Appendix P

Oil Change Facility Alternative Acoustical Analysis

MEMORANDUM

To:	Monique Alaniz-Flejter, Principal Planner, City of Hemet
From:	Connor Burke, (Dudek)
Subject:	Stetson Corner Oil Change Facility Alternative General Plan Compatibility Acoustical Analysis
Date:	29 March 2021
cc:	Mark Storm, INCE Bd. Cert. (Dudek)
Attachment(s):	Figure 1: Site Plan Figure 2: Noise Modeling Receptor Locations A: Operational Noise Model Input & Output

Dudek has completed this site-specific acoustical assessment for the Stetson Corner project Oil Change Facility Alternative (project alternative) located in the City of Hemet, California (City). This memo has been prepared pursuant to the City Municipal Code Section 90-897 (b)(5), which outlines specific design requirements for automotive maintenance and report services, as follows:

> An acoustical analysis shall be prepared for any new or expanded facility proposed adjacent to residences or residentially-zoned parcels. The acoustical analysis shall be prepared prior to project approval and shall meet the land use compatibility standards of the general plan, with mitigation if necessary to reduce off-site noise impacts.

Pursuant to the Municipal Code requirement, this concise memo summarizes the operational noise associated with the project alternative that includes an oil change facility and addresses its compliance with the City's General Plan Noise Element.

1 Project Description and Context

The Oil Change Facility Alternative was considered as a potentially feasible use that would reduce vehicle trips to and from the project site such that queuing impacts would potentially be reduced as compared to those of the proposed project. This alternative would replace the proposed project's drive-thru restaurant with a 1,760 square foot oil change facility (Figure 1, Site Plan). The facility would also include a loading bay, a small waiting room area, storage area, bathroom, and sales area. The access lanes to the oil change facility would include a dual-lane entryway, rather than a single-file lane as proposed by the drive-thru restaurant. Two bays would be included for vehicle maintenance within the structure along with two vehicle lifts, and associated equipment such as air compressors, pneumatic tools, and fluid storage and dispensing systems. The remainder of the project site and on/off-site components would remain the same as the proposed project.

City of Hemet General Plan 2030

Applicable policies and standards governing environmental noise in the City are set forth in the General Plan Public Safety Element. Table 6.5 from the City's General Plan 2030 outlines the acceptable daytime/nighttime noise performance standards for non-transportation noise sources and is detailed in Table 1.

Table 1. Noise Level Performance Standards for Non-transportation Noise Sources

Noise Level Descriptor	Daytime 7:00 a.m. to 10:00 p.m.	Nighttime 10:00 p.m. to 7:00 a.m.
Hourly Average Level (L_{eq})	60 dBA	45 dBA
Maximum Equivalent Levels (L_{max})	75 dBA	65 dBA

Source: City of Hemet General Plan 2030, Public Safety Element, Table 6.5 (City of Hemet 2012)
Notes: Each of the noise levels specified shall be lowered by 5 decibels for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises. These noise level standards do not apply to residential units established in conjunction with industrial or commercial uses (e.g., caretaker dwellings). The noise standard is to be applied at the property lines of the affected land use.

2 Operational Noise Prediction and Impact Assessment

While this memo is being prepared pursuant to the City's Municipal Code Section 90-897 specifically for automotive maintenance and repair services, this memo addresses all noise that would be generated by the project alternative (i.e., gas station, oil change, car wash) because noise generated from all sources on the project site would combine at residential receiver locations and the General Plan Compatibility standards apply to all non-transportation related noise sources (i.e., not for only automotive maintenance and repair services). The proposed project alternative is expected to feature "stationary" producers of noise associated with on-site operations that are distinct from off-site transportation-related noise. The proposed project alternative operations would occur during daytime hours; therefore, the proposed project alternative must demonstrate compliance to the City's 60 dBA noise limit at the property line of nearby residential receptors in accordance with Table 1. The assumed major on-site operating noise sources during daytime hours (7:00 a.m. to 10:00 p.m.) are as follows:

- The 4,088 square foot convenience store (e.g., 7-Eleven) would likely feature a packaged air-conditioner on its roof, which would be similar to a 5-ton (refrigeration) air-cooled condensing unit resembling a Carrier CA16NA 060, and thus having a reference sound power level of 78 dBA (or 76 dBA if equipped with a "sound shield" [Carrier Corporation 2012]). Unit tonnage is based off reference data for buildings of similar usage and square footage (Loren Cook Company 2015). This rooftop HVAC unit would also operate during some or all nighttime hours.
- An approximately 1,760 square foot oil change facility with two vehicle lifts and associated equipment such as air compressors, pneumatic tools. Sound sources include as follows:
    - Each of two sets of compressor and average pneumatic tool operation exhibiting 98 dBA sound power level; and
    - Two 5-ton (refrigeration) air-cooled condensing (ACC) units having a reference sound power level of 78 dBA each.
- An approximately 3,590 square-foot car wash with 21 operating self-serve vacuum stations under a 3,096-square-foot canopy. Sound sources include:
    - Each vacuum unit exhibiting 77 dBA sound power level; and,
    - Each of three car wash tunnel exit air dryers (blowers) exhibiting 104 dBA sound power level.

- 10 idling vehicles queued up for the car-wash and 9 idling vehicles in line for the oil change drive-thru for no more than five minutes in any hour (8.25% of the time), consistent with state law for trucks and the site plan (see Figure 1). Conservatively, a pick-up truck is considered idling with L_{max} = 71 dBA at 50 feet. Three additional vehicles are idling in parking stalls near the proposed restaurant, and three are idling at parking stalls associated with the convenience store.
- An Idling recreational vehicle (RV) idling just before and after using the fuel pumps, up to one at a time during daytime and nighttime hours and idling for no more than five minutes in any hour (8.25% of the time), consistent with state law for trucks. Conservatively, a large RV is considered an idling bus with L_{max} = 72 dBA at 50 feet.
- Up to six fuel pumps operate during the day for no more than 20 minutes in any hour (33% of the time), and each generates no more than 80 dBA sound power level.

The aggregate sound emission of these proposed project alternative on-site noise-producing sources was predicted with CadnaA, a commercially available sound propagation modeling software program based on International Organization for Standardization (ISO) 9613-2 algorithms and reference information. Key modeling parameters and assumptions utilized by the software are included in Attachment A. It is noted that a concrete masonry unit wall currently separates the project site from adjacent residential uses, and was included in the analysis as it would remain in place with the implementation of the project alternative.

Table 2 compares the predicted aggregate proposed project alternative operation noise emission levels (i.e., at the modeled receptor locations appearing in Figure 2) and the applicable City of Hemet daytime noise thresholds. Refer also to Attachment A, which includes a noise contour map for the project alternative. Even under these conservative sound modeling conditions, such as all 21 vacuum stations in use by prospective customers of the car wash, no exceedances with respect to the municipal standards are expected. The project alternative would be in compliance with Goal PS-13 and associated policy PS-13.3, as the proposed stationary noise sources would not encroach onto noise-sensitive land uses and the predicted aggregate noise level would not exceed the 60 dBA L_{eq} daytime threshold. Thus, the Oil Change Facility Alternative's operational noise impact from stationary sources during daytime hours would be **less than significant**.

Table 2. Predicted Project Alternative Daytime Stationary Operations Noise at Nearest Sensitive Receptors

Receptor Tag (and Description)	Predicted Stationary Ops Noise Level (dBA L_{eq})	Daytime Hourly L_{eq} Limit (residential/industrial zone)*	Exceedance?
M1 - (southwestern project boundary)	53	60	No
M2 - (northeastern project boundary)	54	60	No
M3 - (residence north of Stetson)	53	60	No
M4 - (residence north of Stetson)	50	60	No
M5 - (residence south of Stetson)	53	60	No
M6 - (residence south of Stetson)	57	60	No
M7 - (residence south of Stetson)	58	60	No
M8 - (residence south of Stetson)	55	60	No

Source: Attachment A
Notes: *threshold from Table 1.

Table 1 also indicates the City has maximum sound level (L_{max}) performance standards, which for daytime hours and applied at the affected offsite receptors (i.e., the residences to the north or south of the proposed project site) would be 75 dBA. Compliance with this standard, along with the hourly L_{eq} standard of 60 dBA previously presented and discussed, is expected for the following reasons:

- The modeled sound sources, including the convenience store and oil change facility rooftop air-conditioning units, vacuum systems, car wash dryers, and even the idling customer vehicles expected onsite represent types of mechanical equipment that operate in a relatively "steady-state" manner and consequently produce sound of a generally continuous nature such that the L_{eq} measured over a sample hour would vary little with time and be similar to what may be a slightly higher and momentary L_{max} value. In other words, the sound energy being averaged over time is steady and not represented by one or a few peaks of very loud sound. The expected difference between the L_{eq} and L_{max} values for such noise-producing steady-state equipment would be much less than the 15 dB difference between the 60 dBA magnitude of the City's hourly L_{eq} standard and the 75 dBA L_{max} standard.
- The prediction model conservatively quantifies the operation of onsite pneumatic tools with a reference sound level based upon an L_{max} sound pressure (L_p) value at a distance of 50 feet as listed in Table 1 of the Federal Highway Administration (FHWA) Roadway Construction Noise Model (RCNM) *User's Guide*. The context of L_{max} for listed equipment in this oft-used industry reference is that it describes the sound level when equipment is operating at full power.
- Although previously noted temporal adjustments, such as the 5-minutes per hour for idling vehicles or the 20-minutes per hour for operating fuel pumps, may have been applied in the predictive modeling of hourly L_{eq} values at receptors for direct comparison with the City's hourly L_{eq} standard of 60 dBA, they do not represent more than an 11 dB adjustment to the sound source emission. Put another way, if these adjustment terms were dropped to yield a sound level akin to an L_{max}, the source sound level would only be greater by that amount and less than the 15 dB difference between the 60 dBA and 75 dBA standard magnitude.
- Although L_{max} values for modeled sources may be different from the L_{eq} values as discussed above, the other model parameters are unchanged. For example, an L_{max} sound level still attenuates with distance traveled, and would be occluded (and thus reduced) by intervening barriers and other structures.

In summary, a prediction model of L_{max} sound level for the proposed project would not elevate onsite sound source levels by more than 15 dBA, and the modeled site conditions and their surroundings would remain the same; hence, it is reasonable to conclude that compliance with the City's hourly L_{eq} standard of 60 dBA during daytime hours also means expected compliance with the L_{max} standard of 75 dBA.

The proposed project alternative would not result in generation of a substantial increase in ambient noise levels in the vicinity of the project site in excess of standards established in the City's General Plan or Noise Ordinance. The results indicate that potential noise impacts during operation activities would be less than significant during daytime hours when operational activities are usually expected.

3 Conclusions

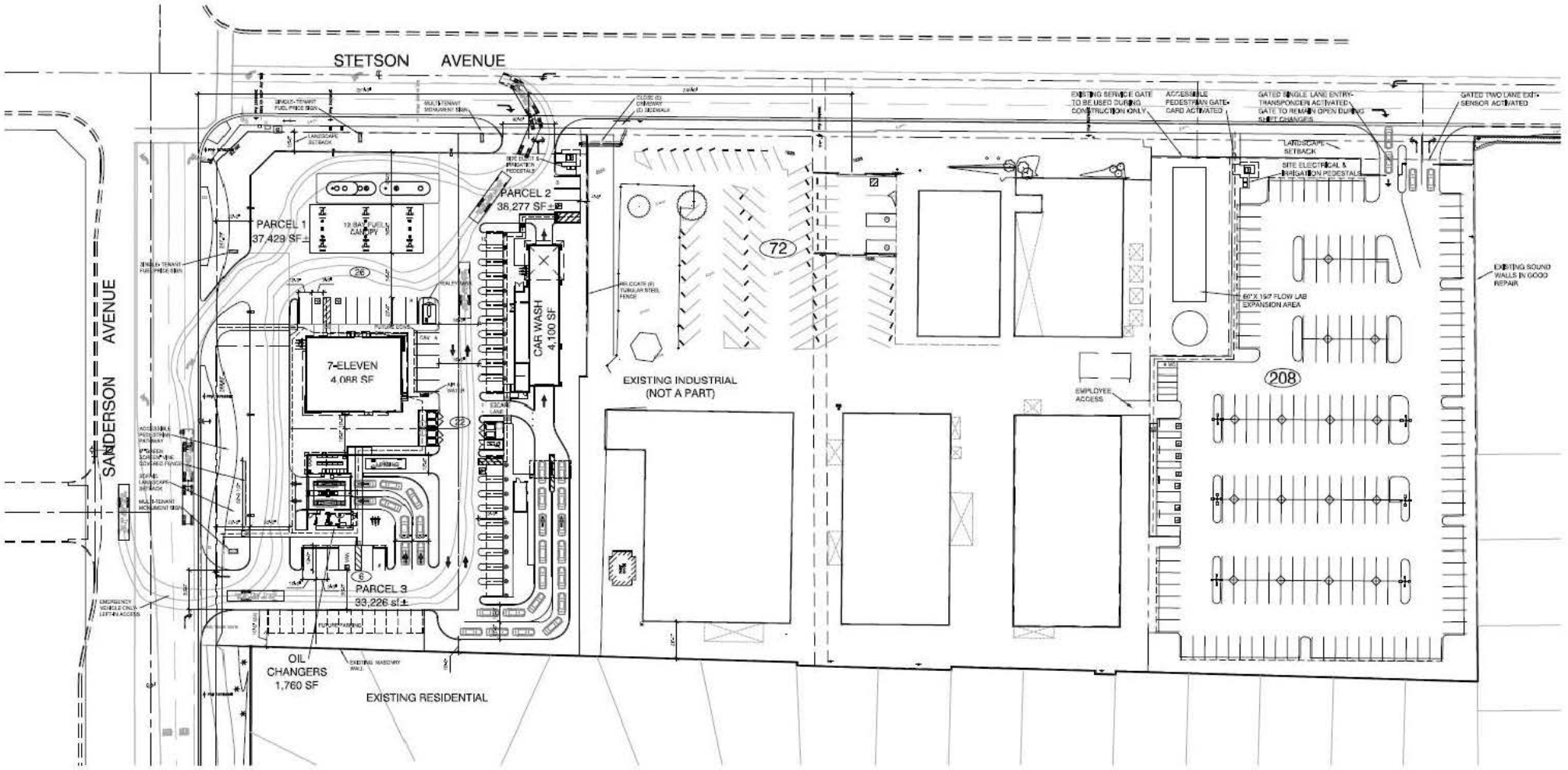
This technical noise memorandum was conducted to satisfy the City's Municipal Code Sec. 90-897 (b)(5) requirement for automotive maintenance and report services acoustical analysis. The proposed project alternative would not result in generation of a substantial increase in ambient noise levels in the vicinity of the project site in excess of standards established in the City's General Plan or Noise Ordinance. The results indicate that potential noise impacts during operation activities would be less than significant during daytime hours when operational activities are usually expected.

Should you have any questions or require additional information, please do not hesitate to contact Connor Burke at 760.479.4272, cburke@dudek.com.

Sincerely,

Connor Burke,
Environmental Analyst

Att. *Figure 1: Site Plan*
Figure 2: Noise Modeling Receptor Locations
A: Operational Noise Modeling Input and Output



CONCEPTUAL SITE PLAN
SCHEME Vv3

0 20' 40' 80'
SCALE: 1" = 40.00'
NORTH

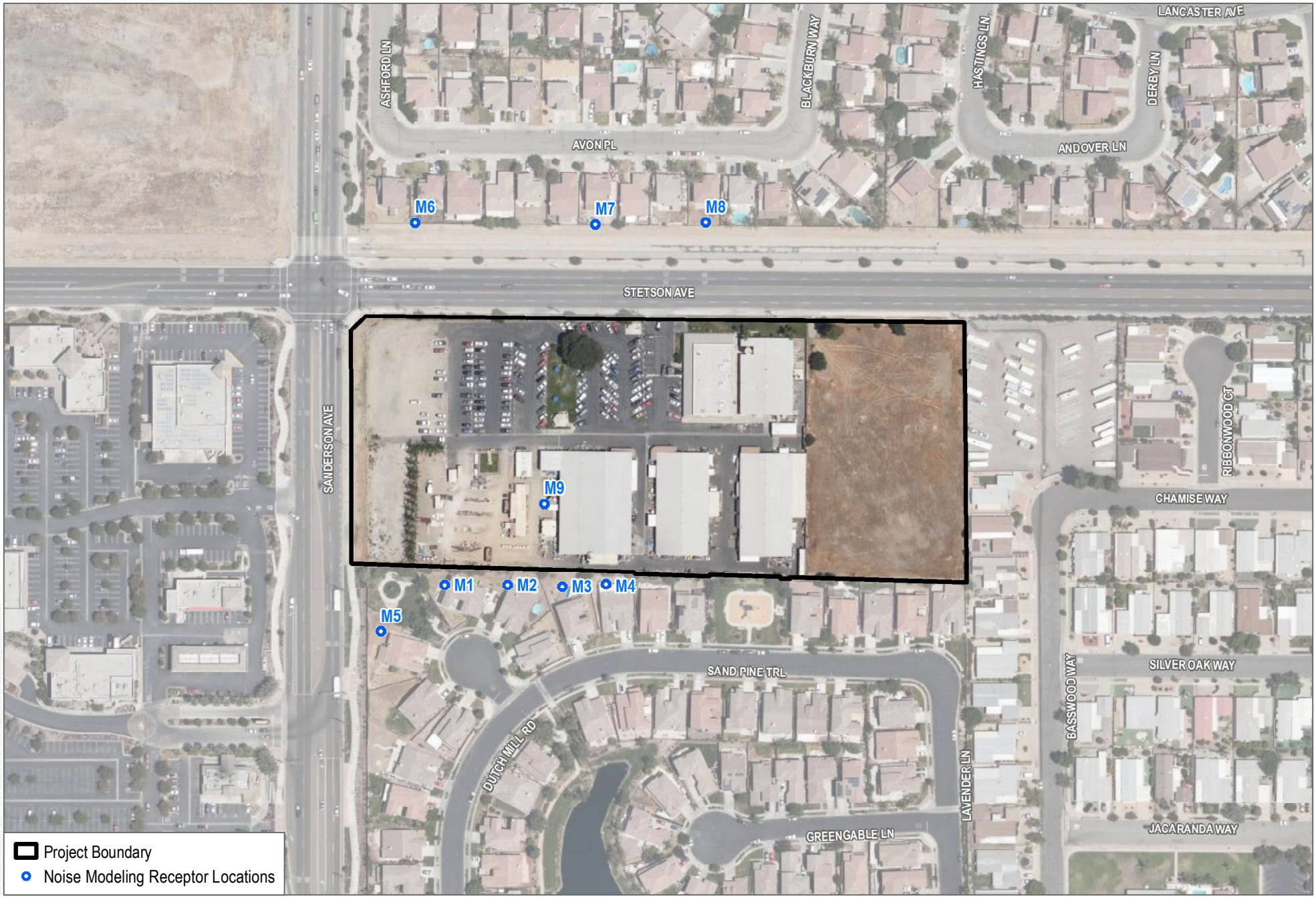
SAGE RETAIL & McHOLLAND PARKING
HEMET, CALIFORNIA

RANCHO McHOLLAND, LLC
2937 BIRCH STREET
NEWPORT BEACH, CA 92660
949.554.8100

GKP PIERCE ARCHITECTS

FIGURE 1
Site Plan
Stetson Corner

DUDEK



SOURCE: Riverside County 2020; Bing Maps

DUDEK

0 150 300 Feet

FIGURE 2

Noise Modeling Receptor Locations

Stetson Corner

Attachment A

Operational Noise Model Input and Output Data

Attachment A: Operational Noise Modeling Input & Output

Recievers

Name	M.	ID	Level Lr		Limit. Value		Land Use		Height:		Coordinates		
			Day (dBA)	Night (dBA)	Day (dBA)	Night (dBA)	Type	Auto	Noise Type	(ft)	X (ft)	Y (ft)	Z (ft)
M1			52.6	52.6	0	0	x	Total	5 r		448.94	188.62	5
M2			54.2	54.2	0	0	x	Total	5 r		551.78	182.36	5
M3			59.1	59.1	0	0	x	Total	5 r		699.43	182.55	5
M4			50	50	0	0	x	Total	5 r		702.97	187.25	5
M5			52.9	52.9	0	0	x	Total	5 r		569.99	108.95	5
M6			58.8	58.8	0	0	x	Total	5 r		596.35	749.35	5
M7			58.3	58.3	0	0	x	Total	5 r		572.65	749.35	5
M8			54.7	54.7	0	0	x	Total	5 r		681.1	745.05	5
M9			78.4	78.4	0	0	x	Total	5 r		607.58	193.27	5

Source Library

Name	ID	Type	Octave Spectrum (dB)											Source
			Weight.	31.5	63	125	250	500	1000	2000	4000	8000	A	lin	
5 Ton Carrier CA18NA Air Cooli	ACU	Lw	A		50	55	58.5	62.5	66.5	68	65	59.5	51.5	72.1	90	
Idling Car	Car	Lw	A		67	76	67	92	92	92	88	79	69	97.8	109.9	Car
Idling RV	RV	Lw	A		68	77	68	95	95	95	89	80	79	96.8	110.9	RV
Vacuum Islands	VAC	Lw	A		50	50	49	52	52	58	64	67	69	76.9	84.1	Vacutec
Car Wash Tunnel Dryer	BL1	Lw	A		57	76	81	84	96	90	90	85	78	104.2	111.2	Blower
Compressor	Comp	Lw	A		62	81	81	80	85	86	86	84	81	92.7	121.6	

Point Sources

Name	M.	ID	Result. PWL			Lw / Ll		Correction			Sound Reduction		Attenuatio	Operating Time			KO	Freq.	Direct.	Height:		Coordinates		
			Day (dBA)	Evening (dBA)	Night (dBA)	Type	Value	norm. dB(A)	Day dB(A)	Evening dB(A)	Night dB(A)	R	Area (ft²)		Day (min)	Special (min)	Night (min)	(dB)	(Hz)		(ft)		X (ft)	Y (ft)	Z (ft)
Vacutec1			78.9	78.9	78.9	Lw	VAC		0	0	0							0		(none)		4 r		550.82	521.35	4
6ks Pump	-		80.1	80.1	80.1	SET												0		(none)		4 r		478.65	540.33	4
6ks Pump	-		80.1	80.1	80.1	SET												0		(none)		4 r		401.39	515.19	4
7-11 HVAC		HVAC1	72.1	72.1	72.1	Lw	ACU		0	0	0							0		(none)		22 r		427.24	417.42	22
6ks Pump			80.1	80.1	80.1	SET												0		(none)		4 r		470.41	589.47	4
6ks Pump	-		80.1	80.1	80.1	SET												0		(none)		4 r		475.34	514.27	4
6ks Pump			80.1	80.1	80.1	SET												0		(none)		4 r		489.76	514.49	4
6ks Pump	-		80.1	80.1	80.1	SET												0		(none)		4 r		440.14	515.15	4
6ks Pump			80.1	80.1	80.1	SET												0		(none)		4 r		495.85	514.49	4
6ks Pump	-		80.1	80.1	80.1	SET												0		(none)		4 r		440.57	540.05	4
6ks Pump			80.1	80.1	80.1	SET												0		(none)		4 r		488.5	540.67	4
6ks Pump			80.1	80.1	80.1	SET												0		(none)		4 r		405.81	589.81	4
6ks Pump	-		80.1	80.1	80.1	SET												0		(none)		4 r		599.94	540.19	4
6ks Pump			80.1	80.1	80.1	SET												0		(none)		4 r		408.11	514.98	4
Vacutec1			78.9	78.9	78.9	Lw	VAC		0	0	0							0		(none)		4 r		550.79	509.97	4
Vacutec1			78.9	78.9	78.9	Lw	VAC		0	0	0							0		(none)		4 r		550.98	496.91	4
Vacutec1			78.9	78.9	78.9	Lw	VAC		0	0	0							0		(none)		4 r		550.66	487.54	4
Vacutec1			78.9	78.9	78.9	Lw	VAC		0	0	0							0		(none)		4 r		550.45	478.7	4
Vacutec1			78.9	78.9	78.9	Lw	VAC		0	0	0							0		(none)		4 r		550.45	441.28	4
Vacutec1			78.9	78.9	78.9	Lw	VAC		0	0	0							0		(none)		4 r		550.02	484.25	4
Vacutec1			78.9	78.9	78.9	Lw	VAC		0	0	0							0		(none)		4 r		550.07	452.1	4
Vacutec1			78.9	78.9	78.9	Lw	VAC		0	0	0							0		(none)		4 r		550.65	419.89	4
Vacutec1			78.9	78.9	78.9	Lw	VAC		0	0	0							0		(none)		4 r		550.5	418.06	4
Vacutec1			78.9	78.9	78.9	Lw	VAC		0	0	0							0		(none)		4 r		550.65	408.9	4
Vacutec1			78.9	78.9	78.9	Lw	VAC		0	0	0							0		(none)		4 r		551.72	936.46	4
Vacutec1			78.9	78.9	78.9	Lw	VAC		0	0	0							0		(none)		4 r		551.99	924.43	4
Vacutec1			78.9	78.9	78.9	Lw	VAC		0	0	0							0		(none)		4 r		551.85	901.96	4
Vacutec1			78.9	78.9	78.9	Lw	VAC		0	0	0							0		(none)		4 r		551.99	190.49	4
Vacutec1			78.9	78.9	78.9	Lw	VAC		0	0	0							0		(none)		4 r		551.72	278.05	4
Vacutec1			78.9	78.9	78.9	Lw	VAC		0	0	0							0		(none)		4 r		552.22	249.76	4
Vacutec1			78.9	78.9	78.9	Lw	VAC		0	0	0							0		(none)		4 r		551.01	292.01	4
Vacutec1			78.9	78.9	78.9	Lw	VAC		0	0	0							0		(none)		4 r		552.19	255.67	4
Vacutec1			78.9	78.9	78.9	Lw	VAC		0	0	0							0		(none)		4 r		551.92	286.11	4
Vacutec1			78.9	78.9	78.9	Lw	VAC		0	0	0							0		(none)		4 r		551.58	919.86	4
Idling Car	+		97.8	97.8	97.8	Lw	Car		0	0	0							0		(none)		3 r		560.72	972.84	3
Idling Car	+		97.8	97.8	97.8	Lw	Car		0	0	0							0		(none)		4 r		598.22	258.43	4
Idling Car	+		97.8	97.8	97.8	Lw	Car		0	0	0							0		(none)		4 r		561.51	154.07	4
Idling Car	+		97.8	97.8	97.8	Lw	Car		0	0	0							0		(none)		4 r		561.25	174.3	4
Idling Car	+		97.8	97.8	97.8	Lw	Car		0	0	0							0		(none)		4 r		598.11	274.68	4
Idling Car	+		97.8	97.8	97.8	Lw	Car		0	0	0							0		(none)		4 r		595.68	259.99	4
Idling Car	+		97.8	97.8	97.8	Lw	Car		0	0	0							0		(none)		4 r		560.25	295.71	4
Idling Car			97.8	97.8	97.8	Lw	Car		0	0	0							0		(none)		4 r		560.25	315.45	4
Idling Car	+		97.8	97.8	97.8	Lw	Car		0	0	0							0		(none)		4 r		595.68	918.74	4
Idling Car			97.8	97.8	97.8	Lw	Car		0	0	0							0		(none)		4 r		579.85	938.51	4
Idling Car	+		97.8	97.8	97.8	Lw	Car		0	0	0							0		(none)		4 r		597	938.08	4
Idling Car			97.8	97.8	97.8	Lw	Car		0	0	0							0		(none)		4 r		479.57	297.64	4
Idling Car			97.8	97.8	97.8	Lw	Car		0	0	0							0		(none)		4 r		467.89	298.99	4
Idling Car			97.8	97.8	97.8	Lw	Car		0	0	0							0		(none)		4 r		488.4	925.78	4
Idling Car			97.8	97.8	97.8	Lw	Car		0	0	0							0		(none)		4 r		472.41	919.28	4
Idling Car			97.8	97.8	97.8	Lw	Car		0	0	0							0		(none)		4 r		451.68	925.43	4
Idling Car			97.8	97.8	97.8	Lw	Car		0	0	0							0		(none)		4 r		489.36	911.77	4
Idling Car			97.8	97.8	97.8	Lw	Car		0	0	0							0		(none)		4 r		451.76	910.76	4
Idling Car			97.8	97.8	97.8	Lw	Car		0	0	0							0		(none)		4 r		458.2	480.42	4
Idling Car			97.8	97.8	97.8	Lw	Car		0	0	0							0		(none)		4 r		427.44	480.42	4
Idling Car			97.8	97.8	97.8	Lw	Car		0	0	0							0		(none)		4 r		484.93	419.84	4
Idling Car			97.8	97.8	97.8	Lw	Car		0	0	0							0		(none)		4 r		488.41	278.07	4
Idling Car			97.8	97.8	97.8	Lw	Car		0	0	0							0		(none)		4 r		481.08	278.21	4
compressor/pneumatic tools			97.8	97.8	97.8	Lw	Car		0	0	0							0		(none)		4 r		407.08	925.85	4
Compressor/pneumatic tools			92.7	92.7	92.7	Lw	Comp		0	0	0							0		(none)		4 r		408.79	908.86	4
Oil HVAC		HVAC1	72.1	72.1	72.1	Lw	ACU		0	0	0							0		(none)		22 r		405.58	941.09	22
Oil HVAC		HVAC1	72.1	72.1	72.1	Lw	ACU		0	0	0							0		(none)		22 r		411.42	298.04	22

Area Sources

Name	M.	ID	Result. PWL			Result. PWL"			Lw / Ll			Correction			Sound Reduction		Attenuatio	Operating Time			KO	Freq.	Direct.	Moving Pt. Src Number		
			Day (dBA)	Evening (dBA)	Night (dBA)	Day (dBA)	Evening (dBA)	Night (dBA)	Type	Value	norm. dB(A)	Day dB(A)	Evening dB(A)	Night dB(A)	R	Area (ft²)		Day (min)	Special (min)	Night (min)	(dB)	(Hz)		Day	Evening	Night
Idling RV			96.8	96.8	96.8	66.7	66.7	66.7	Lw	RV		0	0	0							0	(none)				

Vertical Area Sources

Name	M.	ID	Result. PWL			Result. PWL"			Lw / Ll			Correction			Sound Reduction		Attenuatio	Operating Time			KO	Freq.	Direct.
			Day (dBA)	Evening (dBA)	Night (dBA)	Day (dBA)	Evening (dBA)	Night (dBA)	Type	Value	norm. dB(A)	Day dB(A)	Evening dB(A)	Night dB(A)	R	Area (ft²)		Day (min)	Special (min)	Night (min)	(dB)	(Hz)	
Dryer			109.2	109.2	109.2	101.4	101.4	101.4	Lw	BL1		0	0	0			-5				3	(none)	

CadnaA Output Map