

August 27, 2021

Mr. Luke Eid
 SSCW Companies
 1830 N 95th Ave, Ste 106
 Phoenix, AZ 85037

Subject: SuperStar Express Car Wash @ 9804 South Yosemite Street – Noise Impact Study – City of Lone Tree, CO

Dear Mr. Eid:

MD Acoustics, LLC (MD) has completed a noise assessment for the proposed SuperStar Express Car Wash located at 9804 South Yosemite Street, in Lone Tree, CO. This assessment reviews the projected car wash operational noise levels and compares to the City’s noise ordinance. The project proposes an approximately 110-foot car wash tunnel with 21 covered vacuum bays.

1.0 Assessment Overview

This assessment evaluates the project-only operational noise levels and compares them to the City’s noise ordinance. The project location map is located in Exhibit A. The site plan utilized for the project is indicated in Exhibit B. It should be noted that the nearest residences are located 150 ft to the west.

2.0 Local Acoustical Requirements

Section 1703A of the Douglas County Municipal Code states the following:

The following are the maximum permissible noise levels that may be emitted from lots or parcels within the following zone districts:

Table 1: Douglas County Noise Limits

Zone District	7:00 AM to 7:00 PM	7:00 PM to Next 7:00 AM
A-1/LRR/RR/ER/SR/MF/MH	55 dB(A)	50 dB(A)

There is a multifamily property 150 ft to the west, a single-family residential area 550 ft to the north, a single-family residential area with a golf course 450 ft to the southwest, and an elementary school, and an elementary school over 600 ft to the northeast. The noise level must be below 50 dBA within residential zones to comply with the nighttime residential limits. These residences represent the closest surrounding sensitive usable outdoor spaces or residential buildings.

3.0 Study Method and Procedure

3.1 SoundPLAN Acoustic Model

SoundPLAN (SP) acoustical modeling software was utilized to model future worst-case stationary noise impacts to the adjacent land uses. SP is capable of evaluating multiple stationary noise source impacts at various receiver locations. SP’s software utilizes algorithms (based on the inverse square law and reference equipment noise level data) to calculate noise level projections.

Exhibit A
Location Map

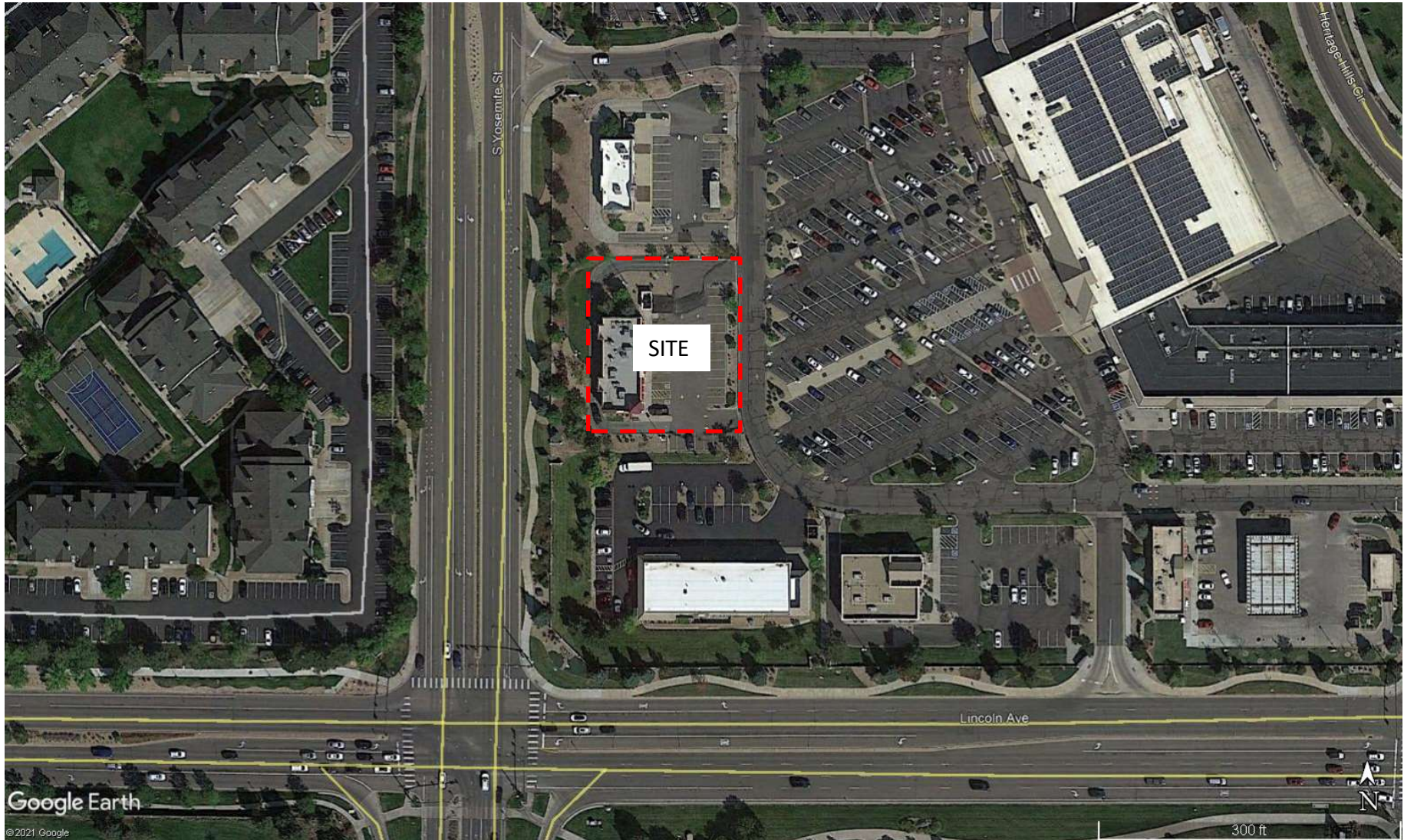
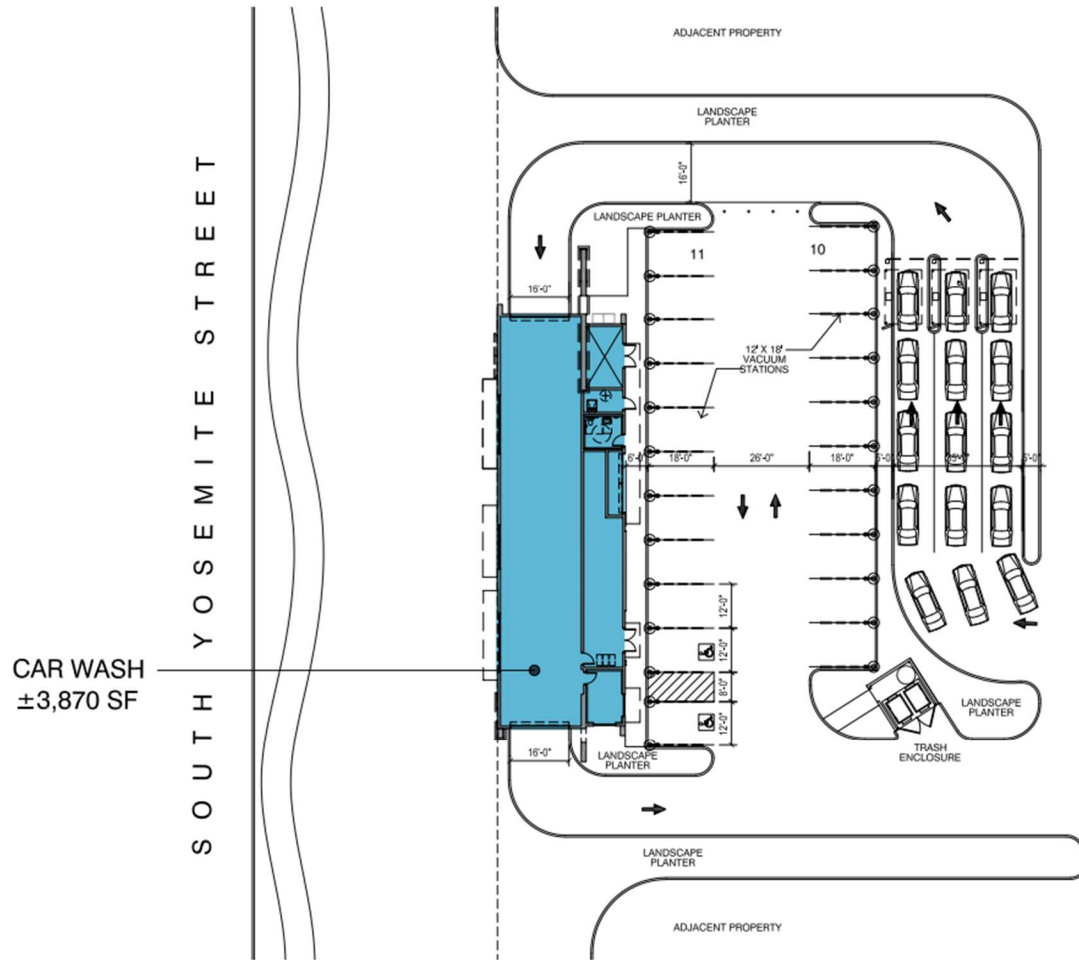


Exhibit B
Site Plan



VICINITY MAP
PROJECT SUMMARY

PROPOSED CARWASH USE
 LAND AREA: +/- 0.72 ACRES
 BUILDING AREA: +/- 3,870 SF
 CONSTRUCTION TYPE: V-B
 OCCUPANCY: B
 VACUUM SPACES: 21 (INCLUDING 2 ACCESSIBLE SPACES)
 3 PAY STATIONS
 110' WASH TUNNEL

The software allows the user to input specific noise sources, spectral content, sound barriers, building placement, topography, and sensitive receptor locations.

The model assumes that the car wash tunnel is approximately 5,200 square feet with a 9-foot-tall by 10-foot-wide exit and entrance opening. The blowers (14 MacNeil blowers or equivalent) were modeled at 10 to 12 feet high as a point source. The blowers will be located approximately 5 to 10 feet inside the exit of the tunnel. The reference equipment sound level data is provided in Appendix B.

The SP model assumes that a total of 21 vacuums and the dryer system are operating simultaneously (worst-case scenario) when in actuality the noise will be intermittent and lower in noise level. The project proposes to house the vacuum turbine motor inside a CMU enclosure with a roof. The reference vacuum equipment sound level data is provided in Appendix B. The model includes an 8-foot-tall wing wall to the southwest of the tunnel exit. This wall is 30 ft long and extends from the end of the tunnel to the south landscape planter and must be at least 4 lb/ft².

All other noise-producing equipment (e.g., compressors, pumps) will be housed within mechanical equipment rooms.

4.0 Findings and Recommendations

Future Exterior Noise

A total of four (4) receptors were modeled to accurately evaluate the future operational noise levels at or near the project site. A receptor is denoted by a yellow dot. R1 – R4 represent the noise level at the nearest properties adjacent to the project site. A receptor is denoted by a yellow dot. All receptor locations are located at the sensitive property lines or on the nearest sensitive buildings. Table 2 presents the project’s projected noise level.

Table 2: Project Predicted Operational Noise level

Receptor	Floor	Project Noise Level (dBA, Leq)	City Nighttime Limit 7 PM to 7 AM (dBA, Leq)	Exceeds Standard (?)
R1	1	46	50	No
R2	1	49		No
	2	49		No
	3	50		No
R3	1	33		No
R4	1	44		No
Notes: Receptors 1 and 4 are single-family uses. Receptor 2 is a multi-family use. Receptor 3 is a school.				

Exhibit C shows the future noise level projections and contours based on the proposed project design. The noise levels at the various adjacent uses will range between 33 to 50 dBA, and the noise contours illustrate how the noise will propagate.

When comparing the operational noise levels to the nighttime residential noise limit of 50 dBA the project noise levels will comply with the City’s noise ordinance with the 8-foot-tall wing wall extended 30 feet south of the tunnel.

5.0 Conclusions

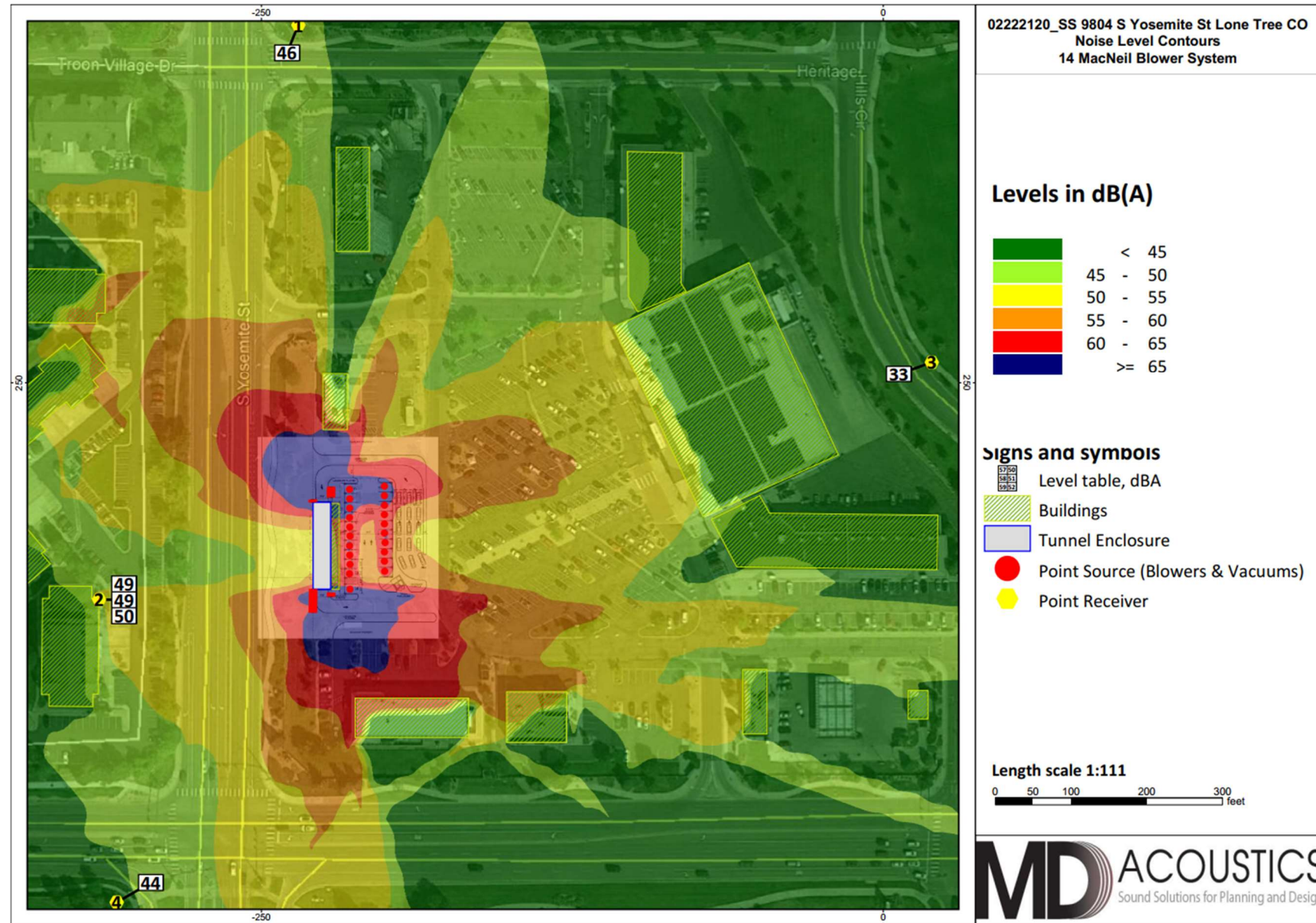
MD is pleased to provide this noise review for the SuperStar Express Car Wash project. If you have any questions regarding this analysis, please call our office at (602) 774-1950.

Sincerely,
MD Acoustics



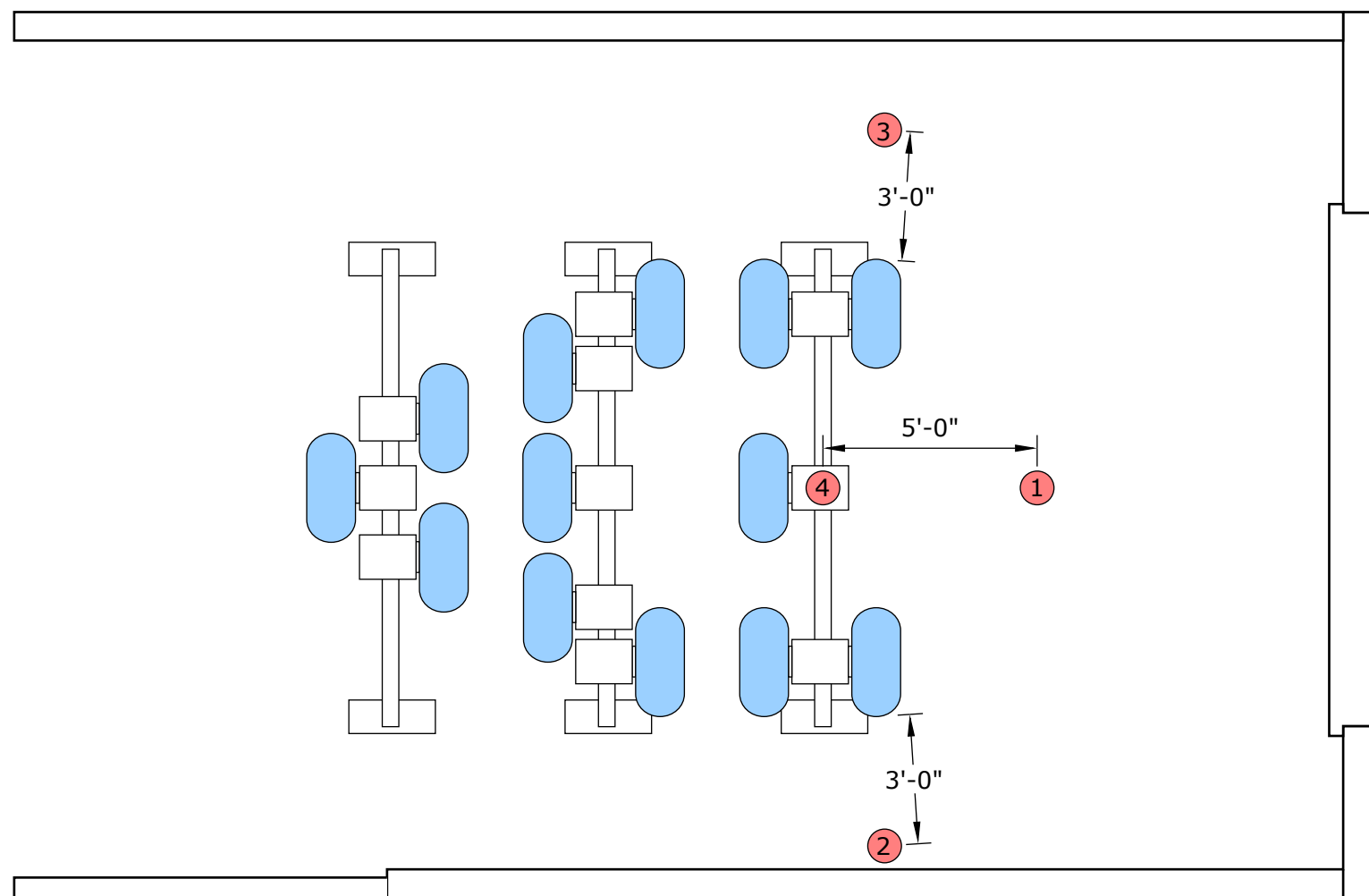
Claire Pincock, INCE-USA
Acoustical Consultant

Operational Noise Levels



Appendix A
Reference Data

Key	
	Tech 21
	Measurement locations



Location	Scenario	Distance from Blower	Overall dBA	1/3 Octave Band																											
				40	50	63	80	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000	10000	12500	16000	20000
1	All Tech 21 Blowers	5'	98.7	45.3	51.1	56.9	63.5	68.1	67.9	69.8	74.4	80.3	81.4	86.6	89.5	90	88.3	88.9	88.9	87.6	87.5	85.9	85.1	83.7	82.9	81	77.7	73	67.8	61.9	55.4
2	All Tech 21 Blowers	3' Left of Blowers	99.1	46.6	51.3	62.7	64.9	65	64.4	66.4	72.9	80.5	82.2	86.7	89.1	89.9	88.9	89.7	89.4	88.2	88.6	86.9	86	84.2	83.1	81.6	78.5	73.2	67.5	60.9	53.5
3	All Tech 21 Blowers	3' Right of Blowers	98.6	47.7	49.7	58.8	64.3	62.9	64.9	68.4	75.4	80.8	81	87.6	90	89.5	88.1	89.1	88.5	87.5	87.4	85.2	84	82.9	82.2	80.5	76.8	71.6	65.9	59.3	51.5
4	All Tech 21 Blowers	Directly Below Blowers	103.3	50.3	54.1	60.1	66.4	68.8	71.7	74.1	77.8	82.4	83.5	91.1	94.8	94.3	92.4	93.7	93.2	92.3	92.1	90.7	89.4	88.4	88.3	86.9	83.5	79.1	74.2	69.1	63.6

Project: SuperStar Car Wash Chula Vista
Site Location: 1555 W Warner Rd, Gilbert, AZ 85233
Date: 4/5/2018
Field Tech/Engineer: Robert Pearson
Source/System: Vacutec System

Site Observations:
Clear sky, measurements were performed within 1.5ft of source. Measurements were performed while the vacuum was positioned at three (3) different positions. Holstered, unholstered and inside a car. This data is utilized for acoustic modeling purposes and represents an average sound level at a vacuum station.

Location: Vac Bay 1
Sound Meter: NTi XL2 **SN:** A2A-05967-E0
Settings: A-weighted, slow, 1-sec, 10-sec duration
Meteorological Cond.: 80 degrees F, 2 mph wind

Table 1: Summary Measurement Data

Source	System	Overall dB(A)	3rd Octave Band Data (dBA)																														
			20	25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1K	1.25K	1.6K	2K	2.5K	3.15K	4K	5K	6.3K	8K	10K	12.5K	16K	20K
Vacutec (Holstered)	Vacuum	63.3	9	17	22	29	31	35	40	41	44	43	46	48	47	49	51	51	52	53	52	52	50	52	53	50	47	47	48	48	45	39	30
Vacutec (Unholstered)	Vacuum	80.7	6	19	22	28	34	37	40	43	47	46	48	48	49	54	55	58	58	62	65	68	70	74	75	73	69	67	65	63	60	55	
Vacutec (Inside Car)	Vacuum	69.6	16	28	31	38	42	45	49	51	52	55	60	61	57	55	59	53	55	56	54	57	57	57	57	55	54	51	48	46	42	36	
Average Level*	Vacuum	76.3	13	24	28	34	38	41	45	47	49	51	56	57	53	52	56	54	56	56	59	61	64	66	69	70	68	64	62	60	58	55	50

* Refers to the logarithmic average of all measurements. This measurement represents an average of the multiple vacuum positions.

Figure 1: Example Measurement Position

Figure 1: Holstered



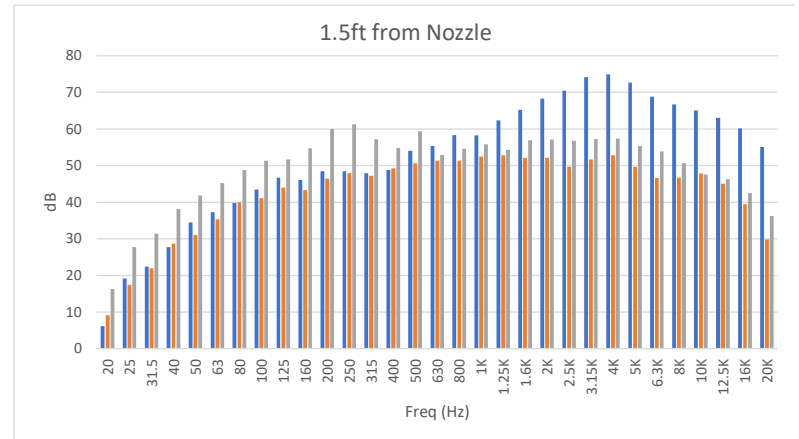
Figure 2: Unholstered



Figure 3: Inside Car



1.5ft from Nozzle



Appendix B
SoundPlan Inputs/Outputs

SS 9804 S Yosemite St Lone Tree CO
Octave spectra of the sources in dB(A) - 001 - 14 MacNeil: Outdoor SP

3

Name	Source type	I or A	Li	R'w	L'w	Lw	KI	KT	LwMax	DO-Wall	Time histogram	Emission spectrum	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
		m,m ²	dB(A)	dB	dB(A)	dB(A)	dB	dB	dB(A)	dB			dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
001 - 14 MacNeil Tunnel-Facade 01	Area	23.54	93.7	57.0	40.1	53.8	0.0	0.0		3	100%/24h	15_Facade 01_	44.5	39.1	47.4	51.3	41.0	35.1	28.1	23.3	
001 - 14 MacNeil Tunnel-Facade 02	Area	156.18	92.8	57.0	39.7	61.6	0.0	0.0		3	100%/24h	16_Facade 02_	52.4	46.9	55.3	59.1	48.3	42.0	34.6	28.3	
001 - 14 MacNeil Tunnel-Facade 03	Area	23.54	92.5	57.0	39.3	53.0	0.0	0.0		3	100%/24h	17_Facade 03_	43.8	38.3	46.7	50.5	39.8	33.5	25.9	18.5	
001 - 14 MacNeil Tunnel-Facade 04	Area	156.18	92.8	57.0	39.7	61.6	0.0	0.0		3	100%/24h	18_Facade 04_	52.4	46.9	55.3	59.1	48.3	42.0	34.6	28.3	
001 - 14 MacNeil Tunnel-Roof 01	Area	246.01	92.3	57.0	39.2	63.1	0.0	0.0		0	100%/24h	13_Roof 01_	53.8	48.4	56.7	60.5	49.8	43.4	36.1	30.0	
001 - 14 MacNeil Tunnel-Transmissive area 01	Area	8.36	93.1	0.0	93.1	102.3	0.0	0.0		3	100%/24h	19_Transmissive area 01_	69.5	78.0	88.4	98.2	97.0	95.0	91.1	84.2	
001 - 14 MacNeil Tunnel-Transmissive area 01	Area	8.36	92.4	0.0	92.4	101.7	0.0	0.0		3	100%/24h	20_Transmissive area 01_	69.2	77.8	88.1	97.9	96.3	94.0	89.5	80.1	
Vac 2	Point				73.8	73.8	0.0	0.0		0	100%/24h	Vacutech - in car	55.2	62.0	68.6	65.4	64.0	66.0	65.4	60.6	51.9
Vac 3	Point				73.8	73.8	0.0	0.0		0	100%/24h	Vacutech - in car	55.2	62.0	68.6	65.4	64.0	66.0	65.4	60.6	51.9
Vac 4	Point				73.8	73.8	0.0	0.0		0	100%/24h	Vacutech - in car	55.2	62.0	68.6	65.4	64.0	66.0	65.4	60.6	51.9
Vac 5	Point				73.8	73.8	0.0	0.0		0	100%/24h	Vacutech - in car	55.2	62.0	68.6	65.4	64.0	66.0	65.4	60.6	51.9
Vac 6	Point				73.8	73.8	0.0	0.0		0	100%/24h	Vacutech - in car	55.2	62.0	68.6	65.4	64.0	66.0	65.4	60.6	51.9
Vac 7	Point				73.8	73.8	0.0	0.0		0	100%/24h	Vacutech - in car	55.2	62.0	68.6	65.4	64.0	66.0	65.4	60.6	51.9
Vac 8	Point				73.8	73.8	0.0	0.0		0	100%/24h	Vacutech - in car	55.2	62.0	68.6	65.4	64.0	66.0	65.4	60.6	51.9
Vac 9	Point				73.8	73.8	0.0	0.0		0	100%/24h	Vacutech - in car	55.2	62.0	68.6	65.4	64.0	66.0	65.4	60.6	51.9
Vac 10	Point				73.8	73.8	0.0	0.0		0	100%/24h	Vacutech - in car	55.2	62.0	68.6	65.4	64.0	66.0	65.4	60.6	51.9
Vac 11	Point				73.8	73.8	0.0	0.0		0	100%/24h	Vacutech - in car	55.2	62.0	68.6	65.4	64.0	66.0	65.4	60.6	51.9
Vac 13	Point				73.8	73.8	0.0	0.0		0	100%/24h	Vacutech - in car	55.2	62.0	68.6	65.4	64.0	66.0	65.4	60.6	51.9
Vac 15	Point				73.8	73.8	0.0	0.0		0	100%/24h	Vacutech - in car	55.2	62.0	68.6	65.4	64.0	66.0	65.4	60.6	51.9
Vac 16	Point				73.8	73.8	0.0	0.0		0	100%/24h	Vacutech - in car	55.2	62.0	68.6	65.4	64.0	66.0	65.4	60.6	51.9
Vac 17	Point				73.8	73.8	0.0	0.0		0	100%/24h	Vacutech - in car	55.2	62.0	68.6	65.4	64.0	66.0	65.4	60.6	51.9
Vac 18	Point				73.8	73.8	0.0	0.0		0	100%/24h	Vacutech - in car	55.2	62.0	68.6	65.4	64.0	66.0	65.4	60.6	51.9
Vac 19	Point				73.8	73.8	0.0	0.0		0	100%/24h	Vacutech - in car	55.2	62.0	68.6	65.4	64.0	66.0	65.4	60.6	51.9
Vac 20	Point				73.8	73.8	0.0	0.0		0	100%/24h	Vacutech - in car	55.2	62.0	68.6	65.4	64.0	66.0	65.4	60.6	51.9

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SS 9804 S Yosemite St Lone Tree CO
Octave spectra of the sources in dB(A) - 001 - 14 MacNeil: Outdoor SP

3

Name	Source type	I or A	Li	R'w	L'w	Lw	KI	KT	LwMax	DO-Wall	Time histogram	Emission spectrum	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
		m,m ²	dB(A)	dB	dB(A)	dB(A)	dB	dB	dB(A)	dB			dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
Vac 22	Point				73.8	73.8	0.0	0.0		0	100%/24h	Vacutech - in car	55.2	62.0	68.6	65.4	64.0	66.0	65.4	60.6	51.9
Vac 23	Point				73.8	73.8	0.0	0.0		0	100%/24h	Vacutech - in car	55.2	62.0	68.6	65.4	64.0	66.0	65.4	60.6	51.9
Vac 24	Point				73.8	73.8	0.0	0.0		0	100%/24h	Vacutech - in car	55.2	62.0	68.6	65.4	64.0	66.0	65.4	60.6	51.9
Vac 25	Point				73.8	73.8	0.0	0.0		0	100%/24h	Vacutech - in car	55.2	62.0	68.6	65.4	64.0	66.0	65.4	60.6	51.9

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Assessed receiver spectra in dB(A) - 001 - 14 MacNeil: Outdoor SP

Time slice	63Hz dB(A)	125Hz dB(A)	250Hz dB(A)	500Hz dB(A)	1kHz dB(A)	2kHz dB(A)	4kHz dB(A)	8kHz dB(A)	16kHz dB(A)
Receiver R1 FI G LrD,lim dB(A) LrD 46.3 dB(A) Sigma(LrD) 0.0 dB(A)									
LrD	21.6	25.3	28.2	39.6	43.0	40.5	31.5	6.2	
Receiver R2 FI G LrD,lim dB(A) LrD 48.6 dB(A) Sigma(LrD) 0.0 dB(A)									
LrD	24.3	28.7	36.1	44.9	43.5	40.5	33.5	19.2	
Receiver R2 FI F2 LrD,lim dB(A) LrD 49.4 dB(A) Sigma(LrD) 0.0 dB(A)									
LrD	23.9	28.2	36.7	45.8	44.3	41.4	35.0	20.0	
Receiver R2 FI F3 LrD,lim dB(A) LrD 50.2 dB(A) Sigma(LrD) 0.0 dB(A)									
LrD	24.0	28.4	37.1	46.2	45.0	43.4	36.7	21.4	-29.9
Receiver R3 FI G LrD,lim dB(A) LrD 33.5 dB(A) Sigma(LrD) 0.0 dB(A)									
LrD	14.5	16.5	23.8	30.7	27.2	22.7	10.3	-19.1	
Receiver R4 FI G LrD,lim dB(A) LrD 44.3 dB(A) Sigma(LrD) 0.0 dB(A)									
LrD	21.4	24.8	30.9	40.4	39.4	37.1	28.3	8.1	

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SS 9804 S Yosemite St Lone Tree CO
Octave spectra of the sources in dB(A) - 001 - 14 MacNeil: Indoor SP

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Name	Source type	I or A m,m ²	Li dB(A)	R'w dB	L'w dB(A)	Lw dB(A)	KI dB	KT dB	LwMax dB(A)	DO-Wall dB	Time histogram	Emission spectrum	63Hz dB(A)	125Hz dB(A)	250Hz dB(A)	500Hz dB(A)	1kHz dB(A)	2kHz dB(A)	4kHz dB(A)	8kHz dB(A)	16kHz dB(A)
Point source 01	Point				109.3	109.3	0.0	0.0		0	100%/24h	Tech 21 - 13 Blowers @ 5'	75.4	84.0	94.5	104.4	103.9	102.7	99.3	93.7	79.6

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Contribution level - 001 - 14 MacNeil: Outdoor SP

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Source	Source ty	LrD dB(A)	
Receiver R1 FI G LrD,lim dB(A) LrD 46.3 dB(A) Sigma(LrD) 0.0 dB(A)			
001 - 14 MacNeil Tunnel-Transmissive area 01	Area	46.3	
001 - 14 MacNeil Tunnel-Transmissive area 01	Area	25.1	
Vac 22	Point	14.1	
Vac 23	Point	13.9	
Vac 24	Point	13.7	
Vac 25	Point	13.6	
Vac 16	Point	12.4	
Vac 15	Point	12.4	
Vac 20	Point	12.2	
Vac 19	Point	11.9	
Vac 18	Point	11.8	
Vac 17	Point	11.8	
Vac 6	Point	10.1	
Vac 5	Point	10.1	
Vac 4	Point	10.1	
Vac 2	Point	9.9	
Vac 3	Point	9.2	
Vac 8	Point	9.0	
Vac 7	Point	9.0	
Vac 13	Point	8.1	
Vac 11	Point	8.1	
Vac 10	Point	8.1	
Vac 9	Point	8.0	
001 - 14 MacNeil Tunnel-Facade 04	Area	6.1	
001 - 14 MacNeil Tunnel-Roof 01	Area	1.3	
001 - 14 MacNeil Tunnel-Facade 02	Area	-1.5	
001 - 14 MacNeil Tunnel-Facade 03	Area	-2.2	
001 - 14 MacNeil Tunnel-Facade 01	Area	-11.7	
Receiver R2 FI G LrD,lim dB(A) LrD 48.6 dB(A) Sigma(LrD) 0.0 dB(A)			
001 - 14 MacNeil Tunnel-Transmissive area 01	Area	47.8	
001 - 14 MacNeil Tunnel-Transmissive area 01	Area	40.7	
Vac 2	Point	15.9	
Vac 13	Point	15.6	
001 - 14 MacNeil Tunnel-Facade 04	Area	13.3	

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Source	Source ty	LrD dB(A)	
Vac 15	Point	13.1	
Vac 16	Point	12.6	
001 - 14 MacNeil Tunnel-Roof 01	Area	10.4	
Vac 3	Point	8.8	
Vac 25	Point	8.7	
Vac 17	Point	8.7	
Vac 24	Point	8.6	
Vac 23	Point	8.5	
Vac 18	Point	8.4	
Vac 22	Point	8.3	
Vac 19	Point	8.3	
Vac 20	Point	8.3	
Vac 4	Point	6.2	
Vac 11	Point	5.6	
Vac 10	Point	5.5	
Vac 5	Point	5.4	
Vac 9	Point	5.4	
Vac 7	Point	5.3	
Vac 6	Point	5.3	
Vac 8	Point	5.2	
001 - 14 MacNeil Tunnel-Facade 01	Area	4.5	
001 - 14 MacNeil Tunnel-Facade 02	Area	1.8	
001 - 14 MacNeil Tunnel-Facade 03	Area	-1.9	
Receiver R2	FI F2	LrD,lim dB(A)	LrD 49.4 dB(A) Sigma(LrD) 0.0 dB(A)
001 - 14 MacNeil Tunnel-Transmissive area 01	Area	48.6	
001 - 14 MacNeil Tunnel-Transmissive area 01	Area	41.7	
Vac 13	Point	16.6	
Vac 2	Point	16.0	
001 - 14 MacNeil Tunnel-Facade 04	Area	14.7	
Vac 15	Point	13.1	
Vac 16	Point	12.5	
001 - 14 MacNeil Tunnel-Roof 01	Area	11.1	
Vac 25	Point	9.0	
Vac 17	Point	8.9	
Vac 24	Point	8.9	
Vac 3	Point	8.9	
Vac 23	Point	8.8	

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Source	Source ty	LrD dB(A)	
Vac 18	Point	8.8	
Vac 22	Point	8.6	
Vac 19	Point	8.6	
Vac 20	Point	8.6	
001 - 14 MacNeil Tunnel-Facade 01	Area	6.0	
Vac 4	Point	6.0	
Vac 11	Point	5.5	
Vac 10	Point	5.4	
Vac 5	Point	5.3	
Vac 9	Point	5.3	
Vac 7	Point	5.2	
Vac 6	Point	5.2	
Vac 8	Point	5.1	
001 - 14 MacNeil Tunnel-Facade 02	Area	2.1	
001 - 14 MacNeil Tunnel-Facade 03	Area	-1.1	
Receiver R2 FI F3	LrD,lim dB(A)	LrD 50.2 dB(A)	Sigma(LrD) 0.0 dB(A)
001 - 14 MacNeil Tunnel-Transmissive area 01	Area	49.3	
001 - 14 MacNeil Tunnel-Transmissive area 01	Area	43.2	
Vac 13	Point	17.4	
Vac 2	Point	16.4	
001 - 14 MacNeil Tunnel-Facade 04	Area	14.9	
Vac 15	Point	13.6	
Vac 16	Point	13.1	
Vac 25	Point	11.3	
001 - 14 MacNeil Tunnel-Roof 01	Area	11.1	
Vac 24	Point	10.6	
Vac 23	Point	10.3	
Vac 17	Point	10.2	
Vac 22	Point	10.2	
Vac 20	Point	10.1	
Vac 18	Point	10.1	
Vac 19	Point	10.1	
Vac 3	Point	9.6	
Vac 4	Point	7.0	
Vac 11	Point	6.6	
Vac 10	Point	6.5	
Vac 5	Point	6.4	
Vac 9	Point	6.4	

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Source	Source ty	LrD dB(A)	
Vac 7	Point	6.3	
001 - 14 MacNeil Tunnel-Facade 01	Area	6.3	
Vac 6	Point	6.3	
Vac 8	Point	6.3	
001 - 14 MacNeil Tunnel-Facade 02	Area	2.8	
001 - 14 MacNeil Tunnel-Facade 03	Area	-0.7	
Receiver R3 Fl G LrD,lim dB(A) LrD 33.5 dB(A) Sigma(LrD) 0.0 dB(A)			
001 - 14 MacNeil Tunnel-Transmissive area 01	Area	33.0	
001 - 14 MacNeil Tunnel-Transmissive area 01	Area	21.6	
Vac 5	Point	6.4	
Vac 8	Point	6.4	
Vac 4	Point	6.3	
Vac 7	Point	6.3	
Vac 6	Point	6.3	
Vac 9	Point	6.2	
Vac 10	Point	6.1	
Vac 11	Point	6.0	
Vac 13	Point	6.0	
Vac 3	Point	5.1	
Vac 20	Point	4.9	
Vac 22	Point	4.9	
Vac 23	Point	4.9	
Vac 18	Point	4.9	
Vac 24	Point	4.9	
Vac 19	Point	4.9	
Vac 25	Point	4.9	
Vac 17	Point	4.6	
Vac 15	Point	4.3	
Vac 16	Point	4.3	
Vac 2	Point	4.0	
001 - 14 MacNeil Tunnel-Roof 01	Area	-7.8	
001 - 14 MacNeil Tunnel-Facade 03	Area	-10.4	
001 - 14 MacNeil Tunnel-Facade 04	Area	-10.9	
001 - 14 MacNeil Tunnel-Facade 02	Area	-12.0	
001 - 14 MacNeil Tunnel-Facade 01	Area	-18.2	

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Source	Source ty	LrD dB(A)	
Receiver R4	FI G	LrD,lim dB(A)	LrD 44.3 dB(A) Sigma(LrD) 0.0 dB(A)
001 - 14 MacNeil Tunnel-Transmissive area 01	Area	44.1	
001 - 14 MacNeil Tunnel-Transmissive area 01	Area	31.0	
Vac 13	Point	16.4	
Vac 20	Point	15.7	
Vac 25	Point	15.6	
Vac 24	Point	15.4	
Vac 23	Point	15.2	
Vac 22	Point	15.1	
Vac 19	Point	13.2	
Vac 18	Point	12.0	
Vac 11	Point	11.7	
Vac 2	Point	10.4	
001 - 14 MacNeil Tunnel-Facade 04	Area	8.1	
Vac 17	Point	8.1	
Vac 16	Point	7.6	
Vac 10	Point	7.4	
Vac 15	Point	7.2	
Vac 9	Point	5.4	
001 - 14 MacNeil Tunnel-Roof 01	Area	5.1	
Vac 8	Point	4.3	
Vac 7	Point	3.8	
Vac 6	Point	3.3	
Vac 5	Point	3.0	
Vac 3	Point	2.9	
Vac 4	Point	2.8	
001 - 14 MacNeil Tunnel-Facade 01	Area	-0.5	
001 - 14 MacNeil Tunnel-Facade 02	Area	-1.2	
001 - 14 MacNeil Tunnel-Facade 03	Area	-9.2	

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