July 8th, 2013

Re: Vacutech Sound Study Projections for SouthCoast Speedwash, Santa Ana, CA.

To: City of Santa Ana / Planning Commission/ Plan Review

Due to the fact that there is no formal data available on vacuum sound projections beyond fifteen feet. I have gathered the following data using the information contained within the Lakewood Carwash Sound Study, performed by Vacutech. This data provided is only able to give a decibel reading at a maximum of 15'.

The chart below shows a cumulative average of that data and is presented in an incremental form based on the worst case scenario of the vacuum hoses being off the hook, so to speak. I took the collective average of the 5 ft. reading through the 15ft. reading and presented the data in the table below.

Vacutech Noise Study Projections	
Average of all ten hoses off	77.24 db
Average @ 25'	74.53 db
Average @ 35'	71.82 db
Average @ 45'	69.11 db
Average @ 55'	66.40 db
Average @ 65'	63.69 db

Refer to attached Vacutech Sound Study for All readings

The data from the Vacutech Sound Study also shows an ambient noise level of 74.4 – 82.3 db which is conclusive with the sound study that was performed by ACS on the existing parcel of the Bristol Speedwash. These numbers are all based on averages but do not appear to be out of line.

Below you will find the Vacutech sound study performed at the Lakewood Carwash. After reviewing the data provided by Vacutech there is no apparent reason that noise from the vacuum system would reach above ambient sound levels at the property line of the proposed project. Any questions or comments please feel free to call.

Ron Akers

ACS/Engineering

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Sound Study – Lakewood Car Wash

Date: 01/19/2012

Ambient Sound Level: 74.4 – 82.3

Readings with Vacuum System On

3 Feet	84.7
5 Feet	83.6
10 Feet	82.2
15 Feet	81.2
25 Feet	79.1
40 Feet	78.2

SOUND LEVEL METER USED: SIMPSON MODEL #40003 – MSHA APPROVED. MEETS OSHA & WALSH-HEALY REQUIREMENTS FOR NOISE CONTROL. CONFORMS TO ANSI S1.4-1983, IEC 651 SPECS FOR METER TYPE.

NOTE: Typical outside vacuum system with 1 ½" X 15' Vacuum nozzles 4" wide by ¾" opening, in use with Customer vacuuming.

Readings From Hose Position 1

Readings	Hose Hung	Hose Off
3 Feet	82.1	84.8
5 Feet	81.6	84.9
10 Feet	79.5	82.1
15 Feet	81	81.2

Readings From Hose Position 2

Readings	Hose Hung	Hose Off
3 Feet	80.2	83.4
5 Feet	81.1	83.5
10 Feet	79.6	79.8
15 Feet	79.1	78.8

Readings From Hose Position 3

Readings	Hose Hung	Hose Off
3 Feet	80.1	81.3
5 Feet	78.7	80.1
10 Feet	79.4	78.6
15 Feet	79.5	77.5

Readings From Hose Position 4

Readings	Hose Hung	Hose Off
3 Feet	80.3	80.5
5 Feet	78.5	78
10 Feet	77.8	79.2
15 Feet	77.2	76.2

Readings From Hose Position 5

Readings	Hose Hung	Hose Off
3 Feet	75.5	80.4
5 Feet	75.1	78.3
10 Feet	78.7	77.9
15 Feet	76.6	77.1

Readings From Hose Position 6

Readings	Hose Hung	Hose Off
3 Feet	75.9	78.6
5 Feet	74.8	78.2
10 Feet	78.8	78.6
15 Feet	78.2	74.7

Readings From Hose Position 7

Readings	Hose Hung	Hose Off
3 Feet	74.8	78.9
5 Feet	74.5	78.8
10 Feet	78.7	0.5
15 Feet	75.1	77.1

Readings From Hose Position 8

Readings	Hose Hung	Hose Off
3 Feet	76.8	79.8
5 Feet	77.3	79.5
10 Feet	76.5	78.7
15 Feet	80.2	76.5

Readings From Hose Position 9

Readings	Hose Hung	Hose Off
3 Feet	75.6	79.8
5 Feet	75.8	78.9
10 Feet	74.9	77.3
15 Feet	79.5	78.5

Readings From Hose Position 10

Readings	Hose Hung	Hose Off
3 Feet	74.8	77.1
5 Feet	75.6	79.3
10 Feet	73.9	75.4
15 Feet	71.1	74.8

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Sound Information

Source	dBA SPL
Produces Pain	120-140
Jet Aircraft During Takeoff (at 20 meters)	130
Snowmobile Tractor Without Cab	120
Rock Concert	110
Die Forging Hammer Gas Weed-Whacker Chain Saw Pneumatic Drill	100-105
Home Lawn Mowers	95 to 100 dB
Semi-trailers (at 20 meters)	90
Heavy Traffic	80
Automobile (at 20 meters)	70
Vacuum Cleaner	65
Conversational Speech (at 1 meter)	60
Quiet Business Office	50
Residential Area at Night	40
Whisper, Rustle of Leaves	20
Rustle of Leaves	10
Threshold of Audibility	0

SOUND LEVEL METER READINGS

MODEL: **FT-DD-T330HP4** (30 HP TURBINE VACUUM PRODUCER)

READING ONE: 41 DBA, 3 FEET FROM CORNER OF BUILDING @ 45° ANGLE.

READING TWO: 34 DBA, 5 FEET CORNER OF BUILDING @ 45° ANGLE.

READING THREE: 20 DBA, 10 FEET FROM CORNER OF BUILDING @ 45° ANGLE.

READING FOUR: 9 DBA, 25 FEET FROM CORNER OF BUILDING @ 45° ANGLE.

READINGS WERE TAKEN OUTSIDE A CINDER BLOCK BUILDING EQUIPMENT ROOM WITH A STEEL DOOR, CONCRETE SLAB, AND A METAL ROOF.

SOUND LEVEL METER USED:

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MEETS OSHA & WALSH-HEALY REQUIREMENTS FOR NOISE CONTROL.
CONFORMS TO ANSI S1.4-1983, IEC 651 SPECS FOR METER TYPE.

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SOUND LEVEL METER READINGS

MODEL: FT-DD-T330HP4 (30HP TURBINE VACUUM PRODUCER)

READING ONE: 69 DB-A, 10 FEET FROM TURBINE @ 45° ANGLE
AND NO BACKGROUND NOISE OR OUTSIDE INTERFERENCE.

READING TWO: 54 DB-A, 20 FEET FROM TURBINE @ 45° ANGLE
AND NO BACKGROUND NOISE OR OUTSIDE INTERFERENCE.

READING THREE: 38 DB-A, 30 FEET FROM TURBINE @ 45° ANGLE
AND NO BACKGROUND NOISE OR OUTSIDE INTERFERENCE.

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