potential noise impacts during construction and operation of the proposed Paseo Montril Project (proposed project). This assessment utilizes City of San Diego (City) significance thresholds that are comparable to those relating to noise and vibration assessment in Appendix G of the California Environmental Quality Act Guidelines (14 CCR 15000 et seq.).

Project Description

The project site is located on a 15.2-acre vacant site (Assessor's Parcel Number 315-020-5500) at 10198 Paseo Montril in the San Diego, California (Figure 1, Project Location). The site is currently vacant and located on a hillside adjacent to Interstate 15.

The project proposes a Vesting Tentative Map, Site Development Permit, Planned Development Permit, Rezone, and Community Plan Amendment to construct a 55-unit multi-family residential development with supporting improvements (Figure 2, Site Plan). The project would include two terraces, with the lower terrace including two buildings and the upper terrace including three buildings. Supporting improvements would include on-site utilities, an off-site storm drain connection to the south, utility improvements within Paseo Montril, access driveway, parking, and landscaping. The proposed access driveway entrance would be at the southern area of the Paseo Montril cul-de-sac and would extend around the perimeter of the proposed development.

Noise Characteristics

Sound is mechanical energy transmitted by pressure waves in a compressible medium, such as air. Noise is defined as sound that is loud, unpleasant, unexpected, or undesired. The sound pressure level (SPL) has become the most common descriptor used to characterize the loudness of an ambient sound level. The unit of measurement of sound pressure is a decibel (dB). Under controlled conditions in an acoustics laboratory, the trained, healthy human ear is able to discern changes in sound levels of 1 dB when exposed to steady, single-frequency signals in the mid-frequency range. Outside such controlled conditions, the trained ear can detect changes of 2 dB in normal environmental noise. It is widely accepted that the average healthy ear, however, can barely perceive noise level changes of 3 dB. A change of 5 dB is readily perceptible, and a change of 10 dB is perceived as twice or half as loud (Caltrans 2013a). A doubling of sound energy results in a 3 dB increase in sound, which means that a doubling of sound energy (e.g., doubling the number of daily trips along a given road) would result in a barely perceptible change in sound level.

Sound may be described in terms of level or amplitude (measured in dB), frequency or pitch (measured in hertz or cycles per second), and duration (measured in seconds or minutes). Because the human ear is not equally sensitive to sound at all frequencies, a special frequency-dependent rating scale is used to relate noise to human sensitivity. The A-weighted decibel (dBA) scale performs this compensation by discriminating against low and very high frequencies in a manner approximating the sensitivity of the human ear.

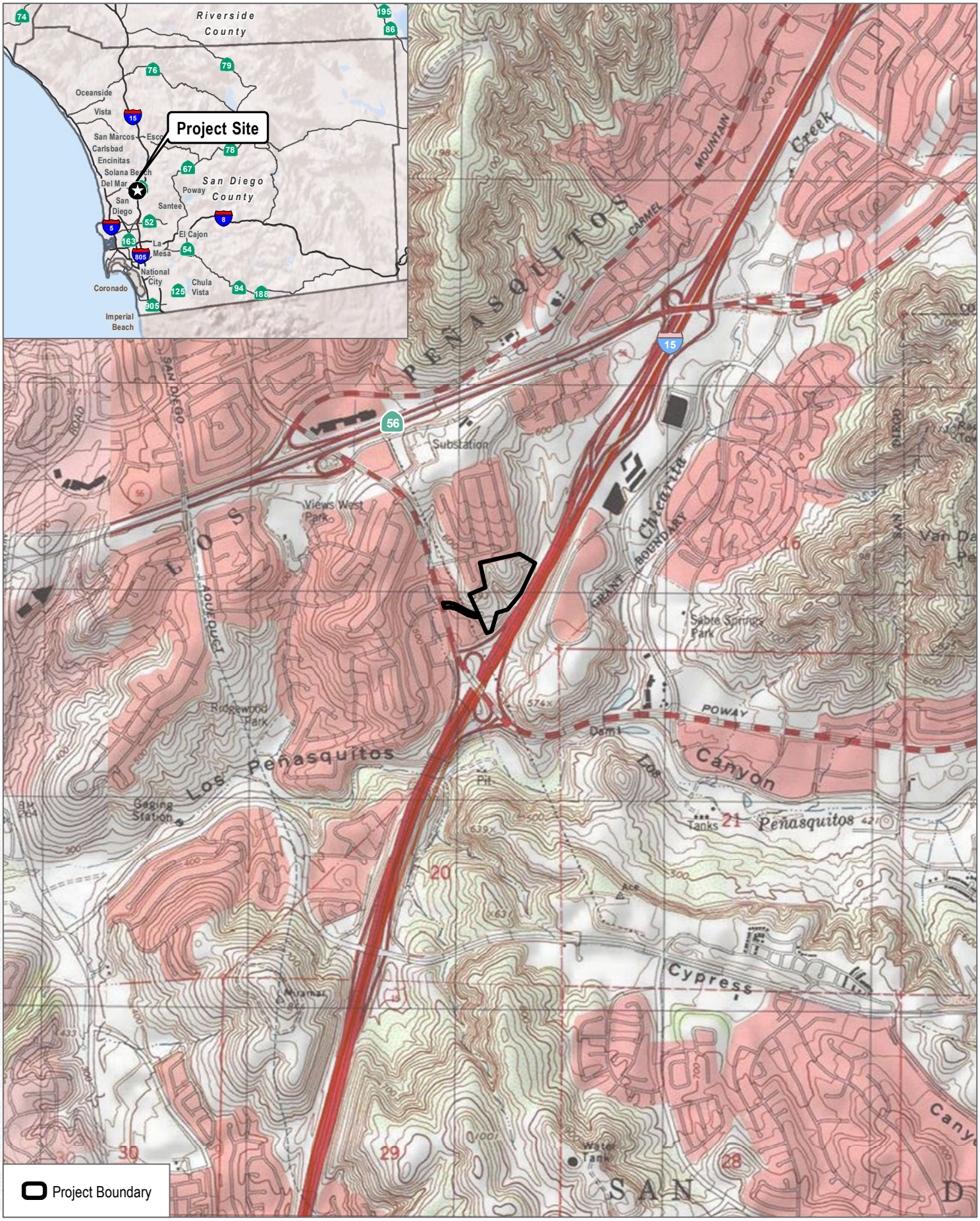
Several descriptors of noise (a.k.a., noise metrics) exist to help predict average community reactions to the adverse effects of environmental noise, including traffic-generated noise. These descriptors include the equivalent noise level over a given period (L_{eq}), the day–night average noise level (L_{dn}), and the community noise equivalent level (CNEL). Each of these descriptors uses units of dBA.

L_{eq} is a decibel quantity that represents the constant or energy-averaged value equivalent to the amount of variable sound energy received by a receptor during a time interval. For example, a 1-hour L_{eq} measurement of 60 dBA would represent the average amount of energy contained in all the noise that occurred in that hour. L_{eq} is an effective noise descriptor because of its ability to assess the total time-varying effects of noise on sensitive receptors, which can then be compared to an established L_{eq} standard or threshold of the same duration. Another descriptor is maximum sound level (L_{max}), which is the greatest sound level measured during a designated time interval or event. The minimum sound level (L_{min}) is often called the *floor* of a measurement period.

Unlike the L_{eq}, L_{max}, and L_{min} metrics, L_{dn} and CNEL descriptors always represent 24-hour periods and differ from a 24-hour L_{eq} value because they apply a time-weighted factor designed to emphasize noise events that occur during the non-daytime hours (when speech and sleep disturbance is of more concern). *Time weighted* refers to the fact that L_{dn} and CNEL penalize noise that occurs during certain sensitive periods. In the case of CNEL, noise occurring during the daytime (7:00 a.m. to 7:00 p.m.) receives no penalty. Noise during the evening (7:00 p.m. to 10:00 p.m.) is penalized by adding 5 dB to the actual levels, and nighttime (10:00 p.m. to 7:00 a.m.) noise is penalized by adding 10 dB to the actual levels. L_{dn} differs from CNEL in that the daytime period is longer (defined instead as 7:00 a.m. to 10:00 p.m.), thus eliminating the dB adjustment for the evening period. L_{dn} and CNEL are the predominant criteria used to measure roadway noise affecting residential receptors. These two metrics generally differ from one another by no more than 0.5–1 dB, and are often considered or actually defined as being essentially equivalent by many jurisdictions.

Vibration Fundamentals

Vibration is oscillatory movement of mass (typically a solid) over time. It is described in terms of frequency and amplitude and, unlike sound, can be expressed as displacement, velocity, or acceleration. For environmental studies, vibration is often studied as a velocity that, akin to the discussion of sound pressure levels, can also be expressed in dB as a way to cast a large range of quantities into a more convenient scale and with respect to a reference quantity. Vibration impacts to buildings are generally discussed in terms of inches per second (ips) peak particle velocity (PPV), which will be used herein to discuss vibration levels for ease of reading and comparison with relevant standards. Vibration can also be annoying and thereby impact occupants of structures, and vibration of sufficient amplitude can disrupt sensitive equipment and processes (Caltrans 2013b), such as those involving the use of electron microscopes and lithography equipment. Common sources of vibration within communities include construction activities and railroads. Groundborne vibration generated by construction projects is usually highest during pile driving, rock blasting, soil compacting, jack hammering, and demolition-related activities where sudden releases of subterranean energy or powerful impacts of tools on hard materials occur. Depending on their distances to a sensitive receptor, operation of large bulldozers, graders, loaded dump trucks, or other heavy construction equipment and vehicles on a construction site also have the potential to cause high vibration amplitudes.



SOURCE: USGS 7.5-Minute Series Poway Quadrangle

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0 250 500 Meters

0 1,000 2,000 Feet

FIGURE 1

Project Location

Paseo Montril Development Project

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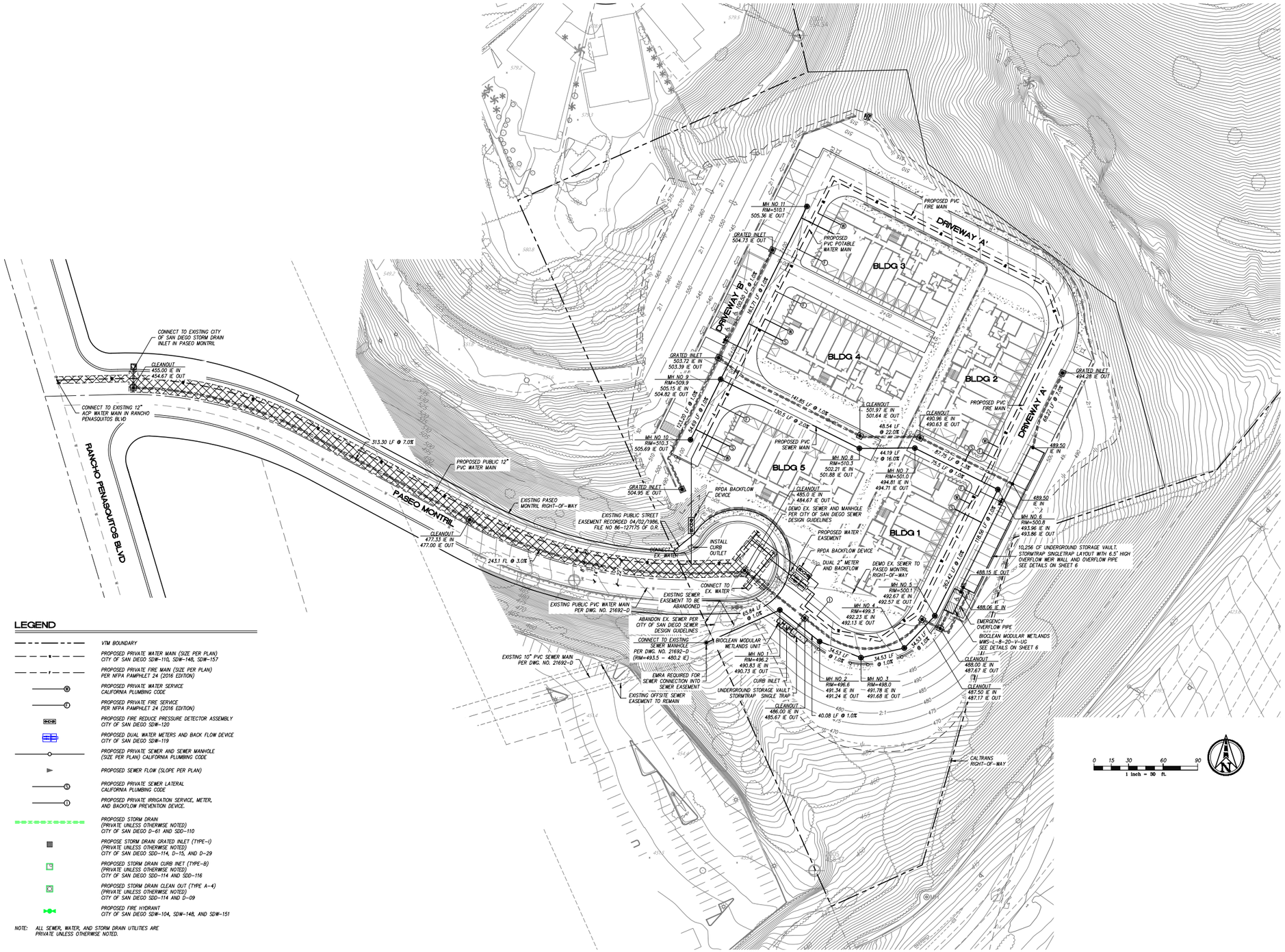

LEGEND

- VTM BOUNDARY
- PROPOSED PRIVATE WATER MAIN (SIZE PER PLAN) CITY OF SAN DIEGO SDW-110, SDW-148, SDW-157
- PROPOSED PRIVATE FIRE MAIN (SIZE PER PLAN) PER NFPA PAMPHLET 24 (2016 EDITION)
- PROPOSED PRIVATE WATER SERVICE CALIFORNIA PLUMBING CODE
- PROPOSED PRIVATE FIRE SERVICE PER NFPA PAMPHLET 24 (2016 EDITION)
- PROPOSED FIRE REDUCE PRESSURE DETECTOR ASSEMBLY CITY OF SAN DIEGO SDW-120
- PROPOSED DUAL WATER METERS AND BACK FLOW DEVICE CITY OF SAN DIEGO SDW-119
- PROPOSED PRIVATE SEWER AND SEWER MANHOLE (SIZE PER PLAN) CALIFORNIA PLUMBING CODE
- PROPOSED SEWER FLOW (SLOPE PER PLAN)
- PROPOSED PRIVATE SEWER LATERAL CALIFORNIA PLUMBING CODE
- PROPOSED PRIVATE IRRIGATION SERVICE, METER, AND BACKFLOW PREVENTION DEVICE.
- PROPOSED STORM DRAIN (PRIVATE UNLESS OTHERWISE NOTED) CITY OF SAN DIEGO D-61 AND SDD-110
- PROPOSE STORM DRAIN GRATED INLET (TYPE-I) (PRIVATE UNLESS OTHERWISE NOTED) CITY OF SAN DIEGO SDD-114, D-15, AND D-29
- PROPOSED STORM DRAIN CURB INET (TYPE-B) (PRIVATE UNLESS OTHERWISE NOTED) CITY OF SAN DIEGO SDD-114 AND SDD-116
- PROPOSED STORM DRAIN CLEAN OUT (TYPE A-4) (PRIVATE UNLESS OTHERWISE NOTED) CITY OF SAN DIEGO SDD-114 AND D-09
- PROPOSED FIRE HYDRANT CITY OF SAN DIEGO SDW-104, SDW-148, AND SDW-151

NOTE: ALL SEWER, WATER, AND STORM DRAIN UTILITIES ARE PRIVATE UNLESS OTHERWISE NOTED.

SOURCE: Civil Sense 2021

FIGURE 2

Site Plan

Paseo Montril Development Project

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2 Regulatory Setting

Regulatory Setting

Federal

Federal Transit Administration

In its Transit Noise and Vibration Impact Assessment guidance manual, the Federal Transit Administration (FTA) recommends a daytime construction noise level threshold of 80 dBA L_{eq} over an 8-hour period (FTA 2018) when detailed construction noise assessments are performed to evaluate potential impacts to community residences surrounding a project. Although this FTA guidance is not a regulation, it can serve as a quantified standard in the absence of such limits at the state and local jurisdictional levels.

State

California Code of Regulations, Title 24

Title 24 of the California Code of Regulations sets standards that new development in California must meet. According to Title 24, interior noise levels are not to exceed 45 dBA CNEL in any habitable room (International Construction Code 2019).

California Department of Health Services Guidelines

The California Department of Health Services has developed guidelines of community noise acceptability for use by local agencies (OPR 2003). Selected relevant levels are listed here:

- Below 60 dBA CNEL: normally acceptable for low-density residential use
- 50 to 70 dBA: conditionally acceptable for low-density residential use
- Below 65 dBA CNEL: normally acceptable for high-density residential use and transient lodging
- 60 to 70 dBA CNEL: conditionally acceptable for high-density residential, transient lodging, churches, educational, and medical facilities

California Department of Transportation

In its Transportation and Construction Vibration Guidance Manual (Caltrans 2013b), the California Department of Transportation (Caltrans) recommends 0.5 ips PPV as a threshold for the avoidance of structural damage to typical newer residential buildings exposed to continuous or frequent intermittent sources of groundborne vibration. For transient vibration events, such as blasting, the damage risk threshold would be 1.0 ips PPV (Caltrans 2013b) at the same type of newer residential structures. For older structures, these guidance thresholds would be more stringent: 0.3 ips PPV for continuous/intermittent vibration sources, and 0.5 ips PPV for transient vibration events. With respect to human annoyance, Caltrans guidance indicates that building occupants exposed to groundborne vibration in the range of 0.2-0.25 ips PPV would find it “distinctly perceptible” or “annoying” and thus a likely significant impact. Although these Caltrans guidance thresholds are not regulations, they can serve as quantified standards in the absence of such limits at the local jurisdictional level.

Local

The following are summarized or reproduced portions of relevant City regulations and General Plan policies.

City of San Diego Municipal Code 59.5.0401 (Noise Ordinance)

It shall be unlawful for any person to cause noise by any means to the extent that the 1-hour average sound level exceeds the applicable limit given in the Table 1, Applicable Noise Limits, at any location in the City of San Diego on or beyond the boundaries of the property on which the noise is produced. The noise subject to these limits is that part of the total noise at the specified location that is due solely to the action of said person.

Table 1. Applicable Noise Limits

Land Use	Time of Day	One-Hour Average Sound Level (dB)
Single-family residential	7:00 a.m. to 7:00 p.m.	50
	7:00 p.m. to 10:00 p.m.	45
	10:00 p.m. to 7:00 a.m.	40
Multifamily residential (up to a maximum density of 1/2,000)	7:00 a.m. to 7:00 p.m.	55
	7:00 p.m. to 10:00 p.m.	50
	10:00 p.m. to 7:00 a.m.	45
All other residential	7:00 a.m. to 7:00 p.m.	60
	7:00 p.m. to 10:00 p.m.	55
	10:00 p.m. to 7:00 a.m.	50
Commercial	7:00 a.m. to 7:00 p.m.	65
	7:00 p.m. to 10:00 p.m.	60
	10:00 p.m. to 7:00 a.m.	60
Industrial or agricultural	Any time	75

Note: dB = decibels

City of San Diego Municipal Code 59.5.0404 (Noise Ordinance), Construction Noise

(a) It shall be unlawful for any person, between the hours of 7:00 p.m. of any day and 7:00 a.m. of the following day, or on legal holidays as specified in Section 21.04 of the San Diego Municipal Code, with exception of Columbus Day and Washington's Birthday, or on Sundays, to erect, construct, demolish, excavate for, alter or repair any building or structure in such a manner as to create disturbing, excessive or offensive noise unless a permit has been applied for and granted beforehand by the Noise Abatement and Control Administrator. In granting such permit, the Administrator shall consider whether the construction noise in the vicinity of the proposed work site would be less objectionable at night than during the daytime because of different population densities or different neighboring activities; whether obstruction and interference with traffic particularly on streets of major importance, would be less objectionable at night than during the daytime; whether the type of work to be performed emits noises at such a low level as to not cause significant disturbances in the vicinity of the work site; the character and nature of the neighborhood of the proposed work site; whether great economic hardship would occur if the work were spread over a longer time; whether proposed night work is in the general public interest; and he shall prescribe such conditions, working times, types of construction equipment to be used, and permissible noise levels as he deems to be required in the public interest.

(b) Except as provided in subsection C. hereof, it shall be unlawful for any person, including the City of San Diego, to conduct any construction activity so as to cause, at or beyond the property lines of any property zoned residential, an average sound level greater than 75 decibels during the 12-hour period from 7:00 a.m. to 7:00 p.m.

(c) The provisions of subsection B. of this section shall not apply to construction equipment used in connection with emergency work, provided the Administrator is notified within 48 hours after commencement of work.

City of San Diego General Plan

The City's General Plan Noise Element identifies compatible exterior noise levels for various land use types (City of San Diego 2015). The maximum allowable noise exposure varies depending on the land use. The maximum acceptable exterior noise level for residential uses and other noise-sensitive uses is 65 dBA CNEL as depicted in Table 2 below.

Table 2. Land Use – Noise Compatibility Guidelines

Land Use Category	Exterior Noise Exposure (dBA CNEL)				
	55-60	*60-65*	*65-70*	*70-75*	*75-80*
Parks and Recreational					
Parks, Active and Passive Recreation					
Outdoor Spectator Sports, Golf Courses; Water Recreational Facilities; Indoor Recreation Facilities					
Agricultural					
Crop Raising and Farming; Community Gardens, Aquaculture, Dairies; Horticulture Nurseries & Greenhouses; Animal Raising, Maintenance and Keeping; Commercial Stables					
Residential					
Single Units; Mobile Homes		45			
Multiple Dwelling Units **For uses affected by aircraft noise, refer to Policies NE-D.2. and NE-D.3.*		45	45*		
Institutional					
Hospitals; Nursing Facilities; Intermediate Care Facilities; Kindergarten through Grade 12 Educational Facilities; Libraries; Museums; Child Care Facilities		45			
Other Educational Facilities including Vocational/Trade Schools and Colleges and Universities		45	45		
Cemeteries					
Retail Sales					
Building Supplies/Equipment; Food, Beverages & Groceries; Pets & Pet Supplies; Sundries, Pharmaceutical & Convenience Sales; Wearing Apparel & Accessories			50	50	

Table 2. Land Use – Noise Compatibility Guidelines

Land Use Category	Exterior Noise Exposure (dBA CNEL)				
	55-60	*60-65*	*65-70*	*70-75*	*75-80*
Commercial Services					
Building Services; Business Support; Eating & Drinking; Financial Institutions; Maintenance & Repair; Personal Services; Assembly & Entertainment (includes public and religious assembly); Radio and Television Studios; Golf Course Support			50	50	
Visitor Accommodations		45	45	45	
Offices					
Business & Professional; Government; Medical, Dental & Health Practitioner; Regional & Corporate Headquarters			50	50	
Vehicle and Vehicular Equipment Sales and Services Use					
Commercial or Personal Vehicle Repair & Maintenance; Commercial or Personal Vehicle Sales & Rentals; Vehicle Equipment & Supplies Sales & Rentals; Vehicle Parking					
Wholesale, Distribution, Storage Use Category					
Equipment & Materials Storage Yards; Moving & Storage Facilities; Warehouse; Wholesale Distribution					
Industrial					
Heavy Manufacturing; Light Manufacturing; Marine Industry; Trucking & Transportation Terminals; Mining & Extractive Industries					
Research and Development				50	

	Compatible	Indoor Uses	Standard construction methods should attenuate exterior noise to an acceptable indoor noise level. Refer to Section I.
		Outdoor Uses	Activities associated with the land use may be carried out.
45, 50	Conditionally Compatible	Indoor Uses	Building structure must attenuate exterior noise to the indoor noise level indicated by the number (45 or 50) for occupied areas. Refer to Section I.
		Outdoor Uses	Feasible noise mitigation techniques should be analyzed and incorporated to make the outdoor activities acceptable. Refer to Section I.
	Incompatible	Indoor Uses	New construction should not be undertaken.
		Outdoor Uses	Severe noise interference makes outdoor activities unacceptable.

Source: City of San Diego 2015.

3 Existing Conditions

SPL measurements were conducted near the proposed project site on March 2, 2020 to quantify and characterize the existing outdoor ambient sound levels. Table 3 provides the location, date, and time period at which these baseline noise level measurements were performed by an attending Dudek field investigator using a Rion-branded Model NL-52 sound level meter (SLM) equipped with a 0.5-inch, pre-polarized condenser microphone with pre-amplifier. The SLM meets the current American National Standards Institute standard for a Type 1 (Precision Grade) sound level meter. The accuracy of the SLM was verified using a field calibrator before and after the measurements, and the measurements were conducted with the microphone positioned approximately 5 feet above the ground.

Four (4) short-term (ST) noise level measurement locations (ST1–ST4) that represent existing noise-sensitive receivers were selected on and near the proposed project site. These locations are depicted as receivers ST1–ST4 on Figure 3, Noise Measurement Locations. The measured L_{eq} and L_{max} noise levels are provided in Table 3. The primary noise sources at the sites identified in Table 3 consisted of traffic along adjacent roadways, the sounds of leaves rustling, and birdsong. As shown in Table 3, the measured SPL ranged from approximately 67.5 dBA L_{eq} at ST1 to 58.5 dBA L_{eq} at ST4. Beyond the summarized information presented in Table 3, detailed noise measurement data is included in Appendix A, Baseline Noise Measurement Field Data.

Table 3. Measured Baseline Outdoor Ambient Noise Levels

Site	Location/Address	Date/Time	L_{eq}	L_{max}
ST1	East of cul-da-sac on Paseo Montril	2020-03-02, 11:15 AM to 11:25 AM	67.5	70.7
ST2	On bluff, approximately 200 feet north of Paseo Montril	2020-03-02, 11:35 AM to 11:45 AM	67.2	70.1
ST3	South of Atria Rancho Penasquitos Assisted Living	2020-03-02, 11:50 AM to 12:00 PM	60.3	73.0
ST4	Western driveway of eaves Rancho Penasquitos	2020-03-02, 12:15 PM to 12:40 PM	58.5	72.8

Source: Appendix A.
Notes: L_{eq} = equivalent continuous sound level (time-averaged sound level); L_{max} = maximum sound level during the measurement interval; dBA = A-weighted decibels; ST = short-term noise measurement locations.

Generally, the measured samples of daytime L_{eq} agree with expectations based on proximity to the I-5 freeway: values tend to decrease with distance from this major acoustical contributor to the sound environment, until noise from localized sources (i.e., local roadway traffic, commercial activities, etc.) exhibits greater influence on the measured outdoor ambient sound level.

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SOURCE: SANGIS 2017

0 50 100 Meters
0 200 400 Feet

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FIGURE 3

Noise Measurement Locations

Paseo Montril Development Project

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4 Thresholds of Significance

City of San Diego Significance Determination Thresholds

Interior and Exterior Noise Impacts from Traffic-Generated Noise

As shown in Table 4, which is reproduced from Table K-2 in the City's CEQA Significance Determination Thresholds, the noise level at exterior usable open space for single- and multifamily residences should not exceed 65 dBA CNEL (City of San Diego 2016). A significant permanent increase is defined as a direct project-related permanent ambient increase of 3 dBA or greater, where exterior noise levels would already exceed the City's significance thresholds (City of San Diego 2016) (e.g., 65 dBA daytime for single-family residential land uses). An increase of 3 dBA is perceived by the human ear as a barely perceptible increase.

Table 4. City of San Diego Traffic Noise Significance Thresholds (dBA CNEL)

Structure or Proposed Use that would be impacted by Traffic Noise	Interior Space	Exterior Useable Space[1]	General Indication of Potential Significance
Single-family detached	45 dB	65 dB	Structure or outdoor useable area[2] is <50 feet from the center of the closest (outside) lane on a street with existing or future ADTs >7,500
Multi-family, school, library, hospital, day care center, hotel, motel, park, convalescent home	Development Services Department ensures 45 dB pursuant to Title 24	65 dB	
Office, church, business, Professional uses	n/a	70 dB	Structure or outdoor useable area is <50 feet from the center of the closest lane on a street with existing or future ADTs >20,000
Commercial, retail, industrial, outdoor sports uses	n/a	75 dB	Structure or outdoor useable area is <50 feet from the center of the closest lane on a street with existing or future ADTs >40,000

Source: City of San Diego 2016.
Notes: ADT = average daily traffic

1 If a project is currently at or exceeds the significance thresholds for traffic noise described above, and noise levels would result in less than a 3-dB increase, then the impact is not considered significant.

2 Exterior useable areas do not include residential front yards or balconies, unless the areas such as balconies are part of the required useable open space calculation for multi-family units.

Exterior Noise Land Use Compatibility

Table K-4 from the City's CEQA Significance Determination Thresholds indicates that up to 60 dBA CNEL would be considered an exterior noise level compatible with multi-family residential use (City of San Diego 2016) as proposed by the project. This compatibility value is consistent with what appears in Table 2 for this type of land use. Above this level, the City's significance threshold (#7 under Section K) elaborates that "the transition zone between compatible and incompatible should be evaluated by the environmental planner to determine whether the use would be acceptable based on all available information and the extent to which the noise from the proposed project would affect the surrounding uses" (City of San Diego 2016). Hence, this analysis shall refer to Table 4 and apply 60 to 70 dBA CNEL as "conditionally compatible" for the multi-family residential uses and its associated onsite open spaces.

Noise from Adjacent Stationary Uses (Noise Generators)

The City's Noise Ordinance also limits property line noise levels for various land uses by time of day for noise generated by on-site sources associated with project operation (see the Table of Allowable Limits in Section 59.5.0401 of the San Diego Municipal Code [SDMC]). By way of illustration, the limit for multifamily residential land uses is 55 dBA L_{eq} from 7:00 a.m. to 7:00 p.m., 50 dBA L_{eq} from 7:00 p.m. to 10:00 p.m., and 50 dBA L_{eq} from 10:00 p.m. to 7:00 a.m. A project that would generate noise levels at the property line that exceed the City's Noise Ordinance Standards is considered potentially significant (such as potentially a carwash or projects operating generators or noisy equipment). If a nonresidential use, such as a commercial, industrial, or school use, is proposed to abut an existing residential use, the decibel level at the property line should be the arithmetic mean of the decibel levels allowed for each use as set forth in SDMC Section 59.5.0401.

Temporary Construction Noise and Sound Level Limits

Temporary construction noise that exceeds 75 dBA L_{eq} at a sensitive receptor would be considered significant. In particular, per SDMC 59.5.0404(c), construction noise levels measured at or beyond the property lines of any property zoned residential shall not exceed an average sound level greater than 75 dB L_{eq} during the 12-hour period from 7:00 a.m. to 7:00 p.m. In addition, construction activity is prohibited between the hours of 7:00 p.m. of any day and 7:00 a.m. of the following day, or on legal holidays as specified in SDMC Section 21.04, with the exception of Columbus Day and Washington's Birthday, or on Sundays, that would create disturbing, excessive, or offensive noise unless a permit has been applied for and granted beforehand by the Noise Abatement and Control Administrator, in conformance with SDMC Section 59.5.0404. Additionally, where temporary construction noise would substantially interfere with normal business communication, or affect sensitive receptors, such as day care facilities, a significant noise impact may be identified.

Construction Vibration Guidance

Guidance from Caltrans indicates that a vibration velocity level of 0.2 ips PPV received at a structure would be considered annoying by occupants within (Caltrans 2013b). As for the receiving structure itself, aforementioned Caltrans guidance from Section 2 recommends that a vibration level of 0.5 ips PPV would represent the threshold for building damage risk to a newer residential building experiencing continuous/frequent groundborne vibration.

5 Impact Discussion

Short-Term Construction

Conventional Construction Activities

Construction noise associated with the proposed project is assessed with respect to the nearest pre-existing residential receptors, at which the 75 dBA 12-hour L_{eq} threshold per SDMC 59.5.0404(c) would apply.

Construction noise and vibration are temporary phenomena. Construction noise and vibration levels vary from hour to hour and day to day, depending on the equipment in use, the operations performed, and the distance between the source and receptor. Equipment that would be in use during construction would include, in part, graders, backhoes, rubber-tired dozers, loaders, cranes, forklifts, pavers, rollers, and air compressors. The typical maximum noise levels at a distance of 50 feet from various pieces of construction equipment and activities anticipated for use on the proposed project site are presented in Table 5. Note that the equipment noise levels presented in Table 5 are maximum noise levels. Usually, construction equipment operates in alternating cycles of full power and low power, producing average noise levels over time that are less than the maximum noise level. The average sound level of construction activity also depends on the amount of time that the equipment operates and the intensity of construction activities during that time.

Table 5. Typical Construction Equipment Maximum Noise Levels

Equipment Type	Typical Equipment (L_{max}, dBA at 50 Feet)
Backhoe	78
Blasting	94
Compressor (air)	78
Concrete Mixer Truck	79
Crane	81
Dozer	82
Excavator	81
Generator	72
Grader	85
Man Lift	75
Paver	77
Rock Drill	81
Roller	80
Welder / Torch	73

Source: DOT 2006.
Note: L_{max} = maximum sound level; dBA = A-weighted decibels.

Aggregate noise emission from proposed project construction activities, broken down by sequential phase, was predicted at two distances to the nearest existing noise-sensitive receptor: 1) from the nearest position of the construction site boundary (or where activity is likely to concentrate, such as a building façade) and 2) from the geographic center of the construction site or area of expected activity, which serves as the time-averaged location or geographic *acoustical centroid* of active construction equipment for the phase under study. The intent of the former distance is to help evaluate anticipated construction noise from a limited quantity of equipment or vehicle activity expected to be at the boundary for some period of time, which would be most appropriate for phases such

as site preparation, grading, and paving. The latter distance is used in a manner similar to the general assessment technique as described in the FTA guidance for construction noise prediction, when the location of individual equipment for a given construction phase is uncertain over some extent of (or the entirety of) the construction site area. Because of this uncertainty, all the equipment for a construction phase is assumed to operate—on average—from the acoustical centroid. Table 6 summarizes these two distances to the apparent closest noise-sensitive receptor for each of the five sequential construction phases. At the site boundary, this analysis assumes that up to only one piece of equipment of each listed type per phase will be involved in the construction activity for a limited portion of the 12-hour period. In other words, at such proximity, the operating equipment cannot "stack" or crowd the vicinity and still operate normally. For the acoustical centroid case, which intends to be a geographic average position for all equipment during the indicated phase, this analysis assumes that the equipment may be operating up to all 12 hours per day.

Table 6. Estimated Distances between Construction Activities and the Nearest

Construction Phase (and Equipment Types Involved)	Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet)	Distance from Nearest Noise-Sensitive Receptor to Acoustical Centroid of Site (Feet)
Site preparation (dozer, backhoe, backhoe)	100	340
Grading (excavator, grader, dozer, backhoe)	60	340
Building construction (crane, man-lift, generator, backhoe, welder/torch)	200	340
Architectural finishes (air compressor)	200	340
Paving (paver, roller, other equipment)	200	340

A Microsoft Excel–based noise prediction model emulating and using reference data from the Federal Highway Administration Roadway Construction Noise Model (RCNM) (FHWA 2008) was used to estimate construction noise levels at the nearest occupied noise-sensitive land use. (Although the RCNM was funded and promulgated by the Federal Highway Administration, it is often used for non-roadway projects, because the same types of construction equipment used for roadway projects are often used for other types of construction.) Input variables for the predictive modeling consist of the equipment type and number of each (e.g., two graders, a loader, a tractor), the duty cycle for each piece of equipment (e.g., percentage of time within a specific time period, such as an hour, when the equipment is expected to operate at full power or capacity and thus make noise at a level comparable to what is presented in Table 4), and the distance from the noise-sensitive receiver. The predictive model also considers how many hours that equipment may be on site and operating (or idling) within an established work shift (in this case, the allowable daytime construction hours of 7:00 a.m. to 7:00 p.m. Conservatively, no topographical or structural shielding was assumed in the modeling. The RCNM has default duty-cycle values for the various pieces of equipment, which were derived from an extensive study of typical construction activity patterns. Those default duty-cycle values were used for this noise analysis, which is detailed in Appendix B, Construction Noise Modeling Input and Output, and produce the predicted results displayed in Table 7.

Table 7. Predicted Construction Noise Levels per Activity Phase

Construction Phase (and Equipment Types Involved)	12-Hour L_{eq} at Nearest Noise-Sensitive Receptor to Construction Site Boundary (dBA)	12-Hour L_{eq} at Nearest Noise-Sensitive Receptor to Acoustical Centroid of Site (dBA)
Site preparation (dozer, backhoe, backhoe)	74	64.9
Grading (excavator, grader, dozer, backhoe)	79	65.8
Building construction (crane, man-lift, generator, backhoe, welder/torch)	65	60.7
Architectural finishes (air compressor)	60	55.6
Paving (paver, roller, other equipment)	67	62.6

Notes: L_{eq} = equivalent noise level; dBA = A-weighted decibels.

As presented in Table 7, the estimated construction noise levels are predicted to be as high as 79 dBA L_{eq} over a 12-hour period at the nearest existing residences (as close as 60 feet away) when grading activities take place near the northern project boundaries. Note that these estimated noise levels at a source-to-receiver distance of 60 feet would occur when noted pieces of heavy equipment would each operate for a cumulative period of up to five (5) hours a day. By way of example, a grader might make multiple passes on site that are this close to a receiver; but, for the remaining time during the day, the grader is sufficiently farther away, performing work at a more distant location, or simply not operating. On an average construction workday, heavy equipment will be operating sporadically throughout the project site and more frequently away from the northern edge of the site. At more typical distances closer to the center of the project site (approximately 340 feet from the nearest existing residence), construction noise levels are estimated to range from approximately 56 dBA Leq to 66 dBA Leq at the nearest existing residence. For these instances when operation of construction equipment and processes are sufficiently proximate to cause activity noise levels to exceed 75 dBA Leq, which the City of San Diego requires as a daytime threshold for construction noise exposure over a 12-hour period at a residential receptor, mitigation measure **M-NOI-1** shall be implemented as indicated site conditions may warrant. Proper application of temporary noise barriers or comparable sound abatement due to implementation of **M-NOI-1** has the ability to reduce noise levels by 9 dB, which would correspondingly reduce the predicted 79 dBA 12-hour Leq for the grading phase to less than 70 dBA Leq, which would make the level compliant with the 75 dBA threshold.

It is anticipated that construction activities associated with the proposed project would take place primarily within the allowable hours of construction per the City (7:00 a.m. and 7:00 p.m. Monday through Friday) as described in SDMC 59.5.0404. In the event that construction is required to extend beyond these times, extended hours permits would be required and would be obtained by the applicant.

In summary, construction noise during allowable daytime hours has the potential for noise to exceed the 75 dBA Leq 12-hour City threshold at the nearest residential receiver on occasion. Thus, temporary construction-related noise impacts would be considered potentially significant unless mitigated. With implementation of **M-NOI-1**, impacts would be reduced to **less than significant with mitigation**.

Blasting Operations

Blasting typically involves drilling a series of boreholes, placing explosives (the "charge") in each hole, then topping the charge with fill material to help confine the blast. These multiple holes are typically arranged so as to yield optimal fracturing of the rock strata and thus allow gravity to subsequently collapse or "implode" the volume of rock in as safe and controlled manner as possible after detonation. Post-detonation material can then be further broken down to manageable size and hauled away with conventional construction equipment and vehicles.

By limiting the amount of charge in each hole, and detonating each charge successively with an interstitial time delay, the blasting contractor can limit the total energy released at any single time, which in turn reduces the airborne noise L_{max} and groundborne vibration energy associated with each individual detonated charge.

Based on the known geotechnical conditions of the project site, there is some potential for blasting to be required to excavate the underlying rock. It should be noted that conventional or less intensive means of excavation would be exhausted prior to the use of blasting. However, because there is some potential, the analysis presented in this report conservatively assumes blasting would be required. It is anticipated that blasting operations would occur during the site preparation and grading phase.

Table 8 presents predicted values for blasting scenarios of 1,000 to 1,500 cubic yard per blast. as well as the predicted A-weighted Lmax for each detonated charge, under a fully-confined condition, using mathematical expressions and typical parameters provided by the Blasting and Explosives Quick Reference Guide (Dyno Nobel 2010). The predicted 12-hour L_{eq} value presented in Table 8 accounts for all detonations occurring within a single blast, and just one blast event per 12-hour period.

Table 8. Preliminary Blasting Charge Weights and Predicted L_{max} Values

Nearest Receiving Residential Structure	Cubic Yards Per Blast	Per-Detonation Charge Weight (lbs)	Single Charge Detonation Airborne Sound Pressure Level (SPL, dBA L_{max}) at the Receiving Structure	Single Charge Detonation Peak Particle Velocity (PPV, inches per second)	12-hour L_{eq} for the Blast Event (SPL, dBA)
1. North (120 feet distance to expected closest detonation)	1,000	3.96	103.9	0.997	80.8
	1,500	3.96	103.9	0.997	82.6

With a blast event expected to loosen up to 1,500 cubic yards of material, and assuming a powder factor of 0.5, the total quantity of successive detonations would vary with the per-detonation charge weight but result in the estimated 12-hour L_{eq} values also presented in Table 8. Hence, predicted airborne noise level from the blast for each of these scenarios could exceed the City's standard, with the degree of exceedance depending largely on proximity. Proper implementation of the Blasting Plan introduced as M-NOI-2 is recommended to help render vibration-related environmental impacts temporary and **less than significant with mitigation**. For example, the use of sand/dirt with steel mats over explosive items (Calderone, 2001) or installation of a temporary noise barrier (e.g., sound blankets of sufficient height, horizontal extent, and arrangement that occludes direct sound pathways between the blast event and the receptor[s] of concern) that is capable of exhibiting 12 dBA of noise reduction would decrease the predicted 82.6 dBA 12-hour Leq for the 1,500 cubic-yard scenario in Table 8 to less than 71 dBA and thus comply with the City's standard of 75 dBA. The latter of these noise mitigation options, the temporary noise barrier installed to provide 12 dBA of noise reduction, would doubly serve as an implementation of mitigation measure MM-NOI-1.

Portable Rock-Crushing/Processing Facility

A portable rock-crushing/processing facility would be used on site during construction activities. The rock-crushing operation would begin with a front-end loader picking up material and dumping the material into a primary crusher. The material would then be crushed, screened, and stacked in product piles. The material would be stockpiled adjacent to the rock-crushing equipment. All material will be used on site. Electric power would most likely be provided by a diesel engine generator. The primary crusher would also generate impulsive noise events. Maximum noise levels associated with the primary crusher would be expected to reach approximately 87 dBA at 45 feet according to a previously prepared Ldn Consulting study featuring measured rock crushing noise levels (Ldn Consulting, 2011).

Rock crushing locations have been not been identified but would be most likely located near or adjacent to the Paseo Montril cul-de-sac on flat ground. This would put the closest existing off-site residence more than approximately 400 feet from the proposed rock crushing areas. In addition, there would be intervening topography that would shield adjacent homes from the rock crushing facilities. At this distance the noise level (both 12-hour average and impulsive noise) associated with the rock crushing activities would be less than City's standard of 75 dBA, and **less than significant**.

Long-Term Operational

Roadway Traffic Noise

The proposed project would result in the creation of additional vehicle trips on local arterial roadways (i.e., Paseo Montril and Rancho Penasquitos Boulevard), which could result in increased traffic noise levels at adjacent noise-sensitive land uses. Appendix C, Traffic Noise Modeling Input and Output, contains a spreadsheet with traffic volume data (average daily traffic) for Paseo Montril and surrounding arterial roadways. In particular, the proposed project would create additional traffic along Paseo Montril, which according to the Traffic Impact Assessment prepared for the proposed project (LOS Engineering, 2020) would add 440 average daily trips to the segment of Paseo Montril and adjacent roadways surrounding the project site.

Potential noise effects from vehicular traffic were assessed using the Federal Highway Administration's Traffic Noise Model version 2.5 (FHWA 2004). Information used in the model included the roadway geometry, posted traffic speeds, and traffic volumes for the following scenarios: existing (year 2019), existing plus project, buildout (2050), and buildout plus project. Noise levels were modeled at representative noise-sensitive receivers ST1 through ST4, as shown in Figure 4. Demonstrating validity of the TNM model, predicted traffic noise levels for the existing (2019) without proposed project case shown in Table 9 compare well (i.e., within an average difference of +1.8 dBA) with the measured L_{eq} magnitudes from Table 2. Hence, on the basis of the TNM model accuracy for the existing (2019) without project case, future traffic noise levels can be predicted with confidence.

The City's Noise Element establishes a policy for exterior sensitive areas to be protected from high noise levels. The Noise Element sets 65 dBA CNEL for the outdoor areas and 45 dBA CNEL for interior areas as the normally acceptable levels. However, existing levels from traffic already exceed this threshold. For the purposes of this noise analysis, such impacts are considered significant when they cause an increase of 3 dB from existing noise levels. An increase or decrease in noise level of at least 3 dB is required before any noticeable change in community response would be expected (Caltrans 2013a). The receivers were modeled to be 5 feet above the local ground elevation. The noise model results are summarized in Table 9.

Table 9. Roadway Traffic Noise Modeling Results

Modeled Receiver Tag (Location Description)	Existing (2019) Noise Level (dBA CNEL)	Existing (2019) Plus Project Noise Level (dBA CNEL)	Buildout (2050) Noise Level (dBA CNEL)	Buildout (2050) Plus Project Noise Level (dBA CNEL)	Maximum Project-Related Noise Level Increase (dB)
ST1	69.1	66.3	70.7	68.0	0.0
ST2	67.9	66.9	69.4	69.6	0.2
ST3	63.7	63.7	64.4	64.8	0.4
ST4	59.9	59.4	60.7	59.9	0.0

Notes: dBA = A-weighted decibel; CNEL = Community Noise Equivalent Level; dB = decibel.

Table 9 shows that at all three listed representative receivers, the addition of proposed project traffic to the roadway network would result in a CNEL increase of less than 3 dB, which is below the discernible level of change for the average healthy human ear. At some modeled locations, expected traffic noise levels are predicted to decrease due to introduction of the proposed new buildings as sound path occlusion between them and the freeway noise source. Thus, a **less-than-significant impact** is expected for proposed project–related off-site traffic noise increases affecting existing residences in the vicinity.

Traffic Noise Exposure to Future Project Occupants

Aside from exposure to aviation traffic noise, current CEQA noise-related guidelines at the state level do not require an assessment of exterior-to-interior noise intrusion, environmental noise exposure to occupants of newly-created project residences, or environmental noise exposure to exterior non-residential uses attributed to the development of the proposed project. Nevertheless, the City's CEQA guidelines and the California Building Code requires that interior background noise levels not exceed a CNEL of 45 dB within habitable rooms. Hence, the following predictive analysis of traffic noise exposure at the exteriors of occupied residences and outdoor living areas is provided below.

In addition to the prediction results presented in Table 9, the FHWA TNM software was also used to predict the buildout + Project scenario traffic noise levels at multiple on-site exterior areas, as listed in Table 10. Modeled receptor locations, which appear in Figure 4, include representative positions for the exteriors of multiple floors of the eastern facades. Predicted exterior sound levels presented in Table 9 and Table 10 that are higher than 65 dBA CNEL indicate locations where an exterior-to-interior noise analysis should be performed for the proximate occupied residential unit.

Table 10. On-Site Exterior Roadway Traffic Noise Modeling Results

Location	Modeled Receiver	Description	Predicted Traffic Noise Exposure at Modeled Receiver (dBA CNEL)
Building 1	M1-1	1st floor	70
	M1-2	2nd floor/Balcony	75
	M1-3	3rd floor	75
	M2-1	1st floor	67
	M2-2	2nd floor/Balcony	74
	M2-3	3rd floor	75
	M3-1	1st floor	65
	M3-2	2nd floor/Balcony	73
	M3-3	3rd floor	75

Table 10. On-Site Exterior Roadway Traffic Noise Modeling Results

Location	Modeled Receiver	Description	Predicted Traffic Noise Exposure at Modeled Receiver (dBA CNEL)
Building 2	M4-1	1st floor	64
	M4-2	2nd floor/Balcony	73
	M4-3	3rd floor	75
	M5-1	1st floor	63
	M5-2	2nd floor/Balcony	73
	M5-3	3rd floor	74
Building 3	M6-1	1st floor	62
	M6-2	2nd floor	71
	M6-3	3rd floor	72
Dog Run	DR-1	n/a	54
Central Community Barbeque and Picnic Area	OS-1	n/a	49
South of Building 1 – Seating Area	OS-2	n/a	71
North of Building 2 – Seating Area	OS-3	n/a	57

Notes: dBA = A-weighted decibel; CNEL = Community Noise Equivalent Level.

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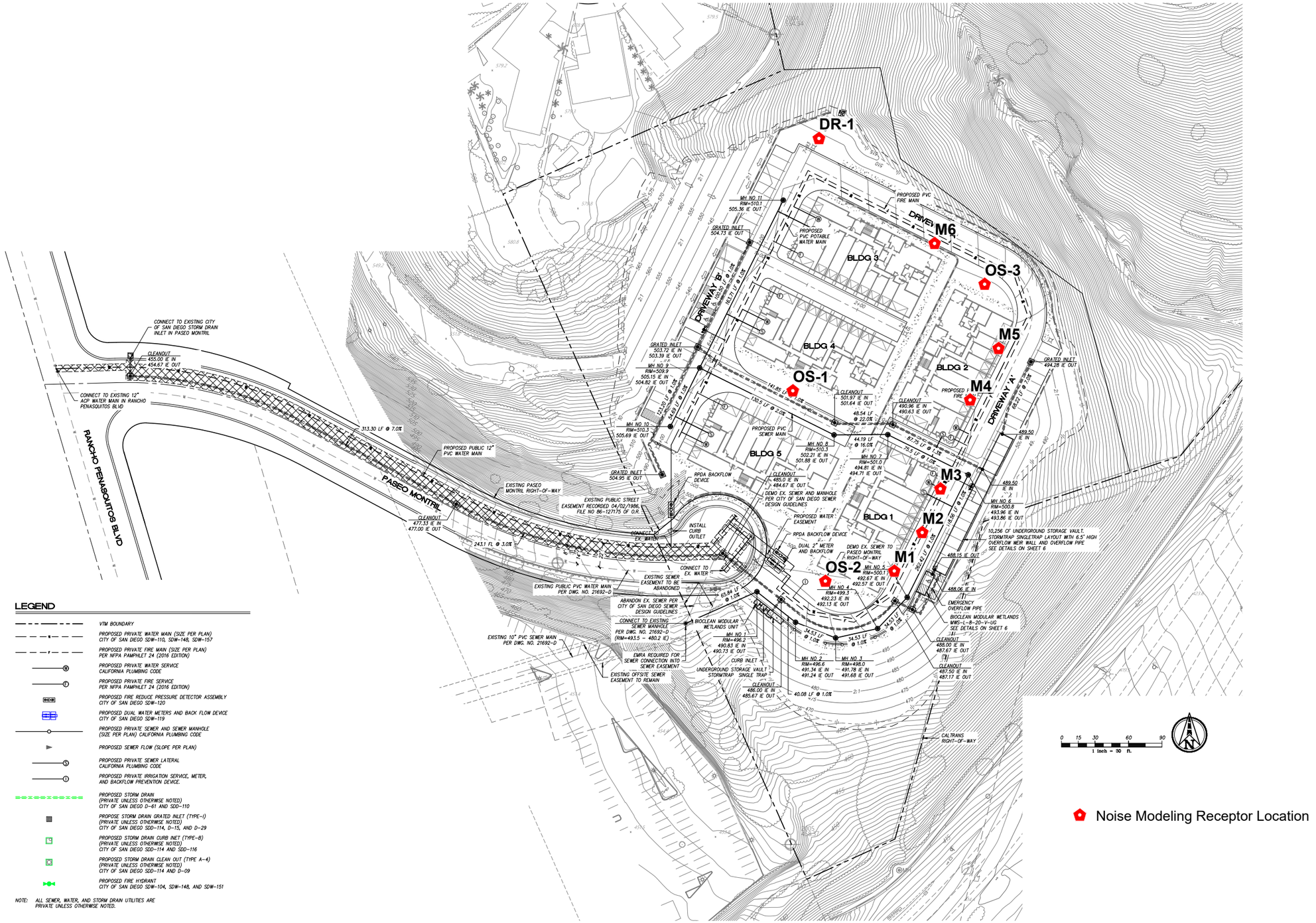

LEGEND

- VTM BOUNDARY
- PROPOSED PRIVATE WATER MAIN (SIZE PER PLAN) CITY OF SAN DIEGO SDW-110, SDW-148, SDW-157
- PROPOSED PRIVATE FIRE MAIN (SIZE PER PLAN) PER NFPA PAMPHLET 24 (2016 EDITION)
- PROPOSED PRIVATE WATER SERVICE CALIFORNIA PLUMBING CODE
- PROPOSED PRIVATE FIRE SERVICE PER NFPA PAMPHLET 24 (2016 EDITION)
- PROPOSED FIRE REDUCE PRESSURE DETECTOR ASSEMBLY CITY OF SAN DIEGO SDW-120
- PROPOSED DUAL WATER METERS AND BACK FLOW DEVICE CITY OF SAN DIEGO SDW-119
- PROPOSED PRIVATE SEWER AND SEWER MANHOLE (SIZE PER PLAN) CALIFORNIA PLUMBING CODE
- PROPOSED SEWER FLOW (SLOPE PER PLAN)
- PROPOSED PRIVATE SEWER LATERAL CALIFORNIA PLUMBING CODE
- PROPOSED PRIVATE IRRIGATION SERVICE, METER, AND BACKFLOW PREVENTION DEVICE.
- PROPOSED STORM DRAIN (PRIVATE UNLESS OTHERWISE NOTED) CITY OF SAN DIEGO D-61 AND SDD-110
- PROPOSE STORM DRAIN GRATED INLET (TYPE-I) (PRIVATE UNLESS OTHERWISE NOTED) CITY OF SAN DIEGO SDD-114, D-15, AND D-29
- PROPOSED STORM DRAIN CURB INET (TYPE-B) (PRIVATE UNLESS OTHERWISE NOTED) CITY OF SAN DIEGO SDD-114 AND SDD-116
- PROPOSED STORM DRAIN CLEAN OUT (TYPE A-4) (PRIVATE UNLESS OTHERWISE NOTED) CITY OF SAN DIEGO SDD-114 AND D-09
- PROPOSED FIRE HYDRANT CITY OF SAN DIEGO SDW-104, SDW-148, AND SDW-151

NOTE: ALL SEWER, WATER, AND STORM DRAIN UTILITIES ARE PRIVATE UNLESS OTHERWISE NOTED.

SOURCE: Civil Sense 2021

FIGURE 4

Noise Modeled Receptor Locations

Paseo Montril Development Project

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The prediction results from the Table 10 indicate that future traffic noise levels would range close to but not exceed 75 dBA CNEL. With the 45 dBA CNEL interior background sound level limit, this means the minimum composite sound transmission class (STC) rating for the exterior shell separating the habitable interior space from the outdoor sound level should be at least 30. The composite STC rating for the portion of a building shell that separates an interior space from the outdoors is calculated from the area-dependent contributions of its elements: windows, wall assemblies, and doors.

Windows are typically the weakest sound isolation element of residential buildings. The minimum performance window option in occupied rooms is assumed to be single hung operable windows with a minimum of dual-glazing. California's Title 24 (Title 24, Part 6 of the California Code of Regulations) stipulates energy efficiency of new residential and nonresidential buildings, with each local community adopting building codes to achieve compliance with these regulations. Based on these Title 24 requirements and the City of San Diego Code, this analysis presumes such dual-paned vinyl windows will be used for this project. A glazing manufacturer, Viracon, reports that a dual pane assembly composed of two 1/8"-thick glass panes separated by a 3/8" wide air-gap yields an STC rating of 31 (Viracon 2019).

Proposed project information suggests that the exterior wall assemblies comprise 7/8"-thick exterior plaster on a weather-resistant barrier attached to 2"-thick wooden studs, with fibrous batt insulation in the stud cavities, and a 5/8"-thick layer of gypsum wallboard (GWB) attached to the interior-facing surface. Assuming the mass of the exterior plaster is comparable to a double-layer of GWB, this analysis applies available acoustical transmission loss (TL) data on such a wall assembly (NRCC 1998) to help determine the composite STC rating for the façade exposed to exterior traffic noise.

Some of the proposed project residential units feature patios or balconies, for which access is provided by single-panel, out-swing fiberglass french doors with hinges (i.e., not sliding) comparable to a Milgard Essence series model (or similar from another manufacturer). For purposes of this analysis, these doors are assumed to feature a dual-pane glazing system similar to the window assembly (i.e., two 1/8"-thick glass panes separated by a 3/8" wide air-gap) in narrow-perimeter frames. The analysis also assumes that these door products feature good seals and related hardware, so that when closed, the effective sound insulating performance is represented by the glass. Viracon data indicates that such glazing should demonstrate an STC rating of 31 (Viracon 2019).

Clearly, an open window or open door to an adjoining patio or balcony greatly compromises the sound insulation performance of the façade wall assembly, as presented for the sample units appearing in Table 11. However, when such windows and doors are closed, all facades are anticipated to exhibit a predicted STC rating of at least 34, and thus would provide sufficient exterior-to-interior sound insulation from outdoor traffic noise to yield interior background sound levels that are less than 45 dBA CNEL and thus compliant with the City and state standards. Recall that none of the predicted exterior traffic noise levels at the studied receptor locations exceeded 75 dBA CNEL; thus, the STC rating value (for closed windows and doors) subtracted from these exterior noise values must result in interior noise levels of less than 45 dBA CNEL (e.g., 75 – 34 = 41 dBA CNEL, which is less than 45). This apparent requirement for closed windows and doors means that the design of these habitable rooms should feature mechanical ventilation or an air-conditioning system to provide interior comfort of the occupants. Detailed transmission loss data is included in Appendix E, Transmission Loss Predictions. Thus, the City's threshold of 45 dB CNEL within habitable rooms would not be exceeded and considered **less than significant.**

Table 11. Predicted Net Sound Transmission Class of Occupied Room Façade

Unit	Occupied Room Facade	Predicted Net Sound Transmission Class (STC) for Scenario		
		Closed Window(s) and Door(s)	*Open Window*	*Open Door*
Building 1	M1-1	n/a	n/a	n/a
	M1-2	34	11	5
	M1-3	37	14	n/a
	M2-1	n/a	n/a	n/a
	M2-2	34	11	5
	M2-3	37	14	n/a
	M3-1	n/a	n/a	n/a
	M3-2	34	11	5
	M3-3	37	14	n/a
Building 2	M4-1	n/a	n/a	n/a
	M4-2	34	11	5
	M4-3	37	14	n/a
	M5-1	n/a	n/a	n/a
	M5-2	34	11	5
	M5-3	37	14	n/a
Building 3	M6-1	n/a	n/a	n/a
	M6-2	34	11	5
	M6-3	37	14	n/a

Notes: n/a = not applicable

Open Space & Balconies

Where predicted exterior noise levels exceed 65 dBA CNEL proximate to a residential patio, balcony, or other usable outdoor space, and such space would count towards the outdoor usable space associated with the project, according to the City's Land Use Noise Compatibility Table (see Table 2), feasible noise reduction techniques should be analyzed and incorporated to make the outdoor activities acceptable at locations that are currently above the City's 65 dBA CNEL standard. With the implementation of project design feature **PDF-1**, the resultant exterior noise levels would meet the City's exterior noise standard of 65 dBA CNEL.

PDF-1: Where exterior noise levels are predicted to exceed 65 dBA CNEL at useable open space areas, the project should install noise-reducing features external to or upon the useable open space areas (or within, as practical and appropriate) in the form of sound walls, fencing, landscape berms, or similarly performing barriers of at least 6 feet in height to occlude incoming roadway traffic noise.

For proposed project residential units that feature patios or balconies expected as outdoor useable areas, predicted future traffic noise exposure levels presented in Table 10 suggest that up to 10 dBA of noise reduction would be needed to keep sound on such balconies at levels below the 65 dBA CNEL compatibility standard. With the implementation of project design feature **PDF-2**, the resultant exterior noise levels would meet the City's exterior noise standard of 65 dBA CNEL.

PDF-2: Residential unit patios or balconies along freeway-facing building facades predicted to be exposed to external noise levels in excess of 65 dBA CNEL should feature railings or other partial-height barriers comprising sufficiently solid and dense materials (e.g., acrylic, glass, wood, etc. that

exhibits a sound transmission class [STC] rating of at least 20) and of a height (from floor or deck of the balcony surface) that occludes direct sound path from the noise-producing roadway of concern and a seated patio or balcony occupant.

Stationary Operations Noise

The incorporation of new multifamily homes and a mix of open space and recreational uses attributed to development of the proposed project will add a variety of noise-producing mechanical equipment that include those presented and discussed in the following paragraphs. Most of these noise-producing equipment or sound sources would be considered stationary, or limited in mobility to a defined area. Additionally, the open space and recreational uses would attract residents and their guests to enjoy proposed project facilities and thus create potential community noise relating to added aggregate speech as appropriate or expected for the venue.

Residential Unit Heating, Ventilation, and Air Conditioning Noise

For purposes of this analysis, each of the new occupied residential units would be expected to feature a split-system type air-conditioning unit, with a refrigeration condenser unit mounted on the ground floor of the building exterior. It is Assumed each condenser unit has a sound emission source level of 74 dBA at 3 feet (Johnson Controls 2010), which includes an additional 3 dBA to account for building reflection. The proposed project site plan suggests that these condenser units would be installed near the building perimeter. Therefore, the closest existing noise-sensitive residential receptor to the north of the proposed project's northern residential buildings would be as close as approximately 230 horizontal feet to what would be an arrangement of up to nine (9) such ground-mounted HVAC condenser units, positioned near the northwest facades of the western-most three buildings and the northeast façade of the northern-most building of the proposed project. However, due to the higher relative elevation of the receivers to the north of the proposed project near the cul de sac of Calle Abuelito and their horizontal distances away from the noise-producing condenser units as modeled, the predicted sound emission level from the combination of these condenser units would be no more than 44 dBA L_{eq}, and would thus be compliant with the City's nighttime threshold of 45 dBA hourly $L_{eq.}$ Although other condenser units are on-site, noise from their operation would—from the perspective of the nearest noise-sensitive receiving properties at the Calle Abuelito cul de sac—be occluded from direct view by proposed project buildings (and be more distant) and thus be reduced in noise to a level that would not substantially contribute acoustically to the eight studied herein. Please see Appendix D for a graphical display of the predicted aggregate noise level from these eight condenser units, superimposed on an aerial image of the expected layout of the HVAC equipment and proposed project buildings and the proximate neighboring Calle Abuelito residences to the north. Under such conditions, the operation of residential air-conditioning units would result in **less-than-significant** noise impacts.

Conventional Construction Activity Vibration

Construction activities may expose persons to excessive groundborne vibration or groundborne noise, causing a potentially significant impact. Caltrans has collected groundborne vibration information related to construction activities (Caltrans 2013b). Information from Caltrans indicates that continuous vibrations with a PPV of approximately 0.2 ips is considered annoying. For context, heavier pieces of construction equipment, such as a bulldozer that may be expected on the project site, have peak particle velocities of approximately 0.089 ips or less at a reference distance of 25 feet (DOT 2006).

Groundborne vibration attenuates rapidly, even over short distances. The attenuation of groundborne vibration as it propagates from source to receptor through intervening soils and rock strata can be estimated with expressions found in FTA and Caltrans guidance. By way of example, for a bulldozer operating on site and as close as the western project boundary (i.e., 100 feet from the nearest receiving sensitive land use) the estimated vibration velocity level would be 0.01 ips per the equation as follows (FTA 2018):

$$PPV_{rcvr} = PPV_{ref} * (25/D)^{1.5} = 0.01 = 0.089 * (25/100)^{1.5};$$

where PPV_{rcvr} is the predicted vibration velocity at the receiver position, PPV_{ref} is the reference value at 25 feet from the vibration source (the bulldozer), and D is the actual horizontal distance to the receiver. Therefore, at this predicted PPV, the impact of vibration-induced annoyance to occupants of nearby existing homes would be **less than significant**.

Construction vibration, at sufficiently high levels, can also present a building damage risk. However, the predicted 0.01 ips PPV at the nearest residential receiver 100 feet away from onsite operation of the bulldozer during grading would not surpass the guidance limit of 0.3 to 0.5 ips PPV for preventing damage to residential structures (Caltrans 2013b). Because the predicted vibration level at 100 feet is less than both the annoyance and building damage risk thresholds, vibration from project conventional construction activities is considered less than significant.

Once operational, the proposed project would not be expected to feature major onsite producers of groundborne vibration. Anticipated mechanical systems like pumps are designed and manufactured to feature rotating components (e.g., impellers) that are well-balanced with isolated vibration within or external to the equipment casings. On this basis, potential vibration impacts due to proposed project operation would be less than significant.

Blasting Event Vibration

Although conventional construction equipment using mechanical means for earth-moving are not expected to yield vibration velocity levels that exceed applicable standards, potential blasting activities represent a separate category of vibration assessment. The project may require blasting to facilitate excavation in areas where competent bedrock occurs at depths that make mechanical excavation difficult. Table 7 presents the estimated per-detonation PPV that would be received at each of the indicated residential receptors for each of the two studied scenarios that vary with detonation-to-receptor distance and per-detonation charge weight. Under such parameters, the blast vibration magnitudes would be compatible with Caltrans guidance limits for single-event or "transient" events. However, to help ensure that vibration from the blasting associated with project excavation would not cause undue temporary annoyance and minimize damage risk to the receiving structures, proper implementation of the Blasting Plan introduced as M-NOI-1 is recommended to help render vibration-related environmental impacts temporary and **less than significant with mitigation**.

c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

Aviation Traffic Noise

There are no private airstrips within the vicinity of the project site. The closest airport to the project site is the Marine Corps Air Station Miramar approximately 5.5 miles southeast of the site. Impacts from aviation overflight noise exposure would be considered **less than significant**.

6 Mitigation Measures

The following mitigation measure, introduced in Section 5, Impact Discussion, would apply during construction and blasting activities.

M-NOI-1 - Temporary Construction Noise

The proposed project applicant or its contractor will implement one or more of the following options for onsite noise control and sound abatement means that, in aggregate, would yield a minimum of approximately 12 dBA of construction noise reduction during the grading phase of the Project.

- *Administrative controls* (e.g., reduce operating time of equipment and/or prohibit usage of equipment type[s] within certain distances to a nearest receiving occupied off-site property).
- *Engineering controls* (change equipment operating parameters [speed, capacity, etc.], or install features or elements that otherwise reduce equipment noise emission [e.g., upgrade engine exhaust mufflers]).
- *Install noise abatement* on the site boundary fencing (or within, as practical and appropriate) in the form of sound blankets or comparable temporary solid barriers to occlude construction noise emission between the site (or specific equipment operation as the situation may define) and the noise-sensitive receptor(s) of concern.

M-NOI-2. Blasting Vibration and Noise Plan

The proposed project applicant or its contractor will prepare a blasting plan that will reduce impacts associated with construction-related noise, drilling operations and vibrations related to blasting. The blasting plan will be site specific, based on general and exact locations of required blasting and the results of a project-specific geotechnical investigation. The blasting plan will include a description of the planned blasting methods, an inventory of receptors potentially affected by the planned blasting, and calculations to determine the area affected by the planned blasting. Noise calculations in the blasting plan will account for blasting activities and all supplemental construction equipment. The final blasting plan and pre-blast survey shall meet the requirements provided below.

- Prior to blasting, a qualified geotechnical professional shall inspect and document the existing conditions of facades and other visible structural features or elements of the nearest neighboring offsite residential buildings. Should this inspector determine that some structural features or elements appear fragile or otherwise potentially sensitive to vibration damage caused by the anticipated blasting activity, the maximum per-delay charge weights and other related blast parameters shall be re-evaluated to establish appropriate quantified limits on expected blast-attributed PPV. The geotechnical professional shall consider geologic and environmental factors that may be reasonably expected to improve attenuation of groundborne vibration between the blast detonations and the receiving structure(s) of concern.
- All blasting shall be designed and performed by a blast contractor and blasting personnel licensed to operate per appropriate regulatory agencies.
- Each blast shall be monitored and recorded with an air-blast overpressure monitor and groundborne vibration accelerometer that is located outside the closest residence to the blast. This data shall be recorded, and a post-blast summary report shall be prepared and be available for public review or distribution as necessary.
- Blasting shall not exceed 1 ips PPV (transient or single-event), or a lower PPV determined by the aforesaid inspector upon completion of the pre-blast inspection, at the façade of the nearest occupied residence.

- To ensure that potentially impacted residents are informed, the applicant will provide notice by mail to all property owners within 500 feet of the project at least 1 week prior to a scheduled blasting event.
- Where a blast event may be expected to cause an airborne noise level that exceeds the City's 12-hour L_{eq} standard, the proposed project applicant or its contractor(s) shall coordinate with the potentially affected neighboring property owner-occupant for permission to install at or near the proposed project property line (to the extent feasible, given the terrain of the proposed project vicinity) a field-erected temporary noise wall (e.g., sound blankets suspended from framing members, such as those provided by Behrens & Associates, Pacific Sound Control, or other vendors of comparable equipment). The installing contractor shall be responsible for determining the height and extent of the temporary noise barrier, so that its proper on-site implementation can be expected to provide up to 15 dBA of noise reduction and thus enable the 12-hour L_{eq} representing the blast event noise level to comply with the City's standard of 75 dBA.
- Where a blast event may be expected to cause an airborne noise level that contributes to exceedance of the City's 12-hour L_{eq} standard, the proposed project applicant or its contractor(s) shall utilize blasting noise abatement techniques (at the discretion of the blast contractor) such as steel or rubber blasting mats over sand/dirt, so that its proper on-site implementation can be expected to provide approximately 15 dBA of noise reduction and thus enable the 12-hour L_{eq} representing the blast event noise level to comply with the City's standard of 75 dBA.

7 Summary of Findings

This noise report was conducted to predictively quantify construction and operation noise and vibration attributed to the proposed project. The results indicate that potential impacts during construction grading activities and blasting events would be less than significant with mitigation **M-NOI-1** and **M-NOI-2** successfully applied. Project design features PDF-1 and PDF-2 successfully implemented would reduce exterior noise at outdoor use areas and unit patios and balconies to less than significant levels. No further mitigation is required.

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Appendix A

Baseline Noise Measurement Field Data

DUDEK
CREATOR OF KERATA TECHNOLOGY

FIELD DATA REPORT

Field Noise Measurement Data

Record: 1253	
Project Name	*Paseo Montril*
Observer(s)	*Connor Burke*
Date	*2020-03-02*

Meteorological Conditions	
Temp (F)	*61*
Humidity % (R.H.)	*50*
Wind	*Light*
Wind Speed (MPH)	*8*
Wind Direction	*East*
Sky	*Partly Cloudy*

Instrument and Calibrator Information	
Instrument Name List	*(ENC) Rion NL-52*
Instrument Name	*(ENC) Rion NL-52*
Instrument Name Lookup Key	*(ENC) Rion NL-52*
Manufacturer	*Rion*
Model	*NL-52*
Serial Number	*553896*
Calibrator Name	*(ENC) LD CAL150*
Calibrator Name	*(ENC) LD CAL150*
Calibrator Name Lookup Key	*(ENC) LD CAL150*
Calibrator Manufacturer	*Larson Davis*
Calibrator Model	*LD CAL150*
Calibrator Serial #	*5152*
Pre-Test (dBA SPL)	*94*
Post-Test (dBA SPL)	*94*
Windscreen	*Yes*
Weighting?	*A-WTD*
Slow/Fast?	*Slow*
ANSI?	*Yes*

Monitoring	
Record #	*1*
Site ID	*ST1*
Site Location Lat/Long	*32.951254, -117.105703*
Begin (Time)	*11:15:00*
End (Time)	*11:25:00*
Leq	*67.5*
Lmax	*70.7*
Lmin	*62.1*
Other Lx?	*L90, L50, L10*
L90	*64.6*
L50	*67.4*
L10	*69.1*
Other Lx (Specify Metric)	*L*
Primary Noise Source	*Traffic*
Other Noise Sources (Background)	*Birds*
Other Noise Sources Additional Description	*Freeway traffic from 15*
Is the same instrument and calibrator being used as previously noted?	*Yes*
Are the meteorological conditions the same as previously noted?	*Yes*

Description / Photos

Site Photos

Photo	

Monitoring

Record #	*2*
Site ID	*ST2*
Site Location Lat/Long	*32.951901, -117.106094*
Begin (Time)	*11:35:00*
End (Time)	*11:45:00*
Leq	*67.2*
Lmax	*70.1*
Lmin	*64.5*
Other Lx?	*L90, L50, L10*
L90	*65.5*
L50	*66.8*
L10	*68.7*
Other Lx (Specify Metric)	*L*
Primary Noise Source	*Traffic*
Other Noise Sources (Background)	*Birds, Distant Aircraft, Rustling Leaves*
Other Noise Sources Additional Description	*I15 traffic*
Is the same instrument and calibrator being used as previously noted?	*Yes*
Are the meteorological conditions the same as previously noted?	*Yes*

Description / Photos

Site Photos

Photo	
	

Monitoring

Record #	*3*
Site ID	*ST3*
Site Location Lat/Long	*32.952912, -117.107278*
Begin (Time)	*11:50:00*
End (Time)	*12:00:00*
Leq	*60.3*
Lmax	*73*
Lmin	*54.5*
Other Lx?	*L90, L50, L10*
L90	*56.6*
L50	*58.8*
L10	*61.9*
Other Lx (Specify Metric)	*L*
Primary Noise Source	*Traffic*
Other Noise Sources (Background)	*Birds, Distant Traffic, Rustling Leaves*
Is the same instrument and calibrator being used as previously noted?	*Yes*
Are the meteorological conditions the same as previously noted?	*Yes*

Source Info and Traffic Counts	
Number of Lanes	4
Lane Width (feet)	10
Roadway Width (feet)	40
Roadway Width (m)	12.2
Distance to Roadway (feet)	100
Distance to Roadway (m)	30.5
Distance Measured to Centerline or Edge of Pavement?	Edge of Pavement
Estimated Vehicle Speed (MPH)	45

Traffic Counts	
Vehicle Count Summary	A 240, MT 3, HT 0, B 0, MC 0
Select Method for Recording Count Duration	Enter Manually
Counting Both Directions?	Yes
Count Duration (minutes)	10
Vehicle Count Tally	
Select Method for Vehicle Counts	Enter Manually
Number of Vehicles - Autos	240
Number of Vehicles - Medium Trucks	3
Number of Vehicles - Heavy Trucks	0
Number of Vehicles - Buses	0
Number of Vehicles - Motorcyles	0

Description / Photos

Site Photos

Photo	

DUDEK
CREATOR OF KERATA TECHNOLOGY

FIELD DATA REPORT

Monitoring	
Record #	4
Site ID	ST4
Site Location Lat/Long	32.950957, -117.109517
Begin (Time)	12:15:00
End (Time)	12:40:00
Leq	58.5
Lmax	72.8
Lmin	49.6
Other Lx?	L90, L50, L10
L90	50.7
L50	53.2
L10	60.5
Other Lx (Specify Metric)	L
Primary Noise Source	Traffic
Is the same instrument and calibrator being used as previously noted?	Yes
Are the meteorological conditions the same as previously noted?	Yes

Source Info and Traffic Counts	
Number of Lanes	2
Lane Width (feet)	10
Roadway Width (feet)	20
Roadway Width (m)	6.1
Distance to Roadway (feet)	10
Distance to Roadway (m)	3
Distance Measured to Centerline or Edge of Pavement?	Edge of Pavement
Estimated Vehicle Speed (MPH)	30

Traffic Counts	
Vehicle Count Summary	A 100, MT 0, HT 0, B 0, MC 0
Select Method for Recording Count Duration	Enter Manually
Counting Both Directions?	Yes
Count Duration (minutes)	25
Vehicle Count Tally	
Select Method for Vehicle Counts	Enter Manually
Number of Vehicles - Autos	100
Number of Vehicles - Medium Trucks	0
Number of Vehicles - Heavy Trucks	0
Number of Vehicles - Buses	0
Number of Vehicles - Motorcyles	0

Description / Photos

Site Photos

Photo	
	

Appendix B

Construction Noise Modeling Input and Output

To User: bordered cells are inputs, unbordered cells have formulae

noise level limit for construction phase, per City = 75
allowable hours over which Leq is to be averaged (example: 12 for City of San Diego) = 12

Construction Phase	Equipment	Total Equipment Qty	AUF % (from FHWA RCNM)	Reference Lmax @ 50 ft. from FHWA RCNM	Client Equipment Description, Data Source and/or Notes	Source to NSR Distance (ft.)	Distance-Adjusted Lmax	Allowable Operation Time (hours)	Allowable Operation Time (minutes)	Predicted 12-hour Leq
Site Preparation	Dozer	1	40	82		100	76.0	6	360	69
	Grader	1	40	85		100	79.0	6	360	72
	Backhoe	1	40	78		100	72.0	6	360	65
	blasting	1	-- N/A --	94		60	92.4	1	60	60
							Total for Site Preparation Phase:			**74.5**
Grading	Dozer	1	40	82		60	80.4	5	300	73
	excavator	1	40	81		60	79.4	5	300	72
	Grader	1	40	85		60	83.4	5	300	76
	Backhoe	1	40	78		60	76.4	5	300	69
							Total for Grading Phase:			**78.9**
Building Construction	Crane	1	16	81		200	69.0	8	480	59
	Man Lift	1	20	75		200	63.0	8	480	54
	Generator	1	50	72		200	60.0	8	480	55
	Backhoe	1	40	78		200	66.0	8	480	60
	Welder / Torch	3	40	73		200	61.0	8	480	60
							Total for Building Construction Phase:			**65.4**
Architectural Coating	Compressor (air)	1	40	78		200	66.0	8	480	60
							Total for Architectural Coating Phase:			**60.2**
Paving	Concrete Mixer Truck	1	40	79		200	67.0	8	480	61
	Roller	1	20	80		200	68.0	8	480	59
	Backhoe	1	40	78		200	66.0	8	480	60
	Paver	1	50	77		200	65.0	8	480	60
	paver	1	50	77		200	65.0	8	480	60
							Total for Paving Phase:			**67.2**

To User: bordered cells are inputs, unbordered cells have formulae

noise level limit for construction phase, per City = 75
allowable hours over which Leq is to be averaged (example: 12 for City of San Diego) = 12

Construction Phase	Equipment	Total Equipment Qty	AUF % (from FHWA RCNM)	Reference Lmax @ 50 ft. from FHWA RCNM	Client Equipment Description, Data Source and/or Notes	Source to NSR Distance (ft.)	Distance-Adjusted Lmax	Allowable Operation Time (hours)	Allowable Operation Time (minutes)	Predicted 12-hour Leq
Site Preparation	Dozer	1	40	82		340	65.3	8	480	60
	Grader	1	40	85		340	68.3	8	480	63
	Backhoe	1	40	78		340	61.3	8	480	56
							Total for Site Preparation Phase:			**64.9**
Grading	Dozer	1	40	82		340	65.3	8	480	60
	excavator	1	40	81		340	64.3	8	480	59
	Grader	1	40	85		340	68.3	8	480	63
	Backhoe	1	40	78		340	61.3	8	480	56
							Total for Grading Phase:			**65.8**
Building Construction	Crane	1	16	81		340	64.3	8	480	55
	Man Lift	1	20	75		340	58.3	8	480	50
	Generator	1	50	72		340	55.3	6	360	49
	Backhoe	1	40	78		340	61.3	8	480	56
	Welder / Torch	3	40	73		340	56.3	8	480	55
							Total for Building Construction Phase:			**60.7**
Architectural Coating	Compressor (air)	1	40	78		340	61.3	8	480	56
							Total for Architectural Coating Phase:			**55.6**
Paving	Concrete Mixer Truck	1	40	79		340	62.3	8	480	57
	Roller	1	20	80		340	63.3	8	480	55
	Backhoe	1	40	78		340	61.3	8	480	56
	Paver	1	50	77		340	60.3	8	480	56
	paver	1	50	77		340	60.3	8	480	56
							Total for Paving Phase:			**62.6**

Dyno Nobel Reference Guide (2010) *To User: bordered cells are inputs, unbordered cells have formulae*

https://www.leg.state.mn.us/docs/2015/other/150681/PFEISref_1/Dyno%20Nobel%202010.pdf

description	symbol	value	units	notes			
peak particle velocity (PPV)	V	25.32	mm/s		0.997	ips	<-- to compare w/ relevant criterion
site and rock factor constant	K	5000		considered typical for "heavily confined", per Dyno-Nobel			
max. instantaneous charge	Q	1.8	kg		3.96	lbs	
constant related to rock and site	B	-1.6		per Dyno-Nobel			
distance from charge	R	36.5	m	based on understood nearest receptor	**120**	feet	

airblast pressure	P	0.056	kPa	**103.9** dBA Lmax	128.9 dBL	0.00806	psi
state of confinement	K	3.3		"fully confined"			
max. instantaneous charge	Q	1.8	kg				
distance from charge	R	36.5	m				

68.3 dBA = hourly Leq (assumes a single, one-second blast)

kg per blast =	382.3	1000	cubic yards of material removed per blast
lbs. per blast =	841.1	764.6	cubic meters
number of charge detonations per blast, using above charge weight =	212.4	0.5	assumed powder factor (see "Rules of Thumb" in Dyno-Nobel guide)
hourly Leq, if all charges detonated [w/ delays] within the same hour =	91.6		
CNEL from the hourly value above =	77.8		
Leq energy-averaged over 12 hours	80.8	12	hours over which to average the Leq

Dyno Nobel Reference Guide (2010)

To User: bordered cells are inputs, unbordered cells have formulae

https://www.leg.state.mn.us/docs/2015/other/150681/PFEISref_1/Dyno%20Nobel%202010.pdf

description	symbol	value	units	notes			
peak particle velocity (PPV)	V	25.32	mm/s		0.997	ips	<-- to compare w/ relevant criterion
site and rock factor constant	K	5000		considered typical for "heavily confined", per Dyno-Nobel			
max. instantaneous charge	Q	1.8	kg		3.96	lbs	
constant related to rock and site	B	-1.6		per Dyno-Nobel			
distance from charge	R	36.5	m	based on understood nearest receptor	**120**	feet	

airblast pressure	P	0.056	kPa	**103.9**	dBA Lmax	128.9 dBL	0.00806 psi
state of confinement	K	3.3		"fully confined"			
max. instantaneous charge	Q	1.8	kg				
distance from charge	R	36.5	m				

68.3 dBA = hourly Leq (assumes a single, one-second blast)

kg per blast =	573.45	1500	cubic yards of material removed per blast
lbs. per blast =	1261.6	1146.9	cubic meters
number of charge detonations per blast, using above charge weight =	318.6	0.5	assumed powder factor (see "Rules of Thumb" in Dyno-Nobel guide)
hourly Leq, if all charges detonated [w/ delays] within the same hour =	93.3		
CNEL from the hourly value above =	79.5		
Leq energy-averaged over 12 hours	82.6	12	hours over which to average the Leq

Equipment Description	Impact Device?	Acoustical Use Factor (%)	Lesser of or available Lmax	Spec. 721 Lmax	Measured L_{max} @50ft (dBA, slow)
All Other Equipment > 5 HP	No	50	85	85	-- N/A --
Auger Drill Rig	No	20	84	85	84
Backhoe	No	40	78	80	78
Bar Bender	No	20	80	80	-- N/A --
Blasting	Yes	-- N/A --	94	94	-- N/A --
Boring Jack Power Unit	No	50	80	80	83
Chain Saw	No	20	84	85	84
Clam Shovel (dropping)	Yes	20	87	93	87
Compactor (ground)	No	20	80	80	83
Compressor (air)	No	40	78	80	78
Concrete Batch Plant	No	15	83	83	-- N/A --
Concrete Mixer Truck	No	40	79	85	79
Concrete Pump Truck	No	20	81	82	81
Concrete Saw	No	20	90	90	90
Crane	No	16	81	85	81
Dozer	No	40	82	85	82
Drill Rig Truck	No	20	79	84	79
Drum Mixer	No	50	80	80	80
Dump Truck	No	40	76	84	76
Excavator	No	40	81	85	81
Flat Bed Truck	No	40	74	84	74
Front End Loader	No	40	79	80	79
Generator	No	50	72	72	81
Generator (<25KVA, VMS signs)	No	50	70	70	73
Gradall	No	40	83	85	83
Grader	No	40	85	85	-- N/A --
Grapple (on backhoe)	No	40	85	85	87
Horizontal Boring Hydr. Jack	No	25	80	80	82
Hydra Break Ram	Yes	10	90	90	-- N/A --
Impact Pile Driver	Yes	20	95	95	101
Jackhammer	Yes	20	85	85	89
Man Lift	No	20	75	85	75
Mounted Impact Hammer (hoe ram)	Yes	20	90	90	90
Pavement Scarafier	No	20	85	85	90
Paver	No	50	77	85	77
Pickup Truck	No	40	55	55	75
Pneumatic Tools	No	50	85	85	85
Pumps	No	50	77	77	81
Refrigerator Unit	No	100	73	82	73
Rivit Buster/chipping gun	Yes	20	79	85	79

Rock Drill	No	20	81	85	81
Roller	No	20	80	85	80
Sand Blasting (Single Nozzle)	No	20	85	85	96
Scraper	No	40	84	85	84
Shears (on backhoe)	No	40	85	85	96
Slurry Plant	No	100	78	78	78
Slurry Trenching Machine	No	50	80	82	80
Soil Mix Drill Rig	No	50	80	80	-- N/A --
Tractor	No	40	84	84	-- N/A --
Vacuum Excavator (Vac-truck)	No	40	85	85	85
Vacuum Street Sweeper	No	10	80	80	82
Ventilation Fan	No	100	79	85	79
Vibrating Hopper	No	50	85	85	87
Vibratory Concrete Mixer	No	20	80	80	80
Vibratory Pile Driver	No	20	95	95	101
Warning Horn	No	5	83	85	83
Welder / Torch	No	40	73	73	74

Appendix C

Traffic Noise Modeling Input and Output

Dudek 24 September 2020
CB TNM 2.5

INPUT: ROADWAYS
PROJECT/CONTRACT: Paseo Montril
RUN: Existing

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with the approval of FHWA

Roadway Name	Width	Points Name	No.	Coordinates (pavement) X	Y	Z	Flow Control Control Device	Speed Constraint	Percent Vehicles Affected	Segment Pvmt Type	On Struct?
	ft			ft	ft	ft		mph	%		
Rancho P Blvd South	40.0	point1	1	1,607,432.4	11,961,654.0	480.00				Average	
		point2	2	1,607,478.5	11,961,497.0	480.00				Average	
		point3	3	1,607,594.4	11,961,110.0	475.72					
Rancho P Blvd North	40.0	point4	4	1,607,645.5	11,961,106.0	475.72				Average	
		point5	5	1,607,478.1	11,961,668.0	480.00					
Paseo Montril West	25.0	point6	6	1,607,076.2	11,960,696.0	495.00				Average	
		point7	7	1,607,100.4	11,960,758.0	490.00				Average	
		point8	8	1,607,125.8	11,960,805.0	480.00				Average	
		point9	9	1,607,148.9	11,960,843.0	472.44				Average	
		point10	10	1,607,236.0	11,960,926.0	472.40				Average	
		point11	11	1,607,296.0	11,960,967.0	472.40				Average	
		point12	12	1,607,390.5	11,961,012.0	470.00				Average	
		point13	13	1,607,482.6	11,961,045.0	460.00				Average	
		point14	14	1,607,564.6	11,961,069.0	460.00					
Roadway4	25.0	point15	15	1,607,097.6	11,960,694.0	495.00				Average	
		point16	16	1,607,109.9	11,960,729.0	490.00				Average	
		point17	17	1,607,133.5	11,960,777.0	480.00				Average	
		point18	18	1,607,160.0	11,960,818.0	472.40				Average	
		point19	19	1,607,185.2	11,960,850.0	472.40				Average	
		point20	20	1,607,239.9	11,960,893.0	472.40				Average	
		point21	21	1,607,280.0	11,960,925.0	470.00				Average	
		point22	22	1,607,345.9	11,960,961.0	460.00				Average	
		point23	23	1,607,446.0	11,961,004.0	460.00				Average	
		point24	24	1,607,573.8	11,961,041.0	460.00					
Paseo Montril East	45.0	point25	25	1,607,687.0	11,961,068.0	465.00				Average	

		point26	26	1,607,746.6	11,961,066.0	475.00				Average	
		point27	27	1,607,814.1	11,961,053.0	479.00				Average	
		point28	28	1,607,887.5	11,961,019.0	479.00				Average	
		point29	29	1,607,982.2	11,960,971.0	485.00				Average	
		point30	30	1,608,065.6	11,960,935.0	488.85				Average	
		point31	31	1,608,159.0	11,960,917.0	498.00				Average	
		point32	32	1,608,236.2	11,960,932.0	498.00					
Roadway6	40.0	point33	33	1,607,660.2	11,961,051.0	460.00				Average	
		point34	34	1,607,667.1	11,961,028.0	460.00				Average	
		point35	35	1,607,677.5	11,960,995.0	452.76				Average	
		point36	36	1,607,722.9	11,960,841.0	452.80				Average	
		point37	37	1,607,800.0	11,960,583.0	452.80				Average	
		point38	38	1,607,855.0	11,960,409.0	446.19				Average	
		point39	39	1,607,887.8	11,960,293.0	446.19				Average	
		point40	40	1,607,932.9	11,960,172.0	439.63				Average	
		point41	41	1,607,998.5	11,960,051.0	433.07				Average	
		point42	42	1,608,076.5	11,959,955.0	433.10					
Roadway7	40.0	point43	43	1,608,039.8	11,959,937.0	429.80				Average	
		point44	44	1,607,977.4	11,960,029.0	429.79				Average	
		point45	45	1,607,924.4	11,960,123.0	433.07				Average	
		point46	46	1,607,874.2	11,960,218.0	439.63				Average	
		point47	47	1,607,839.9	11,960,316.0	446.19				Average	
		point48	48	1,607,802.4	11,960,431.0	449.48				Average	
		point49	49	1,607,758.5	11,960,562.0	450.00				Average	
		point50	50	1,607,713.1	11,960,716.0	450.00				Average	
		point51	51	1,607,668.8	11,960,875.0	460.00				Average	
		point52	52	1,607,616.9	11,961,038.0	460.00					
Roadway8	12.0	point53	53	1,607,936.2	11,960,359.0	446.19				Average	
		point54	54	1,608,031.4	11,960,389.0	446.20				Average	
		point55	55	1,608,163.5	11,960,434.0	446.19				Average	
		point56	56	1,608,281.5	11,960,489.0	446.19				Average	
		point57	57	1,608,365.0	11,960,545.0	446.20				Average	
		point58	58	1,608,424.1	11,960,597.0	446.20				Average	
		point59	59	1,608,499.0	11,960,689.0	446.20				Average	
		point60	60	1,608,592.8	11,960,802.0	446.20				Average	
		point61	61	1,608,686.1	11,960,935.0	446.20					
I15 South	80.0	point62	62	1,609,315.2	11,961,974.0	456.04				Average	
		point63	63	1,609,170.2	11,961,719.0	465.88				Average	
		point64	64	1,609,000.0	11,961,413.0	436.35				Average	

		point65	65	1,608,838.8	11,961,101.0	452.76				Average	
		point66	66	1,608,652.2	11,960,770.0	416.67				Average	
		point67	67	1,608,469.9	11,960,446.0	416.67				Average	
		point68	68	1,608,332.4	11,960,214.0	403.54				Average	
		point69	69	1,608,219.0	11,960,034.0	410.10				Average	
		point70	70	1,608,090.9	11,959,798.0	416.67				Average	
		point71	71	1,607,955.4	11,959,559.0	413.39				Average	
		point72	72	1,607,841.5	11,959,363.0	410.10					
I15 North	80.0	point73	73	1,609,450.4	11,961,913.0	449.48				Average	
		point74	74	1,609,245.9	11,961,534.0	452.76				Average	
		point75	75	1,609,023.9	11,961,125.0	459.32				Average	
		point76	76	1,608,808.5	11,960,735.0	416.67				Average	
		point77	77	1,608,613.6	11,960,419.0	413.39				Average	
		point78	78	1,608,388.8	11,960,015.0	396.98				Average	
		point79	79	1,608,189.2	11,959,660.0	419.95				Average	
		point80	80	1,608,025.8	11,959,386.0	410.10					

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CB TNM 2.5

INPUT: TRAFFIC FOR LAeq1h Volumes
PROJECT/CONTRACT: Paseo Montril
RUN: Existing

Roadway	Points		Segment									
Name	Name	No.	Autos		MTrucks		HTrucks		Buses		Motorcycles	
			V	S	V	S	V	S	V	S	V	S
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
Rancho P Blvd South	point1	1	1490	40	30	40	15	40	0	0	0	0
	point2	2	1490	40	30	40	15	40	0	0	0	0
	point3	3										
Rancho P Blvd North	point4	4	1490	40	30	40	15	40	0	0	0	0
	point5	5										
Paseo Montril West	point6	6	114	25	2	25	1	25	0	0	0	0
	point7	7	114	25	2	25	1	25	0	0	0	0
	point8	8	114	25	2	25	1	25	0	0	0	0
	point9	9	114	25	2	25	1	25	0	0	0	0
	point10	10	114	25	2	25	1	25	0	0	0	0
	point11	11	114	25	2	25	1	25	0	0	0	0
	point12	12	114	25	2	25	1	25	0	0	0	0
	point13	13	114	25	2	25	1	25	0	0	0	0
	point14	14										
Roadway4	point15	15	114	25	2	25	1	25	0	0	0	0
	point16	16	114	25	2	25	1	25	0	0	0	0
	point17	17	114	25	2	25	1	25	0	0	0	0
	point18	18	114	25	2	25	1	25	0	0	0	0
	point19	19	114	25	2	25	1	25	0	0	0	0
	point20	20	114	25	2	25	1	25	0	0	0	0
	point21	21	114	25	2	25	1	25	0	0	0	0
	point22	22	114	25	2	25	1	25	0	0	0	0
	point23	23	114	25	2	25	1	25	0	0	0	0

	point24	24										
Paseo Montril East	point25	25	1	25	0	0	0	0	0	0	0	0
	point26	26	1	25	0	0	0	0	0	0	0	0
	point27	27	1	25	0	0	0	0	0	0	0	0
	point28	28	1	25	0	0	0	0	0	0	0	0
	point29	29	1	25	0	0	0	0	0	0	0	0
	point30	30	1	25	0	0	0	0	0	0	0	0
	point31	31	1	25	0	0	0	0	0	0	0	0
	point32	32										
Roadway6	point33	33	1780	40	36	40	18	40	0	0	0	0
	point34	34	1780	40	36	40	18	40	0	0	0	0
	point35	35	1780	40	36	40	18	40	0	0	0	0
	point36	36	1780	40	36	40	18	40	0	0	0	0
	point37	37	1780	40	36	40	18	40	0	0	0	0
	point38	38	1780	40	36	40	18	40	0	0	0	0
	point39	39	1780	40	36	40	18	40	0	0	0	0
	point40	40	1780	40	36	40	18	40	0	0	0	0
	point41	41	1780	40	36	40	18	40	0	0	0	0
	point42	42										
Roadway7	point43	43	1780	40	36	40	18	40	0	0	0	0
	point44	44	1780	40	36	40	18	40	0	0	0	0
	point45	45	1780	40	36	40	18	40	0	0	0	0
	point46	46	1780	40	36	40	18	40	0	0	0	0
	point47	47	1780	40	36	40	18	40	0	0	0	0
	point48	48	1780	40	36	40	18	40	0	0	0	0
	point49	49	1780	40	36	40	18	40	0	0	0	0
	point50	50	1780	40	36	40	18	40	0	0	0	0
	point51	51	1780	40	36	40	18	40	0	0	0	0
	point52	52										
Roadway8	point53	53	0	0	0	0	0	0	0	0	0	0
	point54	54	0	0	0	0	0	0	0	0	0	0
	point55	55	0	0	0	0	0	0	0	0	0	0
	point56	56	0	0	0	0	0	0	0	0	0	0
	point57	57	0	0	0	0	0	0	0	0	0	0
	point58	58	0	0	0	0	0	0	0	0	0	0
	point59	59	0	0	0	0	0	0	0	0	0	0

	point60	60	0	0	0	0	0	0	0	0	0	0
	point61	61										
I15 South	point62	62	10767	65	222	65	111	65	0	0	0	0
	point63	63	10767	65	222	65	111	65	0	0	0	0
	point64	64	10767	65	222	65	111	65	0	0	0	0
	point65	65	10767	65	222	65	111	65	0	0	0	0
	point66	66	10767	65	222	65	111	65	0	0	0	0
	point67	67	10767	65	222	65	111	65	0	0	0	0
	point68	68	10767	65	222	65	111	65	0	0	0	0
	point69	69	10767	65	222	65	111	65	0	0	0	0
	point70	70	10767	65	222	65	111	65	0	0	0	0
	point71	71	10767	65	222	65	111	65	0	0	0	0
	point72	72										
I15 North	point73	73	10767	65	222	65	111	65	0	0	0	0
	point74	74	10767	65	222	65	111	65	0	0	0	0
	point75	75	10767	65	222	65	111	65	0	0	0	0
	point76	76	10767	65	222	65	111	65	0	0	0	0
	point77	77	10767	65	222	65	111	65	0	0	0	0
	point78	78	10767	65	222	65	111	65	0	0	0	0
	point79	79	10767	65	222	65	111	65	0	0	0	0
	point80	80										

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INPUT: RECEIVERS
PROJECT/CONTRACT: Paseo Montril
RUN: Existing

Receiver Name	No.	#DUs	Coordinates (ground) X	Y	Z	Height above Ground	Input Sound Levels and Criteria Existing LAeq1h	Impact Criteria LAeq1h	Impact Criteria Sub'l	NR Goal	Active in Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB	
ST1	1	1	1,608,244.0	11,960,979.0	500.00	4.92	67.50	66	10.0	8.0	Y
ST2	2	1	1,608,090.0	11,961,225.0	570.00	4.92	67.20	66	10.0	8.0	Y
ST3	3	1	1,607,731.6	11,961,474.0	522.00	4.92	60.30	66	10.0	8.0	Y
ST4	4	1	1,607,179.1	11,960,921.0	480.00	4.92	58.50	66	10.0	8.0	Y

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TNM 2.5

INPUT: BARRIERS
PROJECT/CONTRACT: Paseo Montril
RUN: Existing

Barrier									Points										
Name	Type	Height		If Wall	If Berm			Add'tnl	Name	No.	Coordinates (bottom)			Height	Segment				
		Min	Max	$ per	$ per	Top	Run:Rise	$ per			X	Y	Z	at	Seg Ht	Perturbs		On	Important
				Unit	Unit	Width		Unit						Point	Incre-	#Up	#Dn	Struct?	Reflec-
				Area	Vol.			Length							ment				tions?
		ft	ft	$/sq ft	$/cu yd	ft	ft:ft	$/ft			ft	ft	ft	ft	ft				
Barrier1	W	0.00	99.99	0.00				0.00	point1	1	1,608,752.1	11,961,115.0	452.76	20.00	0.00	0	0		
									point2	2	1,608,738.0	11,961,095.0	452.76	20.00	0.00	0	0		
									point3	3	1,608,708.1	11,961,042.0	442.91	20.00	0.00	0	0		
									point4	4	1,608,672.5	11,960,984.0	442.91	20.00	0.00	0	0		
									point5	5	1,608,579.5	11,960,858.0	452.76	20.00	0.00	0	0		
									point6	6	1,608,511.2	11,960,777.0	452.76	20.00	0.00	0	0		
									point7	7	1,608,450.2	11,960,700.0	433.07	20.00	0.00	0	0		
									point8	8	1,608,398.6	11,960,635.0	423.23	20.00	0.00	0	0		
									point9	9	1,608,340.1	11,960,602.0	423.23	20.00					

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24 September 2020
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Paseo Montril
RUN: Existing
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
ST1	1	1	67.5	69.1	66	1.6	10	Snd Lvl	69.1	0.0	8	-8.0
ST2	2	1	67.2	67.9	66	0.7	10	Snd Lvl	67.9	0.0	8	-8.0
ST3	3	1	60.3	63.7	66	3.4	10	----	63.7	0.0	8	-8.0
ST4	4	1	58.5	59.9	66	1.4	10	----	59.9	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Avg	Max
		dB	dB	dB
All Selected	4	0.0	0.0	0.0
All Impacted	2	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

Dudek 24 September 2020
CB TNM 2.5

INPUT: ROADWAYS
PROJECT/CONTRACT: Paseo Montril
RUN: Existing + Project

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with the approval of FHWA

Roadway Name	Width	Points Name	No.	Coordinates (pavement) X	Y	Z	Flow Control Control Device	Speed Constraint	Percent Vehicles Affected	Segment Pvmt Type	On Struct?
	ft			ft	ft	ft		mph	%		
Rancho P Blvd South	40.0	point1	1	1,607,432.4	11,961,654.0	480.00				Average	
		point2	2	1,607,478.5	11,961,497.0	480.00				Average	
		point3	3	1,607,594.4	11,961,110.0	475.72					
Rancho P Blvd North	40.0	point4	4	1,607,645.5	11,961,106.0	475.72				Average	
		point5	5	1,607,478.1	11,961,668.0	480.00					
Paseo Montril West	25.0	point6	6	1,607,076.2	11,960,696.0	495.00				Average	
		point7	7	1,607,100.4	11,960,758.0	490.00				Average	
		point8	8	1,607,125.8	11,960,805.0	480.00				Average	
		point9	9	1,607,148.9	11,960,843.0	472.44				Average	
		point10	10	1,607,236.0	11,960,926.0	472.40				Average	
		point11	11	1,607,296.0	11,960,967.0	472.40				Average	
		point12	12	1,607,390.5	11,961,012.0	470.00				Average	
		point13	13	1,607,482.6	11,961,045.0	460.00				Average	
		point14	14	1,607,564.6	11,961,069.0	460.00					
Roadway4	25.0	point15	15	1,607,097.6	11,960,694.0	495.00				Average	
		point16	16	1,607,109.9	11,960,729.0	490.00				Average	
		point17	17	1,607,133.5	11,960,777.0	480.00				Average	
		point18	18	1,607,160.0	11,960,818.0	472.40				Average	
		point19	19	1,607,185.2	11,960,850.0	472.40				Average	
		point20	20	1,607,239.9	11,960,893.0	472.40				Average	
		point21	21	1,607,280.0	11,960,925.0	470.00				Average	
		point22	22	1,607,345.9	11,960,961.0	460.00				Average	
		point23	23	1,607,446.0	11,961,004.0	460.00				Average	
		point24	24	1,607,573.8	11,961,041.0	460.00					
Paseo Montril East	45.0	point25	25	1,607,687.0	11,961,068.0	465.00				Average	

		point26	26	1,607,746.6	11,961,066.0	475.00				Average	
		point27	27	1,607,814.1	11,961,053.0	479.00				Average	
		point28	28	1,607,887.5	11,961,019.0	479.00				Average	
		point29	29	1,607,982.2	11,960,971.0	485.00				Average	
		point30	30	1,608,065.6	11,960,935.0	488.85				Average	
		point31	31	1,608,159.0	11,960,917.0	498.00				Average	
		point32	32	1,608,236.2	11,960,932.0	498.00					
Roadway6	40.0	point33	33	1,607,660.2	11,961,051.0	460.00				Average	
		point34	34	1,607,667.1	11,961,028.0	460.00				Average	
		point35	35	1,607,677.5	11,960,995.0	452.76				Average	
		point36	36	1,607,722.9	11,960,841.0	452.80				Average	
		point37	37	1,607,800.0	11,960,583.0	452.80				Average	
		point38	38	1,607,855.0	11,960,409.0	446.19				Average	
		point39	39	1,607,887.8	11,960,293.0	446.19				Average	
		point40	40	1,607,932.9	11,960,172.0	439.63				Average	
		point41	41	1,607,998.5	11,960,051.0	433.07				Average	
		point42	42	1,608,076.5	11,959,955.0	433.10					
Roadway7	40.0	point43	43	1,608,039.8	11,959,937.0	429.80				Average	
		point44	44	1,607,977.4	11,960,029.0	429.79				Average	
		point45	45	1,607,924.4	11,960,123.0	433.07				Average	
		point46	46	1,607,874.2	11,960,218.0	439.63				Average	
		point47	47	1,607,839.9	11,960,316.0	446.19				Average	
		point48	48	1,607,802.4	11,960,431.0	449.48				Average	
		point49	49	1,607,758.5	11,960,562.0	450.00				Average	
		point50	50	1,607,713.1	11,960,716.0	450.00				Average	
		point51	51	1,607,668.8	11,960,875.0	460.00				Average	
		point52	52	1,607,616.9	11,961,038.0	460.00					
Roadway8	12.0	point53	53	1,607,936.2	11,960,359.0	446.19				Average	
		point54	54	1,608,031.4	11,960,389.0	446.20				Average	
		point55	55	1,608,163.5	11,960,434.0	446.19				Average	
		point56	56	1,608,281.5	11,960,489.0	446.19				Average	
		point57	57	1,608,365.0	11,960,545.0	446.20				Average	
		point58	58	1,608,424.1	11,960,597.0	446.20				Average	
		point59	59	1,608,499.0	11,960,689.0	446.20				Average	
		point60	60	1,608,592.8	11,960,802.0	446.20				Average	
		point61	61	1,608,686.1	11,960,935.0	446.20					
I15 South	80.0	point62	62	1,609,315.2	11,961,974.0	456.04				Average	
		point63	63	1,609,170.2	11,961,719.0	465.88				Average	
		point64	64	1,609,000.0	11,961,413.0	436.35				Average	

		point65	65	1,608,838.8	11,961,101.0	452.76				Average	
		point66	66	1,608,652.2	11,960,770.0	416.67				Average	
		point67	67	1,608,469.9	11,960,446.0	416.67				Average	
		point68	68	1,608,332.4	11,960,214.0	403.54				Average	
		point69	69	1,608,219.0	11,960,034.0	410.10				Average	
		point70	70	1,608,090.9	11,959,798.0	416.67				Average	
		point71	71	1,607,955.4	11,959,559.0	413.39				Average	
		point72	72	1,607,841.5	11,959,363.0	410.10					
I15 North	80.0	point73	73	1,609,450.4	11,961,913.0	449.48				Average	
		point74	74	1,609,245.9	11,961,534.0	452.76				Average	
		point75	75	1,609,023.9	11,961,125.0	459.32				Average	
		point76	76	1,608,808.5	11,960,735.0	416.67				Average	
		point77	77	1,608,613.6	11,960,419.0	413.39				Average	
		point78	78	1,608,388.8	11,960,015.0	396.98				Average	
		point79	79	1,608,189.2	11,959,660.0	419.95				Average	
		point80	80	1,608,025.8	11,959,386.0	410.10					

Dudek **24 September 2020**
CB **TNM 2.5**

INPUT: TRAFFIC FOR LAeq1h Volumes
PROJECT/CONTRACT: **Paseo Montril**
RUN: **Existing + Project**

Roadway	Points											
Name	Name	No.	Segment									
			Autos		MTrucks		HTrucks		Buses		Motorcycles	
			V	S	V	S	V	S	V	S	V	S
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
Rancho P Blvd South	point1	1	1499	40	30	40	15	40	0	0	0	0
	point2	2	1499	40	30	40	15	40	0	0	0	0
	point3	3										
Rancho P Blvd North	point4	4	1499	40	30	40	15	40	0	0	0	0
	point5	5										
Paseo Montril West	point6	6	114	25	2	25	1	25	0	0	0	0
	point7	7	114	25	2	25	1	25	0	0	0	0
	point8	8	114	25	2	25	1	25	0	0	0	0
	point9	9	114	25	2	25	1	25	0	0	0	0
	point10	10	114	25	2	25	1	25	0	0	0	0
	point11	11	114	25	2	25	1	25	0	0	0	0
	point12	12	114	25	2	25	1	25	0	0	0	0
	point13	13	114	25	2	25	1	25	0	0	0	0
	point14	14										
Roadway4	point15	15	114	25	2	25	1	25	0	0	0	0
	point16	16	114	25	2	25	1	25	0	0	0	0
	point17	17	114	25	2	25	1	25	0	0	0	0
	point18	18	114	25	2	25	1	25	0	0	0	0
	point19	19	114	25	2	25	1	25	0	0	0	0
	point20	20	114	25	2	25	1	25	0	0	0	0
	point21	21	114	25	2	25	1	25	0	0	0	0
	point22	22	114	25	2	25	1	25	0	0	0	0
	point23	23	114	25	2	25	1	25	0	0	0	0

	point24	24										
Paseo Montril East	point25	25	43	25	0	0	0	0	0	0	0	0
	point26	26	43	25	0	0	0	0	0	0	0	0
	point27	27	43	25	0	0	0	0	0	0	0	0
	point28	28	43	25	0	0	0	0	0	0	0	0
	point29	29	43	25	0	0	0	0	0	0	0	0
	point30	30	43	25	0	0	0	0	0	0	0	0
	point31	31	43	25	0	0	0	0	0	0	0	0
	point32	32										
Roadway6	point33	33	1792	40	37	40	18	40	0	0	0	0
	point34	34	1792	40	37	40	18	40	0	0	0	0
	point35	35	1792	40	37	40	18	40	0	0	0	0
	point36	36	1792	40	37	40	18	40	0	0	0	0
	point37	37	1792	40	37	40	18	40	0	0	0	0
	point38	38	1792	40	37	40	18	40	0	0	0	0
	point39	39	1792	40	37	40	18	40	0	0	0	0
	point40	40	1792	40	37	40	18	40	0	0	0	0
	point41	41	1792	40	37	40	18	40	0	0	0	0
	point42	42										
Roadway7	point43	43	1792	40	37	40	18	40	0	0	0	0
	point44	44	1792	40	37	40	18	40	0	0	0	0
	point45	45	1792	40	37	40	18	40	0	0	0	0
	point46	46	1792	40	37	40	18	40	0	0	0	0
	point47	47	1792	40	37	40	18	40	0	0	0	0
	point48	48	1792	40	37	40	18	40	0	0	0	0
	point49	49	1792	40	37	40	18	40	0	0	0	0
	point50	50	1792	40	37	40	18	40	0	0	0	0
	point51	51	1792	40	37	40	18	40	0	0	0	0
	point52	0										
Roadway8	point53	53	0	0	0	0	0	0	0	0	0	0
	point54	54	0	0	0	0	0	0	0	0	0	0
	point55	55	0	0	0	0	0	0	0	0	0	0
	point56	56	0	0	0	0	0	0	0	0	0	0
	point57	57	0	0	0	0	0	0	0	0	0	0
	point58	58	0	0	0	0	0	0	0	0	0	0
	point59	59	0	0	0	0	0	0	0	0	0	0

	point60	60	0	0	0	0	0	0	0	0	0	0
	point61	61										
I15 South	point62	62	10769	65	222	65	111	65	0	0	0	0
	point63	63	10769	65	222	65	111	65	0	0	0	0
	point64	64	10769	65	222	65	111	65	0	0	0	0
	point65	65	10769	65	222	65	111	65	0	0	0	0
	point66	66	10769	65	222	65	111	65	0	0	0	0
	point67	67	10769	65	222	65	111	65	0	0	0	0
	point68	68	10769	65	222	65	111	65	0	0	0	0
	point69	69	10769	65	222	65	111	65	0	0	0	0
	point70	70	10769	65	222	65	111	65	0	0	0	0
	point71	71	10769	65	222	65	111	65	0	0	0	0
	point72	72										
I15 North	point73	73	10769	65	222	65	111	65	0	0	0	0
	point74	74	10769	65	222	65	111	65	0	0	0	0
	point75	75	10769	65	222	65	111	65	0	0	0	0
	point76	76	10769	65	222	65	111	65	0	0	0	0
	point77	77	10769	65	222	65	111	65	0	0	0	0
	point78	78	10769	65	222	65	111	65	0	0	0	0
	point79	79	10769	65	222	65	111	65	0	0	0	0
	point80	80										

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CB TNM 2.5

INPUT: RECEIVERS
PROJECT/CONTRACT: Paseo Montril
RUN: Existing + Project

Receiver Name	No.	#DUs	Coordinates (ground) X	Y	Z	Height above Ground	Input Sound Levels and Criteria Existing LAeq1h	Impact Criteria LAeq1h	Impact Criteria Sub'l	NR Goal	Active in Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB	
ST1	1	1	1,608,241.2	11,960,972.0	500.00	4.92	67.50	66	10.0	8.0	Y
ST2	2	1	1,608,090.0	11,961,225.0	570.00	4.92	67.20	66	10.0	8.0	Y
ST3	3	1	1,607,731.6	11,961,474.0	522.00	4.92	60.30	66	10.0	8.0	Y
ST4	4	1	1,607,179.1	11,960,921.0	480.00	4.92	58.50	66	10.0	8.0	Y

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INPUT: BARRIERS
PROJECT/CONTRACT: Paseo Montril
RUN: Existing + Project

Barrier									Points										
Name	Type	Height		If Wall	If Berm			Add'tnl	Name	No.	Coordinates (bottom)			Height	Segment				
		Min	Max	$ per Unit Area	$ per Unit Vol.	Top Width	Run:Rise	$ per Unit Length			X	Y	Z	at Point	Seg Ht Increment	Perturbs #Up	#Dn	On Struct?	Important Reflections?
		ft	ft	$/sq ft	$/cu yd	ft	ft:ft	$/ft			ft	ft	ft	ft	ft				
Barrier1	W	0.00	99.99	0.00				0.00	point1	1	1,608,752.1	11,961,115.0	452.76	20.00	0.00	0	0		
									point2	2	1,608,738.0	11,961,095.0	452.76	20.00	0.00	0	0		
									point3	3	1,608,708.1	11,961,042.0	442.91	20.00	0.00	0	0		
									point4	4	1,608,672.5	11,960,984.0	442.91	20.00	0.00	0	0		
									point5	5	1,608,579.5	11,960,858.0	452.76	20.00	0.00	0	0		
									point6	6	1,608,511.2	11,960,777.0	452.76	20.00	0.00	0	0		
									point7	7	1,608,450.2	11,960,700.0	433.07	20.00	0.00	0	0		
									point8	8	1,608,398.6	11,960,635.0	423.23	20.00	0.00	0	0		
									point9	9	1,608,340.1	11,960,602.0	423.23	20.00					
Barrier6	W	0.00	99.99	0.00				0.00	point58	58	1,608,375.6	11,961,020.0	500.00	37.50	0.00	0	0		
									point59	59	1,608,399.6	11,961,087.0	500.00	37.50	0.00	0	0		
									point60	60	1,608,383.5	11,961,093.0	500.00	37.50	0.00	0	0		
									point61	61	1,608,384.8	11,961,095.0	500.00	37.50	0.00	0	0		
									point62	62	1,608,375.5	11,961,100.0	500.00	37.50	0.00	0	0		
									point63	63	1,608,368.6	11,961,083.0	500.00	37.50	0.00	0	0		
									point64	64	1,608,372.1	11,961,081.0	500.00	37.50	0.00	0	0		
									point65	65	1,608,364.0	11,961,061.0	500.00	37.50	0.00	0	0		
									point66	66	1,608,360.2	11,961,062.0	500.00	37.50	0.00	0	0		
									point67	67	1,608,357.6	11,961,052.0	500.00	37.50	0.00	0	0		
									point68	68	1,608,354.5	11,961,054.0	500.00	37.50	0.00	0	0		
									point69	69	1,608,351.6	11,961,047.0	500.00	37.50	0.00	0	0		
									point70	70	1,608,346.6	11,961,034.0	500.00	37.50	0.00	0	0		
									point71	71	1,608,375.6	11,961,020.0	500.00	37.50					
Barrier7	W	0.00	99.99	0.00				0.00	point72	72	1,608,330.0	11,960,894.0	500.00	37.50	0.00	0	0		
									point73	73	1,608,303.5	11,960,907.0	500.00	37.50	0.00	0	0		
									point74	74	1,608,313.9	11,960,934.0	500.00	37.50	0.00	0	0		
									point75	75	1,608,317.4	11,960,933.0	500.00	37.50	0.00	0	0		
									point76	76	1,608,333.9	11,960,978.0	500.00	37.50	0.00	0	0		
									point77	77	1,608,330.4	11,960,979.0	500.00	37.50	0.00	0	0		
									point78	78	1,608,335.1	11,960,989.0	500.00	37.50	0.00	0	0		
									point79	79	1,608,332.9	11,960,990.0	500.00	37.50	0.00	0	0		
									point80	80	1,608,335.9	11,960,996.0	500.00	37.50	0.00	0	0		
									point81	81	1,608,333.5	11,960,997.0	500.00	37.50	0.00	0	0		
									point82	82	1,608,339.0	11,961,011.0	500.00	37.50	0.00	0	0		
									point83	83	1,608,367.2	11,960,998.0	500.00	37.50	0.00	0	0		

									point84	84	1,608,330.0	11,960,894.0	500.00	37.50					
Barrier8	W	0.00	99.99	0.00				0.00	point85	85	1,608,345.5	11,961,097.0	510.00	37.50	0.00	0	0		
									point86	86	1,608,361.5	11,961,138.0	510.00	37.50	0.00	0	0		
									point87	87	1,608,296.4	11,961,167.0	510.00	37.50	0.00	0	0		
									point88	88	1,608,278.1	11,961,130.0	510.00	37.50	0.00	0	0		
									point89	89	1,608,343.6	11,961,098.0	510.00	37.50					
Barrier9	W	0.00	99.99	0.00				0.00	point90	90	1,608,314.1	11,961,018.0	510.00	37.50	0.00	0	0		
									point91	91	1,608,335.2	11,961,068.0	510.00	37.50	0.00	0	0		
									point92	92	1,608,275.0	11,961,097.0	510.00	37.50	0.00	0	0		
									point93	93	1,608,252.5	11,961,047.0	510.00	37.50	0.00	0	0		
									point94	94	1,608,314.1	11,961,018.0	510.00	37.50					
Barrier10	W	0.00	99.99	0.00				0.00	point95	95	1,608,224.2	11,960,984.0	510.00	37.50	0.00	0	0		
									point96	96	1,608,245.5	11,961,025.0	510.00	37.50	0.00	0	0		
									point97	97	1,608,312.8	11,960,992.0	510.00	37.50	0.00	0	0		
									point98	98	1,608,288.0	11,960,950.0	510.00	37.50	0.00	0	0		
									point99	99	1,608,224.2	11,960,984.0	510.00	37.50					

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24 September 2020
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Paseo Montril
RUN: Existing + Project
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
ST1	1	1	67.5	66.3	66	-1.2	10	Snd Lvl	66.3	0.0	8	-8.0
ST2	2	1	67.2	66.9	66	-0.3	10	Snd Lvl	66.9	0.0	8	-8.0
ST3	3	1	60.3	63.7	66	3.4	10	----	63.7	0.0	8	-8.0
ST4	4	1	58.5	59.4	66	0.9	10	----	59.4	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Avg	Max
		dB	dB	dB
All Selected	4	0.0	0.0	0.0
All Impacted	2	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

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INPUT: ROADWAYS
PROJECT/CONTRACT: Paseo Montril
RUN: Future no Project

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with the approval of FHWA

Roadway Name	Width	Points Name	No.	Coordinates (pavement) X	Y	Z	Flow Control Control Device	Speed Constraint	Percent Vehicles Affected	Segment Pvmt Type	On Struct?
	ft			ft	ft	ft		mph	%		
Rancho P Blvd South	40.0	point1	1	1,607,432.4	11,961,654.0	480.00				Average	
		point2	2	1,607,478.5	11,961,497.0	480.00				Average	
		point3	3	1,607,594.4	11,961,110.0	475.72					
Rancho P Blvd North	40.0	point4	4	1,607,645.5	11,961,106.0	475.72				Average	
		point5	5	1,607,478.1	11,961,668.0	480.00					
Paseo Montril West	25.0	point6	6	1,607,076.2	11,960,696.0	495.00				Average	
		point7	7	1,607,100.4	11,960,758.0	490.00				Average	
		point8	8	1,607,125.8	11,960,805.0	480.00				Average	
		point9	9	1,607,148.9	11,960,843.0	472.44				Average	
		point10	10	1,607,236.0	11,960,926.0	472.40				Average	
		point11	11	1,607,296.0	11,960,967.0	472.40				Average	
		point12	12	1,607,390.5	11,961,012.0	470.00				Average	
		point13	13	1,607,482.6	11,961,045.0	460.00				Average	
		point14	14	1,607,564.6	11,961,069.0	460.00					
Roadway4	25.0	point15	15	1,607,097.6	11,960,694.0	495.00				Average	
		point16	16	1,607,109.9	11,960,729.0	490.00				Average	
		point17	17	1,607,133.5	11,960,777.0	480.00				Average	
		point18	18	1,607,160.0	11,960,818.0	472.40				Average	
		point19	19	1,607,185.2	11,960,850.0	472.40				Average	
		point20	20	1,607,239.9	11,960,893.0	472.40				Average	
		point21	21	1,607,280.0	11,960,925.0	470.00				Average	
		point22	22	1,607,345.9	11,960,961.0	460.00				Average	
		point23	23	1,607,446.0	11,961,004.0	460.00				Average	
		point24	24	1,607,573.8	11,961,041.0	460.00					
Paseo Montril East	45.0	point25	25	1,607,687.0	11,961,068.0	465.00				Average	

		point26	26	1,607,746.6	11,961,066.0	475.00				Average	
		point27	27	1,607,814.1	11,961,053.0	479.00				Average	
		point28	28	1,607,887.5	11,961,019.0	479.00				Average	
		point29	29	1,607,982.2	11,960,971.0	485.00				Average	
		point30	30	1,608,065.6	11,960,935.0	488.85				Average	
		point31	31	1,608,159.0	11,960,917.0	498.00				Average	
		point32	32	1,608,236.2	11,960,932.0	498.00					
Roadway6	40.0	point33	33	1,607,660.2	11,961,051.0	460.00				Average	
		point34	34	1,607,667.1	11,961,028.0	460.00				Average	
		point35	35	1,607,677.5	11,960,995.0	452.76				Average	
		point36	36	1,607,722.9	11,960,841.0	452.80				Average	
		point37	37	1,607,800.0	11,960,583.0	452.80				Average	
		point38	38	1,607,855.0	11,960,409.0	446.19				Average	
		point39	39	1,607,887.8	11,960,293.0	446.19				Average	
		point40	40	1,607,932.9	11,960,172.0	439.63				Average	
		point41	41	1,607,998.5	11,960,051.0	433.07				Average	
		point42	42	1,608,076.5	11,959,955.0	433.10					
Roadway7	40.0	point43	43	1,608,039.8	11,959,937.0	429.80				Average	
		point44	44	1,607,977.4	11,960,029.0	429.79				Average	
		point45	45	1,607,924.4	11,960,123.0	433.07				Average	
		point46	46	1,607,874.2	11,960,218.0	439.63				Average	
		point47	47	1,607,839.9	11,960,316.0	446.19				Average	
		point48	48	1,607,802.4	11,960,431.0	449.48				Average	
		point49	49	1,607,758.5	11,960,562.0	450.00				Average	
		point50	50	1,607,713.1	11,960,716.0	450.00				Average	
		point51	51	1,607,668.8	11,960,875.0	460.00				Average	
		point52	52	1,607,616.9	11,961,038.0	460.00					
Roadway8	12.0	point53	53	1,607,936.2	11,960,359.0	446.19				Average	
		point54	54	1,608,031.4	11,960,389.0	446.20				Average	
		point55	55	1,608,163.5	11,960,434.0	446.19				Average	
		point56	56	1,608,281.5	11,960,489.0	446.19				Average	
		point57	57	1,608,365.0	11,960,545.0	446.20				Average	
		point58	58	1,608,424.1	11,960,597.0	446.20				Average	
		point59	59	1,608,499.0	11,960,689.0	446.20				Average	
		point60	60	1,608,592.8	11,960,802.0	446.20				Average	
		point61	61	1,608,686.1	11,960,935.0	446.20					
I15 South	80.0	point62	62	1,609,315.2	11,961,974.0	456.04				Average	
		point63	63	1,609,170.2	11,961,719.0	465.88				Average	
		point64	64	1,609,000.0	11,961,413.0	436.35				Average	

		point65	65	1,608,838.8	11,961,101.0	452.76				Average	
		point66	66	1,608,652.2	11,960,770.0	416.67				Average	
		point67	67	1,608,469.9	11,960,446.0	416.67				Average	
		point68	68	1,608,332.4	11,960,214.0	403.54				Average	
		point69	69	1,608,219.0	11,960,034.0	410.10				Average	
		point70	70	1,608,090.9	11,959,798.0	416.67				Average	
		point71	71	1,607,955.4	11,959,559.0	413.39				Average	
		point72	72	1,607,841.5	11,959,363.0	410.10					
I15 North	80.0	point73	73	1,609,450.4	11,961,913.0	449.48				Average	
		point74	74	1,609,245.9	11,961,534.0	452.76				Average	
		point75	75	1,609,023.9	11,961,125.0	459.32				Average	
		point76	76	1,608,808.5	11,960,735.0	416.67				Average	
		point77	77	1,608,613.6	11,960,419.0	413.39				Average	
		point78	78	1,608,388.8	11,960,015.0	396.98				Average	
		point79	79	1,608,189.2	11,959,660.0	419.95				Average	
		point80	80	1,608,025.8	11,959,386.0	410.10					

Dudek **24 September 2020**
CB **TNM 2.5**

INPUT: TRAFFIC FOR LAeq1h Volumes
PROJECT/CONTRACT: **Paseo Montril**
RUN: **Future no Project**

Roadway	Points											
Name	Name	No.	Segment									
			Autos		MTrucks		HTrucks		Buses		Motorcycles	
			V	S	V	S	V	S	V	S	V	S
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
Rancho P Blvd South	point1	1	1605	40	33	40	16	40	0	0	0	0
	point2	2	1605	40	33	40	16	40	0	0	0	0
	point3	3										
Rancho P Blvd North	point4	4	1605	40	33	40	16	40	0	0	0	0
	point5	5										
Paseo Montril West	point6	6	116	25	2	25	1	25	0	0	0	0
	point7	7	116	25	2	25	1	25	0	0	0	0
	point8	8	116	25	2	25	1	25	0	0	0	0
	point9	9	116	25	2	25	1	25	0	0	0	0
	point10	10	116	25	2	25	1	25	0	0	0	0
	point11	11	116	25	2	25	1	25	0	0	0	0
	point12	12	116	25	2	25	1	25	0	0	0	0
	point13	13	116	25	2	25	1	25	0	0	0	0
	point14	14										
Roadway4	point15	15	116	25	2	25	1	25	0	0	0	0
	point16	16	116	25	2	25	1	25	0	0	0	0
	point17	17	116	25	2	25	1	25	0	0	0	0
	point18	18	116	25	2	25	1	25	0	0	0	0
	point19	19	116	25	2	25	1	25	0	0	0	0
	point20	20	116	25	2	25	1	25	0	0	0	0
	point21	21	116	25	2	25	1	25	0	0	0	0
	point22	22	116	25	2	25	1	25	0	0	0	0
	point23	23	116	25	2	25	1	25	0	0	0	0

	point24	24										
Paseo Montril East	point25	25	9	25	0	0	0	0	0	0	0	0
	point26	26	9	25	0	0	0	0	0	0	0	0
	point27	27	9	25	0	0	0	0	0	0	0	0
	point28	28	9	25	0	0	0	0	0	0	0	0
	point29	29	9	25	0	0	0	0	0	0	0	0
	point30	30	9	25	0	0	0	0	0	0	0	0
	point31	31	9	25	0	0	0	0	0	0	0	0
	point32	32										
Roadway6	point33	33	1843	40	38	40	19	40	0	0	0	0
	point34	34	1843	40	38	40	19	40	0	0	0	0
	point35	35	1843	40	38	40	19	40	0	0	0	0
	point36	36	1843	40	38	40	19	40	0	0	0	0
	point37	37	1843	40	38	40	19	40	0	0	0	0
	point38	38	1843	40	38	40	19	40	0	0	0	0
	point39	39	1843	40	38	40	19	40	0	0	0	0
	point40	40	1843	40	38	40	19	40	0	0	0	0
	point41	41	1843	40	38	40	19	40	0	0	0	0
	point42	42										
Roadway7	point43	43	1843	40	38	40	19	40	0	0	0	0
	point44	44	1843	40	38	40	19	40	0	0	0	0
	point45	45	1843	40	38	40	19	40	0	0	0	0
	point46	46	1843	40	38	40	19	40	0	0	0	0
	point47	47	1843	40	38	40	19	40	0	0	0	0
	point48	48	1843	40	38	40	19	40	0	0	0	0
	point49	49	1843	40	38	40	19	40	0	0	0	0
	point50	50	1843	40	38	40	19	40	0	0	0	0
	point51	51	1843	40	38	40	19	40	0	0	0	0
	point52	52										
Roadway8	point53	53	0	0	0	0	0	0	0	0	0	0
	point54	54	0	0	0	0	0	0	0	0	0	0
	point55	55	0	0	0	0	0	0	0	0	0	0
	point56	56	0	0	0	0	0	0	0	0	0	0
	point57	57	0	0	0	0	0	0	0	0	0	0
	point58	58	0	0	0	0	0	0	0	0	0	0
	point59	59	0	0	0	0	0	0	0	0	0	0

	point60	60	0	0	0	0	0	0	0	0	0	0
	point61	61										
I15 South	point62	62	15699	65	324	65	162	65	0	0	0	0
	point63	63	15699	65	324	65	162	65	0	0	0	0
	point64	64	15699	65	324	65	162	65	0	0	0	0
	point65	65	15699	65	324	65	162	65	0	0	0	0
	point66	66	15699	65	324	65	162	65	0	0	0	0
	point67	67	15699	65	324	65	162	65	0	0	0	0
	point68	68	15699	65	324	65	162	65	0	0	0	0
	point69	69	15699	65	324	65	162	65	0	0	0	0
	point70	70	15699	65	324	65	162	65	0	0	0	0
	point71	71	15699	65	324	65	162	65	0	0	0	0
	point72	72										
I15 North	point73	73	15699	65	324	65	162	65	0	0	0	0
	point74	74	15699	65	324	65	162	65	0	0	0	0
	point75	75	15699	65	324	65	162	65	0	0	0	0
	point76	76	15699	65	324	65	162	65	0	0	0	0
	point77	77	15699	65	324	65	162	65	0	0	0	0
	point78	78	15699	65	324	65	162	65	0	0	0	0
	point79	79	15699	65	324	65	162	65	0	0	0	0
	point80	80										

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INPUT: RECEIVERS
PROJECT/CONTRACT: Paseo Montril
RUN: Future no Project

Receiver Name	No.	#DUs	Coordinates (ground) X	Y	Z	Height above Ground	Input Sound Levels and Criteria: Existing LAeq1h	Impact Criteria LAeq1h	Impact Criteria Sub'l	NR Goal	Active in Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB	
ST1	1	1	1,608,244.0	11,960,979.0	500.00	4.92	67.50	66	10.0	8.0	Y
ST2	2	1	1,608,090.0	11,961,225.0	570.00	4.92	67.20	66	10.0	8.0	Y
ST3	3	1	1,607,731.6	11,961,474.0	522.00	4.92	60.30	66	10.0	8.0	Y
ST4	4	1	1,607,179.1	11,960,921.0	480.00	4.92	58.50	66	10.0	8.0	Y

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INPUT: BARRIERS
PROJECT/CONTRACT: Paseo Montril
RUN: Future no Project

Barrier									Points										
Name	Type	Height		If Wall	If Berm			Add'tnl	Name	No.	Coordinates (bottom)			Height	Segment				
		Min	Max	$ per	$ per	Top	Run:Rise	$ per			X	Y	Z	at	Seg Ht	Perturbs		On	Important
				Unit	Unit	Width		Unit						Point	Incre-	#Up	#Dn	Struct?	Reflec-
				Area	Vol.			Length							ment				tions?
		ft	ft	$/sq ft	$/cu yd	ft	ft:ft	$/ft			ft	ft	ft	ft	ft				
Barrier1	W	0.00	99.99	0.00				0.00	point1	1	1,608,752.1	11,961,115.0	452.76	20.00	0.00	0	0		
									point2	2	1,608,738.0	11,961,095.0	452.76	20.00	0.00	0	0		
									point3	3	1,608,708.1	11,961,042.0	442.91	20.00	0.00	0	0		
									point4	4	1,608,672.5	11,960,984.0	442.91	20.00	0.00	0	0		
									point5	5	1,608,579.5	11,960,858.0	452.76	20.00	0.00	0	0		
									point6	6	1,608,511.2	11,960,777.0	452.76	20.00	0.00	0	0		
									point7	7	1,608,450.2	11,960,700.0	433.07	20.00	0.00	0	0		
									point8	8	1,608,398.6	11,960,635.0	423.23	20.00	0.00	0	0		
									point9	9	1,608,340.1	11,960,602.0	423.23	20.00					

Dudek
CB

24 September 2020
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Paseo Montril
RUN: Future no Project
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
ST1	1	1	67.5	70.7	66	3.2	10	Snd Lvl	70.7	0.0	8	-8.0
ST2	2	1	67.2	69.4	66	2.2	10	Snd Lvl	69.4	0.0	8	-8.0
ST3	3	1	60.3	64.4	66	4.1	10	----	64.4	0.0	8	-8.0
ST4	4	1	58.5	60.7	66	2.2	10	----	60.7	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Avg	Max
		dB	dB	dB
All Selected	4	0.0	0.0	0.0
All Impacted	2	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

Dudek 24 September 2020
CB TNM 2.5

INPUT: ROADWAYS
PROJECT/CONTRACT: Paseo Montril
RUN: Future + Project

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with the approval of FHWA

Roadway Name	Width	Points Name	No.	Coordinates (pavement) X	Y	Z	Flow Control Control Device	Speed Constraint	Percent Vehicles Affected	Segment Pvmt Type	On Struct?
	ft			ft	ft	ft		mph	%		
Rancho P Blvd South	40.0	point1	1	1,607,432.4	11,961,654.0	480.00				Average	
		point2	2	1,607,478.5	11,961,497.0	480.00				Average	
		point3	3	1,607,594.4	11,961,110.0	475.72					
Rancho P Blvd North	40.0	point4	4	1,607,645.5	11,961,106.0	475.72				Average	
		point5	5	1,607,478.1	11,961,668.0	480.00					
Paseo Montril West	25.0	point6	6	1,607,076.2	11,960,696.0	495.00				Average	
		point7	7	1,607,100.4	11,960,758.0	490.00				Average	
		point8	8	1,607,125.8	11,960,805.0	480.00				Average	
		point9	9	1,607,148.9	11,960,843.0	472.44				Average	
		point10	10	1,607,236.0	11,960,926.0	472.40				Average	
		point11	11	1,607,296.0	11,960,967.0	472.40				Average	
		point12	12	1,607,390.5	11,961,012.0	470.00				Average	
		point13	13	1,607,482.6	11,961,045.0	460.00				Average	
		point14	14	1,607,564.6	11,961,069.0	460.00					
Roadway4	25.0	point15	15	1,607,097.6	11,960,694.0	495.00				Average	
		point16	16	1,607,109.9	11,960,729.0	490.00				Average	
		point17	17	1,607,133.5	11,960,777.0	480.00				Average	
		point18	18	1,607,160.0	11,960,818.0	472.40				Average	
		point19	19	1,607,185.2	11,960,850.0	472.40				Average	
		point20	20	1,607,239.9	11,960,893.0	472.40				Average	
		point21	21	1,607,280.0	11,960,925.0	470.00				Average	
		point22	22	1,607,345.9	11,960,961.0	460.00				Average	
		point23	23	1,607,446.0	11,961,004.0	460.00				Average	
		point24	24	1,607,573.8	11,961,041.0	460.00					
Paseo Montril East	45.0	point25	25	1,607,687.0	11,961,068.0	465.00				Average	

		point26	26	1,607,746.6	11,961,066.0	475.00				Average	
		point27	27	1,607,814.1	11,961,053.0	479.00				Average	
		point28	28	1,607,887.5	11,961,019.0	479.00				Average	
		point29	29	1,607,982.2	11,960,971.0	485.00				Average	
		point30	30	1,608,065.6	11,960,935.0	488.85				Average	
		point31	31	1,608,159.0	11,960,917.0	498.00				Average	
		point32	32	1,608,236.2	11,960,932.0	498.00					
Roadway6	40.0	point33	33	1,607,660.2	11,961,051.0	460.00				Average	
		point34	34	1,607,667.1	11,961,028.0	460.00				Average	
		point35	35	1,607,677.5	11,960,995.0	452.76				Average	
		point36	36	1,607,722.9	11,960,841.0	452.80				Average	
		point37	37	1,607,800.0	11,960,583.0	452.80				Average	
		point38	38	1,607,855.0	11,960,409.0	446.19				Average	
		point39	39	1,607,887.8	11,960,293.0	446.19				Average	
		point40	40	1,607,932.9	11,960,172.0	439.63				Average	
		point41	41	1,607,998.5	11,960,051.0	433.07				Average	
		point42	42	1,608,076.5	11,959,955.0	433.10					
Roadway7	40.0	point43	43	1,608,039.8	11,959,937.0	429.80				Average	
		point44	44	1,607,977.4	11,960,029.0	429.79				Average	
		point45	45	1,607,924.4	11,960,123.0	433.07				Average	
		point46	46	1,607,874.2	11,960,218.0	439.63				Average	
		point47	47	1,607,839.9	11,960,316.0	446.19				Average	
		point48	48	1,607,802.4	11,960,431.0	449.48				Average	
		point49	49	1,607,758.5	11,960,562.0	450.00				Average	
		point50	50	1,607,713.1	11,960,716.0	450.00				Average	
		point51	51	1,607,668.8	11,960,875.0	460.00				Average	
		point52	52	1,607,616.9	11,961,038.0	460.00					
Roadway8	12.0	point53	53	1,607,936.2	11,960,359.0	446.19				Average	
		point54	54	1,608,031.4	11,960,389.0	446.20				Average	
		point55	55	1,608,163.5	11,960,434.0	446.19				Average	
		point56	56	1,608,281.5	11,960,489.0	446.19				Average	
		point57	57	1,608,365.0	11,960,545.0	446.20				Average	
		point58	58	1,608,424.1	11,960,597.0	446.20				Average	
		point59	59	1,608,499.0	11,960,689.0	446.20				Average	
		point60	60	1,608,592.8	11,960,802.0	446.20				Average	
		point61	61	1,608,686.1	11,960,935.0	446.20					
I15 South	80.0	point62	62	1,609,315.2	11,961,974.0	456.04				Average	
		point63	63	1,609,170.2	11,961,719.0	465.88				Average	
		point64	64	1,609,000.0	11,961,413.0	436.35				Average	

		point65	65	1,608,838.8	11,961,101.0	452.76				Average	
		point66	66	1,608,652.2	11,960,770.0	416.67				Average	
		point67	67	1,608,469.9	11,960,446.0	416.67				Average	
		point68	68	1,608,332.4	11,960,214.0	403.54				Average	
		point69	69	1,608,219.0	11,960,034.0	410.10				Average	
		point70	70	1,608,090.9	11,959,798.0	416.67				Average	
		point71	71	1,607,955.4	11,959,559.0	413.39				Average	
		point72	72	1,607,841.5	11,959,363.0	410.10					
I15 North	80.0	point73	73	1,609,450.4	11,961,913.0	449.48				Average	
		point74	74	1,609,245.9	11,961,534.0	452.76				Average	
		point75	75	1,609,023.9	11,961,125.0	459.32				Average	
		point76	76	1,608,808.5	11,960,735.0	416.67				Average	
		point77	77	1,608,613.6	11,960,419.0	413.39				Average	
		point78	78	1,608,388.8	11,960,015.0	396.98				Average	
		point79	79	1,608,189.2	11,959,660.0	419.95				Average	
		point80	80	1,608,025.8	11,959,386.0	410.10					

Dudek **24 September 2020**
CB **TNM 2.5**

INPUT: TRAFFIC FOR LAeq1h Volumes
PROJECT/CONTRACT: **Paseo Montril**
RUN: **Future + Project**

Roadway	Points											
Name	Name	No.	Segment									
			Autos		MTrucks		HTrucks		Buses		Motorcycles	
			V	S	V	S	V	S	V	S	V	S
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
Rancho P Blvd South	point1	1	1615	40	33	40	16	40	0	0	0	0
	point2	2	1615	40	33	40	16	40	0	0	0	0
	point3	3										
Rancho P Blvd North	point4	4	1615	40	33	40	16	40	0	0	0	0
	point5	5										
Paseo Montril West	point6	6	137	25	2	25	1	25	0	0	0	0
	point7	7	137	25	2	25	1	25	0	0	0	0
	point8	8	137	25	2	25	1	25	0	0	0	0
	point9	9	137	25	2	25	1	25	0	0	0	0
	point10	10	137	25	2	25	1	25	0	0	0	0
	point11	11	137	25	2	25	1	25	0	0	0	0
	point12	12	137	25	2	25	1	25	0	0	0	0
	point13	13	137	25	2	25	1	25	0	0	0	0
	point14	14										
Roadway4	point15	15	137	25	2	25	1	25	0	0	0	0
	point16	16	137	25	2	25	1	25	0	0	0	0
	point17	17	137	25	2	25	1	25	0	0	0	0
	point18	18	137	25	2	25	1	25	0	0	0	0
	point19	19	137	25	2	25	1	25	0	0	0	0
	point20	20	137	25	2	25	1	25	0	0	0	0
	point21	21	137	25	2	25	1	25	0	0	0	0
	point22	22	137	25	2	25	1	25	0	0	0	0
	point23	23	137	25	2	25	1	25	0	0	0	0

	point24	24										
Paseo Montril East	point25	25	52	25	1	25	0	0	0	0	0	0
	point26	26	52	25	1	25	0	0	0	0	0	0
	point27	27	52	25	1	25	0	0	0	0	0	0
	point28	28	52	25	1	25	0	0	0	0	0	0
	point29	29	52	25	1	25	0	0	0	0	0	0
	point30	30	52	25	1	25	0	0	0	0	0	0
	point31	31	52	25	1	25	0	0	0	0	0	0
	point32	32										
Roadway6	point33	33	1854	40	38	40	19	40	0	0	0	0
	point34	34	1854	40	38	40	19	40	0	0	0	0
	point35	35	1854	40	38	40	19	40	0	0	0	0
	point36	36	1854	40	38	40	19	40	0	0	0	0
	point37	37	1854	40	38	40	19	40	0	0	0	0
	point38	38	1854	40	38	40	19	40	0	0	0	0
	point39	39	1854	40	38	40	19	40	0	0	0	0
	point40	40	1854	40	38	40	19	40	0	0	0	0
	point41	41	1854	40	38	40	19	40	0	0	0	0
	point42	42										
Roadway7	point43	43	1854	40	38	40	19	40	0	0	0	0
	point44	44	1854	40	38	40	19	40	0	0	0	0
	point45	45	1854	40	38	40	19	40	0	0	0	0
	point46	46	1854	40	38	40	19	40	0	0	0	0
	point47	47	1854	40	38	40	19	40	0	0	0	0
	point48	48	1854	40	38	40	19	40	0	0	0	0
	point49	49	1854	40	38	40	19	40	0	0	0	0
	point50	50	1854	40	38	40	19	40	0	0	0	0
	point51	51	1854	40	38	40	19	40	0	0	0	0
	point52	52										
Roadway8	point53	53	0	0	0	0	0	0	0	0	0	0
	point54	54	0	0	0	0	0	0	0	0	0	0
	point55	55	0	0	0	0	0	0	0	0	0	0
	point56	56	0	0	0	0	0	0	0	0	0	0
	point57	57	0	0	0	0	0	0	0	0	0	0
	point58	58	0	0	0	0	0	0	0	0	0	0
	point59	59	0	0	0	0	0	0	0	0	0	0

	point60	60	0	0	0	0	0	0	0	0	0	0
	point61	61										
I15 South	point62	62	15701	65	324	65	162	65	0	0	0	0
	point63	63	15701	65	324	65	162	65	0	0	0	0
	point64	64	15701	65	324	65	162	65	0	0	0	0
	point65	65	15701	65	324	65	162	65	0	0	0	0
	point66	66	15701	65	324	65	162	65	0	0	0	0
	point67	67	15701	65	324	65	162	65	0	0	0	0
	point68	68	15701	65	324	65	162	65	0	0	0	0
	point69	69	15701	65	324	65	162	65	0	0	0	0
	point70	70	15701	65	324	65	162	65	0	0	0	0
	point71	71	15701	65	324	65	162	65	0	0	0	0
	point72	72										
I15 North	point73	73	15701	65	324	65	162	65	0	0	0	0
	point74	74	15701	65	324	65	162	65	0	0	0	0
	point75	75	15701	65	324	65	162	65	0	0	0	0
	point76	76	15701	65	324	65	162	65	0	0	0	0
	point77	77	15701	65	324	65	162	65	0	0	0	0
	point78	78	15701	65	324	65	162	65	0	0	0	0
	point79	79	15701	65	324	65	162	65	0	0	0	0
	point80	80										

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CB TNM 2.5

INPUT: RECEIVERS
PROJECT/CONTRACT: Paseo Montril
RUN: Future + Project

Receiver Name	No.	#DUs	Coordinates (ground) X	Y	Z	Height above Ground	Input Sound Levels and Criteria Existing LAeq1h	Impact Criteria LAeq1h	Impact Criteria Sub'l	NR Goal	Active in Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB	
ST1	1	1	1,608,241.2	11,960,972.0	500.00	4.92	67.50	66	10.0	8.0	Y
ST2	2	1	1,608,090.0	11,961,225.0	570.00	4.92	67.20	66	10.0	8.0	Y
ST3	3	1	1,607,731.6	11,961,474.0	522.00	4.92	60.30	66	10.0	8.0	Y
ST4	4	1	1,607,179.1	11,960,921.0	480.00	4.92	58.50	66	10.0	8.0	Y
M1-1	6	1	1,608,339.5	11,960,911.0	500.00	4.92	0.00	66	10.0	8.0	Y
M1-2	7	1	1,608,339.5	11,960,911.0	500.00	14.92	0.00	66	10.0	8.0	Y
M1-3	8	1	1,608,339.5	11,960,911.0	500.00	24.92	0.00	66	10.0	8.0	Y
M2-1	9	1	1,608,352.0	11,960,945.0	500.00	4.92	0.00	66	10.0	8.0	Y
M2-2	10	1	1,608,352.0	11,960,945.0	500.00	14.92	0.00	66	10.0	8.0	Y
M2-3	11	1	1,608,352.0	11,960,945.0	500.00	24.92	0.00	66	10.0	8.0	Y
M3-1	12	1	1,608,367.0	11,960,986.0	500.00	4.92	0.00	66	10.0	8.0	Y
M3-2	13	1	1,608,367.0	11,960,986.0	500.00	14.92	0.00	66	10.0	8.0	Y
M3-3	14	1	1,608,367.0	11,960,986.0	500.00	24.92	0.00	66	10.0	8.0	Y
M4-1	15	1	1,608,382.0	11,961,028.0	500.00	4.92	0.00	66	10.0	8.0	Y
M4-2	16	1	1,608,382.0	11,961,028.0	500.00	14.92	0.00	66	10.0	8.0	Y
M4-3	17	1	1,608,382.0	11,961,028.0	500.00	24.92	0.00	66	10.0	8.0	Y
M5-1	18	1	1,608,397.0	11,961,070.0	500.00	4.92	0.00	66	10.0	8.0	Y
M5-2	19	1	1,608,397.0	11,961,070.0	500.00	14.92	0.00	66	10.0	8.0	Y
M5-3	20	1	1,608,397.0	11,961,070.0	500.00	24.92	0.00	66	10.0	8.0	Y
M6-1	22	1	1,608,357.0	11,961,117.0	510.00	4.92	0.00	66	10.0	8.0	Y
M6-2	23	1	1,608,357.0	11,961,117.0	510.00	14.92	0.00	66	10.0	8.0	Y
M6-3	24	1	1,608,357.0	11,961,117.0	510.00	24.92	0.00	66	10.0	8.0	Y

Dog Park	26	1	1,608,297.1	11,961,195.0	500.00	4.92	0.00	66	10.0	8.0	Y
Open Space	28	1	1,608,312.5	11,961,088.0	500.00	4.92	0.00	66	10.0	8.0	Y

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CB TNM 2.5

INPUT: BARRIERS
PROJECT/CONTRACT: Paseo Montril
RUN: Future + Project

Barrier									Points										
Name	Type	Height		If Wall	If Berm			Add'tnl	Name	No.	Coordinates (bottom)			Height	Segment				
		Min	Max	$ per Unit Area	$ per Unit Vol.	Top Width	Run:Rise	$ per Unit Length			X	Y	Z	at Point	Seg Ht Incre-ment	#Up	#Dn	On Struct?	Important Reflec-tions?
		ft	ft	$/sq ft	$/cu yd	ft	ft:ft	$/ft			ft	ft	ft	ft	ft				
Barrier1	W	0.00	99.99	0.00				0.00	point1	1	1,608,752.1	11,961,115.0	452.76	20.00	0.00	0	0		
									point2	2	1,608,738.0	11,961,095.0	452.76	20.00	0.00	0	0		
									point3	3	1,608,708.1	11,961,042.0	442.91	20.00	0.00	0	0		
									point4	4	1,608,672.5	11,960,984.0	442.91	20.00	0.00	0	0		
									point5	5	1,608,579.5	11,960,858.0	452.76	20.00	0.00	0	0		
									point6	6	1,608,511.2	11,960,777.0	452.76	20.00	0.00	0	0		
									point7	7	1,608,450.2	11,960,700.0	433.07	20.00	0.00	0	0		
									point8	8	1,608,398.6	11,960,635.0	423.23	20.00	0.00	0	0		
									point9	9	1,608,340.1	11,960,602.0	423.23	20.00					
Barrier6	W	0.00	99.99	0.00				0.00	point58	58	1,608,375.6	11,961,020.0	500.00	37.50	0.00	0	0		
									point59	59	1,608,399.6	11,961,087.0	500.00	37.50	0.00	0	0		
									point60	60	1,608,383.5	11,961,093.0	500.00	37.50	0.00	0	0		
									point61	61	1,608,384.8	11,961,095.0	500.00	37.50	0.00	0	0		
									point62	62	1,608,375.5	11,961,100.0	500.00	37.50	0.00	0	0		
									point63	63	1,608,368.6	11,961,083.0	500.00	37.50	0.00	0	0		
									point64	64	1,608,372.1	11,961,081.0	500.00	37.50	0.00	0	0		
									point65	65	1,608,364.0	11,961,061.0	500.00	37.50	0.00	0	0		
									point66	66	1,608,360.2	11,961,062.0	500.00	37.50	0.00	0	0		
									point67	67	1,608,357.6	11,961,052.0	500.00	37.50	0.00	0	0		
									point68	68	1,608,354.5	11,961,054.0	500.00	37.50	0.00	0	0		
									point69	69	1,608,351.6	11,961,047.0	500.00	37.50	0.00	0	0		
									point70	70	1,608,346.6	11,961,034.0	500.00	37.50	0.00	0	0		
									point71	71	1,608,375.6	11,961,020.0	500.00	37.50					
Barrier7	W	0.00	99.99	0.00				0.00	point72	72	1,608,330.0	11,960,894.0	500.00	37.50	0.00	0	0		
									point73	73	1,608,303.5	11,960,907.0	500.00	37.50	0.00	0	0		
									point74	74	1,608,313.9	11,960,934.0	500.00	37.50	0.00	0	0		
									point75	75	1,608,317.4	11,960,933.0	500.00	37.50	0.00	0	0		
									point76	76	1,608,333.9	11,960,978.0	500.00	37.50	0.00	0	0		
									point77	77	1,608,330.4	11,960,979.0	500.00	37.50	0.00	0	0		
									point78	78	1,608,335.1	11,960,989.0	500.00	37.50	0.00	0	0		
									point79	79	1,608,332.9	11,960,990.0	500.00	37.50	0.00	0	0		
									point80	80	1,608,335.9	11,960,996.0	500.00	37.50	0.00	0	0		
									point81	81	1,608,333.5	11,960,997.0	500.00	37.50	0.00	0	0		
									point82	82	1,608,339.0	11,961,011.0	500.00	37.50	0.00	0	0		
									point83	83	1,608,367.2	11,960,998.0	500.00	37.50	0.00	0	0		

									point84	84	1,608,330.0	11,960,894.0	500.00	37.50					
Barrier8	W	0.00	99.99	0.00				0.00	point85	85	1,608,350.2	11,960,879.0	500.00	6.00	0.00	0	0		
									point86	86	1,608,368.4	11,960,915.0	500.00	6.00	0.00	0	0		
									point87	87	1,608,377.8	11,960,933.0	500.00	6.00	0.00	0	0		
									point88	88	1,608,384.0	11,960,953.0	500.00	6.00	0.00	0	0		
									point89	89	1,608,395.9	11,960,985.0	500.00	6.00	0.00	0	0		
									point90	90	1,608,405.5	11,961,012.0	500.00	6.00	0.00	0	0		
									point91	91	1,608,413.6	11,961,034.0	500.00	6.00	0.00	0	0		
									point92	92	1,608,414.6	11,961,047.0	500.00	6.00	0.00	0	0		
									point93	93	1,608,412.5	11,961,062.0	500.00	6.00	0.00	0	0		
									point94	94	1,608,410.9	11,961,069.0	500.00	6.00	0.00	0	0		
									point95	95	1,608,412.5	11,961,086.0	500.00	6.00	0.00	0	0		
									point96	96	1,608,410.4	11,961,100.0	505.00	6.00	0.00	0	0		
									point97	97	1,608,402.8	11,961,117.0	510.00	6.00	0.00	0	0		
									point98	98	1,608,391.1	11,961,130.0	510.00	6.00	0.00	0	0		
									point99	99	1,608,378.6	11,961,144.0	510.00	6.00	0.00	0	0		
									point100	100	1,608,359.0	11,961,164.0	510.00	6.00					
Barrier9	W	0.00	99.99	0.00				0.00	point101	101	1,608,314.1	11,961,018.0	510.00	37.50	0.00	0	0		
									point102	102	1,608,335.2	11,961,068.0	510.00	37.50	0.00	0	0		
									point103	103	1,608,275.0	11,961,097.0	510.00	37.50	0.00	0	0		
									point104	104	1,608,252.5	11,961,047.0	510.00	37.50	0.00	0	0		
									point105	105	1,608,314.1	11,961,018.0	510.00	37.50					
Barrier10	W	0.00	99.99	0.00				0.00	point106	106	1,608,224.2	11,960,984.0	510.00	37.50	0.00	0	0		
									point107	107	1,608,245.5	11,961,025.0	510.00	37.50	0.00	0	0		
									point108	108	1,608,312.8	11,960,992.0	510.00	37.50	0.00	0	0		
									point109	109	1,608,288.0	11,960,950.0	510.00	37.50	0.00	0	0		
									point110	110	1,608,224.2	11,960,984.0	510.00	37.50					
Barrier11	W	0.00	99.99	0.00				0.00	point111	111	1,608,345.5	11,961,097.0	510.00	37.50	0.00	0	0		
									point112	112	1,608,361.5	11,961,138.0	510.00	37.50	0.00	0	0		
									point113	113	1,608,296.4	11,961,167.0	510.00	37.50	0.00	0	0		
									point114	114	1,608,278.1	11,961,130.0	510.00	37.50	0.00	0	0		
									point115	115	1,608,343.6	11,961,098.0	510.00	37.50					

Dudek			24 September 2020	
CB			TNM 2.5	
INPUT: TERRAIN LINES				
PROJECT/CONTRACT:	Paseo Montril			
RUN:	Future + Project			
Terrain Line	Points			
Name	No.	Coordinates (ground)		
		X	Y	Z
		ft	ft	ft
Terrain Line7	20	1,608,473.5	11,960,830.0	450.00
	21	1,608,549.5	11,960,935.0	450.00
	22	1,608,565.9	11,961,035.0	450.00
	23	1,608,586.1	11,961,141.0	450.00
	24	1,608,531.2	11,961,205.0	450.00
	25	1,608,428.4	11,961,285.0	450.00
	26	1,608,381.2	11,961,310.0	450.00
Terrain Line8	27	1,608,396.6	11,960,880.0	500.00
	28	1,608,427.5	11,960,934.0	500.00
	29	1,608,438.0	11,960,983.0	500.00
	30	1,608,459.1	11,961,041.0	500.00
	31	1,608,457.2	11,961,091.0	500.00
	32	1,608,442.9	11,961,144.0	500.00
	33	1,608,414.0	11,961,177.0	500.00
	34	1,608,381.2	11,961,190.0	500.00
	35	1,608,301.5	11,961,259.0	500.00
Terrain Line9	36	1,608,542.9	11,960,850.0	450.00
	37	1,608,697.2	11,961,113.0	450.00
	38	1,608,808.4	11,961,324.0	450.00
	39	1,608,906.4	11,961,484.0	450.00
	40	1,608,975.6	11,961,606.0	450.00

Dudek
CB
24 September 2020
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Paseo Montril
RUN: Future + Project
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

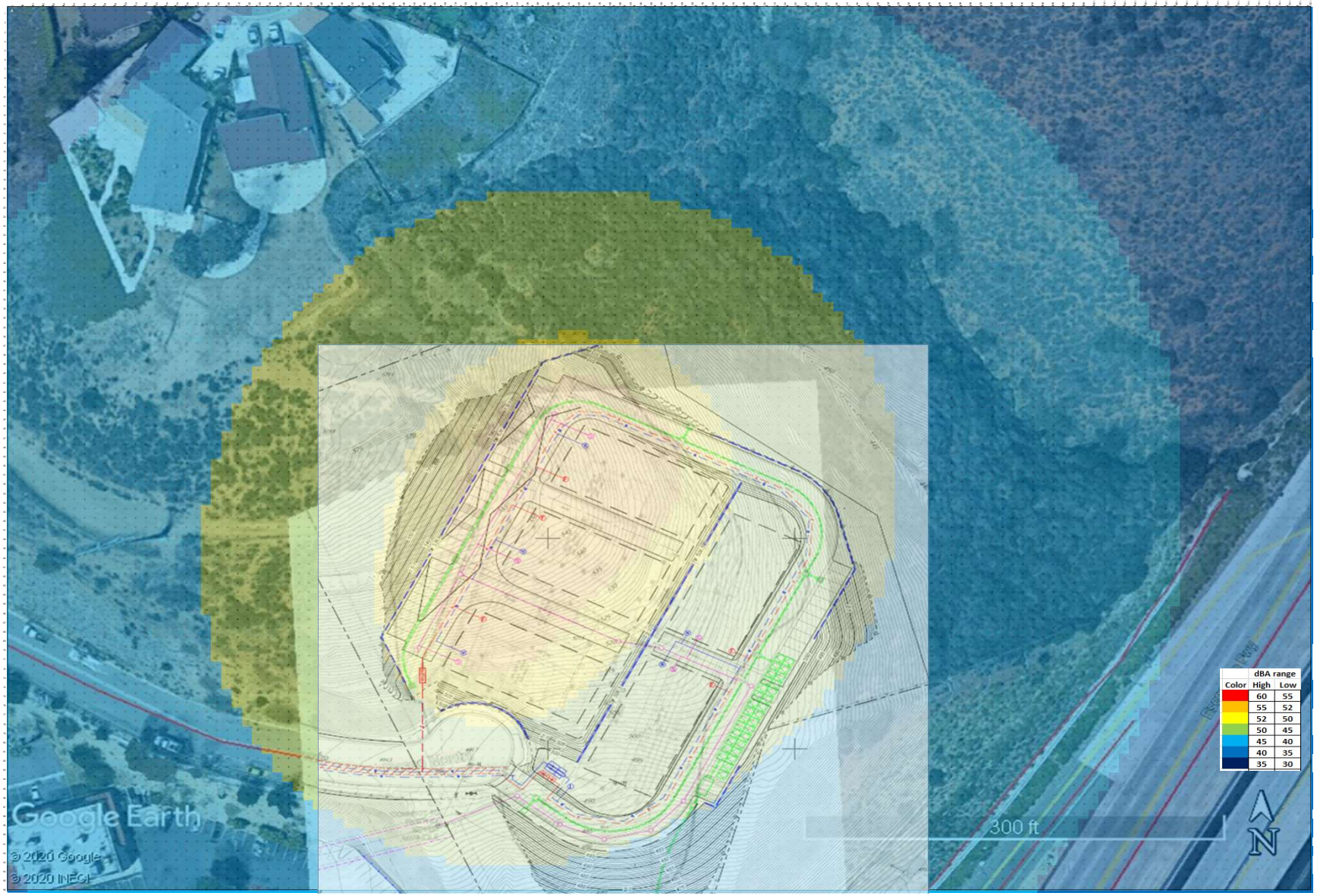
Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
ST1	1	1	67.5	68.0	66	0.5	10	Snd Lvl	68.0	0.0	8	-8.0
ST2	2	1	67.2	69.6	66	2.4	10	Snd Lvl	69.6	0.0	8	-8.0
ST3	3	1	60.3	64.8	66	4.5	10	----	64.8	0.0	8	-8.0
ST4	4	1	58.5	59.9	66	1.4	10	----	59.9	0.0	8	-8.0
M1-1	6	1	0.0	69.8	66	69.8	10	Snd Lvl	69.8	0.0	8	-8.0
M1-2	7	1	0.0	74.6	66	74.6	10	Snd Lvl	74.6	0.0	8	-8.0
M1-3	8	1	0.0	75.4	66	75.4	10	Snd Lvl	75.4	0.0	8	-8.0
M2-1	9	1	0.0	66.6	66	66.6	10	Snd Lvl	66.6	0.0	8	-8.0
M2-2	10	1	0.0	74.2	66	74.2	10	Snd Lvl	74.2	0.0	8	-8.0
M2-3	11	1	0.0	75.2	66	75.2	10	Snd Lvl	75.2	0.0	8	-8.0
M3-1	12	1	0.0	64.7	66	64.7	10	----	64.7	0.0	8	-8.0
M3-2	13	1	0.0	73.3	66	73.3	10	Snd Lvl	73.3	0.0	8	-8.0
M3-3	14	1	0.0	75.0	66	75.0	10	Snd Lvl	75.0	0.0	8	-8.0
M4-1	15	1	0.0	63.8	66	63.8	10	----	63.8	0.0	8	-8.0
M4-2	16	1	0.0	72.8	66	72.8	10	Snd Lvl	72.8	0.0	8	-8.0
M4-3	17	1	0.0	74.5	66	74.5	10	Snd Lvl	74.5	0.0	8	-8.0
M5-1	18	1	0.0	63.4	66	63.4	10	----	63.4	0.0	8	-8.0
M5-2	19	1	0.0	72.7	66	72.7	10	Snd Lvl	72.7	0.0	8	-8.0
M5-3	20	1	0.0	74.2	66	74.2	10	Snd Lvl	74.2	0.0	8	-8.0
M6-1	22	1	0.0	62.3	66	62.3	10	----	62.3	0.0	8	-8.0
M6-2	23	1	0.0	71.7	66	71.7	10	Snd Lvl	71.7	0.0	8	-8.0
M6-3	24	1	0.0	71.9	66	71.9	10	Snd Lvl	71.9	0.0	8	-8.0
Dog Park	26	1	0.0	67.0	66	67.0	10	Snd Lvl	67.0	0.0	8	-8.0
Open Space	28	1	0.0	48.6	66	48.6	10	----	48.6	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction		
		Min	Avg	Max
		dB	dB	dB
All Selected	24	0.0	0.0	0.0
All Impacted	17	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

Appendix D

Residential HVAC Noise Prediction


dBA range
Color
High
Low
60
55
55
52
52
50
50
45
45
40
40
35
35
30
300 ft
N
Google Earth
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Appendix E

Transmission Loss Predictions

Unit _____, _____ Room with ***Closed Window(s) and Door***

34 = approx. STC

	qty	width	height	Square feet	
material or element #1				30	Sheet AD-22
material or element #2	1	6	6	36	vinyl window (dual pane)
material or element #3	1	3	8	24	french door glazing (dual pane)
material or element #4				0	opening
total surface		10	9	90	arbitrary total surface area

TL Data Source

NRC-CNRC IC-IR-761 (p. 25: G16_WS90(406)_MFB90_2G16)

2 x 5/8" GWB, 2"x4" wood, 24" o.c., fiber batt fill, 1 x 5/8" GWB

available TL data for comparable assembly:

Viracon 5/8" overall - 1/8" glass + 3/8" airspace + 1/8" glass

available TL data for comparable assembly:

Viracon 5/8" overall - 1/8" glass + 3/8" airspace + 1/8" glass

enter desired STC value: 34

sum of negative differentials: -8

Octave Band Center Frequency (OBCF, Hz)

	125	250	500	1000	2000	4000
Sheet AD-22	16	40	41	48	43	52
material #1 τ	0.02512	0.0001	7.9E-05	1.6E-05	5E-05	6.3E-06
vinyl window (dual pane)	23	23	27	35	47	36
material #2 τ	0.00501	0.00501	0.002	0.00032	2E-05	0.00025
french door glazing (dual pane)	23	23	27	35	47	36
material #2 τ	0.00501	0.00501	0.002	0.00032	2E-05	0.00025
opening	0	0	0	0	0	0
material #4 τ	1	1	1	1	1	1
composite TL	19	25	29	37	45	38
prospective STC curve	18	27	34	37	38	38
differentials	1	-2	-5	0	7	0

Unit _____, _____ Room with ***Open French Door***

5 = approx. STC

	qty	width	height	Square feet	
material or element #1				30	Sheet Sheet AD-22
material or element #2	1	6	6	36	vinyl window (dual pane)
material or element #3	0	0	0	0	french door glazing (dual pane)
material or element #4	1	3	8	24	opening
total surface		10	9	90	arbitrary total surface area

TL Data Source

NRC-CNRC IC-IR-761 (p. 25: G16_WS90(406)_MFB90_2G16)

2 x 5/8" GWB, 2"x4" wood, 24" o.c., fiber batt fill, 1 x 5/8" GWB

available TL data for comparable assembly:

Viracon 5/8" overall - 1/8" glass + 3/8" airspace + 1/8" glass

available TL data for comparable assembly:

Viracon 5/8" overall - 1/8" glass + 3/8" airspace + 1/8" glass

enter desired STC value: 5

sum of negative differentials: -9

Octave Band Center Frequency (OBCF, Hz)

	125	250	500	1000	2000	4000
Sheet Sheet AD-22	16	40	41	48	43	52
material #1 τ	0.02512	0.0001	7.9E-05	1.6E-05	5E-05	6.3E-06
vinyl window (dual pane)	23	23	27	35	47	36
material #2 τ	0.00501	0.00501	0.002	0.00032	2E-05	0.00025
french door glazing (dual pane)	23	23	27	35	47	36
material #2 τ	0.00501	0.00501	0.002	0.00032	2E-05	0.00025
opening	0	0	0	0	0	0
material #4 τ	1	1	1	1	1	1
composite TL	6	6	6	6	6	6
prospective STC curve	-11	-2	5	8	9	9
differentials	17	8	1	-2	-3	-3

Unit _____, _____ Room with ***Open Window***

11 = approx. STC

	qty	width	height	Square feet	
material or element #1				30	Sheet Sheet AD-22
material or element #2	1	6	4.75	28.5	vinyl window (dual pane)
material or element #3	1	3	8	24	french door glazing (dual pane)
material or element #4	1	3	2.5	7.5	opening
total surface		10	9	90	arbitrary total surface area

TL Data Source

NRC-CNRC IC-IR-761 (p. 25: G16_WS90(406)_MFB90_2G16)

2 x 5/8" GWB, 2"x4" wood, 24" o.c., fiber batt fill, 1 x 5/8" GWB

available TL data for comparable assembly:

Viracon 5/8" overall - 1/8" glass + 3/8" airspace + 1/8" glass

available TL data for comparable assembly:

Viracon 5/8" overall - 1/8" glass + 3/8" airspace + 1/8" glass

enter desired STC value: 11

sum of negative differentials: -12

Octave Band Center Frequency (OBCF, Hz)

	125	250	500	1000	2000	4000
Sheet Sheet AD-22	16	40	41	48	43	52
material #1 τ	0.02512	0.0001	7.9E-05	1.6E-05	5E-05	6.3E-06
vinyl window (dual pane)	23	23	27	35	47	36
material #2 τ	0.00501	0.00501	0.002	0.00032	2E-05	0.00025
french door glazing (dual pane)	23	23	27	35	47	36
material #2 τ	0.00501	0.00501	0.002	0.00032	2E-05	0.00025
opening	0	0	0	0	0	0
material #4 τ	1	1	1	1	1	1
composite TL	10	11	11	11	11	11
prospective STC curve	-5	4	11	14	15	15
differentials	15	7	0	-3	-4	-4

Unit _____, _____ Room with ***Closed Window(s)***

37 = approx. STC

	qty	width	height	Square feet	
material or element #1				75	Sheet Sheet AD-22
material or element #2	1	4	6	24	vinyl window (dual pane)
material or element #3				0	french door glazing (dual pane)
material or element #4				0	opening
total surface		11	9	99	arbitrary total surface area

TL Data Source		Octave Band Center Frequency (OBCF, Hz)	125	250	500	1000	2000	4000
NRC-CNRC IC-IR-761 (p. 25: G16_WS90(406)_MFB90_2G16)		Sheet Sheet AD-22	16	40	41	48	43	52
2 x 5/8" GWB, 2"x4" wood, 24" o.c., fiber batt fill, 1 x 5/8" GWB		material #1 τ	0.02512	0.0001	7.9E-05	1.6E-05	5E-05	6.3E-06
available TL data for comparable assembly:		vinyl window (dual pane)	23	23	27	35	47	36
Viracon 5/8" overall - 1/8" glass + 3/8" airspace + 1/8" glass		material #2 τ	0.00501	0.00501	0.002	0.00032	2E-05	0.00025
available TL data for comparable assembly:		french door glazing (dual pane)	23	23	27	35	47	36
Viracon 5/8" overall - 1/8" glass + 3/8" airspace + 1/8" glass		material #2 τ	0.00501	0.00501	0.002	0.00032	2E-05	0.00025
		opening	0	0	0	0	0	0
		material #4 τ	1	1	1	1	1	1
		composite TL	17	29	33	41	44	42
enter desired STC value	37	prospective STC curve	21	30	37	40	41	41
sum of negative differentials	-10	differentials	-4	-1	-4	1	3	1

Unit _____, _____ Room with ***Open Window(s)***

14 = approx. STC

	qty	width	height	Square feet	
material or element #1				75	Sheet Sheet AD-22
material or element #2	1	4	5	20	vinyl window (dual pane)
material or element #3	0	0	0	0	french door glazing (dual pane)
material or element #4	1	4	1	4	opening
total surface		11	9	99	arbitrary total surface area

TL Data Source		Octave Band Center Frequency (OBCF, Hz)	125	250	500	1000	2000	4000
NRC-CNRC IC-IR-761 (p. 25: G16_WS90(406)_MFB90_2G16)		Sheet Sheet AD-22	16	40	41	48	43	52
2 x 5/8" GWB, 2"x4" wood, 24" o.c., fiber batt fill, 1 x 5/8" GWB		material #1 τ	0.02512	0.0001	7.9E-05	1.6E-05	5E-05	6.3E-06
available TL data for comparable assembly:		vinyl window (dual pane)	23	23	27	35	47	36
Viracon 5/8" overall - 1/8" glass + 3/8" airspace + 1/8" glass		material #2 τ	0.00501	0.00501	0.002	0.00032	2E-05	0.00025
available TL data for comparable assembly:		french door glazing (dual pane)	23	23	27	35	47	36
Viracon 5/8" overall - 1/8" glass + 3/8" airspace + 1/8" glass		material #2 τ	0.00501	0.00501	0.002	0.00032	2E-05	0.00025
		opening	0	0	0	0	0	0
		material #4 τ	1	1	1	1	1	1
		composite TL	12	14	14	14	14	14
enter desired STC value	14	prospective STC curve	-2	7	14	17	18	18
sum of negative differentials	-11	differentials	14	7	0	-3	-4	-4

Appendix F

Previous 2020 Project Noise Analysis

Noise Technical Report
for the
Paseo Montril Project
City of San Diego, California

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MARCH 2020

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TABLES

APPENDICES

Acronyms and Abbreviations

Acronym/Abbreviation	Definition
a.k.a.	Also known as
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
City	City of San Diego
CNEL	Community Noise Equivalent Level
CNMP	construction noise management plan
dB	decibel
dBA	A-weighted decibel
FTA	Federal Transit Administration
GSF	Gross square foot
ips	inches per second
L_{dn}	day–night average noise level
L_{eq}	equivalent noise level
L_{max}	maximum sound level
L_{min}	minimum sound level
Paseo Montril	proposed project
NACO	Noise abatement control officer
PPV	peak particle velocity
RCNM	Roadway Construction Noise Model
SDMC	San Diego Municipal Code
SLM	Sound level meter
SPL	Sound pressure level
ST	Short-term

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1 Introduction and Background

This technical noise report evaluates the potential noise impacts during construction and operation of the proposed Paseo Montril Project (proposed project). This assessment utilizes the significance thresholds in Appendix G of the California Environmental Quality Act Guidelines (14 CCR 15000 et seq.).

Project Description

The project site is located on a 15.2-acre vacant site (Assessor's Parcel Number 315-020-5500) at 10198 Paseo Montril in the City of San Diego (City), California (Figure 1, Project Location). The site is currently vacant and located on a hillside adjacent to Interstate 15.

The project proposes a Vesting Tentative Map, Site Development Permit, Planned Development Permit and Community Plan Amendment to construct a 32-unit multi-family residential development with supporting improvements (Figure 2, Site Plan). The project would include two terraces, with the lower terrace including two buildings and the upper terrace including four buildings. Supporting improvements would include on-site utilities, an off-site storm drain connection to the south, utility improvements within Paseo Montril, access driveway, parking, and landscaping. The proposed access driveway entrance would be at the southern area of the Paseo Montril cul-de-sac and would extend around the perimeter of the proposed development.

Noise Characteristics

Sound is mechanical energy transmitted by pressure waves in a compressible medium, such as air. Noise is defined as sound that is loud, unpleasant, unexpected, or undesired. The sound pressure level (SPL) has become the most common descriptor used to characterize the loudness of an ambient sound level. The unit of measurement of sound pressure is a decibel (dB). Under controlled conditions in an acoustics laboratory, the trained, healthy human ear is able to discern changes in sound levels of 1 dB when exposed to steady, single-frequency signals in the mid-frequency range. Outside such controlled conditions, the trained ear can detect changes of 2 dB in normal environmental noise. It is widely accepted that the average healthy ear, however, can barely perceive noise level changes of 3 dB. A change of 5 dB is readily perceptible, and a change of 10 dB is perceived as twice or half as loud (Caltrans 2013a). A doubling of sound energy results in a 3 dB increase in sound, which means that a doubling of sound energy (e.g., doubling the number of daily trips along a given road) would result in a barely perceptible change in sound level.

Sound may be described in terms of level or amplitude (measured in dB), frequency or pitch (measured in hertz or cycles per second), and duration (measured in seconds or minutes). Because the human ear is not equally sensitive to sound at all frequencies, a special frequency-dependent rating scale is used to relate noise to human sensitivity. The A-weighted decibel (dBA) scale performs this compensation by discriminating against low and very high frequencies in a manner approximating the sensitivity of the human ear.

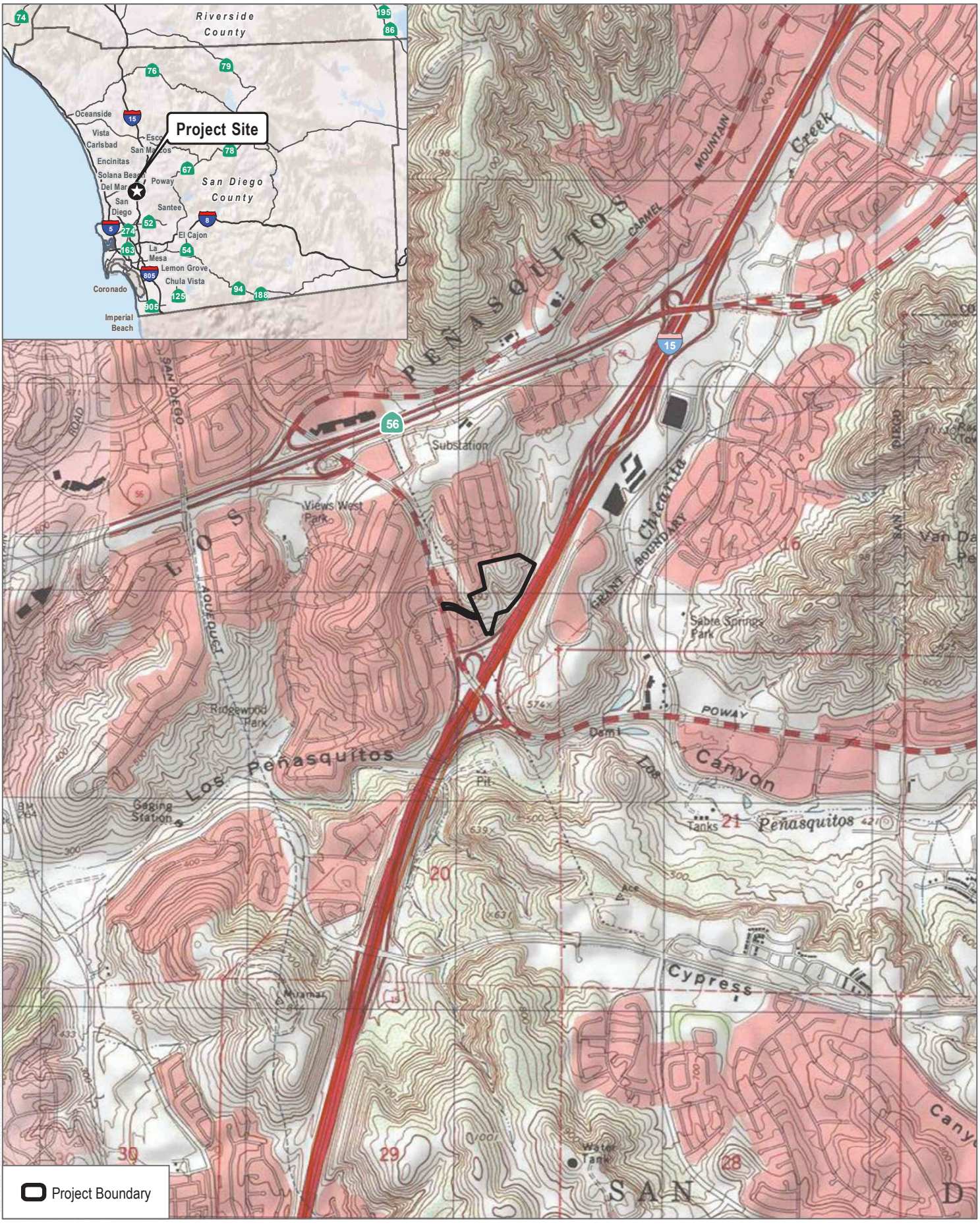
Several descriptors of noise (a.k.a., noise metrics) exist to help predict average community reactions to the adverse effects of environmental noise, including traffic-generated noise. These descriptors include the equivalent noise level over a given period (L_{eq}), the day–night average noise level (L_{dn}), and the community noise equivalent level (CNEL). Each of these descriptors uses units of dBA.

L_{eq} is a decibel quantity that represents the constant or energy-averaged value equivalent to the amount of variable sound energy received by a receptor during a time interval. For example, a 1-hour L_{eq} measurement of 60 dBA would represent the average amount of energy contained in all the noise that occurred in that hour. L_{eq} is an effective noise descriptor because of its ability to assess the total time-varying effects of noise on sensitive receptors, which can then be compared to an established L_{eq} standard or threshold of the same duration. Another descriptor is maximum sound level (L_{max}), which is the greatest sound level measured during a designated time interval or event. The minimum sound level (L_{min}) is often called the *floor* of a measurement period.

Unlike the L_{eq}, L_{max}, and L_{min} metrics, L_{dn} and CNEL descriptors always represent 24-hour periods and differ from a 24-hour L_{eq} value because they apply a time-weighted factor designed to emphasize noise events that occur during the non-daytime hours (when speech and sleep disturbance is of more concern). *Time weighted* refers to the fact that L_{dn} and CNEL penalize noise that occurs during certain sensitive periods. In the case of CNEL, noise occurring during the daytime (7:00 a.m. to 7:00 p.m.) receives no penalty. Noise during the evening (7:00 p.m. to 10:00 p.m.) is penalized by adding 5 dB to the actual levels, and nighttime (10:00 p.m. to 7:00 a.m.) noise is penalized by adding 10 dB to the actual levels. L_{dn} differs from CNEL in that the daytime period is longer (defined instead as 7:00 a.m. to 10:00 p.m.), thus eliminating the dB adjustment for the evening period. L_{dn} and CNEL are the predominant criteria used to measure roadway noise affecting residential receptors. These two metrics generally differ from one another by no more than 0.5–1 dB, and are often considered or actually defined as being essentially equivalent by many jurisdictions.

Vibration Fundamentals

Vibration is oscillatory movement of mass (typically a solid) over time. It is described in terms of frequency and amplitude and, unlike sound, can be expressed as displacement, velocity, or acceleration. For environmental studies, vibration is often studied as a velocity that, akin to the discussion of sound pressure levels, can also be expressed in dB as a way to cast a large range of quantities into a more convenient scale and with respect to a reference quantity. Vibration impacts to buildings are generally discussed in terms of inches per second (ips) peak particle velocity (PPV), which will be used herein to discuss vibration levels for ease of reading and comparison with relevant standards. Vibration can also be annoying and thereby impact occupants of structures, and vibration of sufficient amplitude can disrupt sensitive equipment and processes (Caltrans 2013b), such as those involving the use of electron microscopes and lithography equipment. Common sources of vibration within communities include construction activities and railroads. Groundborne vibration generated by construction projects is usually highest during pile driving, rock blasting, soil compacting, jack hammering, and demolition-related activities where sudden releases of subterranean energy or powerful impacts of tools on hard materials occur. Depending on their distances to a sensitive receptor, operation of large bulldozers, graders, loaded dump trucks, or other heavy construction equipment and vehicles on a construction site also have the potential to cause high vibration amplitudes.



SOURCE: USGS 7.5-Minute Series Poway Quadrangle

0 250 500 Meters

0 1,000 2,000 Feet

DUDEK

FIGURE 1

Project Location

Paseo Montril Development Project

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FIGURE 2

Site Plan

Paseo Montril Development Project

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2 Regulatory Setting

Regulatory Setting

Federal

Federal Transit Administration

In its Transit Noise and Vibration Impact Assessment guidance manual, the Federal Transit Administration (FTA) recommends a daytime construction noise level threshold of 80 dBA L_{eq} over an 8-hour period (FTA 2018) when detailed construction noise assessments are performed to evaluate potential impacts to community residences surrounding a project. Although this FTA guidance is not a regulation, it can serve as a quantified standard in the absence of such limits at the state and local jurisdictional levels.

State

California Code of Regulations, Title 24

Title 24 of the California Code of Regulations sets standards that new development in California must meet. According to Title 24, interior noise levels are not to exceed 45 dBA CNEL in any habitable room (International Construction Code 2019).

California Department of Health Services Guidelines

The California Department of Health Services has developed guidelines of community noise acceptability for use by local agencies (OPR 2003). Selected relevant levels are listed here:

- Below 60 dBA CNEL: normally acceptable for low-density residential use
- 50 to 70 dBA: conditionally acceptable for low-density residential use
- Below 65 dBA CNEL: normally acceptable for high-density residential use and transient lodging
- 60 to 70 dBA CNEL: conditionally acceptable for high-density residential, transient lodging, churches, educational, and medical facilities

The normally acceptable exterior noise level for transient lodging use is up to 65 dBA CNEL. Conditionally acceptable exterior noise levels range up to 70 dBA CNEL for transient lodging.

California Department of Transportation

In its Transportation and Construction Vibration Guidance Manual (Caltrans 2013b), the California Department of Transportation (Caltrans) recommends 0.5 ips PPV as a threshold for the avoidance of structural damage to typical newer residential buildings exposed to continuous or frequent intermittent sources of groundborne vibration. For transient vibration events, such as blasting, the damage risk threshold would be 1.0 ips PPV (Caltrans 2013b) at the same type of newer residential structures. For older structures, these guidance thresholds would be more stringent: 0.3 ips PPV for continuous/intermittent vibration sources, and 0.5 ips PPV for transient vibration events. With respect to human annoyance, Caltrans guidance indicates that building occupants exposed to groundborne vibration in the range of 0.2-0.25 ips PPV would find it “distinctly perceptible” or “annoying” and thus a likely

significant impact. Although these Caltrans guidance thresholds are not regulations, they can serve as quantified standards in the absence of such limits at the local jurisdictional level.

Local

The following are summarized or reproduced portions of relevant City regulations and General Plan policies.

City of San Diego Municipal Code 59.5.0401 (Noise Ordinance)

It shall be unlawful for any person to cause noise by any means to the extent that the 1-hour average sound level exceeds the applicable limit given in the Table 1, Applicable Noise Limits, at any location in the City of San Diego on or beyond the boundaries of the property on which the noise is produced. The noise subject to these limits is that part of the total noise at the specified location that is due solely to the action of said person.

Table 1. Applicable Noise Limits

Land Use	Time of Day	One-Hour Average Sound Level (dB)
Single-family residential	7:00 a.m. to 7:00 p.m.	50
	7:00 p.m. to 10:00 p.m.	45
	10:00 p.m. to 7:00 a.m.	40
Multifamily residential (up to a maximum density of 1/2,000)	7:00 a.m. to 7:00 p.m.	55
	7:00 p.m. to 10:00 p.m.	50
	10:00 p.m. to 7:00 a.m.	45
All other residential	7:00 a.m. to 7:00 p.m.	60
	7:00 p.m. to 10:00 p.m.	55
	10:00 p.m. to 7:00 a.m.	50
Commercial	7:00 a.m. to 7:00 p.m.	65
	7:00 p.m. to 10:00 p.m.	60
	10:00 p.m. to 7:00 a.m.	60
Industrial or agricultural	Any time	75

Note: dB = decibels

City of San Diego Municipal Code 59.5.0404 (Noise Ordinance), Construction Noise

(a) It shall be unlawful for any person, between the hours of 7:00 p.m. of any day and 7:00 a.m. of the following day, or on legal holidays as specified in Section 21.04 of the San Diego Municipal Code, with exception of Columbus Day and Washington's Birthday, or on Sundays, to erect, construct, demolish, excavate for, alter or repair any building or structure in such a manner as to create disturbing, excessive or offensive noise unless a permit has been applied for and granted beforehand by the Noise Abatement and Control Administrator. In granting such permit, the Administrator shall consider whether the construction noise in the vicinity of the proposed work site would be less objectionable at night than during the daytime because of different population densities or different neighboring activities; whether obstruction and interference with traffic particularly on streets of major importance, would be less objectionable at night than during the daytime; whether the type of work to be performed emits noises at such a low level as to not cause significant disturbances in the vicinity of the work site; the character and nature of the neighborhood of the proposed work site; whether great economic hardship would occur if the work were spread over a longer time; whether proposed night work is in the general public interest; and he shall prescribe such conditions,

working times, types of construction equipment to be used, and permissible noise levels as he deems to be required in the public interest.

(b) Except as provided in subsection C. hereof, it shall be unlawful for any person, including the City of San Diego, to conduct any construction activity so as to cause, at or beyond the property lines of any property zoned residential, an average sound level greater than 75 decibels during the 12-hour period from 7:00 a.m. to 7:00 p.m.

(c) The provisions of subsection B. of this section shall not apply to construction equipment used in connection with emergency work, provided the Administrator is notified within 48 hours after commencement of work.

City of San Diego General Plan

The City's General Plan Noise Element identifies compatible exterior noise levels for various land use types (City of San Diego 2015). The maximum allowable noise exposure varies depending on the land use. The maximum acceptable exterior noise level for residential uses and other noise-sensitive uses is 65 dBA CNEL as depicted in Table 2 below.

Table 2. Land Use – Noise Compatibility Guidelines

Land Use Category	Exterior Noise Exposure (dBA CNEL)				
	60	*65*	*70*	*75*	
Open Space and Parks and Recreational					
Community and Neighborhood Parks; Passive Recreation					
Regional Parks; Outdoor Spectator Sports, Golf Courses; Athletic Fields; Outdoor Spectator Sports, Water Recreational Facilities; Horse Stables; Park Maintenance Facilities					
Agricultural					
Crop Raising and Farming; Aquaculture, Dairies; Horticulture Nurseries and Greenhouses; Animal Raising, Maintenance and Keeping; Commercial Stables					
Residential					
Single Units; Mobile Homes; Senior Housing		45			
Multiple Units; Mixed-Use Commercial/Residential; Live Work; Group Living Accommodations **For uses affected by aircraft noise, refer to Policies NE-D.2. and NE-D.3.*		45	45*		
Institutional					
Hospitals; Nursing Facilities; Intermediate Care Facilities; Kindergarten through Grade 12 Educational Facilities; Libraries; Museums; Places of Worship; Child Care Facilities		45			
Vocational or Professional Educational Facilities; Higher Education Institution Facilities (Community or Junior Colleges, Colleges, or Universities)		45	45		
Cemeteries					
Sales					
Building Supplies/Equipment; Food, Beverages, and Groceries; Pets and Pet Supplies; Sundries, Pharmaceutical and Convenience Sales; Wearing Apparel and Accessories			50	50	

Table 2. Land Use – Noise Compatibility Guidelines

Land Use Category	Exterior Noise Exposure (dBA CNEL)				
	60	*65*	*70*	*75*	
Commercial Services					
Building Services; Business Support; Eating and Drinking; Financial Institutions; Assembly and Entertainment; Radio and Television Studios; Golf Course Support			50	50	
Visitor Accommodations		45	45	45	
Offices					
Business and Professional; Government; Medical, Dental and Health Practitioner; Regional and Corporate Headquarters			50	50	
Vehicle and Vehicular Equipment Sales and Services Use					
Commercial or Personal Vehicle Repair and Maintenance; Commercial or Personal Vehicle Sales and Rentals; Vehicle Equipment and Supplies Sales and Rentals; Vehicle Parking					
Wholesale, Distribution, Storage Use Category					
Equipment and Materials Storage Yards; Moving and Storage Facilities; Warehouse; Wholesale Distribution					
Industrial					
Heavy Manufacturing; Light Manufacturing; Marine Industry; Trucking and Transportation Terminals; Mining and Extractive Industries					
Research and Development				50	

	Compatible	Indoor Uses	Standard construction methods should attenuate exterior noise to an acceptable indoor noise level. Refer to Section I.
		Outdoor Uses	Activities associated with the land use may be carried out.
	Conditionally Compatible	Indoor Uses	Building structure must attenuate exterior noise to the indoor noise level indicated by the number for occupied areas. Refer to Section I.
		Outdoor Uses	Feasible noise mitigation techniques should be analyzed and incorporated to make the outdoor activities acceptable. Refer to Section I.
	Incompatible	Indoor Uses	New construction should not be undertaken.
		Outdoor Uses	Severe noise interference makes outdoor activities unacceptable.

Source: City of San Diego 2008a.

3 Existing Conditions

SPL measurements were conducted near the proposed project site on March 2, 2020 to quantify and characterize the existing outdoor ambient sound levels. Table 3 provides the location, date, and time period at which these baseline noise level measurements were performed by an attending Dudek field investigator using a Rion-branded Model NL-52 sound level meter (SLM) equipped with a 0.5-inch, pre-polarized condenser microphone with pre-amplifier. The SLM meets the current American National Standards Institute standard for a Type 1 (Precision Grade) sound level meter. The accuracy of the SLM was verified using a field calibrator before and after the measurements, and the measurements were conducted with the microphone positioned approximately 5 feet above the ground.

Four (4) short-term (ST) noise level measurement locations (ST1–ST4) that represent existing noise-sensitive receivers were selected on and near the proposed project site. These locations are depicted as receivers ST1–ST4 on Figure 3, Noise Measurement Locations. The measured L_{eq} and L_{max} noise levels are provided in Table 3. The primary noise sources at the sites identified in Table 3 consisted of traffic along adjacent roadways, the sounds of leaves rustling, and birdsong. As shown in Table 3, the measured SPL ranged from approximately 67.5 dBA L_{eq} at ST1 to 58.5 dBA L_{eq} at ST4. Beyond the summarized information presented in Table 3, detailed noise measurement data is included in Appendix A, Baseline Noise Measurement Field Data.

Table 3. Measured Baseline Outdoor Ambient Noise Levels

Site	Location/Address	Date/Time	L_{eq}	L_{max}
ST1	East of cul-da-sac on Paseo Montril	2020-03-02, 11:15 AM to 11:25 AM	67.5	70.7
ST2	On bluff, approximately 200 feet north of Paseo Montril	2020-03-02, 11:35 AM to 11:45 AM	67.2	70.1
ST3	South of Atria Rancho Penasquitos Assisted Living	2020-03-02, 11:50 AM to 12:00 PM	60.3	73.0
ST4	Western driveway of eaves Rancho Penasquitos	2020-03-02, 12:15 PM to 12:40 PM	58.5	72.8

Source: Appendix A.
Notes: L_{eq} = equivalent continuous sound level (time-averaged sound level); L_{max} = maximum sound level during the measurement interval; dBA = A-weighted decibels; ST = short-term noise measurement locations.

Generally, the measured samples of daytime L_{eq} agree with expectations based on proximity to the I-5 freeway: values tend to decrease with distance from this major acoustical contributor to the sound environment, until noise from localized sources (i.e., local roadway traffic, commercial activities, etc.) exhibits greater influence on the measured outdoor ambient sound level.

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SOURCE: SANGIS 2017

0 50 100 Meters

0 200 400 Feet

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FIGURE 3

Noise Measurement Locations

Paseo Montril Development Project

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4 Thresholds of Significance

City of San Diego Significance Determination Thresholds

The following significance criteria are based on Appendix G of the California Environmental Quality Act (CEQA) Guidelines (14 CCR 15000 et seq.) and will be used to determine the significance of potential noise impacts. Such potential noise and vibration impacts to the community would be considered significant if the proposed project would result in the following:

a. Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
b. Generation of excessive groundborne vibration or groundborne noise levels; and,
c. Expose people residing or working in the project area to excessive noise levels (for a project located within the vicinity of a private airstrip or an airport land use plan, or where such a plan has not been adopted, within 2 miles of a public airport or public use airport).

In addition, and while no longer one of the above-listed CEQA significance criteria required for noise at the State level, for informational purposes and to satisfy the City's policies, this noise analysis also evaluates exterior-to-interior noise intrusion upon newly-created noise-sensitive residential land uses associated with the proposed project. Therefore, the following thresholds and context, categorized by noise sources or type of potentially impacted receptors, have been used in this analysis for identifying potentially significant noise impacts as a result of implementation of the proposed project.

Interior and Exterior Noise Impacts from Traffic-Generated Noise

The City's CEQA Significance Determination Thresholds provide guidance on implementing the City's noise policies and ordinances, including the general thresholds of significance for uses affected by traffic noise included in Table 4.

As shown in Table 4, the noise level at exterior usable open space for single- and multifamily residences should not exceed 65 dBA (City of San Diego 2011). A significant permanent increase is defined as a direct project-related permanent ambient increase of 3 dBA or greater, where exterior noise levels would already exceed the City's significance thresholds (City of San Diego 2011) (e.g., 65 dBA daytime for single-family residential land uses). An increase of 3 dBA is perceived by the human ear as a barely perceptible increase.

Table 4. City of San Diego Traffic Noise Significance Thresholds

Structure of Proposed Use That Would Be Impacted by Traffic Noise	Interior Space	Exterior Useable Space[1]	General Indication of Potential Significance
Single-family detached	45 dB	65 dB	Structure or outdoor useable area[2] is <50 feet from the center of the closest (outside) lane on a street with existing or future ADTs >7,500
Multi-family, school, library, hospital, day care center, hotel, motel, park, convalescent home	Development Services Department ensures 45 dB pursuant to Title 24	65 dB	
Office, church, business, Professional uses	n/a	70 dB	Structure or outdoor useable area is <50 feet from the center of the closest lane on a street with existing or future ADTs >20,000
Commercial, retail, industrial, outdoor sports uses	n/a	75 dB	Structure or outdoor useable area is <50 feet from the center of the closest lane on a street with existing or future ADTs >40,000

Source: City of San Diego 2016.
Notes: ADT = average daily traffic
1 If a project is currently at or exceeds the significance thresholds for traffic noise described above, and noise levels would result in less than a 3-dB increase, then the impact is not considered significant.
2 Exterior useable areas do not include residential front yards or balconies unless the areas such as balconies are part of the required useable open space calculation for multifamily units.

Noise from Adjacent Stationary Uses (Noise Generators)

The City's Noise Ordinance also limits property line noise levels for various land uses by time of day for noise generated by on-site sources associated with project operation (see the Table of Allowable Limits in Section 59.5.0401 of the San Diego Municipal Code [SDMC]). By way of illustration, the limit for multifamily residential land uses is 55 dBA L_{eq} from 7:00 a.m. to 7:00 p.m., 50 dBA L_{eq} from 7:00 p.m. to 10:00 p.m., and 50 dBA L_{eq} from 10:00 p.m. to 7:00 a.m. A project that would generate noise levels at the property line that exceed the City's Noise Ordinance Standards is considered potentially significant (such as potentially a carwash or projects operating generators or noisy equipment). If a nonresidential use, such as a commercial, industrial, or school use, is proposed to abut an existing residential use, the decibel level at the property line should be the arithmetic mean of the decibel levels allowed for each use as set forth in SDMC Section 59.5.0401.

Temporary Construction Noise and Sound Level Limits

Temporary construction noise that exceeds 75 dBA L_{eq} at a sensitive receptor would be considered significant. In particular, per SDMC 59.5.0404(c), construction noise levels measured at or beyond the property lines of any property zoned residential shall not exceed an average sound level greater than 75 dB L_{eq} during the 12-hour period from 7:00 a.m. to 7:00 p.m. In addition, construction activity is prohibited between the hours of 7:00 p.m. of any day and 7:00 a.m. of the following day, or on legal holidays as specified in SDMC Section 21.04, with the exception of Columbus Day and Washington's Birthday, or on Sundays, that would create disturbing, excessive, or offensive noise unless a permit has been applied for and granted beforehand by the Noise Abatement and Control Administrator, in conformance with SDMC Section 59.5.0404. Additionally, where temporary construction noise

would substantially interfere with normal business communication, or affect sensitive receptors, such as day care facilities, a significant noise impact may be identified.

Construction Vibration Guidance

Guidance from Caltrans indicates that a vibration velocity level of 0.2 ips PPV received at a structure would be considered annoying by occupants within (Caltrans 2013b). As for the receiving structure itself, aforementioned Caltrans guidance from Section 2 recommends that a vibration level of 0.5 ips PPV would represent the threshold for building damage risk to a newer residential building experiencing continuous/frequent groundborne vibration.

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5 Impact Discussion

a) Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Short-Term Construction

Conventional Construction Activities

Construction noise associated with the proposed project is assessed with respect to the nearest pre-existing residential receptors, at which the 75 dBA 12-hour L_{eq} threshold per SDMC 59.5.0404(c) would apply.

Construction noise and vibration are temporary phenomena. Construction noise and vibration levels vary from hour to hour and day to day, depending on the equipment in use, the operations performed, and the distance between the source and receptor. Equipment that would be in use during construction would include, in part, graders, backhoes, rubber-tired dozers, loaders, cranes, forklifts, pavers, rollers, and air compressors. The typical maximum noise levels for various pieces of construction equipment at a distance of 50 feet are presented in Table 5. Note that the equipment noise levels presented in Table 5 are maximum noise levels. Usually, construction equipment operates in alternating cycles of full power and low power, producing average noise levels over time that are less than the maximum noise level. The average sound level of construction activity also depends on the amount of time that the equipment operates and the intensity of construction activities during that time.

Table 5. Typical Construction Equipment Maximum Noise Levels

Equipment Type	Typical Equipment (L_{max}, dBA at 50 Feet)
All Other Equipment > 5 HP	85
Backhoe	78
Compressor (air)	78
Concrete Saw	90
Crane	81
Dozer	82
Excavator	81
Front End Loader	79
Generator	72
Grader	85
Man Lift	75
Paver	77
Roller	80
Scraper	84
Tractor	84
Welder / Torch	73

Source: DOT 2006.
Note: L_{max} = maximum sound level; dBA = A-weighted decibels.

Aggregate noise emission from proposed project construction activities, broken down by sequential phase, was predicted at two distances to the nearest existing noise-sensitive receptor: 1) from the nearest position of the

construction site boundary (or where activity is likely to concentrate, such as a building façade) and 2) from the geographic center of the construction site or area of expected activity, which serves as the time-averaged location or geographic *acoustical centroid* of active construction equipment for the phase under study. The intent of the former distance is to help evaluate anticipated construction noise from a limited quantity of equipment or vehicle activity expected to be at the boundary for some period of time, which would be most appropriate for phases such as site preparation, grading, and paving. The latter distance is used in a manner similar to the general assessment technique as described in the FTA guidance for construction noise prediction, when the location of individual equipment for a given construction phase is uncertain over some extent of (or the entirety of) the construction site area. Because of this uncertainty, all the equipment for a construction phase is assumed to operate—on average—from the acoustical centroid. Table 6 summarizes these two distances to the apparent closest noise-sensitive receptor for each of the five sequential construction phases. At the site boundary, this analysis assumes that up to only one piece of equipment of each listed type per phase will be involved in the construction activity for a limited portion of the 12-hour period. In other words, at such proximity, the operating equipment cannot "stack" or crowd the vicinity and still operate normally. For the acoustical centroid case, which intends to be a geographic average position for all equipment during the indicated phase, this analysis assumes that the equipment may be operating up to all 12 hours per day.

Table 6. Estimated Distances between Construction Activities and the Nearest

Construction Phase (and Equipment Types Involved)	Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet)	Distance from Nearest Noise-Sensitive Receptor to Acoustical Centroid of Site (Feet)
Site preparation (dozer, backhoe, backhoe)	100	340
Grading (excavator, grader, dozer, backhoe)	100	340
Building construction (crane, man-lift, generator, backhoe, welder/torch)	200	340
Architectural finishes (air compressor)	200	340
Paving (paver, roller, other equipment)	200	340

A Microsoft Excel–based noise prediction model emulating and using reference data from the Federal Highway Administration Roadway Construction Noise Model (RCNM) (FHWA 2008) was used to estimate construction noise levels at the nearest occupied noise-sensitive land use. (Although the RCNM was funded and promulgated by the Federal Highway Administration, it is often used for non-roadway projects, because the same types of construction equipment used for roadway projects are often used for other types of construction.) Input variables for the predictive modeling consist of the equipment type and number of each (e.g., two graders, a loader, a tractor), the duty cycle for each piece of equipment (e.g., percentage of time within a specific time period, such as an hour, when the equipment is expected to operate at full power or capacity and thus make noise at a level comparable to what is presented in Table 4), and the distance from the noise-sensitive receiver. The predictive model also considers how many hours that equipment may be on site and operating (or idling) within an established work shift (in this case, the allowable daytime construction hours of 7:00 a.m. to 7:00 p.m. Conservatively, no topographical or structural shielding was assumed in the modeling. The RCNM has default duty-cycle values for the various pieces of equipment, which were derived from an extensive study of typical construction activity patterns. Those default duty-cycle values were used for this noise analysis, which is detailed in Appendix B, Construction Noise Modeling Input and Output, and produce the predicted results displayed in Table 7.

Table 7. Predicted Construction Noise Levels per Activity Phase

Construction Phase (and Equipment Types Involved)	12-Hour L_{eq} at Nearest Noise-Sensitive Receptor to Construction Site Boundary (dBA)	12-Hour L_{eq} at Nearest Noise-Sensitive Receptor to Acoustical Centroid of Site (dBA)
Site preparation (dozer, backhoe, backhoe)	74	64.9
Grading (excavator, grader, dozer, backhoe)	74	65.8
Building construction (crane, man-lift, generator, backhoe, welder/torch)	65	60.7
Architectural finishes (air compressor)	60	55.6
Paving (paver, roller, other equipment)	67	62.6

Notes: L_{eq} = equivalent noise level; dBA = A-weighted decibels.

As presented in Table 7, the estimated construction noise levels are predicted to be as high as 74 dBA L_{eq} over a 12-hour period at the nearest existing residences (as close as 100 feet away) when site preparation and grading activities take place near the northern project boundaries. Note that these estimated noise levels at a source-to-receiver distance of 100 feet would occur when noted pieces of heavy equipment would each operate for a cumulative period of up to five (5) hours a day. By way of example, a grader might make multiple passes on site that are this close to a receiver; but, for the remaining time during the day, the grader is sufficiently farther away, performing work at a more distant location, or simply not operating. On an average construction workday, heavy equipment will be operating sporadically throughout the project site and more frequently away from the northern edge of the site. At more typical distances closer to the center of the project site (approximately 340 feet from the nearest existing residence), construction noise levels are estimated to range from approximately 56 dBA L_{eq} to 66 dBA L_{eq} at the nearest existing residence. Construction activity from the above equipment would not generate noise levels that exceed 75 dBA L_{eq}, which the City of San Diego requires as a daytime threshold for construction noise exposure over a 12-hour period at a residential receptor.

Although nearby off-site residences would be exposed to elevated construction noise levels, the increased noise levels would typically be relatively short term. It is anticipated that construction activities associated with the proposed project would take place primarily within the allowable hours of construction per the City (7:00 a.m. and 7:00 p.m. Monday through Friday) as described in SDMC 59.5.0404. In the event that construction is required to extend beyond these times, extended hours permits would be required and would be obtained by the applicant.

In summary, construction noise during allowable daytime hours would not exceed the aforementioned City's threshold and would not be substantially higher than existing ambient daytime noise levels (as shown in Table 2). Construction-related noise impacts would be considered **less than significant**.

Blasting Operations

Blasting typically involves drilling a series of boreholes, placing explosives (the "charge") in each hole, then topping the charge with fill material to help confine the blast. These multiple holes are typically arranged so as to yield optimal fracturing of the rock strata and thus allow gravity to subsequently collapse or "implode" the volume of rock in as safe and controlled manner as possible after detonation. Post-detonation material can then be further broken down to manageable size and hauled away with conventional construction equipment and vehicles.

By limiting the amount of charge in each hole, and detonating each charge successively with an interstitial time delay, the blasting contractor can limit the total energy released at any single time, which in turn reduces the airborne noise L_{max} and groundborne vibration energy associated with each individual detonated charge.

Based on the known geotechnical conditions of the project site, there is some potential for blasting to be required to excavate the underlying rock. It should be noted that conventional or less intensive means of excavation would be exhausted prior to the use of blasting. However, because there is some potential, the analysis presented in this report conservatively assumes blasting would be required. It is anticipated that blasting operations would occur during the site preparation and grading phase.

Table 8 presents predicted values for two potential blasting scenarios as follows: 1) the maximum per-detonation charge weight that, for the indicated distance between the detonation hole and the nearest residential structure, would be expected to yield no greater than 1 ips PPV at the receptor; and, 2) assuming a minimum per-detonation charge weight of 13 pounds, what would be the minimum detonation-to-receptor distance needed to avoid exceeding the 1 ips PPV threshold. Table 8 also displays the predicted A-weighted L_{max} for each detonated charge, under a fully-confined condition, using mathematical expressions and typical parameters provided by the Blasting and Explosives Quick Reference Guide (Dyno Nobel 2010). The predicted 12-hour L_{eq} value presented in Table 8 accounts for all detonations occurring within a single blast, and just one blast event per 12-hour period.

Table 8. Preliminary Blasting Charge Weights and Predicted L_{max} Values

Nearest Receiving Residential Structure	Per-Detonation Charge Weight (lbs)	Single Charge Detonation Airborne Sound Pressure Level (SPL, dBA L_{max}) at the Receiving Structure	Single Charge Detonation Peak Particle Velocity (PPV, inches per second)	12-hour L_{eq} for the Blast Event (SPL, dBA)
1. North (100 feet distance to expected closest detonation)	2.75	104.5	0.998	86.6
2. North (216 feet distance to expected closest detonation)	13.0	101.8	0.999	77.2

With a blast event expected to loosen up to 2,300 cubic yards of material, and assuming a powder factor of 0.5, the total quantity of successive detonations would vary with the per-detonation charge weight but result in the estimated 12-hour L_{eq} values also presented in Table 8. Hence, predicted airborne noise level from the blast for each of these scenarios could exceed the City's standard, with the degree of exceedance depending largely on proximity. Proper implementation of the Blasting Plan introduced as M-NOI-1 is recommended to help render vibration-related environmental impacts temporary and **less than significant with mitigation**. For example, installation of a temporary noise barrier (e.g., sound blankets of sufficient height, horizontal extent, and arrangement that occludes direct sound pathways between the blast event and the receptor[s] of concern) that is capable of exhibiting up to 12-15 dBA of noise reduction would decrease the predicted 86.6 dBA 12-hour L_{eq} of Scenario 1 in Table 8 to no more than 74.6 dBA and thus comply with the City's standard of 75 dBA.

Portable Rock-Crushing/Processing Facility

A portable rock-crushing/processing facility would be used on site during construction activities. The rock-crushing operation would begin with a front-end loader picking up material and dumping the material into a primary crusher.

The material would then be crushed, screened, and stacked in product piles. The material would be stockpiled adjacent to the rock-crushing equipment. All material will be used on site. Electric power would most likely be provided by a diesel engine generator. The primary crusher would also generate impulsive noise events. Maximum noise levels associated with the primary crusher could reach approximately 87 dBA at 45 feet (Ldn Consulting, 2011).

Rock crushing locations have been not been identified but would be most likely located near or adjacent to the Paseo Montril cul-de-sac on flat ground. This would put the closest existing off-site residence more than approximately 400 feet from the proposed rock crushing areas. In addition, there would be intervening topography that would shield adjacent homes from the rock crushing facilities. At this distance the noise level (both 12-hour average and impulsive noise) associated with the rock crushing activities would be less than City's standard of 75 dBA, and **less than significant**.

Long-Term Operational

Roadway Traffic Noise

The proposed project would result in the creation of additional vehicle trips on local arterial roadways (i.e., Paseo Montril and Rancho Penasquitos Boulevard), which could result in increased traffic noise levels at adjacent noise-sensitive land uses. Appendix C, Traffic Noise Modeling Input and Output, contains a spreadsheet with traffic volume data (average daily traffic) for Paseo Montril and surrounding arterial roadways. In particular, the proposed project would create additional traffic along Paseo Montril, which according to the Traffic Impact Assessment prepared for the proposed project (LOS Engineering, 2019) would add 550 average daily trips to the segment of Paseo Montril and adjacent roadways surrounding the project site.

Potential noise effects from vehicular traffic were assessed using the Federal Highway Administration's Traffic Noise Model version 2.5 (FHWA 2004). Information used in the model included the roadway geometry, posted traffic speeds, and traffic volumes for the following scenarios: existing (year 2019), existing plus project, buildout (2050), and buildout plus project. Noise levels were modeled at representative noise-sensitive receivers ST1 through ST4, as shown in Figure 4. Demonstrating validity of the TNM model, predicted traffic noise levels for the existing (2019) without proposed project case shown in Table 8 compare well (i.e., within an average difference of +1.8 dBA) with the measured L_{eq} magnitudes from Table 2. Hence, on the basis of the TNM model accuracy for the existing (2019) without project case, future traffic noise levels can be predicted with confidence.

The City's Noise Element establishes a policy for exterior sensitive areas to be protected from high noise levels. The Noise Element sets 65 dBA CNEL for the outdoor areas and 45 dBA CNEL for interior areas as the normally acceptable levels. However, existing levels from traffic already exceed this threshold. For the purposes of this noise analysis, such impacts are considered significant when they cause an increase of 3 dB from existing noise levels. An increase or decrease in noise level of at least 3 dB is required before any noticeable change in community response would be expected (Caltrans 2013a). The receivers were modeled to be 5 feet above the local ground elevation. The noise model results are summarized in Table 9.

Table 9. Roadway Traffic Noise Modeling Results

Modeled Receiver Tag (Location Description)	Existing (2019) Noise Level (dBA CNEL)	Existing (2019) Plus Project Noise Level (dBA CNEL)	Buildout (2050) Noise Level (dBA CNEL)	Buildout (2050) Plus Project Noise Level (dBA CNEL)	Maximum Project-Related Noise Level Increase (dB)
ST1	69.1	66.3	70.7	67.9	0.0
ST2	67.9	67.0	69.4	68.5	0.0
ST3	63.7	63.7	64.4	64.4	0.0
ST4	59.9	59.6	60.7	60.3	0.0

Notes: dBA = A-weighted decibel; CNEL = Community Noise Equivalent Level; dB = decibel.

Table 9 shows that at all three listed representative receivers, the addition of proposed project traffic to the roadway network would result in a CNEL increase of less than 3 dB, which is below the discernible level of change for the average healthy human ear. At some modeled locations, expected traffic noise levels are predicted to decrease due to introduction of the proposed new buildings as sound path occlusion between them and the freeway noise source. Thus, a **less-than-significant impact** is expected for proposed project–related off-site traffic noise increases affecting existing residences in the vicinity.

Traffic Noise Exposure to Future Project Occupants

Aside from exposure to aviation traffic noise, current CEQA noise-related guidelines at the state level do not require an assessment of exterior-to-interior noise intrusion, environmental noise exposure to occupants of newly-created project residences, or environmental noise exposure to exterior non-residential uses attributed to the development of the proposed project. Nevertheless, the City's CEQA guidelines and the California Building Code requires that interior background noise levels not exceed a CNEL of 45 dB within habitable rooms. Hence, the following predictive analysis of traffic noise exposure at the exteriors of occupied residences and outdoor living areas is provided below.

In addition to the prediction results presented in Table 9, the FHWA TNM software was also used to predict the buildout + Project scenario traffic noise levels at multiple on-site exterior areas, as listed in Table 10. Modeled receptor locations, which appear in Figure 4, include representative positions for the exteriors of multiple floors of the eastern facades.

Table 10. On-Site Exterior Roadway Traffic Noise Modeling Results

Location	Modeled Receiver	Description	Predicted Traffic Noise Exposure at Modeled Receiver (dBA CNEL)
Building 1	M1-1	1st floor	71
	M1-2	2nd floor/Balcony	75
	M1-3	3rd floor	75
	M2-1	1st floor	67
	M2-2	2nd floor/Balcony	74
	M2-3	3rd floor	75
	M3-1	1st floor	65
	M3-2	2nd floor/Balcony	73
	M3-3	3rd floor	75
Building 2	M4-1	1st floor	64
	M4-2	2nd floor/Balcony	73
	M4-3	3rd floor	75
	M5-1	1st floor	64
	M5-2	2nd floor/Balcony	73
	M5-3	3rd floor	74
Building 6	M6-1	1st floor	62
	M6-2	2nd floor	71
	M6-3	3rd floor	72
Dog Park	DP-1	n/a	67
Open Space Courtyard	OS-1	n/a	47

Notes: dBA = A-weighted decibel; CNEL = Community Noise Equivalent Level.

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Noise Modeled Receptor Locations

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The prediction results from the Table 10 indicate that future traffic noise levels would range close to but not exceed 75 dBA CNEL. With the 45 dBA CNEL interior background sound level limit, this means the minimum composite sound transmission class (STC) rating for the exterior shell separating the habitable interior space from the outdoor sound level should be at least 30. The composite STC rating for the portion of a building shell that separates an interior space from the outdoors is calculated from the area-dependent contributions of its elements: windows, wall assemblies, and doors.

Windows are typically the weakest sound isolation element of residential buildings. The minimum performance window option in occupied rooms is assumed to be single hung operable windows with a minimum of dual-glazing. California's Title 24 (Title 24, Part 6 of the California Code of Regulations) stipulates energy efficiency of new residential and nonresidential buildings, with each local community adopting building codes to achieve compliance with these regulations. Based on these Title 24 requirements and the City of San Diego Code, this analysis presumes such dual-paned vinyl windows will be used for this project. A glazing manufacturer, Viracon, reports that a dual pane assembly composed of two 1/8"-thick glass panes separated by a 3/8" wide air-gap yields an STC rating of 31 (Viracon 2019).

Proposed project information suggests that the exterior wall assemblies comprise 7/8"-thick exterior plaster on a weather-resistant barrier attached to 2"-thick wooden studs, with fibrous batt insulation in the stud cavities, and a 5/8"-thick layer of gypsum wallboard (GWB) attached to the interior-facing surface. Assuming the mass of the exterior plaster is comparable to a double-layer of GWB, this analysis applies available acoustical transmission loss (TL) data on such a wall assembly (NRCC 1998) to help determine the composite STC rating for the façade exposed to exterior traffic noise.

Some of the proposed project residential units feature patios or balconies, for which access is provided by single-panel, out-swing fiberglass french doors with hinges (i.e., not sliding) comparable to a Milgard Essence series model (or similar from another manufacturer). For purposes of this analysis, these doors are assumed to feature a dual-pane glazing system similar to the window assembly (i.e., two 1/8"-thick glass panes separated by a 3/8" wide air-gap) in narrow-perimeter frames. The analysis also assumes that these door products feature good seals and related hardware, so that when closed, the effective sound insulating performance is represented by the glass. Viracon data indicates that such glazing should demonstrate an STC rating of 31 (Viracon 2019).

Clearly, an open window or open door to an adjoining patio or balcony greatly compromises the sound insulation performance of the façade wall assembly, as presented for the sample units appearing in Table 11. However, when such windows and doors are closed, all facades are anticipated to exhibit a predicted STC rating of at least 34, and thus would provide sufficient exterior-to-interior sound insulation from outdoor traffic noise to yield interior background sound levels that are less than 45 dBA CNEL and thus compliant with the City and state standards. Recall that none of the predicted exterior traffic noise levels at the studied receptor locations exceeded 75 dBA CNEL; thus, the STC rating value (for closed windows and doors) subtracted from these exterior noise values must result in interior noise levels of less than 45 dBA CNEL (e.g., 75 – 34 = 41 dBA CNEL, which is less than 45). This apparent requirement for closed windows and doors means that the design of these habitable rooms should feature mechanical ventilation or an air-conditioning system to provide interior comfort of the occupants. Detailed transmission loss data is included in Appendix E, Transmission Loss Predictions. Thus, the City's threshold of 45 dB CNEL within habitable rooms would not be exceeded and considered **less than significant.**

Table 11. Predicted Net Sound Transmission Class of Occupied Room Façade

Unit	Occupied Room Facade	Predicted Net Sound Transmission Class (STC) for Scenario		
		Closed Window(s) and Door(s)	Open Window	Open Door
Building 1	M1-1	n/a	n/a	n/a
	M1-2	34	11	5
	M1-3	37	14	n/a
	M2-1	n/a	n/a	n/a
	M2-2	34	11	5
	M2-3	37	14	n/a
	M3-1	n/a	n/a	n/a
	M3-2	34	11	5
	M3-3	37	14	n/a
Building 2	M4-1	n/a	n/a	n/a
	M4-2	34	11	5
	M4-3	37	14	n/a
	M5-1	n/a	n/a	n/a
	M5-2	34	11	5
	M5-3	37	14	n/a
Building 6	M6-1	n/a	n/a	n/a
	M6-2	34	11	5
	M6-3	37	14	n/a

Notes: n/a = not applicable

Open Space & Balconies

Predicted exterior sound levels presented in Table 9 that are higher than 65 dBA CNEL indicate locations where an exterior-to-interior noise study should be performed for the proximate occupied residential unit. Where predicted exterior noise levels exceed 65 dBA CNEL proximate to a patio, balcony, or other usable outdoor space (e.g., open space or dog park), such a location would need localized noise mitigation, such as a sound wall, to yield an outdoor level compliant with the City's 65 dBA CNEL standard. The proposed Dog Park near the northwestern project boundary has predicted levels of 67 dBA CNEL. With the implementation of mitigation **M-NOI-2**, the resultant exterior noise levels would meet the City's exterior noise standard of 65 dBA CNEL.

Where proposed residential units feature balconies expected as outdoor use areas, predicted future traffic noise exposure levels presented in Table 9 suggest that up to 10 dBA of noise reduction would be needed to keep sound on such balconies at levels below the 65 dBA CNEL compatibility standard. With the implementation of mitigation **M-NOI-3**, the resultant exterior noise levels would meet the City's exterior noise standard of 65 dBA CNEL. If the balconies and patios exposed to exterior noise levels in excess of 65 dBA CNEL are not expected to count towards the proposed project's usable outdoor space, then per the City's CEQA significance thresholds they would not be considered significant impacts.

Stationary Operations Noise

The incorporation of new multifamily homes and a mix of open space and recreational uses attributed to development of the proposed project will add a variety of noise-producing mechanical equipment that include those presented and discussed in the following paragraphs. Most of these noise-producing equipment or sound sources would be considered

stationary, or limited in mobility to a defined area. Additionally, the open space and recreational uses would attract residents and their guests to enjoy proposed project facilities and thus create potential community noise relating to added aggregate speech as appropriate or expected for the venue.

Residential Unit Heating, Ventilation, and Air Conditioning Noise

For purposes of this analysis, each of the new occupied residential units would be expected to feature a split-system type air-conditioning unit, with a refrigeration condenser unit mounted on the ground floor of the building exterior. Assuming each condenser unit has a sound emission source level of 74 dBA at 3 feet (Johnson Controls 2010), the proposed project site plan suggests that these condenser units would be installed near the building perimeter. Therefore, the closest existing noise-sensitive residential receptor to the north of the proposed project's northern residential buildings would be as close as approximately 230 horizontal feet to what would be an arrangement of up to eight (8) such ground-mounted HVAC condenser units, positioned near the northwest facades of the western-most four buildings and the northeast façade of the northern-most building of the proposed project. However, due to the higher relative elevation of the receivers to the north of the proposed project near the cul de sac of Calle Abuelito and their horizontal distances away from the noise-producing condenser units as modeled, the predicted sound emission level from the combination of these condenser units would be no more than 44 dBA L_{eq}, and would thus be compliant with the City's nighttime threshold of 45 dBA hourly $L_{eq.}$ Although other condenser units are on-site, noise from their operation would—from the perspective of the nearest noise-sensitive receiving properties at the Calle Abuelito cul de sac—be occluded from direct view by proposed project buildings (and be more distant) and thus be reduced in noise to a level that would not substantially contribute acoustically to the eight studied herein. Please see Appendix D for a graphical display of the predicted aggregate noise level from these eight condenser units, superimposed on an aerial image of the expected layout of the HVAC equipment and proposed project buildings and the proximate neighboring Calle Abuelito residences to the north. Under such conditions, the operation of residential air-conditioning units would result in **less-than-significant** noise impacts.

b) Would the project result in generation of excessive groundborne vibration or groundborne noise levels?

Conventional Construction Activity Vibration

Construction activities may expose persons to excessive groundborne vibration or groundborne noise, causing a potentially significant impact. Caltrans has collected groundborne vibration information related to construction activities (Caltrans 2013b). Information from Caltrans indicates that continuous vibrations with a PPV of approximately 0.2 ips is considered annoying. For context, heavier pieces of construction equipment, such as a bulldozer that may be expected on the project site, have peak particle velocities of approximately 0.089 ips or less at a reference distance of 25 feet (DOT 2006).

Groundborne vibration attenuates rapidly, even over short distances. The attenuation of groundborne vibration as it propagates from source to receptor through intervening soils and rock strata can be estimated with expressions found in FTA and Caltrans guidance. By way of example, for a bulldozer operating on site and as close as the western project boundary (i.e., 100 feet from the nearest receiving sensitive land use) the estimated vibration velocity level would be 0.01 ips per the equation as follows (FTA 2006):

$$PPV_{rcvr} = PPV_{ref} * (25/D)^{1.5} = 0.01 = 0.089 * (25/100)^{1.5};$$

where PPV_{rcvr} is the predicted vibration velocity at the receiver position, PPV_{ref} is the reference value at 25 feet from the vibration source (the bulldozer), and D is the actual horizontal distance to the receiver. Therefore, at this

predicted PPV, the impact of vibration-induced annoyance to occupants of nearby existing homes would be **less than significant**.

Construction vibration, at sufficiently high levels, can also present a building damage risk. However, the predicted 0.01 ips PPV at the nearest residential receiver 100 feet away from onsite operation of the bulldozer during grading would not surpass the guidance limit of 0.3 to 0.5 ips PPV for preventing damage to residential structures (Caltrans 2013b). Because the predicted vibration level at 100 feet is less than both the annoyance and building damage risk thresholds, vibration from project conventional construction activities is considered less than significant.

Once operational, the proposed project would not be expected to feature major onsite producers of groundborne vibration. Anticipated mechanical systems like pumps are designed and manufactured to feature rotating components (e.g., impellers) that are well-balanced with isolated vibration within or external to the equipment casings. On this basis, potential vibration impacts due to proposed project operation would be less than significant.

Blasting Event Vibration

Although conventional construction equipment using mechanical means for earth-moving are not expected to yield vibration velocity levels that exceed applicable standards, potential blasting activities represent a separate category of vibration assessment. The project may require blasting to facilitate excavation in areas where competent bedrock occurs at depths that make mechanical excavation difficult. Table 7 presents the estimated per-detonation PPV that would be received at each of the indicated residential receptors for each of the two studied scenarios that vary with detonation-to-receptor distance and per-detonation charge weight. Under such parameters, the blast vibration magnitudes would be compatible with Caltrans guidance limits for single-event or "transient" events. However, to help ensure that vibration from the blasting associated with project excavation would not cause undue temporary annoyance and minimize damage risk to the receiving structures, proper implementation of the Blasting Plan introduced as M-NOI-1 is recommended to help render vibration-related environmental impacts temporary and **less than significant with mitigation**.

c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

There are no private airstrips within the vicinity of the project site. The closest airport to the project site is the Marine Corps Air Station Miramar approximately 5.5 miles southeast of the site. Impacts from aviation overflight noise exposure would be considered **less than significant**.

6 Mitigation Measures

The following mitigation measure, introduced in Section 5, Impact Discussion, would apply during construction blasting activities.

M-NOI-1. Blasting Vibration and Noise Plan

The proposed project applicant or its contractor will prepare a blasting plan that will reduce impacts associated with construction-related noise, drilling operations and vibrations related to blasting. The blasting plan will be site specific, based on general and exact locations of required blasting and the results of a project-specific geotechnical investigation. The blasting plan will include a description of the planned blasting methods, an inventory of receptors potentially affected by the planned blasting, and calculations to determine the area affected by the planned blasting. Noise calculations in the blasting plan will account for blasting activities and all supplemental construction equipment. The final blasting plan and pre-blast survey shall meet the requirements provided below.

- Prior to blasting, a qualified geotechnical professional shall inspect and document the existing conditions of facades and other visible structural features or elements of the nearest neighboring offsite residential buildings. Should this inspector determine that some structural features or elements appear fragile or otherwise potentially sensitive to vibration damage caused by the anticipated blasting activity, the maximum per-delay charge weights and other related blast parameters shall be re-evaluated to establish appropriate quantified limits on expected blast-attributed PPV. The geotechnical professional shall consider geologic and environmental factors that may be reasonably expected to improve attenuation of groundborne vibration between the blast detonations and the receiving structure(s) of concern.
- All blasting shall be designed and performed by a blast contractor and blasting personnel licensed to operate per appropriate regulatory agencies.
- Each blast shall be monitored and recorded with an air-blast overpressure monitor and groundborne vibration accelerometer that is located outside the closest residence to the blast. This data shall be recorded, and a post-blast summary report shall be prepared and be available for public review or distribution as necessary.
- Blasting shall not exceed 1 ips PPV (transient or single-event), or a lower PPV determined by the aforesaid inspector upon completion of the pre-blast inspection, at the façade of the nearest occupied residence.
- To ensure that potentially impacted residents are informed, the applicant will provide notice by mail to all property owners within 500 feet of the project at least 1 week prior to a scheduled blasting event.
- Where a blast event may be expected to cause an airborne noise level that exceeds the City's 12-hour L_{eq} standard, the proposed project applicant or its contractor(s) shall coordinate with the potentially affected neighboring property owner-occupant for permission to install at or near the proposed project property line (to the extent feasible, given the terrain of the proposed project vicinity) a field-erected temporary noise wall (e.g., sound blankets suspended from framing members, such as those provided by Behrens & Associates, Pacific Sound Control, or other vendors of comparable equipment). The installing contractor shall be responsible for determining the height and extent of the temporary noise barrier, so that its proper on-site implementation can be expected to provide up to 15 dBA of noise reduction and thus enable the 12-hour L_{eq} representing the blast event noise level to comply with the City's standard of 75 dBA.

M-NOI-2. Dog Park Construction

Install noise abatement fencing on the dog park boundary (or within, as practical and appropriate) in the form of sound barriers of at least 6 feet in height to occlude construction noise emission between the site and the noise-generating source(s) of concern.

M-NOI-3. Balcony Construction

Residential unit balconies along building facades identified in Table 10 shall feature railings or other partial enclosures comprising sufficiently solid and dense materials (e.g., acrylic, glass, wood, etc. that exhibits a sound transmission class [STC] rating of at least 20) and of a height (from floor or deck of the balcony surface) that occludes direct sound path from the noise-producing roadway of concern and a seated balcony occupant.

7 Summary of Findings

This noise report was conducted to predictively quantify construction and operation noise and vibration attributed to the proposed project. The results indicate that potential impacts during blasting events would be less than significant with mitigation **M-NOI-1** successfully applied. Measures **M-NOI-2** and **M-NOI-3** successfully implemented would reduce exterior noise at outdoor use areas such as the dog park and unit patios and balconies to less than significant levels. No further mitigation is required.

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Appendix A

Baseline Noise Measurement Field Data

DUDEK
CREATOR OF KERATA TECHNOLOGY

FIELD DATA REPORT

Field Noise Measurement Data

Record: 1253	
Project Name	*Paseo Montril*
Observer(s)	*Connor Burke*
Date	*2020-03-02*

Meteorological Conditions	
Temp (F)	*61*
Humidity % (R.H.)	*50*
Wind	*Light*
Wind Speed (MPH)	*8*
Wind Direction	*East*
Sky	*Partly Cloudy*

Instrument and Calibrator Information	
Instrument Name List	*(ENC) Rion NL-52*
Instrument Name	*(ENC) Rion NL-52*
Instrument Name Lookup Key	*(ENC) Rion NL-52*
Manufacturer	*Rion*
Model	*NL-52*
Serial Number	*553896*
Calibrator Name	*(ENC) LD CAL150*
Calibrator Name	*(ENC) LD CAL150*
Calibrator Name Lookup Key	*(ENC) LD CAL150*
Calibrator Manufacturer	*Larson Davis*
Calibrator Model	*LD CAL150*
Calibrator Serial #	*5152*
Pre-Test (dBA SPL)	*94*
Post-Test (dBA SPL)	*94*
Windscreen	*Yes*
Weighting?	*A-WTD*
Slow/Fast?	*Slow*
ANSI?	*Yes*

Monitoring	
Record #	*1*
Site ID	*ST1*
Site Location Lat/Long	*32.951254, -117.105703*
Begin (Time)	*11:15:00*
End (Time)	*11:25:00*
Leq	*67.5*
Lmax	*70.7*
Lmin	*62.1*
Other Lx?	*L90, L50, L10*
L90	*64.6*
L50	*67.4*
L10	*69.1*
Other Lx (Specify Metric)	*L*
Primary Noise Source	*Traffic*
Other Noise Sources (Background)	*Birds*
Other Noise Sources Additional Description	*Freeway traffic from 15*
Is the same instrument and calibrator being used as previously noted?	*Yes*
Are the meteorological conditions the same as previously noted?	*Yes*

Description / Photos

Site Photos

Photo	

Monitoring

Record #	*2*
Site ID	*ST2*
Site Location Lat/Long	*32.951901, -117.106094*
Begin (Time)	*11:35:00*
End (Time)	*11:45:00*
Leq	*67.2*
Lmax	*70.1*
Lmin	*64.5*
Other Lx?	*L90, L50, L10*
L90	*65.5*
L50	*66.8*
L10	*68.7*
Other Lx (Specify Metric)	*L*
Primary Noise Source	*Traffic*
Other Noise Sources (Background)	*Birds, Distant Aircraft, Rustling Leaves*
Other Noise Sources Additional Description	*I15 traffic*
Is the same instrument and calibrator being used as previously noted?	*Yes*
Are the meteorological conditions the same as previously noted?	*Yes*

DUDEK
CREATOR OF KERATA TECHNOLOGY

FIELD DATA REPORT

Description / Photos

Site Photos

Photo	

Monitoring

Record #	*3*
Site ID	*ST3*
Site Location Lat/Long	*32.952912, -117.107278*
Begin (Time)	*11:50:00*
End (Time)	*12:00:00*
Leq	*60.3*
Lmax	*73*
Lmin	*54.5*
Other Lx?	*L90, L50, L10*
L90	*56.6*
L50	*58.8*
L10	*61.9*
Other Lx (Specify Metric)	*L*
Primary Noise Source	*Traffic*
Other Noise Sources (Background)	*Birds, Distant Traffic, Rustling Leaves*
Is the same instrument and calibrator being used as previously noted?	*Yes*
Are the meteorological conditions the same as previously noted?	*Yes*

DUDEK
CREATOR OF KERATA TECHNOLOGY

FIELD DATA REPORT

Source Info and Traffic Counts

Number of Lanes	*4*
Lane Width (feet)	*10*
Roadway Width (feet)	*40*
Roadway Width (m)	*12.2*
Distance to Roadway (feet)	*100*
Distance to Roadway (m)	*30.5*
Distance Measured to Centerline or Edge of Pavement?	*Edge of Pavement*
Estimated Vehicle Speed (MPH)	*45*

Traffic Counts

Vehicle Count Summary	*A 240, MT 3, HT 0, B 0, MC 0*
Select Method for Recording Count Duration	*Enter Manually*
Counting Both Directions?	*Yes*
Count Duration (minutes)	*10*
Vehicle Count Tally	
Select Method for Vehicle Counts	*Enter Manually*
Number of Vehicles - Autos	*240*
Number of Vehicles - Medium Trucks	*3*
Number of Vehicles - Heavy Trucks	*0*
Number of Vehicles - Buses	*0*
Number of Vehicles - Motorcyles	*0*

Description / Photos

Site Photos

Photo

DUDEK
CREATOR OF KERATA TECHNOLOGY

FIELD DATA REPORT

Monitoring

Record #	*4*
Site ID	*ST4*
Site Location Lat/Long	*32.950957, -117.109517*
Begin (Time)	*12:15:00*
End (Time)	*12:40:00*
Leq	*58.5*
Lmax	*72.8*
Lmin	*49.6*
Other Lx?	*L90, L50, L10*
L90	*50.7*
L50	*53.2*
L10	*60.5*
Other Lx (Specify Metric)	*L*
Primary Noise Source	*Traffic*
Is the same instrument and calibrator being used as previously noted?	*Yes*
Are the meteorological conditions the same as previously noted?	*Yes*

Source Info and Traffic Counts

Number of Lanes	*2*
Lane Width (feet)	*10*
Roadway Width (feet)	*20*
Roadway Width (m)	*6.1*
Distance to Roadway (feet)	*10*
Distance to Roadway (m)	*3*
Distance Measured to Centerline or Edge of Pavement?	*Edge of Pavement*
Estimated Vehicle Speed (MPH)	*30*

Traffic Counts

Vehicle Count Summary	*A 100, MT 0, HT 0, B 0, MC 0*
Select Method for Recording Count Duration	*Enter Manually*
Counting Both Directions?	*Yes*
Count Duration (minutes)	*25*
Vehicle Count Tally	
Select Method for Vehicle Counts	*Enter Manually*
Number of Vehicles - Autos	*100*
Number of Vehicles - Medium Trucks	*0*
Number of Vehicles - Heavy Trucks	*0*
Number of Vehicles - Buses	*0*
Number of Vehicles - Motorcyles	*0*

Description / Photos

Site Photos

Photo	
	

Appendix B

Construction Noise Modeling Input and Output

To User: bordered cells are inputs, unbordered cells have formulae

noise level limit for construction phase, per County = 75
allowable hours over which Leq is to be averaged (example: 8 for County of San Diego, FTA guidance) = 12

Construction Phase	Equipment	Total Equipment Qty	AUF % (from FHWA RCNM)	Reference Lmax @ 50 ft. from FHWA RCNM	Client Equipment Description, Data Source and/or Notes	Source to NSR Distance (ft.)	Distance-Adjusted Lmax	Allowable Operation Time (hours)	Allowable Operation Time (minutes)	Predicted 12-hour Leq
Site Preparation	Dozer	1	40	82		100	76.0	6	360	69
	Grader	1	40	85		100	79.0	6	360	72
	Backhoe	1	40	78		100	72.0	6	360	65
							Total for Site Preparation Phase:			**74.3**
Grading	Dozer	1	40	82		100	76.0	5	300	68
	excavator	1	40	81		100	75.0	5	300	67
	Grader	1	40	85		100	79.0	5	300	71
	Backhoe	1	40	78		100	72.0	5	300	64
							Total for Grading Phase:			**74.4**
Building Construction	Crane	1	16	81		200	69.0	8	480	59
	Man Lift	1	20	75		200	63.0	8	480	54
	Generator	1	50	72		200	60.0	8	480	55
	Backhoe	1	40	78		200	66.0	8	480	60
	Welder / Torch	3	40	73		200	61.0	8	480	60
							Total for Building Construction Phase:			**65.4**
Architectural Coating	Compressor (air)	1	40	78		200	66.0	8	480	60
							Total for Architectural Coating Phase:			**60.2**
Paving	Concrete Mixer Truck	1	40	79		200	67.0	8	480	61
	Roller	1	20	80		200	68.0	8	480	59
	Backhoe	1	40	78		200	66.0	8	480	60
	Paver	1	50	77		200	65.0	8	480	60
	paver	1	50	77		200	65.0	8	480	60
							Total for Paving Phase:			**67.2**

To User: bordered cells are inputs, unbordered cells have formulae

noise level limit for construction phase, per County = 75
allowable hours over which Leq is to be averaged (example: 8 for County of San Diego, FTA guidance) = 12

Construction Phase	Equipment	Total Equipment Qty	AUF % (from FHWA RCNM)	Reference Lmax @ 50 ft. from FHWA RCNM	Client Equipment Description, Data Source and/or Notes	Source to NSR Distance (ft.)	Distance-Adjusted Lmax	Allowable Operation Time (hours)	Allowable Operation Time (minutes)	Predicted 12-hour Leq
Site Preparation	Dozer	1	40	82		340	65.3	8	480	60
	Grader	1	40	85		340	68.3	8	480	63
	Backhoe	1	40	78		340	61.3	8	480	56
							Total for Site Preparation Phase:			**64.9**
Grading	Dozer	1	40	82		340	65.3	8	480	60
	excavator	1	40	81		340	64.3	8	480	59
	Grader	1	40	85		340	68.3	8	480	63
	Backhoe	1	40	78		340	61.3	8	480	56
							Total for Grading Phase:			**65.8**
Building Construction	Crane	1	16	81		340	64.3	8	480	55
	Man Lift	1	20	75		340	58.3	8	480	50
	Generator	1	50	72		340	55.3	6	360	49
	Backhoe	1	40	78		340	61.3	8	480	56
	Welder / Torch	3	40	73		340	56.3	8	480	55
							Total for Building Construction Phase:			**60.7**
Architectural Coating	Compressor (air)	1	40	78		340	61.3	8	480	56
							Total for Architectural Coating Phase:			**55.6**
Paving	Concrete Mixer Truck	1	40	79		340	62.3	8	480	57
	Roller	1	20	80		340	63.3	8	480	55
	Backhoe	1	40	78		340	61.3	8	480	56
	Paver	1	50	77		340	60.3	8	480	56
	paver	1	50	77		340	60.3	8	480	56
							Total for Paving Phase:			**62.6**

Appendix C

Traffic Noise Modeling Input and Output

Dudek					**5 March 2020**						
CB					**TNM 2.5**						
INPUT: ROADWAYS							**Average pavement type shall be used unless**				
PROJECT/CONTRACT:	**Paseo Montril**						**a State highway agency substantiates the use**				
RUN:	**Existing**						**of a different type with the approval of FHWA**				
Roadway		**Points**									
Name	**Width**	**Name**	**No.**	**Coordinates (pavement)**			**Flow Control**			**Segment**	
				X	**Y**	**Z**	**Control Device**	**Speed Constraint**	**Percent Vehicles Affected**	**Pvmt Type**	**On Struct?**
	ft			ft	ft	ft		mph	%		
Rancho P Blvd South	40.0	point1	1	1,607,432.4	11,961,654.0	480.00				Average	
		point2	2	1,607,478.5	11,961,497.0	480.00				Average	
		point3	3	1,607,594.4	11,961,110.0	475.72					
Rancho P Blvd North	40.0	point4	4	1,607,645.5	11,961,106.0	475.72				Average	
		point5	5	1,607,478.1	11,961,668.0	480.00					
Paseo Montril West	25.0	point6	6	1,607,076.2	11,960,696.0	495.00				Average	
		point7	7	1,607,100.4	11,960,758.0	490.00				Average	
		point8	8	1,607,125.8	11,960,805.0	480.00				Average	
		point9	9	1,607,148.9	11,960,843.0	472.44				Average	
		point10	10	1,607,236.0	11,960,926.0	472.40				Average	
		point11	11	1,607,296.0	11,960,967.0	472.40				Average	
		point12	12	1,607,390.5	11,961,012.0	470.00				Average	
		point13	13	1,607,482.6	11,961,045.0	460.00				Average	
		point14	14	1,607,564.6	11,961,069.0	460.00					
Roadway4	25.0	point15	15	1,607,097.6	11,960,694.0	495.00				Average	
		point16	16	1,607,109.9	11,960,729.0	490.00				Average	
		point17	17	1,607,133.5	11,960,777.0	480.00				Average	
		point18	18	1,607,160.0	11,960,818.0	472.40				Average	
		point19	19	1,607,185.2	11,960,850.0	472.40				Average	
		point20	20	1,607,239.9	11,960,893.0	472.40				Average	
		point21	21	1,607,280.0	11,960,925.0	470.00				Average	
		point22	22	1,607,345.9	11,960,961.0	460.00				Average	
		point23	23	1,607,446.0	11,961,004.0	460.00				Average	
		point24	24	1,607,573.8	11,961,041.0	460.00					
Paseo Montril East	45.0	point25	25	1,607,687.0	11,961,068.0	465.00				Average	

		point26	26	1,607,746.6	11,961,066.0	475.00				Average	
		point27	27	1,607,814.1	11,961,053.0	479.00				Average	
		point28	28	1,607,887.5	11,961,019.0	479.00				Average	
		point29	29	1,607,982.2	11,960,971.0	485.00				Average	
		point30	30	1,608,065.6	11,960,935.0	488.85				Average	
		point31	31	1,608,159.0	11,960,917.0	498.00				Average	
		point32	32	1,608,236.2	11,960,932.0	498.00					
Roadway6	40.0	point33	33	1,607,660.2	11,961,051.0	460.00				Average	
		point34	34	1,607,667.1	11,961,028.0	460.00				Average	
		point35	35	1,607,677.5	11,960,995.0	452.76				Average	
		point36	36	1,607,722.9	11,960,841.0	452.80				Average	
		point37	37	1,607,800.0	11,960,583.0	452.80				Average	
		point38	38	1,607,855.0	11,960,409.0	446.19				Average	
		point39	39	1,607,887.8	11,960,293.0	446.19				Average	
		point40	40	1,607,932.9	11,960,172.0	439.63				Average	
		point41	41	1,607,998.5	11,960,051.0	433.07				Average	
		point42	42	1,608,076.5	11,959,955.0	433.10					
Roadway7	40.0	point43	43	1,608,039.8	11,959,937.0	429.80				Average	
		point44	44	1,607,977.4	11,960,029.0	429.79				Average	
		point45	45	1,607,924.4	11,960,123.0	433.07				Average	
		point46	46	1,607,874.2	11,960,218.0	439.63				Average	
		point47	47	1,607,839.9	11,960,316.0	446.19				Average	
		point48	48	1,607,802.4	11,960,431.0	449.48				Average	
		point49	49	1,607,758.5	11,960,562.0	450.00				Average	
		point50	50	1,607,713.1	11,960,716.0	450.00				Average	
		point51	51	1,607,668.8	11,960,875.0	460.00				Average	
		point52	52	1,607,616.9	11,961,038.0	460.00					
Roadway8	12.0	point53	53	1,607,936.2	11,960,359.0	446.19				Average	
		point54	54	1,608,031.4	11,960,389.0	446.20				Average	
		point55	55	1,608,163.5	11,960,434.0	446.19				Average	
		point56	56	1,608,281.5	11,960,489.0	446.19				Average	
		point57	57	1,608,365.0	11,960,545.0	446.20				Average	
		point58	58	1,608,424.1	11,960,597.0	446.20				Average	
		point59	59	1,608,499.0	11,960,689.0	446.20				Average	
		point60	60	1,608,592.8	11,960,802.0	446.20				Average	
		point61	61	1,608,686.1	11,960,935.0	446.20					
I15 South	80.0	point62	62	1,609,315.2	11,961,974.0	456.04				Average	
		point63	63	1,609,170.2	11,961,719.0	465.88				Average	
		point64	64	1,609,000.0	11,961,413.0	436.35				Average	

		point65	65	1,608,838.8	11,961,101.0	452.76				Average	
		point66	66	1,608,652.2	11,960,770.0	416.67				Average	
		point67	67	1,608,469.9	11,960,446.0	416.67				Average	
		point68	68	1,608,332.4	11,960,214.0	403.54				Average	
		point69	69	1,608,219.0	11,960,034.0	410.10				Average	
		point70	70	1,608,090.9	11,959,798.0	416.67				Average	
		point71	71	1,607,955.4	11,959,559.0	413.39				Average	
		point72	72	1,607,841.5	11,959,363.0	410.10					
I15 North	80.0	point73	73	1,609,450.4	11,961,913.0	449.48				Average	
		point74	74	1,609,245.9	11,961,534.0	452.76				Average	
		point75	75	1,609,023.9	11,961,125.0	459.32				Average	
		point76	76	1,608,808.5	11,960,735.0	416.67				Average	
		point77	77	1,608,613.6	11,960,419.0	413.39				Average	
		point78	78	1,608,388.8	11,960,015.0	396.98				Average	
		point79	79	1,608,189.2	11,959,660.0	419.95				Average	
		point80	80	1,608,025.8	11,959,386.0	410.10					

Dudek 5 March 2020
CB TNM 2.5

INPUT: TRAFFIC FOR LAeq1h Volumes
PROJECT/CONTRACT: Paseo Montril
RUN: Existing

Roadway	Points		Segment									
Name	Name	No.	Autos		MTrucks		HTrucks		Buses		Motorcycles	
			V	S	V	S	V	S	V	S	V	S
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
Rancho P Blvd South	point1	1	1486	40	31	40	15	40	0	0	0	0
	point2	2	1486	40	31	40	15	40	0	0	0	0
	point3	3										
Rancho P Blvd North	point4	4	1486	40	31	40	15	40	0	0	0	0
	point5	5										
Paseo Montril West	point6	6	114	25	2	25	1	25	0	0	0	0
	point7	7	114	25	2	25	1	25	0	0	0	0
	point8	8	114	25	2	25	1	25	0	0	0	0
	point9	9	114	25	2	25	1	25	0	0	0	0
	point10	10	114	25	2	25	1	25	0	0	0	0
	point11	11	114	25	2	25	1	25	0	0	0	0
	point12	12	114	25	2	25	1	25	0	0	0	0
	point13	13	114	25	2	25	1	25	0	0	0	0
	point14	14										
Roadway4	point15	15	114	25	2	25	1	25	0	0	0	0
	point16	16	114	25	2	25	1	25	0	0	0	0
	point17	17	114	25	2	25	1	25	0	0	0	0
	point18	18	114	25	2	25	1	25	0	0	0	0
	point19	19	114	25	2	25	1	25	0	0	0	0
	point20	20	114	25	2	25	1	25	0	0	0	0
	point21	21	114	25	2	25	1	25	0	0	0	0
	point22	22	114	25	2	25	1	25	0	0	0	0
	point23	23	114	25	2	25	1	25	0	0	0	0

	point24	24										
Paseo Montril East	point25	25	0	0	0	0	0	0	0	0	0	0
	point26	26	0	0	0	0	0	0	0	0	0	0
	point27	27	0	0	0	0	0	0	0	0	0	0
	point28	28	0	0	0	0	0	0	0	0	0	0
	point29	29	0	0	0	0	0	0	0	0	0	0
	point30	30	0	0	0	0	0	0	0	0	0	0
	point31	31	0	0	0	0	0	0	0	0	0	0
	point32	32										
Roadway6	point33	33	1775	40	37	40	18	40	0	0	0	0
	point34	34	1775	40	37	40	18	40	0	0	0	0
	point35	35	1775	40	37	40	18	40	0	0	0	0
	point36	36	1775	40	37	40	18	40	0	0	0	0
	point37	37	1775	40	37	40	18	40	0	0	0	0
	point38	38	1775	40	37	40	18	40	0	0	0	0
	point39	39	1775	40	37	40	18	40	0	0	0	0
	point40	40	1775	40	37	40	18	40	0	0	0	0
	point41	41	1775	40	37	40	18	40	0	0	0	0
	point42	42										
Roadway7	point43	43	1775	40	37	40	18	40	0	0	0	0
	point44	44	1775	40	37	40	18	40	0	0	0	0
	point45	45	1775	40	37	40	18	40	0	0	0	0
	point46	46	1775	40	37	40	18	40	0	0	0	0
	point47	47	1775	40	37	40	18	40	0	0	0	0
	point48	48	1775	40	37	40	18	40	0	0	0	0
	point49	49	1775	40	37	40	18	40	0	0	0	0
	point50	50	1775	40	37	40	18	40	0	0	0	0
	point51	51	1775	40	37	40	18	40	0	0	0	0
	point52	52										
Roadway8	point53	53	0	0	0	0	0	0	0	0	0	0
	point54	54	0	0	0	0	0	0	0	0	0	0
	point55	55	0	0	0	0	0	0	0	0	0	0
	point56	56	0	0	0	0	0	0	0	0	0	0
	point57	57	0	0	0	0	0	0	0	0	0	0
	point58	58	0	0	0	0	0	0	0	0	0	0
	point59	59	0	0	0	0	0	0	0	0	0	0

	point60	60	0	0	0	0	0	0	0	0	0	0
	point61	61										
I15 South	point62	62	10767	65	222	65	111	65	0	0	0	0
	point63	63	10767	65	222	65	111	65	0	0	0	0
	point64	64	10767	65	222	65	111	65	0	0	0	0
	point65	65	10767	65	222	65	111	65	0	0	0	0
	point66	66	10767	65	222	65	111	65	0	0	0	0
	point67	67	10767	65	222	65	111	65	0	0	0	0
	point68	68	10767	65	222	65	111	65	0	0	0	0
	point69	69	10767	65	222	65	111	65	0	0	0	0
	point70	70	10767	65	222	65	111	65	0	0	0	0
	point71	71	10767	65	222	65	111	65	0	0	0	0
	point72	72										
I15 North	point73	73	10767	65	222	65	111	65	0	0	0	0
	point74	74	10767	65	222	65	111	65	0	0	0	0
	point75	75	10767	65	222	65	111	65	0	0	0	0
	point76	76	10767	65	222	65	111	65	0	0	0	0
	point77	77	10767	65	222	65	111	65	0	0	0	0
	point78	78	10767	65	222	65	111	65	0	0	0	0
	point79	79	10767	65	222	65	111	65	0	0	0	0
	point80	80										

Dudek 5 March 2020
CB TNM 2.5

INPUT: RECEIVERS
PROJECT/CONTRACT: Paseo Montril
RUN: Existing

Receiver Name	No.	#DUs	Coordinates (ground) X	Y	Z	Height above Ground	Input Sound Levels and Criteria Existing LAeq1h	Impact Criteria LAeq1h	Impact Criteria Sub'l	NR Goal	Active in Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB	
ST1	1	1	1,608,244.0	11,960,979.0	500.00	4.92	67.50	66	10.0	8.0	Y
ST2	2	1	1,608,090.0	11,961,225.0	570.00	4.92	67.20	66	10.0	8.0	Y
ST3	3	1	1,607,731.6	11,961,474.0	522.00	4.92	60.30	66	10.0	8.0	Y
ST4	4	1	1,607,179.1	11,960,921.0	480.00	4.92	58.50	66	10.0	8.0	Y

Dudek 5 March 2020
CB TNM 2.5

INPUT: BARRIERS
PROJECT/CONTRACT: Paseo Montril
RUN: Existing

Barrier									Points										
Name	Type	Height		If Wall	If Berm			Add'tnl	Name	No.	Coordinates (bottom)			Height	Segment				
		Min	Max	$ per	$ per	Top	Run:Rise	$ per			X	Y	Z	at	Seg Ht	Perturbs		On	Important
				Unit	Unit	Width		Unit						Point	Incre-	#Up	#Dn	Struct?	Reflec-
				Area	Vol.			Length							ment				tions?
		ft	ft	$/sq ft	$/cu yd	ft	ft:ft	$/ft			ft	ft	ft	ft	ft				
Barrier1	W	0.00	99.99	0.00				0.00	point1	1	1,608,752.1	11,961,115.0	452.76	20.00	0.00	0	0		
									point2	2	1,608,738.0	11,961,095.0	452.76	20.00	0.00	0	0		
									point3	3	1,608,708.1	11,961,042.0	442.91	20.00	0.00	0	0		
									point4	4	1,608,672.5	11,960,984.0	442.91	20.00	0.00	0	0		
									point5	5	1,608,579.5	11,960,858.0	452.76	20.00	0.00	0	0		
									point6	6	1,608,511.2	11,960,777.0	452.76	20.00	0.00	0	0		
									point7	7	1,608,450.2	11,960,700.0	433.07	20.00	0.00	0	0		
									point8	8	1,608,398.6	11,960,635.0	423.23	20.00	0.00	0	0		
									point9	9	1,608,340.1	11,960,602.0	423.23	20.00					

Dudek
CB

5 March 2020
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Paseo Montril
RUN: Existing
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
ST1	1	1	67.5	69.1	66	1.6	10	Snd Lvl	69.1	0.0	8	-8.0
ST2	2	1	67.2	67.9	66	0.7	10	Snd Lvl	67.9	0.0	8	-8.0
ST3	3	1	60.3	63.7	66	3.4	10	----	63.7	0.0	8	-8.0
ST4	4	1	58.5	59.9	66	1.4	10	----	59.9	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Avg	Max
		dB	dB	dB
All Selected	4	0.0	0.0	0.0
All Impacted	2	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

Dudek					**5 March 2020**						
CB					**TNM 2.5**						
INPUT: ROADWAYS								**Average pavement type shall be used unless**			
PROJECT/CONTRACT:	**Paseo Montril**							**a State highway agency substantiates the use**			
RUN:	**Existing + Project**							**of a different type with the approval of FHWA**			
Roadway		**Points**									
Name	**Width**	**Name**	**No.**	**Coordinates (pavement)**			**Flow Control**			**Segment**	
				X	**Y**	**Z**	**Control Device**	**Speed Constraint**	**Percent Vehicles Affected**	**Pvmt Type**	**On Struct?**
	ft			ft	ft	ft		mph	%		
Rancho P Blvd South	40.0	point1	1	1,607,432.4	11,961,654.0	480.00				Average	
		point2	2	1,607,478.5	11,961,497.0	480.00				Average	
		point3	3	1,607,594.4	11,961,110.0	475.72					
Rancho P Blvd North	40.0	point4	4	1,607,645.5	11,961,106.0	475.72				Average	
		point5	5	1,607,478.1	11,961,668.0	480.00					
Paseo Montril West	25.0	point6	6	1,607,076.2	11,960,696.0	495.00				Average	
		point7	7	1,607,100.4	11,960,758.0	490.00				Average	
		point8	8	1,607,125.8	11,960,805.0	480.00				Average	
		point9	9	1,607,148.9	11,960,843.0	472.44				Average	
		point10	10	1,607,236.0	11,960,926.0	472.40				Average	
		point11	11	1,607,296.0	11,960,967.0	472.40				Average	
		point12	12	1,607,390.5	11,961,012.0	470.00				Average	
		point13	13	1,607,482.6	11,961,045.0	460.00				Average	
		point14	14	1,607,564.6	11,961,069.0	460.00					
Roadway4	25.0	point15	15	1,607,097.6	11,960,694.0	495.00				Average	
		point16	16	1,607,109.9	11,960,729.0	490.00				Average	
		point17	17	1,607,133.5	11,960,777.0	480.00				Average	
		point18	18	1,607,160.0	11,960,818.0	472.40				Average	
		point19	19	1,607,185.2	11,960,850.0	472.40				Average	
		point20	20	1,607,239.9	11,960,893.0	472.40				Average	
		point21	21	1,607,280.0	11,960,925.0	470.00				Average	
		point22	22	1,607,345.9	11,960,961.0	460.00				Average	
		point23	23	1,607,446.0	11,961,004.0	460.00				Average	
		point24	24	1,607,573.8	11,961,041.0	460.00					
Paseo Montril East	45.0	point25	25	1,607,687.0	11,961,068.0	465.00				Average	

		point26	26	1,607,746.6	11,961,066.0	475.00				Average	
		point27	27	1,607,814.1	11,961,053.0	479.00				Average	
		point28	28	1,607,887.5	11,961,019.0	479.00				Average	
		point29	29	1,607,982.2	11,960,971.0	485.00				Average	
		point30	30	1,608,065.6	11,960,935.0	488.85				Average	
		point31	31	1,608,159.0	11,960,917.0	498.00				Average	
		point32	32	1,608,236.2	11,960,932.0	498.00					
Roadway6	40.0	point33	33	1,607,660.2	11,961,051.0	460.00				Average	
		point34	34	1,607,667.1	11,961,028.0	460.00				Average	
		point35	35	1,607,677.5	11,960,995.0	452.76				Average	
		point36	36	1,607,722.9	11,960,841.0	452.80				Average	
		point37	37	1,607,800.0	11,960,583.0	452.80				Average	
		point38	38	1,607,855.0	11,960,409.0	446.19				Average	
		point39	39	1,607,887.8	11,960,293.0	446.19				Average	
		point40	40	1,607,932.9	11,960,172.0	439.63				Average	
		point41	41	1,607,998.5	11,960,051.0	433.07				Average	
		point42	42	1,608,076.5	11,959,955.0	433.10					
Roadway7	40.0	point43	43	1,608,039.8	11,959,937.0	429.80				Average	
		point44	44	1,607,977.4	11,960,029.0	429.79				Average	
		point45	45	1,607,924.4	11,960,123.0	433.07				Average	
		point46	46	1,607,874.2	11,960,218.0	439.63				Average	
		point47	47	1,607,839.9	11,960,316.0	446.19				Average	
		point48	48	1,607,802.4	11,960,431.0	449.48				Average	
		point49	49	1,607,758.5	11,960,562.0	450.00				Average	
		point50	50	1,607,713.1	11,960,716.0	450.00				Average	
		point51	51	1,607,668.8	11,960,875.0	460.00				Average	
		point52	52	1,607,616.9	11,961,038.0	460.00					
Roadway8	12.0	point53	53	1,607,936.2	11,960,359.0	446.19				Average	
		point54	54	1,608,031.4	11,960,389.0	446.20				Average	
		point55	55	1,608,163.5	11,960,434.0	446.19				Average	
		point56	56	1,608,281.5	11,960,489.0	446.19				Average	
		point57	57	1,608,365.0	11,960,545.0	446.20				Average	
		point58	58	1,608,424.1	11,960,597.0	446.20				Average	
		point59	59	1,608,499.0	11,960,689.0	446.20				Average	
		point60	60	1,608,592.8	11,960,802.0	446.20				Average	
		point61	61	1,608,686.1	11,960,935.0	446.20					
I15 South	80.0	point62	62	1,609,315.2	11,961,974.0	456.04				Average	
		point63	63	1,609,170.2	11,961,719.0	465.88				Average	
		point64	64	1,609,000.0	11,961,413.0	436.35				Average	

		point65	65	1,608,838.8	11,961,101.0	452.76				Average	
		point66	66	1,608,652.2	11,960,770.0	416.67				Average	
		point67	67	1,608,469.9	11,960,446.0	416.67				Average	
		point68	68	1,608,332.4	11,960,214.0	403.54				Average	
		point69	69	1,608,219.0	11,960,034.0	410.10				Average	
		point70	70	1,608,090.9	11,959,798.0	416.67				Average	
		point71	71	1,607,955.4	11,959,559.0	413.39				Average	
		point72	72	1,607,841.5	11,959,363.0	410.10					
I15 North	80.0	point73	73	1,609,450.4	11,961,913.0	449.48				Average	
		point74	74	1,609,245.9	11,961,534.0	452.76				Average	
		point75	75	1,609,023.9	11,961,125.0	459.32				Average	
		point76	76	1,608,808.5	11,960,735.0	416.67				Average	
		point77	77	1,608,613.6	11,960,419.0	413.39				Average	
		point78	78	1,608,388.8	11,960,015.0	396.98				Average	
		point79	79	1,608,189.2	11,959,660.0	419.95				Average	
		point80	80	1,608,025.8	11,959,386.0	410.10					

Dudek 5 March 2020
CB TNM 2.5

INPUT: TRAFFIC FOR LAeq1h Volumes
PROJECT/CONTRACT: Paseo Montril
RUN: Existing + Project

Roadway	Points		Segment									
Name	Name	No.	Autos		MTrucks		HTrucks		Buses		Motorcycles	
			V	S	V	S	V	S	V	S	V	S
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
Rancho P Blvd South	point1	1	1491	40	31	40	15	40	0	0	0	0
	point2	2	1491	40	31	40	15	40	0	0	0	0
	point3	3										
Rancho P Blvd North	point4	4	1491	40	31	40	15	40	0	0	0	0
	point5	5										
Paseo Montril West	point6	6	126	25	3	25	1	25	0	0	0	0
	point7	7	126	25	3	25	1	25	0	0	0	0
	point8	8	126	25	3	25	1	25	0	0	0	0
	point9	9	126	25	3	25	1	25	0	0	0	0
	point10	10	126	25	3	25	1	25	0	0	0	0
	point11	11	126	25	3	25	1	25	0	0	0	0
	point12	12	126	25	3	25	1	25	0	0	0	0
	point13	13	126	25	3	25	1	25	0	0	0	0
	point14	14										
Roadway4	point15	15	126	25	3	25	1	25	0	0	0	0
	point16	16	126	25	3	25	1	25	0	0	0	0
	point17	17	126	25	3	25	1	25	0	0	0	0
	point18	18	126	25	3	25	1	25	0	0	0	0
	point19	19	126	25	3	25	1	25	0	0	0	0
	point20	20	126	25	3	25	1	25	0	0	0	0
	point21	21	126	25	3	25	1	25	0	0	0	0
	point22	22	126	25	3	25	1	25	0	0	0	0
	point23	23	126	25	3	25	1	25	0	0	0	0

	point24	24										
Paseo Montril East	point25	25	26	25	0	0	0	0	0	0	0	0
	point26	26	26	25	0	0	0	0	0	0	0	0
	point27	27	26	25	0	0	0	0	0	0	0	0
	point28	28	26	25	0	0	0	0	0	0	0	0
	point29	29	26	25	0	0	0	0	0	0	0	0
	point30	30	26	25	0	0	0	0	0	0	0	0
	point31	31	26	25	0	0	0	0	0	0	0	0
	point32	32										
Roadway6	point33	33	1782	40	37	40	18	40	0	0	0	0
	point34	34	1782	40	37	40	18	40	0	0	0	0
	point35	35	1782	40	37	40	18	40	0	0	0	0
	point36	36	1782	40	37	40	18	40	0	0	0	0
	point37	37	1782	40	37	40	18	40	0	0	0	0
	point38	38	1782	40	37	40	18	40	0	0	0	0
	point39	39	1782	40	37	40	18	40	0	0	0	0
	point40	40	1782	40	37	40	18	40	0	0	0	0
	point41	41	1782	40	37	40	18	40	0	0	0	0
	point42	42										
Roadway7	point43	43	1782	40	37	40	18	40	0	0	0	0
	point44	44	1782	40	37	40	18	40	0	0	0	0
	point45	45	1782	40	37	40	18	40	0	0	0	0
	point46	46	1782	40	37	40	18	40	0	0	0	0
	point47	47	1782	40	37	40	18	40	0	0	0	0
	point48	48	1782	40	37	40	18	40	0	0	0	0
	point49	49	1782	40	37	40	18	40	0	0	0	0
	point50	50	1782	40	37	40	18	40	0	0	0	0
	point51	51	1782	40	37	40	18	40	0	0	0	0
	point52	52										
Roadway8	point53	53	0	0	0	0	0	0	0	0	0	0
	point54	54	0	0	0	0	0	0	0	0	0	0
	point55	55	0	0	0	0	0	0	0	0	0	0
	point56	56	0	0	0	0	0	0	0	0	0	0
	point57	57	0	0	0	0	0	0	0	0	0	0
	point58	58	0	0	0	0	0	0	0	0	0	0
	point59	59	0	0	0	0	0	0	0	0	0	0

	point60	60	0	0	0	0	0	0	0	0	0	0
	point61	61										
I15 South	point62	62	10769	65	222	65	111	65	0	0	0	0
	point63	63	10769	65	222	65	111	65	0	0	0	0
	point64	64	10769	65	222	65	111	65	0	0	0	0
	point65	65	10769	65	222	65	111	65	0	0	0	0
	point66	66	10769	65	222	65	111	65	0	0	0	0
	point67	67	10769	65	222	65	111	65	0	0	0	0
	point68	68	10769	65	222	65	111	65	0	0	0	0
	point69	69	10769	65	222	65	111	65	0	0	0	0
	point70	70	10769	65	222	65	111	65	0	0	0	0
	point71	71	10769	65	222	65	111	65	0	0	0	0
	point72	72										
I15 North	point73	73	10769	65	222	65	111	65	0	0	0	0
	point74	74	10769	65	222	65	111	65	0	0	0	0
	point75	75	10769	65	222	65	111	65	0	0	0	0
	point76	76	10769	65	222	65	111	65	0	0	0	0
	point77	77	10769	65	222	65	111	65	0	0	0	0
	point78	78	10769	65	222	65	111	65	0	0	0	0
	point79	79	10769	65	222	65	111	65	0	0	0	0
	point80	80										

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INPUT: RECEIVERS
PROJECT/CONTRACT: Paseo Montril
RUN: Existing + Project

Receiver Name	No.	#DUs	Coordinates (ground) X	Y	Z	Height above Ground	Input Sound Levels and Criteria Existing LAeq1h	Impact Criteria LAeq1h	Impact Criteria Sub'l	NR Goal	Active in Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB	
ST1	1	1	1,608,241.2	11,960,972.0	500.00	4.92	67.50	66	10.0	8.0	Y
ST2	2	1	1,608,090.0	11,961,225.0	570.00	4.92	67.20	66	10.0	8.0	Y
ST3	3	1	1,607,731.6	11,961,474.0	522.00	4.92	60.30	66	10.0	8.0	Y
ST4	4	1	1,607,179.1	11,960,921.0	480.00	4.92	58.50	66	10.0	8.0	Y

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INPUT: BARRIERS
PROJECT/CONTRACT: Paseo Montril
RUN: Existing + Project

Barrier									Points										
Name	Type	Height		If Wall	If Berm			Add'tnl	Name	No.	Coordinates (bottom)			Height	Segment				
		Min	Max	$ per Unit Area	$ per Unit Vol.	Top Width	Run:Rise	$ per Unit Length			X	Y	Z	at Point	Seg Ht Incre-ment	Perturbs #Up	#Dn	On Struct?	Important Reflec-tions?
		ft	ft	$/sq ft	$/cu yd	ft	ft:ft	$/ft			ft	ft	ft	ft	ft				
Barrier1	W	0.00	99.99	0.00				0.00	point1	1	1,608,752.1	11,961,115.0	452.76	20.00	0.00	0	0		
									point2	2	1,608,738.0	11,961,095.0	452.76	20.00	0.00	0	0		
									point3	3	1,608,708.1	11,961,042.0	442.91	20.00	0.00	0	0		
									point4	4	1,608,672.5	11,960,984.0	442.91	20.00	0.00	0	0		
									point5	5	1,608,579.5	11,960,858.0	452.76	20.00	0.00	0	0		
									point6	6	1,608,511.2	11,960,777.0	452.76	20.00	0.00	0	0		
									point7	7	1,608,450.2	11,960,700.0	433.07	20.00	0.00	0	0		
									point8	8	1,608,398.6	11,960,635.0	423.23	20.00	0.00	0	0		
									point9	9	1,608,340.1	11,960,602.0	423.23	20.00					
Barrier2	W	0.00	99.99	0.00				0.00	point10	10	1,608,228.2	11,960,984.0	510.00	37.50	0.00	0	0		
									point11	11	1,608,246.8	11,960,974.0	510.00	37.50	0.00	0	0		
									point12	12	1,608,248.6	11,960,979.0	510.00	37.50	0.00	0	0		
									point13	13	1,608,258.0	11,960,974.0	510.00	37.50	0.00	0	0		
									point14	14	1,608,259.4	11,960,977.0	510.00	37.50	0.00	0	0		
									point15	15	1,608,278.9	11,960,967.0	510.00	37.50	0.00	0	0		
									point16	16	1,608,277.4	11,960,964.0	510.00	37.50	0.00	0	0		
									point17	17	1,608,293.0	11,960,957.0	510.00	37.50	0.00	0	0		
									point18	18	1,608,303.2	11,960,986.0	510.00	37.50	0.00	0	0		
									point19	19	1,608,245.0	11,961,015.0	510.00	37.50	0.00	0	0		
									point20	20	1,608,228.2	11,960,984.0	510.00	37.50					
Barrier3	W	0.00	99.99	0.00				0.00	point21	21	1,608,310.8	11,961,008.0	510.00	37.50	0.00	0	0		
									point22	22	1,608,253.8	11,961,036.0	510.00	37.50	0.00	0	0		
									point23	23	1,608,266.4	11,961,066.0	510.00	37.50	0.00	0	0		
									point24	24	1,608,282.6	11,961,059.0	510.00	37.50	0.00	0	0		
									point25	25	1,608,280.9	11,961,055.0	510.00	37.50	0.00	0	0		
									point26	26	1,608,289.4	11,961,051.0	510.00	37.50	0.00	0	0		
									point27	27	1,608,288.2	11,961,048.0	510.00	37.50	0.00	0	0		
									point28	28	1,608,307.6	11,961,039.0	510.00	37.50	0.00	0	0		
									point29	29	1,608,309.0	11,961,042.0	510.00	37.50	0.00	0	0		
									point30	30	1,608,322.9	11,961,035.0	510.00	37.50	0.00	0	0		
									point31	31	1,608,310.8	11,961,008.0	510.00	37.50					
Barrier4	W	0.00	99.99	0.00				0.00	point32	32	1,608,331.1	11,961,057.0	510.00	37.50	0.00	0	0		
									point33	33	1,608,316.6	11,961,063.0	510.00	37.50	0.00	0	0		
									point34	34	1,608,318.4	11,961,067.0	510.00	37.50	0.00	0	0		
									point35	35	1,608,299.2	11,961,076.0	510.00	37.50	0.00	0	0		

									point36	36	1,608,298.4	11,961,073.0	510.00	37.50	0.00	0	0		
									point37	37	1,608,290.8	11,961,077.0	510.00	37.50	0.00	0	0		
									point38	38	1,608,289.6	11,961,074.0	510.00	37.50	0.00	0	0		
									point39	39	1,608,284.2	11,961,077.0	510.00	37.50	0.00	0	0		
									point40	40	1,608,283.2	11,961,075.0	510.00	37.50	0.00	0	0		
									point41	41	1,608,271.6	11,961,080.0	510.00	37.50	0.00	0	0		
									point42	42	1,608,284.4	11,961,109.0	510.00	37.50	0.00	0	0		
									point43	43	1,608,340.6	11,961,084.0	510.00	37.50	0.00	0	0		
									point44	44	1,608,333.9	11,961,068.0	510.00	37.50	0.00	0	0		
									point45	45	1,608,336.2	11,961,067.0	510.00	37.50	0.00	0	0		
									point46	46	1,608,331.1	11,961,057.0	510.00	37.50					
Barrier5	W	0.00	99.99	0.00				0.00	point47	47	1,608,290.6	11,961,128.0	510.00	37.50	0.00	0	0		
									point48	48	1,608,347.8	11,961,103.0	510.00	37.50	0.00	0	0		
									point49	49	1,608,357.9	11,961,131.0	510.00	37.50	0.00	0	0		
									point50	50	1,608,343.4	11,961,137.0	510.00	37.50	0.00	0	0		
									point51	51	1,608,342.5	11,961,134.0	510.00	37.50	0.00	0	0		
									point52	52	1,608,324.8	11,961,141.0	510.00	37.50	0.00	0	0		
									point53	53	1,608,325.5	11,961,143.0	510.00	37.50	0.00	0	0		
									point54	54	1,608,317.2	11,961,147.0	510.00	37.50	0.00	0	0		
									point55	55	1,608,318.4	11,961,150.0	510.00	37.50	0.00	0	0		
									point56	56	1,608,302.2	11,961,157.0	510.00	37.50	0.00	0	0		
									point57	57	1,608,290.6	11,961,128.0	510.00	37.50					
Barrier6	W	0.00	99.99	0.00				0.00	point58	58	1,608,375.6	11,961,020.0	500.00	37.50	0.00	0	0		
									point59	59	1,608,399.6	11,961,087.0	500.00	37.50	0.00	0	0		
									point60	60	1,608,383.5	11,961,093.0	500.00	37.50	0.00	0	0		
									point61	61	1,608,384.8	11,961,095.0	500.00	37.50	0.00	0	0		
									point62	62	1,608,375.5	11,961,100.0	500.00	37.50	0.00	0	0		
									point63	63	1,608,368.6	11,961,083.0	500.00	37.50	0.00	0	0		
									point64	64	1,608,372.1	11,961,081.0	500.00	37.50	0.00	0	0		
									point65	65	1,608,364.0	11,961,061.0	500.00	37.50	0.00	0	0		
									point66	66	1,608,360.2	11,961,062.0	500.00	37.50	0.00	0	0		
									point67	67	1,608,357.6	11,961,052.0	500.00	37.50	0.00	0	0		
									point68	68	1,608,354.5	11,961,054.0	500.00	37.50	0.00	0	0		
									point69	69	1,608,351.6	11,961,047.0	500.00	37.50	0.00	0	0		
									point70	70	1,608,346.6	11,961,034.0	500.00	37.50	0.00	0	0		
									point71	71	1,608,375.6	11,961,020.0	500.00	37.50					
Barrier7	W	0.00	99.99	0.00				0.00	point72	72	1,608,330.0	11,960,894.0	500.00	37.50	0.00	0	0		
									point73	73	1,608,303.5	11,960,907.0	500.00	37.50	0.00	0	0		
									point74	74	1,608,313.9	11,960,934.0	500.00	37.50	0.00	0	0		
									point75	75	1,608,317.4	11,960,933.0	500.00	37.50	0.00	0	0		
									point76	76	1,608,333.9	11,960,978.0	500.00	37.50	0.00	0	0		
									point77	77	1,608,330.4	11,960,979.0	500.00	37.50	0.00	0	0		
									point78	78	1,608,335.1	11,960,989.0	500.00	37.50	0.00	0	0		
									point79	79	1,608,332.9	11,960,990.0	500.00	37.50	0.00	0	0		
									point80	80	1,608,335.9	11,960,996.0	500.00	37.50	0.00	0	0		
									point81	81	1,608,333.5	11,960,997.0	500.00	37.50	0.00	0	0		
									point82	82	1,608,339.0	11,961,011.0	500.00	37.50	0.00	0	0		
									point83	83	1,608,367.2	11,960,998.0	500.00	37.50	0.00	0	0		
									point84	84	1,608,330.0	11,960,894.0	500.00	37.50					

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5 March 2020
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Paseo Montril
RUN: Existing + Project
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
ST1	1	1	67.5	66.3	66	-1.2	10	Snd Lvl	66.3	0.0	8	-8.0
ST2	2	1	67.2	67.0	66	-0.2	10	Snd Lvl	67.0	0.0	8	-8.0
ST3	3	1	60.3	63.7	66	3.4	10	----	63.7	0.0	8	-8.0
ST4	4	1	58.5	59.6	66	1.1	10	----	59.6	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Avg	Max
		dB	dB	dB
All Selected	4	0.0	0.0	0.0
All Impacted	2	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

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INPUT: ROADWAYS
PROJECT/CONTRACT: Paseo Montril
RUN: Future no Project

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with the approval of FHWA

Roadway Name	Width	Points Name	No.	Coordinates (pavement) X	Y	Z	Flow Control Control Device	Speed Constraint	Percent Vehicles Affected	Segment Pvmt Type	On Struct?
	ft			ft	ft	ft		mph	%		
Rancho P Blvd South	40.0	point1	1	1,607,432.4	11,961,654.0	480.00				Average	
		point2	2	1,607,478.5	11,961,497.0	480.00				Average	
		point3	3	1,607,594.4	11,961,110.0	475.72					
Rancho P Blvd North	40.0	point4	4	1,607,645.5	11,961,106.0	475.72				Average	
		point5	5	1,607,478.1	11,961,668.0	480.00					
Paseo Montril West	25.0	point6	6	1,607,076.2	11,960,696.0	495.00				Average	
		point7	7	1,607,100.4	11,960,758.0	490.00				Average	
		point8	8	1,607,125.8	11,960,805.0	480.00				Average	
		point9	9	1,607,148.9	11,960,843.0	472.44				Average	
		point10	10	1,607,236.0	11,960,926.0	472.40				Average	
		point11	11	1,607,296.0	11,960,967.0	472.40				Average	
		point12	12	1,607,390.5	11,961,012.0	470.00				Average	
		point13	13	1,607,482.6	11,961,045.0	460.00				Average	
		point14	14	1,607,564.6	11,961,069.0	460.00					
Roadway4	25.0	point15	15	1,607,097.6	11,960,694.0	495.00				Average	
		point16	16	1,607,109.9	11,960,729.0	490.00				Average	
		point17	17	1,607,133.5	11,960,777.0	480.00				Average	
		point18	18	1,607,160.0	11,960,818.0	472.40				Average	
		point19	19	1,607,185.2	11,960,850.0	472.40				Average	
		point20	20	1,607,239.9	11,960,893.0	472.40				Average	
		point21	21	1,607,280.0	11,960,925.0	470.00				Average	
		point22	22	1,607,345.9	11,960,961.0	460.00				Average	
		point23	23	1,607,446.0	11,961,004.0	460.00				Average	
		point24	24	1,607,573.8	11,961,041.0	460.00					
Paseo Montril East	45.0	point25	25	1,607,687.0	11,961,068.0	465.00				Average	

		point26	26	1,607,746.6	11,961,066.0	475.00				Average	
		point27	27	1,607,814.1	11,961,053.0	479.00				Average	
		point28	28	1,607,887.5	11,961,019.0	479.00				Average	
		point29	29	1,607,982.2	11,960,971.0	485.00				Average	
		point30	30	1,608,065.6	11,960,935.0	488.85				Average	
		point31	31	1,608,159.0	11,960,917.0	498.00				Average	
		point32	32	1,608,236.2	11,960,932.0	498.00					
Roadway6	40.0	point33	33	1,607,660.2	11,961,051.0	460.00				Average	
		point34	34	1,607,667.1	11,961,028.0	460.00				Average	
		point35	35	1,607,677.5	11,960,995.0	452.76				Average	
		point36	36	1,607,722.9	11,960,841.0	452.80				Average	
		point37	37	1,607,800.0	11,960,583.0	452.80				Average	
		point38	38	1,607,855.0	11,960,409.0	446.19				Average	
		point39	39	1,607,887.8	11,960,293.0	446.19				Average	
		point40	40	1,607,932.9	11,960,172.0	439.63				Average	
		point41	41	1,607,998.5	11,960,051.0	433.07				Average	
		point42	42	1,608,076.5	11,959,955.0	433.10					
Roadway7	40.0	point43	43	1,608,039.8	11,959,937.0	429.80				Average	
		point44	44	1,607,977.4	11,960,029.0	429.79				Average	
		point45	45	1,607,924.4	11,960,123.0	433.07				Average	
		point46	46	1,607,874.2	11,960,218.0	439.63				Average	
		point47	47	1,607,839.9	11,960,316.0	446.19				Average	
		point48	48	1,607,802.4	11,960,431.0	449.48				Average	
		point49	49	1,607,758.5	11,960,562.0	450.00				Average	
		point50	50	1,607,713.1	11,960,716.0	450.00				Average	
		point51	51	1,607,668.8	11,960,875.0	460.00				Average	
		point52	52	1,607,616.9	11,961,038.0	460.00					
Roadway8	12.0	point53	53	1,607,936.2	11,960,359.0	446.19				Average	
		point54	54	1,608,031.4	11,960,389.0	446.20				Average	
		point55	55	1,608,163.5	11,960,434.0	446.19				Average	
		point56	56	1,608,281.5	11,960,489.0	446.19				Average	
		point57	57	1,608,365.0	11,960,545.0	446.20				Average	
		point58	58	1,608,424.1	11,960,597.0	446.20				Average	
		point59	59	1,608,499.0	11,960,689.0	446.20				Average	
		point60	60	1,608,592.8	11,960,802.0	446.20				Average	
		point61	61	1,608,686.1	11,960,935.0	446.20					
I15 South	80.0	point62	62	1,609,315.2	11,961,974.0	456.04				Average	
		point63	63	1,609,170.2	11,961,719.0	465.88				Average	
		point64	64	1,609,000.0	11,961,413.0	436.35				Average	

		point65	65	1,608,838.8	11,961,101.0	452.76				Average	
		point66	66	1,608,652.2	11,960,770.0	416.67				Average	
		point67	67	1,608,469.9	11,960,446.0	416.67				Average	
		point68	68	1,608,332.4	11,960,214.0	403.54				Average	
		point69	69	1,608,219.0	11,960,034.0	410.10				Average	
		point70	70	1,608,090.9	11,959,798.0	416.67				Average	
		point71	71	1,607,955.4	11,959,559.0	413.39				Average	
		point72	72	1,607,841.5	11,959,363.0	410.10					
I15 North	80.0	point73	73	1,609,450.4	11,961,913.0	449.48				Average	
		point74	74	1,609,245.9	11,961,534.0	452.76				Average	
		point75	75	1,609,023.9	11,961,125.0	459.32				Average	
		point76	76	1,608,808.5	11,960,735.0	416.67				Average	
		point77	77	1,608,613.6	11,960,419.0	413.39				Average	
		point78	78	1,608,388.8	11,960,015.0	396.98				Average	
		point79	79	1,608,189.2	11,959,660.0	419.95				Average	
		point80	80	1,608,025.8	11,959,386.0	410.10					

Dudek 5 March 2020
CB TNM 2.5

INPUT: TRAFFIC FOR LAeq1h Volumes
PROJECT/CONTRACT: Paseo Montril
RUN: Future no Project

Roadway	Points		Segment									
Name	Name	No.	Autos		MTrucks		HTrucks		Buses		Motorcycles	
			V	S	V	S	V	S	V	S	V	S
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
Rancho P Blvd South	point1	1	1605	40	33	40	17	40	0	0	0	0
	point2	2	1605	40	33	40	17	40	0	0	0	0
	point3	3										
Rancho P Blvd North	point4	4	1605	40	33	40	17	40	0	0	0	0
	point5	5										
Paseo Montril West	point6	6	116	25	2	25	1	25	0	0	0	0
	point7	7	116	25	2	25	1	25	0	0	0	0
	point8	8	116	25	2	25	1	25	0	0	0	0
	point9	9	116	25	2	25	1	25	0	0	0	0
	point10	10	116	25	2	25	1	25	0	0	0	0
	point11	11	116	25	2	25	1	25	0	0	0	0
	point12	12	116	25	2	25	1	25	0	0	0	0
	point13	13	116	25	2	25	1	25	0	0	0	0
	point14	14										
Roadway4	point15	15	116	25	2	25	1	25	0	0	0	0
	point16	16	116	25	2	25	1	25	0	0	0	0
	point17	17	116	25	2	25	1	25	0	0	0	0
	point18	18	116	25	2	25	1	25	0	0	0	0
	point19	19	116	25	2	25	1	25	0	0	0	0
	point20	20	116	25	2	25	1	25	0	0	0	0
	point21	21	116	25	2	25	1	25	0	0	0	0
	point22	22	116	25	2	25	1	25	0	0	0	0
	point23	23	116	25	2	25	1	25	0	0	0	0

	point24	24										
Paseo Montril East	point25	25	0	0	0	0	0	0	0	0	0	0
	point26	26	0	0	0	0	0	0	0	0	0	0
	point27	27	0	0	0	0	0	0	0	0	0	0
	point28	28	0	0	0	0	0	0	0	0	0	0
	point29	29	0	0	0	0	0	0	0	0	0	0
	point30	30	0	0	0	0	0	0	0	0	0	0
	point31	31	0	0	0	0	0	0	0	0	0	0
	point32	32										
Roadway6	point33	33	1824	40	38	40	19	40	0	0	0	0
	point34	34	1824	40	38	40	19	40	0	0	0	0
	point35	35	1824	40	38	40	19	40	0	0	0	0
	point36	36	1824	40	38	40	19	40	0	0	0	0
	point37	37	1824	40	38	40	19	40	0	0	0	0
	point38	38	1824	40	38	40	19	40	0	0	0	0
	point39	39	1824	40	38	40	19	40	0	0	0	0
	point40	40	1824	40	38	40	19	40	0	0	0	0
	point41	41	1824	40	38	40	19	40	0	0	0	0
	point42	42										
Roadway7	point43	43	1824	40	38	40	19	40	0	0	0	0
	point44	44	1824	40	38	40	19	40	0	0	0	0
	point45	45	1824	40	38	40	19	40	0	0	0	0
	point46	46	1824	40	38	40	19	40	0	0	0	0
	point47	47	1824	40	38	40	19	40	0	0	0	0
	point48	48	1824	40	38	40	19	40	0	0	0	0
	point49	49	1824	40	38	40	19	40	0	0	0	0
	point50	50	1824	40	38	40	19	40	0	0	0	0
	point51	51	1824	40	38	40	19	40	0	0	0	0
	point52	52										
Roadway8	point53	53	0	0	0	0	0	0	0	0	0	0
	point54	54	0	0	0	0	0	0	0	0	0	0
	point55	55	0	0	0	0	0	0	0	0	0	0
	point56	56	0	0	0	0	0	0	0	0	0	0
	point57	57	0	0	0	0	0	0	0	0	0	0
	point58	58	0	0	0	0	0	0	0	0	0	0
	point59	59	0	0	0	0	0	0	0	0	0	0

	point60	60	0	0	0	0	0	0	0	0	0	0
	point61	61										
I15 South	point62	62	15699	65	324	65	162	65	0	0	0	0
	point63	63	15699	65	324	65	162	65	0	0	0	0
	point64	64	15699	65	324	65	162	65	0	0	0	0
	point65	65	15699	65	324	65	162	65	0	0	0	0
	point66	66	15699	65	324	65	162	65	0	0	0	0
	point67	67	15699	65	324	65	162	65	0	0	0	0
	point68	68	15699	65	324	65	162	65	0	0	0	0
	point69	69	15699	65	324	65	162	65	0	0	0	0
	point70	70	15699	65	324	65	162	65	0	0	0	0
	point71	71	15699	65	324	65	162	65	0	0	0	0
	point72	72										
I15 North	point73	73	15699	65	324	65	162	65	0	0	0	0
	point74	74	15699	65	324	65	162	65	0	0	0	0
	point75	75	15699	65	324	65	162	65	0	0	0	0
	point76	76	15699	65	324	65	162	65	0	0	0	0
	point77	77	15699	65	324	65	162	65	0	0	0	0
	point78	78	15699	65	324	65	162	65	0	0	0	0
	point79	79	15699	65	324	65	162	65	0	0	0	0
	point80	80										

Dudek 5 March 2020
CB TNM 2.5

INPUT: RECEIVERS
PROJECT/CONTRACT: Paseo Montril
RUN: Future no Project

Receiver Name	No.	#DUs	Coordinates (ground) X	Y	Z	Height above Ground	Input Sound Levels and Criteria: Existing LAeq1h	Impact Criteria LAeq1h	Impact Criteria Sub'l	NR Goal	Active in Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB	
ST1	1	1	1,608,244.0	11,960,979.0	500.00	4.92	67.50	66	10.0	8.0	Y
ST2	2	1	1,608,090.0	11,961,225.0	570.00	4.92	67.20	66	10.0	8.0	Y
ST3	3	1	1,607,731.6	11,961,474.0	522.00	4.92	60.30	66	10.0	8.0	Y
ST4	4	1	1,607,179.1	11,960,921.0	480.00	4.92	58.50	66	10.0	8.0	Y

Dudek 5 March 2020
CB TNM 2.5

INPUT: BARRIERS
PROJECT/CONTRACT: Paseo Montril
RUN: Future no Project

Barrier									Points										
Name	Type	Height		If Wall	If Berm			Add'tnl	Name	No.	Coordinates (bottom)			Height	Segment				
		Min	Max	$ per	$ per	Top	Run:Rise	$ per			X	Y	Z	at	Seg Ht	Perturbs		On	Important
				Unit	Unit	Width		Unit						Point	Incre-	#Up	#Dn	Struct?	Reflec-
				Area	Vol.			Length							ment				tions?
		ft	ft	$/sq ft	$/cu yd	ft	ft:ft	$/ft			ft	ft	ft	ft	ft				
Barrier1	W	0.00	99.99	0.00				0.00	point1	1	1,608,752.1	11,961,115.0	452.76	20.00	0.00	0	0		
									point2	2	1,608,738.0	11,961,095.0	452.76	20.00	0.00	0	0		
									point3	3	1,608,708.1	11,961,042.0	442.91	20.00	0.00	0	0		
									point4	4	1,608,672.5	11,960,984.0	442.91	20.00	0.00	0	0		
									point5	5	1,608,579.5	11,960,858.0	452.76	20.00	0.00	0	0		
									point6	6	1,608,511.2	11,960,777.0	452.76	20.00	0.00	0	0		
									point7	7	1,608,450.2	11,960,700.0	433.07	20.00	0.00	0	0		
									point8	8	1,608,398.6	11,960,635.0	423.23	20.00	0.00	0	0		
									point9	9	1,608,340.1	11,960,602.0	423.23	20.00					

Dudek
CB

5 March 2020
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Paseo Montril
RUN: Future no Project
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
ST1	1	1	67.5	70.7	66	3.2	10	Snd Lvl	70.7	0.0	8	-8.0
ST2	2	1	67.2	69.4	66	2.2	10	Snd Lvl	69.4	0.0	8	-8.0
ST3	3	1	60.3	64.4	66	4.1	10	----	64.4	0.0	8	-8.0
ST4	4	1	58.5	60.7	66	2.2	10	----	60.7	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Avg	Max
		dB	dB	dB
All Selected	4	0.0	0.0	0.0
All Impacted	2	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

Dudek 5 March 2020
CB TNM 2.5

INPUT: ROADWAYS
PROJECT/CONTRACT: Paseo Montril
RUN: Future + Project

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with the approval of FHWA

Roadway Name	Width	Points Name	No.	Coordinates (pavement) X	Y	Z	Flow Control Control Device	Speed Constraint	Percent Vehicles Affected	Segment Pvmt Type	On Struct?
	ft			ft	ft	ft		mph	%		
Rancho P Blvd South	40.0	point1	1	1,607,432.4	11,961,654.0	480.00				Average	
		point2	2	1,607,478.5	11,961,497.0	480.00				Average	
		point3	3	1,607,594.4	11,961,110.0	475.72					
Rancho P Blvd North	40.0	point4	4	1,607,645.5	11,961,106.0	475.72				Average	
		point5	5	1,607,478.1	11,961,668.0	480.00					
Paseo Montril West	25.0	point6	6	1,607,076.2	11,960,696.0	495.00				Average	
		point7	7	1,607,100.4	11,960,758.0	490.00				Average	
		point8	8	1,607,125.8	11,960,805.0	480.00				Average	
		point9	9	1,607,148.9	11,960,843.0	472.44				Average	
		point10	10	1,607,236.0	11,960,926.0	472.40				Average	
		point11	11	1,607,296.0	11,960,967.0	472.40				Average	
		point12	12	1,607,390.5	11,961,012.0	470.00				Average	
		point13	13	1,607,482.6	11,961,045.0	460.00				Average	
		point14	14	1,607,564.6	11,961,069.0	460.00					
Roadway4	25.0	point15	15	1,607,097.6	11,960,694.0	495.00				Average	
		point16	16	1,607,109.9	11,960,729.0	490.00				Average	
		point17	17	1,607,133.5	11,960,777.0	480.00				Average	
		point18	18	1,607,160.0	11,960,818.0	472.40				Average	
		point19	19	1,607,185.2	11,960,850.0	472.40				Average	
		point20	20	1,607,239.9	11,960,893.0	472.40				Average	
		point21	21	1,607,280.0	11,960,925.0	470.00				Average	
		point22	22	1,607,345.9	11,960,961.0	460.00				Average	
		point23	23	1,607,446.0	11,961,004.0	460.00				Average	
		point24	24	1,607,573.8	11,961,041.0	460.00					
Paseo Montril East	45.0	point25	25	1,607,687.0	11,961,068.0	465.00				Average	

		point26	26	1,607,746.6	11,961,066.0	475.00				Average	
		point27	27	1,607,814.1	11,961,053.0	479.00				Average	
		point28	28	1,607,887.5	11,961,019.0	479.00				Average	
		point29	29	1,607,982.2	11,960,971.0	485.00				Average	
		point30	30	1,608,065.6	11,960,935.0	488.85				Average	
		point31	31	1,608,159.0	11,960,917.0	498.00				Average	
		point32	32	1,608,236.2	11,960,932.0	498.00					
Roadway6	40.0	point33	33	1,607,660.2	11,961,051.0	460.00				Average	
		point34	34	1,607,667.1	11,961,028.0	460.00				Average	
		point35	35	1,607,677.5	11,960,995.0	452.76				Average	
		point36	36	1,607,722.9	11,960,841.0	452.80				Average	
		point37	37	1,607,800.0	11,960,583.0	452.80				Average	
		point38	38	1,607,855.0	11,960,409.0	446.19				Average	
		point39	39	1,607,887.8	11,960,293.0	446.19				Average	
		point40	40	1,607,932.9	11,960,172.0	439.63				Average	
		point41	41	1,607,998.5	11,960,051.0	433.07				Average	
		point42	42	1,608,076.5	11,959,955.0	433.10					
Roadway7	40.0	point43	43	1,608,039.8	11,959,937.0	429.80				Average	
		point44	44	1,607,977.4	11,960,029.0	429.79				Average	
		point45	45	1,607,924.4	11,960,123.0	433.07				Average	
		point46	46	1,607,874.2	11,960,218.0	439.63				Average	
		point47	47	1,607,839.9	11,960,316.0	446.19				Average	
		point48	48	1,607,802.4	11,960,431.0	449.48				Average	
		point49	49	1,607,758.5	11,960,562.0	450.00				Average	
		point50	50	1,607,713.1	11,960,716.0	450.00				Average	
		point51	51	1,607,668.8	11,960,875.0	460.00				Average	
		point52	52	1,607,616.9	11,961,038.0	460.00					
Roadway8	12.0	point53	53	1,607,936.2	11,960,359.0	446.19				Average	
		point54	54	1,608,031.4	11,960,389.0	446.20				Average	
		point55	55	1,608,163.5	11,960,434.0	446.19				Average	
		point56	56	1,608,281.5	11,960,489.0	446.19				Average	
		point57	57	1,608,365.0	11,960,545.0	446.20				Average	
		point58	58	1,608,424.1	11,960,597.0	446.20				Average	
		point59	59	1,608,499.0	11,960,689.0	446.20				Average	
		point60	60	1,608,592.8	11,960,802.0	446.20				Average	
		point61	61	1,608,686.1	11,960,935.0	446.20					
I15 South	80.0	point62	62	1,609,315.2	11,961,974.0	456.04				Average	
		point63	63	1,609,170.2	11,961,719.0	465.88				Average	
		point64	64	1,609,000.0	11,961,413.0	436.35				Average	

		point65	65	1,608,838.8	11,961,101.0	452.76				Average	
		point66	66	1,608,652.2	11,960,770.0	416.67				Average	
		point67	67	1,608,469.9	11,960,446.0	416.67				Average	
		point68	68	1,608,332.4	11,960,214.0	403.54				Average	
		point69	69	1,608,219.0	11,960,034.0	410.10				Average	
		point70	70	1,608,090.9	11,959,798.0	416.67				Average	
		point71	71	1,607,955.4	11,959,559.0	413.39				Average	
		point72	72	1,607,841.5	11,959,363.0	410.10					
I15 North	80.0	point73	73	1,609,450.4	11,961,913.0	449.48				Average	
		point74	74	1,609,245.9	11,961,534.0	452.76				Average	
		point75	75	1,609,023.9	11,961,125.0	459.32				Average	
		point76	76	1,608,808.5	11,960,735.0	416.67				Average	
		point77	77	1,608,613.6	11,960,419.0	413.39				Average	
		point78	78	1,608,388.8	11,960,015.0	396.98				Average	
		point79	79	1,608,189.2	11,959,660.0	419.95				Average	
		point80	80	1,608,025.8	11,959,386.0	410.10					

Dudek 5 March 2020
CB TNM 2.5

INPUT: TRAFFIC FOR LAeq1h Volumes
PROJECT/CONTRACT: Paseo Montril
RUN: Future + Project

Roadway	Points		Segment									
Name	Name	No.	Autos		MTrucks		HTrucks		Buses		Motorcycles	
			V	S	V	S	V	S	V	S	V	S
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
Rancho P Blvd South	point1	1	1611	40	33	40	17	40	0	0	0	0
	point2	2	1611	40	33	40	17	40	0	0	0	0
	point3	3										
Rancho P Blvd North	point4	4	1611	40	33	40	17	40	0	0	0	0
	point5	5										
Paseo Montril West	point6	6	129	25	3	25	1	25	0	0	0	0
	point7	7	129	25	3	25	1	25	0	0	0	0
	point8	8	129	25	3	25	1	25	0	0	0	0
	point9	9	129	25	3	25	1	25	0	0	0	0
	point10	10	129	25	3	25	1	25	0	0	0	0
	point11	11	129	25	3	25	1	25	0	0	0	0
	point12	12	129	25	3	25	1	25	0	0	0	0
	point13	13	129	25	3	25	1	25	0	0	0	0
	point14	14										
Roadway4	point15	15	129	25	3	25	1	25	0	0	0	0
	point16	16	129	25	3	25	1	25	0	0	0	0
	point17	17	129	25	3	25	1	25	0	0	0	0
	point18	18	129	25	3	25	1	25	0	0	0	0
	point19	19	129	25	3	25	1	25	0	0	0	0
	point20	20	129	25	3	25	1	25	0	0	0	0
	point21	21	129	25	3	25	1	25	0	0	0	0
	point22	22	129	25	3	25	1	25	0	0	0	0
	point23	23	129	25	3	25	1	25	0	0	0	0

	point24	24										
Paseo Montril East	point25	25	26	25	0	0	0	0	0	0	0	0
	point26	26	26	25	0	0	0	0	0	0	0	0
	point27	27	26	25	0	0	0	0	0	0	0	0
	point28	28	26	25	0	0	0	0	0	0	0	0
	point29	29	26	25	0	0	0	0	0	0	0	0
	point30	30	26	25	0	0	0	0	0	0	0	0
	point31	31	26	25	0	0	0	0	0	0	0	0
	point32	32										
Roadway6	point33	33	1830	40	38	40	19	40	0	0	0	0
	point34	34	1830	40	38	40	19	40	0	0	0	0
	point35	35	1830	40	38	40	19	40	0	0	0	0
	point36	36	1830	40	38	40	19	40	0	0	0	0
	point37	37	1830	40	38	40	19	40	0	0	0	0
	point38	38	1830	40	38	40	19	40	0	0	0	0
	point39	39	1830	40	38	40	19	40	0	0	0	0
	point40	40	1830	40	38	40	19	40	0	0	0	0
	point41	41	1830	40	38	40	19	40	0	0	0	0
	point42	42										
Roadway7	point43	43	1830	40	38	40	19	40	0	0	0	0
	point44	44	1830	40	38	40	19	40	0	0	0	0
	point45	45	1830	40	38	40	19	40	0	0	0	0
	point46	46	1830	40	38	40	19	40	0	0	0	0
	point47	47	1830	40	38	40	19	40	0	0	0	0
	point48	48	1830	40	38	40	19	40	0	0	0	0
	point49	49	1830	40	38	40	19	40	0	0	0	0
	point50	50	1830	40	38	40	19	40	0	0	0	0
	point51	51	1830	40	38	40	19	40	0	0	0	0
	point52	52										
Roadway8	point53	53	0	0	0	0	0	0	0	0	0	0
	point54	54	0	0	0	0	0	0	0	0	0	0
	point55	55	0	0	0	0	0	0	0	0	0	0
	point56	56	0	0	0	0	0	0	0	0	0	0
	point57	57	0	0	0	0	0	0	0	0	0	0
	point58	58	0	0	0	0	0	0	0	0	0	0
	point59	59	0	0	0	0	0	0	0	0	0	0

	point60	60	0	0	0	0	0	0	0	0	0	0
	point61	61										
I15 South	point62	62	15701	65	324	65	162	65	0	0	0	0
	point63	63	15701	65	324	65	162	65	0	0	0	0
	point64	64	15701	65	324	65	162	65	0	0	0	0
	point65	65	15701	65	324	65	162	65	0	0	0	0
	point66	66	15701	65	324	65	162	65	0	0	0	0
	point67	67	15701	65	324	65	162	65	0	0	0	0
	point68	68	15701	65	324	65	162	65	0	0	0	0
	point69	69	15701	65	324	65	162	65	0	0	0	0
	point70	70	15701	65	324	65	162	65	0	0	0	0
	point71	71	15701	65	324	65	162	65	0	0	0	0
	point72	72										
I15 North	point73	73	15701	65	324	65	162	65	0	0	0	0
	point74	74	15701	65	324	65	162	65	0	0	0	0
	point75	75	15701	65	324	65	162	65	0	0	0	0
	point76	76	15701	65	324	65	162	65	0	0	0	0
	point77	77	15701	65	324	65	162	65	0	0	0	0
	point78	78	15701	65	324	65	162	65	0	0	0	0
	point79	79	15701	65	324	65	162	65	0	0	0	0
	point80	80										

Dudek 5 March 2020
CB TNM 2.5

INPUT: RECEIVERS
PROJECT/CONTRACT: Paseo Montril
RUN: Future + Project

Receiver Name	No.	#DUs	Coordinates (ground) X	Y	Z	Height above Ground	Input Sound Levels and Criteria: Existing LAeq1h	Impact Criteria LAeq1h	Impact Criteria Sub'l	NR Goal	Active in Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB	
ST1	1	1	1,608,241.2	11,960,972.0	500.00	4.92	67.50	66	10.0	8.0	Y
ST2	2	1	1,608,090.0	11,961,225.0	570.00	4.92	67.20	66	10.0	8.0	Y
ST3	3	1	1,607,731.6	11,961,474.0	522.00	4.92	60.30	66	10.0	8.0	Y
ST4	4	1	1,607,179.1	11,960,921.0	480.00	4.92	58.50	66	10.0	8.0	Y

Dudek 5 March 2020
CB TNM 2.5

INPUT: BARRIERS
PROJECT/CONTRACT: Paseo Montril
RUN: Future + Project

Barrier									Points										
Name	Type	Height		If Wall	If Berm			Add'tnl	Name	No.	Coordinates (bottom)			Height	Segment				
		Min	Max	$ per Unit Area	$ per Unit Vol.	Top Width	Run:Rise	$ per Unit Length			X	Y	Z	at Point	Seg Ht Incre-ment	Perturbs #Up	#Dn	On Struct?	Important Reflec-tions?
		ft	ft	$/sq ft	$/cu yd	ft	ft:ft	$/ft			ft	ft	ft	ft	ft				
Barrier1	W	0.00	99.99	0.00				0.00	point1	1	1,608,752.1	11,961,115.0	452.76	20.00	0.00	0	0		
									point2	2	1,608,738.0	11,961,095.0	452.76	20.00	0.00	0	0		
									point3	3	1,608,708.1	11,961,042.0	442.91	20.00	0.00	0	0		
									point4	4	1,608,672.5	11,960,984.0	442.91	20.00	0.00	0	0		
									point5	5	1,608,579.5	11,960,858.0	452.76	20.00	0.00	0	0		
									point6	6	1,608,511.2	11,960,777.0	452.76	20.00	0.00	0	0		
									point7	7	1,608,450.2	11,960,700.0	433.07	20.00	0.00	0	0		
									point8	8	1,608,398.6	11,960,635.0	423.23	20.00	0.00	0	0		
									point9	9	1,608,340.1	11,960,602.0	423.23	20.00					
Barrier2	W	0.00	99.99	0.00				0.00	point10	10	1,608,228.2	11,960,984.0	510.00	37.50	0.00	0	0		
									point11	11	1,608,246.8	11,960,974.0	510.00	37.50	0.00	0	0		
									point12	12	1,608,248.6	11,960,979.0	510.00	37.50	0.00	0	0		
									point13	13	1,608,258.0	11,960,974.0	510.00	37.50	0.00	0	0		
									point14	14	1,608,259.4	11,960,977.0	510.00	37.50	0.00	0	0		
									point15	15	1,608,278.9	11,960,967.0	510.00	37.50	0.00	0	0		
									point16	16	1,608,277.4	11,960,964.0	510.00	37.50	0.00	0	0		
									point17	17	1,608,293.0	11,960,957.0	510.00	37.50	0.00	0	0		
									point18	18	1,608,303.2	11,960,986.0	510.00	37.50	0.00	0	0		
									point19	19	1,608,245.0	11,961,015.0	510.00	37.50	0.00	0	0		
									point20	20	1,608,228.2	11,960,984.0	510.00	37.50					
Barrier3	W	0.00	99.99	0.00				0.00	point21	21	1,608,310.8	11,961,008.0	510.00	37.50	0.00	0	0		
									point22	22	1,608,253.8	11,961,036.0	510.00	37.50	0.00	0	0		
									point23	23	1,608,266.4	11,961,066.0	510.00	37.50	0.00	0	0		
									point24	24	1,608,282.6	11,961,059.0	510.00	37.50	0.00	0	0		
									point25	25	1,608,280.9	11,961,055.0	510.00	37.50	0.00	0	0		
									point26	26	1,608,289.4	11,961,051.0	510.00	37.50	0.00	0	0		
									point27	27	1,608,288.2	11,961,048.0	510.00	37.50	0.00	0	0		
									point28	28	1,608,307.6	11,961,039.0	510.00	37.50	0.00	0	0		
									point29	29	1,608,309.0	11,961,042.0	510.00	37.50	0.00	0	0		
									point30	30	1,608,322.9	11,961,035.0	510.00	37.50	0.00	0	0		
									point31	31	1,608,310.8	11,961,008.0	510.00	37.50					
Barrier4	W	0.00	99.99	0.00				0.00	point32	32	1,608,331.1	11,961,057.0	510.00	37.50	0.00	0	0		
									point33	33	1,608,316.6	11,961,063.0	510.00	37.50	0.00	0	0		
									point34	34	1,608,318.4	11,961,067.0	510.00	37.50	0.00	0	0		
									point35	35	1,608,299.2	11,961,076.0	510.00	37.50	0.00	0	0		

									point36	36	1,608,298.4	11,961,073.0	510.00	37.50	0.00	0	0		
									point37	37	1,608,290.8	11,961,077.0	510.00	37.50	0.00	0	0		
									point38	38	1,608,289.6	11,961,074.0	510.00	37.50	0.00	0	0		
									point39	39	1,608,284.2	11,961,077.0	510.00	37.50	0.00	0	0		
									point40	40	1,608,283.2	11,961,075.0	510.00	37.50	0.00	0	0		
									point41	41	1,608,271.6	11,961,080.0	510.00	37.50	0.00	0	0		
									point42	42	1,608,284.4	11,961,109.0	510.00	37.50	0.00	0	0		
									point43	43	1,608,340.6	11,961,084.0	510.00	37.50	0.00	0	0		
									point44	44	1,608,333.9	11,961,068.0	510.00	37.50	0.00	0	0		
									point45	45	1,608,336.2	11,961,067.0	510.00	37.50	0.00	0	0		
									point46	46	1,608,331.1	11,961,057.0	510.00	37.50					
Barrier5	W	0.00	99.99	0.00				0.00	point47	47	1,608,290.6	11,961,128.0	510.00	37.50	0.00	0	0		
									point48	48	1,608,347.8	11,961,103.0	510.00	37.50	0.00	0	0		
									point49	49	1,608,357.9	11,961,131.0	510.00	37.50	0.00	0	0		
									point50	50	1,608,343.4	11,961,137.0	510.00	37.50	0.00	0	0		
									point51	51	1,608,342.5	11,961,134.0	510.00	37.50	0.00	0	0		
									point52	52	1,608,324.8	11,961,141.0	510.00	37.50	0.00	0	0		
									point53	53	1,608,325.5	11,961,143.0	510.00	37.50	0.00	0	0		
									point54	54	1,608,317.2	11,961,147.0	510.00	37.50	0.00	0	0		
									point55	55	1,608,318.4	11,961,150.0	510.00	37.50	0.00	0	0		
									point56	56	1,608,302.2	11,961,157.0	510.00	37.50	0.00	0	0		
									point57	57	1,608,290.6	11,961,128.0	510.00	37.50					
Barrier6	W	0.00	99.99	0.00				0.00	point58	58	1,608,375.6	11,961,020.0	500.00	37.50	0.00	0	0		
									point59	59	1,608,399.6	11,961,087.0	500.00	37.50	0.00	0	0		
									point60	60	1,608,383.5	11,961,093.0	500.00	37.50	0.00	0	0		
									point61	61	1,608,384.8	11,961,095.0	500.00	37.50	0.00	0	0		
									point62	62	1,608,375.5	11,961,100.0	500.00	37.50	0.00	0	0		
									point63	63	1,608,368.6	11,961,083.0	500.00	37.50	0.00	0	0		
									point64	64	1,608,372.1	11,961,081.0	500.00	37.50	0.00	0	0		
									point65	65	1,608,364.0	11,961,061.0	500.00	37.50	0.00	0	0		
									point66	66	1,608,360.2	11,961,062.0	500.00	37.50	0.00	0	0		
									point67	67	1,608,357.6	11,961,052.0	500.00	37.50	0.00	0	0		
									point68	68	1,608,354.5	11,961,054.0	500.00	37.50	0.00	0	0		
									point69	69	1,608,351.6	11,961,047.0	500.00	37.50	0.00	0	0		
									point70	70	1,608,346.6	11,961,034.0	500.00	37.50	0.00	0	0		
									point71	71	1,608,375.6	11,961,020.0	500.00	37.50					
Barrier7	W	0.00	99.99	0.00				0.00	point72	72	1,608,330.0	11,960,894.0	500.00	37.50	0.00	0	0		
									point73	73	1,608,303.5	11,960,907.0	500.00	37.50	0.00	0	0		
									point74	74	1,608,313.9	11,960,934.0	500.00	37.50	0.00	0	0		
									point75	75	1,608,317.4	11,960,933.0	500.00	37.50	0.00	0	0		
									point76	76	1,608,333.9	11,960,978.0	500.00	37.50	0.00	0	0		
									point77	77	1,608,330.4	11,960,979.0	500.00	37.50	0.00	0	0		
									point78	78	1,608,335.1	11,960,989.0	500.00	37.50	0.00	0	0		
									point79	79	1,608,332.9	11,960,990.0	500.00	37.50	0.00	0	0		
									point80	80	1,608,335.9	11,960,996.0	500.00	37.50	0.00	0	0		
									point81	81	1,608,333.5	11,960,997.0	500.00	37.50	0.00	0	0		
									point82	82	1,608,339.0	11,961,011.0	500.00	37.50	0.00	0	0		
									point83	83	1,608,367.2	11,960,998.0	500.00	37.50	0.00	0	0		
									point84	84	1,608,330.0	11,960,894.0	500.00	37.50					

Dudek
CB

5 March 2020
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Paseo Montril
RUN: Future + Project
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

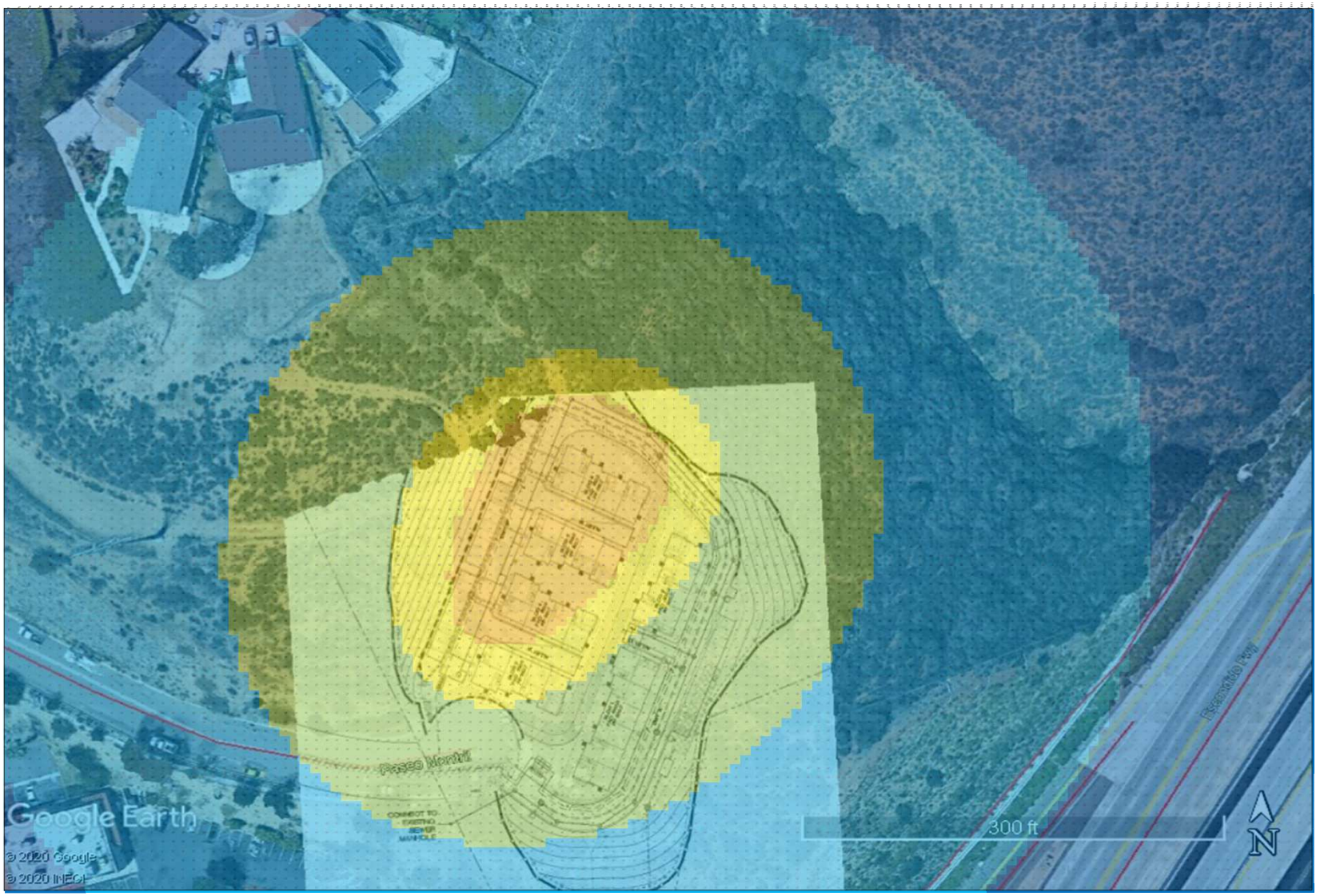
Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
ST1	1	1	67.5	67.9	66	0.4	10	Snd Lvl	67.9	0.0	8	-8.0
ST2	2	1	67.2	68.5	66	1.3	10	Snd Lvl	68.5	0.0	8	-8.0
ST3	3	1	60.3	64.4	66	4.1	10	----	64.4	0.0	8	-8.0
ST4	4	1	58.5	60.3	66	1.8	10	----	60.3	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Avg	Max
		dB	dB	dB
All Selected	4	0.0	0.0	0.0
All Impacted	2	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

Appendix D

Residential HVAC Noise Prediction

Paseo Montril- Residential HVAC Noise Prediction



dBA range

Color	High	Low	Color	High	Low
	55	52		45	40
	50	50		40	35
	50	45			

HVAC Ground Model

prepared by Dudek - DRAFT - 3/9/2020

Appendix E

Transmission Loss Predictions

Unit _____, _____ Room with ***Closed Window(s) and Door***

34 = approx. STC

	qty	width	height	Square feet	
material or element #1				30	Sheet AD-22
material or element #2	1	6	6	36	vinyl window (dual pane)
material or element #3	1	3	8	24	french door glazing (dual pane)
material or element #4				0	opening
total surface		10	9	90	arbitrary total surface area

TL Data Source

NRC-CNRC IC-IR-761 (p. 25: G16_WS90(406)_MFB90_2G16)

2 x 5/8" GWB, 2"x4" wood, 24" o.c., fiber batt fill, 1 x 5/8" GWB

available TL data for comparable assembly:

Viracon 5/8" overall - 1/8" glass + 3/8" airspace + 1/8" glass

available TL data for comparable assembly:

Viracon 5/8" overall - 1/8" glass + 3/8" airspace + 1/8" glass

enter desired STC value: 34

sum of negative differentials: -8

Octave Band Center Frequency (OBCF, Hz)

	125	250	500	1000	2000	4000
Sheet AD-22	16	40	41	48	43	52
material #1 τ	0.02512	0.0001	7.9E-05	1.6E-05	5E-05	6.3E-06
vinyl window (dual pane)	23	23	27	35	47	36
material #2 τ	0.00501	0.00501	0.002	0.00032	2E-05	0.00025
french door glazing (dual pane)	23	23	27	35	47	36
material #2 τ	0.00501	0.00501	0.002	0.00032	2E-05	0.00025
opening	0	0	0	0	0	0
material #4 τ	1	1	1	1	1	1
composite TL	19	25	29	37	45	38
prospective STC curve	18	27	34	37	38	38
differentials	1	-2	-5	0	7	0

Unit _____, _____ Room with ***Open French Door***

5 = approx. STC

	qty	width	height	Square feet	
material or element #1				30	Sheet Sheet AD-22
material or element #2	1	6	6	36	vinyl window (dual pane)
material or element #3	0	0	0	0	french door glazing (dual pane)
material or element #4	1	3	8	24	opening
total surface		10	9	90	arbitrary total surface area

TL Data Source

NRC-CNRC IC-IR-761 (p. 25: G16_WS90(406)_MFB90_2G16)

2 x 5/8" GWB, 2"x4" wood, 24" o.c., fiber batt fill, 1 x 5/8" GWB

available TL data for comparable assembly:

Viracon 5/8" overall - 1/8" glass + 3/8" airspace + 1/8" glass

available TL data for comparable assembly:

Viracon 5/8" overall - 1/8" glass + 3/8" airspace + 1/8" glass

enter desired STC value: 5

sum of negative differentials: -9

Octave Band Center Frequency (OBCF, Hz)

	125	250	500	1000	2000	4000
Sheet Sheet AD-22	16	40	41	48	43	52
material #1 τ	0.02512	0.0001	7.9E-05	1.6E-05	5E-05	6.3E-06
vinyl window (dual pane)	23	23	27	35	47	36
material #2 τ	0.00501	0.00501	0.002	0.00032	2E-05	0.00025
french door glazing (dual pane)	23	23	27	35	47	36
material #2 τ	0.00501	0.00501	0.002	0.00032	2E-05	0.00025
opening	0	0	0	0	0	0
material #4 τ	1	1	1	1	1	1
composite TL	6	6	6	6	6	6
prospective STC curve	-11	-2	5	8	9	9
differentials	17	8	1	-2	-3	-3

Unit _____, _____ Room with ***Open Window***

11 = approx. STC

	qty	width	height	Square feet	
material or element #1				30	Sheet Sheet AD-22
material or element #2	1	6	4.75	28.5	vinyl window (dual pane)
material or element #3	1	3	8	24	french door glazing (dual pane)
material or element #4	1	3	2.5	7.5	opening
total surface		10	9	90	arbitrary total surface area

TL Data Source

NRC-CNRC IC-IR-761 (p. 25: G16_WS90(406)_MFB90_2G16)

2 x 5/8" GWB, 2"x4" wood, 24" o.c., fiber batt fill, 1 x 5/8" GWB

available TL data for comparable assembly:

Viracon 5/8" overall - 1/8" glass + 3/8" airspace + 1/8" glass

available TL data for comparable assembly:

Viracon 5/8" overall - 1/8" glass + 3/8" airspace + 1/8" glass

enter desired STC value: 11

sum of negative differentials: -12

Octave Band Center Frequency (OBCF, Hz)

	125	250	500	1000	2000	4000
Sheet Sheet AD-22	16	40	41	48	43	52
material #1 τ	0.02512	0.0001	7.9E-05	1.6E-05	5E-05	6.3E-06
vinyl window (dual pane)	23	23	27	35	47	36
material #2 τ	0.00501	0.00501	0.002	0.00032	2E-05	0.00025
french door glazing (dual pane)	23	23	27	35	47	36
material #2 τ	0.00501	0.00501	0.002	0.00032	2E-05	0.00025
opening	0	0	0	0	0	0
material #4 τ	1	1	1	1	1	1
composite TL	10	11	11	11	11	11
prospective STC curve	-5	4	11	14	15	15
differentials	15	7	0	-3	-4	-4

Unit _____, _____ Room with ***Closed Window(s)***

37 = approx. STC

	qty	width	height	Square feet	
material or element #1				75	Sheet Sheet AD-22
material or element #2	1	4	6	24	vinyl window (dual pane)
material or element #3				0	french door glazing (dual pane)
material or element #4				0	opening
total surface		11	9	99	arbitrary total surface area

TL Data Source		Octave Band Center Frequency (OBCF, Hz)	125	250	500	1000	2000	4000
NRC-CNRC IC-IR-761 (p. 25: G16_WS90(406)_MFB90_2G16)		Sheet Sheet AD-22	16	40	41	48	43	52
2 x 5/8" GWB, 2"x4" wood, 24" o.c., fiber batt fill, 1 x 5/8" GWB		material #1 τ	0.02512	0.0001	7.9E-05	1.6E-05	5E-05	6.3E-06
available TL data for comparable assembly:		vinyl window (dual pane)	23	23	27	35	47	36
Viracon 5/8" overall - 1/8" glass + 3/8" airspace + 1/8" glass		material #2 τ	0.00501	0.00501	0.002	0.00032	2E-05	0.00025
available TL data for comparable assembly:		french door glazing (dual pane)	23	23	27	35	47	36
Viracon 5/8" overall - 1/8" glass + 3/8" airspace + 1/8" glass		material #2 τ	0.00501	0.00501	0.002	0.00032	2E-05	0.00025
		opening	0	0	0	0	0	0
		material #4 τ	1	1	1	1	1	1
		composite TL	17	29	33	41	44	42
enter desired STC value	37	prospective STC curve	21	30	37	40	41	41
sum of negative differentials	-10	differentials	-4	-1	-4	1	3	1

Unit _____, _____ Room with ***Open Window(s)***

14 = approx. STC

	qty	width	height	Square feet	
material or element #1				75	Sheet Sheet AD-22
material or element #2	1	4	5	20	vinyl window (dual pane)
material or element #3	0	0	0	0	french door glazing (dual pane)
material or element #4	1	4	1	4	opening
total surface		11	9	99	arbitrary total surface area

TL Data Source		Octave Band Center Frequency (OBCF, Hz)	125	250	500	1000	2000	4000
NRC-CNRC IC-IR-761 (p. 25: G16_WS90(406)_MFB90_2G16)		Sheet Sheet AD-22	16	40	41	48	43	52
2 x 5/8" GWB, 2"x4" wood, 24" o.c., fiber batt fill, 1 x 5/8" GWB		material #1 τ	0.02512	0.0001	7.9E-05	1.6E-05	5E-05	6.3E-06
available TL data for comparable assembly:		vinyl window (dual pane)	23	23	27	35	47	36
Viracon 5/8" overall - 1/8" glass + 3/8" airspace + 1/8" glass		material #2 τ	0.00501	0.00501	0.002	0.00032	2E-05	0.00025
available TL data for comparable assembly:		french door glazing (dual pane)	23	23	27	35	47	36
Viracon 5/8" overall - 1/8" glass + 3/8" airspace + 1/8" glass		material #2 τ	0.00501	0.00501	0.002	0.00032	2E-05	0.00025
		opening	0	0	0	0	0	0
		material #4 τ	1	1	1	1	1	1
		composite TL	12	14	14	14	14	14
enter desired STC value	14	prospective STC curve	-2	7	14	17	18	18
sum of negative differentials	-11	differentials	14	7	0	-3	-4	-4