ATTACHMENT A

CALIFORNIA WATER SERVICE
Los Altos District 949 B Street
Los Altos, CA 94024 *Tel:* (650) 917-0152

October 8, 2021

Design Review Commission
Los Altos City Hall
1 North San Antonio Road
Los Altos, CA 94022

Re: Generator Installation at Pump Station 9 (10900 Beechwood Lane)

Dear Design Review Commission,

This is a variance/use permit justification letter regarding California Water Service (Cal Water) installing a 125 kW emergency generator at pump station 9 (10900 Beechwood Lane, Los Altos, CA 94024). The generator would provide backup power to the pump that provides potable drinking water and fire protection to several hundred homes. This emergency backup generator also would provide power to the on-site radio communication equipment that is necessary to control the water pump. The variance being requested is regarding the front setback, lot coverage, and floor area as discussed below.

Front Setback
The generator is in the front yard of the station and is considered a detached accessory structure. The generator distance from the nearest station property line meets the standard distance according to National Fire Protection Association (NFPA) 30, which is a minimum of 10 feet distance from the property line. However, the generator location does not meet 30 feet setback required by the R1-20 zoning requirements (14.10.080). Cal Water proposes this location as it complies with NFPA 30 regulations, is constructible, free of underground utilities, and complies with the City noise ordinance. Three other locations on the property were studied but these locations did not comply with NFPA 30 or the city noise ordinance. Therefore, Cal Water is requesting a variance on the front yard setback.

We understand there may be concern about how the generator will affect the visual aesthetic of the neighborhood and how noisy it will be if it is installed in the front yard setback. More information on these items is included below.

Screening. The generator will be screened from public view by the existing mature landscaping that exists between the existing fence and street. The landscaping is taller than the top of the generator would be. The existing landscaping is shown in Figure 1.

Noise. The generator will be placed inside a custom enclosure specifically built to reduce the sound pressure level. This generator custom enclosure sound rating is 65dbA at 23 feet. H&E performed a noise study, refer exhibit A. This study shows that the generator custom outdoor enclosure, meets the City's daytime limit of 60dbA for short-duration noise in residential areas. Therefore, the custom-built reduced-noise generator meets municipality code 6.16.050A.2.B. After installation is complete, the generator will be tested by operating it for 15 minutes every week. All generator testing would be done between 7:30 a.m. and 3:30 p.m.

Figure 1. 10900 Beechwood Existing Landscaping Looking North

Lot Coverage and Floor Area

The existing potable water storage tank has a 27% lot coverage which exceeds the less than 25% lot coverage requirement for the R1-20 zoning. The generator does not add much footprint, so the site coverage would remain at 27% after the generator is installed. Furthermore, the floor area is at 27% percent with the tank and the zoning requires it to be less than 21%. The generator does not add much footprint, so the floor area would remain at 27% after the generator is installed.

City comments shown in bold are addressed below.

1. **That the proposed location of the conditional use is desirable or essential to the public health, safety, comfort, convenience, prosperity, or welfare;**

Continuous operation of the pump is essential to provide potable drinking water and fire protection to several hundred homes. The pump needs electricity that would be provided by the generator when grid power is not available.

2. That the proposed location of the conditional use is in accordance with the objectives of the zoning plan as stated in Chapter 14.02 of this title;

The zoning plan objectives include the following.

A. To guide community growth along sound lines;
This project does not affect this objective.

B. To ensure a harmonious, convenient relationship among land uses;
Potable water is essential to the surrounding land uses. During an emergency, having the installed generator will make this neighborhood more resilient.

C. To promote a safe, workable traffic circulation system;
This project does not affect this objective.

D. To provide appropriate locations for needed community facilities;
This project does not affect this objective.

E. To promote business activities of appropriate types;
This project does not affect this objective.

F. To protect and enhance real property values within the city; and
Having a robust water supply is a benefit to the neighborhood.

G. To conserve the city's natural beauty, to improve its appearance, and to preserve and enhance its distinctive physical character.
As requested by the City, a solid fence with lattice is provided to screen the generator. There is also existing mature vegetation that would screen the generator.

3. That the proposed location of the conditional use, under the circumstances of the particular case, will not be detrimental to the health, safety, comfort, convenience, prosperity, or welfare of persons residing or working in the vicinity or injurious to property or improvements in the vicinity.

This project is not detrimental to the health, safety, comfort, convenience, prosperity, or welfare of persons residing or working in the vicinity or injurious to property or improvements in the vicinity. The project benefits health and safety as potable water would be able to continue to be

provided during a power outage. The generator noise has been mitigated as discussed in this letter and is not considered detrimental to the neighbors.

4. That the proposed conditional use will comply with the regulations prescribed for the district in which the site is located and the general provisions of Chapter 14.02.

This project will comply with the regulations and general provisions of Chapter 14.02 of the Los Altos Municipal Code as listed in the answer to Question 2. The variance being requested in this letter is regarding the requirements for front setback, lot coverage, and floor area.

5. The variance(s) shall be granted only when, because of special circumstances applicable to the property, including size, shape, topography, location, or surroundings, the strict application of the provisions of the Zoning Ordinance deprive the subject property of privileges enjoyed by other properties in the vicinity and under identical zoning classifications.

This application is unique as the property is used to provide a safe and reliable water supply to the neighboring properties.

Protecting customer health and safety is Cal Water's highest priority. This water system upgrade will help ensure that we can continue providing both a reliable supply of high quality water to our neighbors in this portion of Los Altos and sufficient fire protection for first responders in emergencies. If you have any questions, please contact the project engineer, Mandy Macatiag, at (408) 828-0522.

Sincerely,

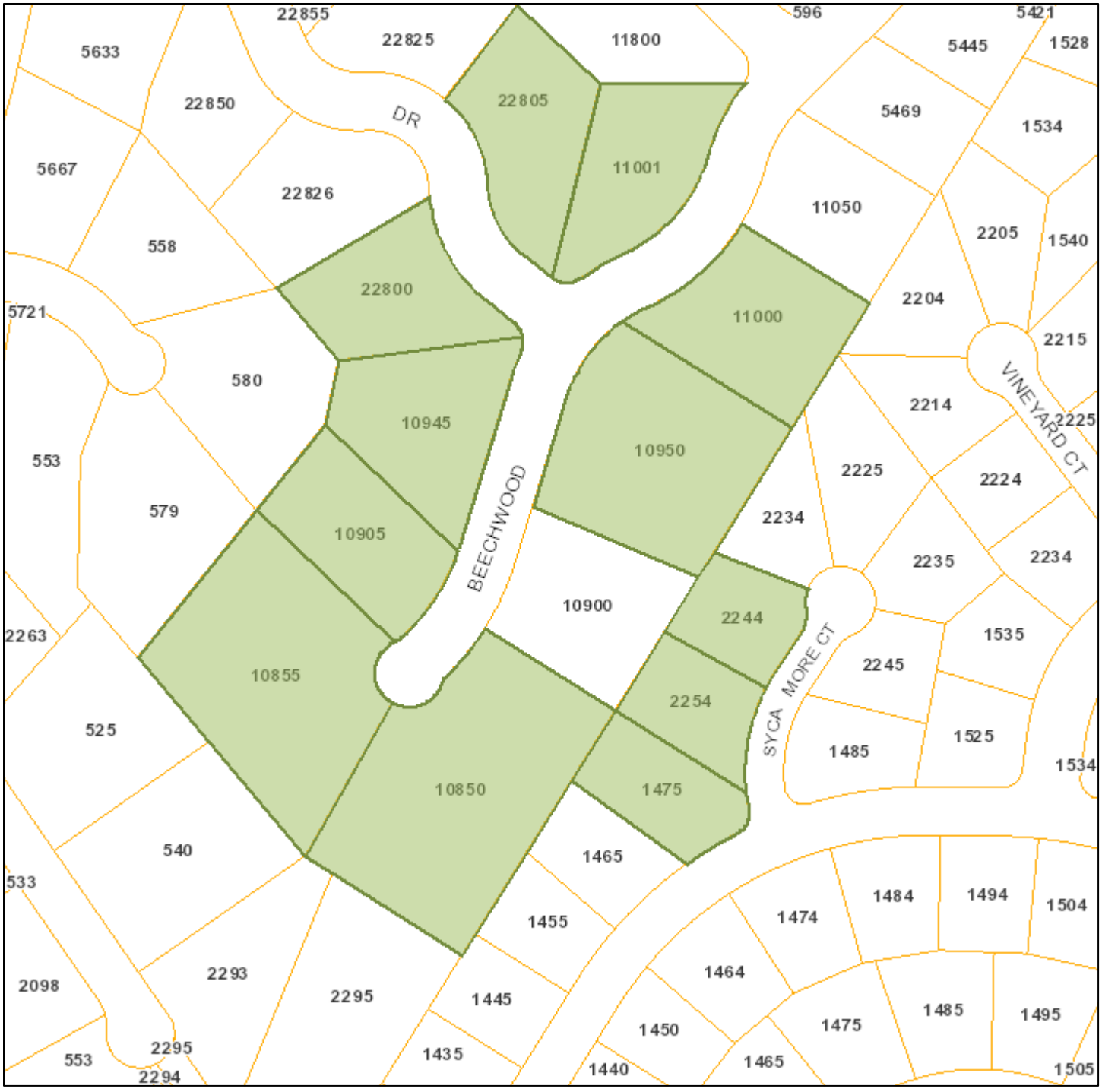
Dawn Smithson

Dawn Smithson, P.E.
District Manager

Attachments
Exhibit A
Drawings
Arborist Report

ATTACHMENT B

Notification Map



Print Date: July 15, 2021

1:2,257

0 0.015 0.03 0.06 mi

0 0.0225 0.045 0.09 km

- Schools
- Park and Recreation Areas
- City Limit
- Road Names
- Waterways
- Situs Label
- TaxParcel

ATTACHMENT C

California Water Service Company • Los Altos Station 9
10900 Beechwood Lane • Los Altos, California

Statement of Hammett & Edison, Inc., Consulting Engineers

The firm of Hammett & Edison, Inc., Consulting Engineers, has been retained on behalf of the California Water Service Company to evaluate the proposed installation of a generator at "Los Altos Station 9," located at 10900 Beechwood Lane in Los Altos, California, for compliance with appropriate guidelines limiting sound levels from the installation.

Executive Summary

CalWater proposes to install a generator at its facility at 10900 Beechwood Lane in Los Altos. Noise levels from the generator operation can comply with the City's permitted limits.

Prevailing Standard

The City of Los Altos sets forth limits on sound levels in Table 1 of Section 6.16.050 "Exterior Noise Limits" of its Municipal Code, including the following limits for noise lasting more than 30 minutes in any hour in the indicated zones:

Zone	"Day" 7 am to 10 pm	"Night" 10 pm to 7 am
R-1	55 dBA	45 dBA
R-3/PCF	55	50
OA	60	55
C	65	60

The more restrictive noise limits apply whenever adjacent parcels have different zoning. Higher levels are allowed for shorter time periods, including an increase of 5 dBA for noise lasting no more than 15 minutes within any hour.

Section 6.16.090.A exempts from the above standard those activities associated with the emission of sound in the performance of emergency work, such as the operation of a back-up power generator during an emergency, when commercial power is unavailable; nevertheless, for the purpose of this study, the generator's operation during periodic, no-load testing* is evaluated for compliance.

Figure 1 attached describes the calculation methodology used to determine applicable noise levels for evaluation against the prevailing standard.

* Back-up power generators are typically exercised for a 15-minute period once a week during daytime hours on a non-holiday weekday.

California Water Service Company • Los Altos Station 9
10900 Beechwood Lane • Los Altos, California

Site & Facility Description

Based upon information provided by CalWater, including drawings dated October 10, 2019, and April 2022, it is proposed to install a Caterpillar Model C7.1 125 kW back-up diesel power generator, configured with a custom sound-reducing enclosure, at its facility at 10900 Beechwood Lane in Los Altos. The surrounding area is zoned R-1 and includes residential parcels to the north, west, and south, approximately 72, 69, and 45 feet from the generator, respectively.

Study Results

Caterpillar reports† that the maximum noise level from its generator as configured is 60.8 dBA, measured at a reference distance of 23 feet. On the day the generator is tested, the maximum calculated noise levels at the surrounding parcels to the north, west, and south are 50.9, 51.2, and 55.0 dBA, respectively, all meeting the City's daytime limit of 60 dBA for short-duration noise in residential areas.

Conclusion

Based on the information and analysis above, it is the undersigned's professional opinion that operation of the back-up power generator proposed to be installed at the CalWater facility located at 10900 Beechwood Lane in Los Altos, California, can comply with that City's requirements for limiting acoustic noise emission levels.

Authorship

The undersigned author of this statement is a qualified Professional Engineer, holding California Registration Nos. E-13026 and M-20676, which expire on June 30, 2023. This work has been carried out under his direction, and all statements are true and correct of his own knowledge except, where noted, when data has been supplied by others, which data he believes to be correct.

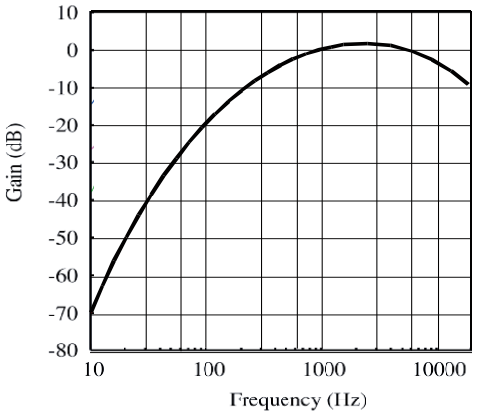
William F. Hammett, P.E.
707/996-5200

May 16, 2022

† See attached three-page description from Caterpillar.

Noise Level Calculation Methodology

Most municipalities and other agencies specify noise limits in units of dBA, which is intended to mimic the reduced receptivity of the human ear to Sound Pressure ("L_P") at particularly low or high frequencies. This frequency-sensitive filter shape, shown in the graph to the right as defined in the International Electrotechnical Commission Standard No. 179, the American National Standards Institute Standard No. 5.1, and various other standards, is also incorporated into most calibrated field test equipment for measuring noise levels.



30 dBA	library
40 dBA	rural background
50 dBA	office space
60 dBA	conversation
70 dBA	car radio
80 dBA	traffic corner
90 dBA	lawnmower

The dBA units of measure are referenced to a pressure of 20 µPa (micropascals), which is the threshold of normal hearing. Although noise levels vary greatly by location and noise source, representative levels are shown in the box to the left.

Manufacturers of many types of equipment, such as air conditioners, generators, and telecommunications devices, often test their products in various configurations to determine the acoustical emissions at certain distances. This data, normally expressed in dBA at a known reference distance, can be used to determine the corresponding sound pressure level at any particular distance, such as at a nearby building or property line. The sound pressure drops as the square of the increase in distance, according to the formula:

$$L_P = L_K + 20 \log(D_K/D_P),$$

where L_P is the sound pressure level at distance D_p and L_K is the known sound pressure level at distance D_K.

Individual sound pressure levels at a particular point from several different noise sources cannot be combined directly in units of dBA. Rather, the units need to be converted to scalar sound intensity units in order to be added together, then converted back to decibel units, according to the formula:

where L_T is the total sound pressure level and L_1, L_2, etc are individual sound pressure levels.

$$L_T = 10 \log \left(10^{L_1/10} + 10^{L_2/10} + \ldots\right),$$

Certain equipment installations may include the placement of barriers and/or absorptive materials to reduce transmission of noise beyond the site. Noise Reduction Coefficients ("NRC") are published for many different materials, expressed as unitless power factors, with 0 being perfect reflection and 1 being perfect absorption. Unpainted concrete block, for instance, can have an NRC as high as 0.35. However, a barrier's effectiveness depends on its specific configuration, as well as the materials used and their surface treatment.

Cat C7.1 DIESEL GENERATOR SETS

Standby & Prime: 60 Hz, 480V

Engine Model	Cat® C7.1 In-line 6, 4-cycle diesel
Bore x Stroke	105mm x 127mm (4.1in x 5.0 in)
Displacement	7.01 L (428 in³)
Compression Ratio	16.7:1
Aspiration	Turbocharged Air-to-Air-Aftercooled
Fuel Injection System	Electronic, Common Rail

Standby	Prime	Performance Strategy
125 ekW	**114 ekW**	**EPA TIER III**

PACKAGE PERFORMANCE

Performance	Standby		Prime	
Genset power rating	156.3 kVA		142.5 kVA	
Genset power rating with fan @ 0.8 power factor	125 ekW		114 ekW	
Performance number	P4392A-00		P4392C-00	
Fuel Consumption				
100% Load with fan	37.8 L/hr	10.0 g/hr	35.2 L/hr	9.3 g/hr
75% Load with fan	30.3 L/hr	8.0 g/hr	28.2 L/hr	7.4 g/hr
50% Load with fan	21.9 L/hr	5.8 g/hr	20.3 L/hr	5.4 g/hr
Cooling System[1]				
Radiator air flow restriction (system)	0.12 kPa	0.48 in Water	0.12 kPa	0.48 in Water
Engine coolant capacity	9.5 L	2.5 gal	9.5	L 2.5 gal
Radiator coolant capacity	11.5 L	3.0 gal	11.5	L 3.0 gal
Total coolant capacity	21.0 L	5.5 gal	21.0 L	L 5.5 gal
Inlet Air				
Combustion air inlet flow rate	14.4 m³/min	508.5 cfm	13.9 m³/min	490.9 cfm
Max. allowable combustion air inlet temp	51°C, 124°F			
Exhaust System				
Exhaust stack gas temperature	450°C	843°F	439°C	822°F
Exhaust gas flow rate	29.9 m³/min	1056 cfm	28.8 m³/min	1017 cfm
Exhaust system backpressure (maximum allowable)	15.0 kPa	60.2 in water	15.0 kPa	60.2 in water
Exhaust flange size (internal diameter)	89.0 mm	3.5 in	89.0 mm	3.5 in
Heat Rejection				
Heat rejection to Coolant (total)	75.0 kW	4368 Btu/min	69.0 kW	3924 Btu/min
Heat rejection to Exhaust (total)	128.0 kW	7496 Btu/min	120.0 kW	6796 Btu/min
Heat rejection to Aftercooler	32.0 kW	2138 Btu/min	30.0 kW	1689 Btu/min
Heat rejection to Atmosphere from Engine	28.0 kW	1649 Btu/min	26.0 kW	1496 Btu/min
Heat rejection from alternator	9.8 kW	557.3 Btu/min	8.8 kW	500.4 Btu/min
Lube System				
Sump refill with filter	17.5 L	4.6 gal	17.5 L	4.6 gal

Emissions (Nominal)[2]	Standby		Prime	
NOx + HC	4.0 g/kW-hr		4.0 g/kW-hr	
CO	1.0 g/kW-hr		1.0 g/kW-hr	
PM	0.2 g/kW-hr		0.2 g/kW-hr	
Alternator[3]				
Voltages	480V		480V	
Motor starting capability @ 30% Voltage Dip	363 skVA		363 skVA	
Frame Size	LC3114G		LC3114G	
Excitation	Self Excited		Self Excited	
Temperature Rise	130°C	234°F	105°C	189°F

DEFINITIONS AND CONDITIONS

[1] For ambient and altitude capabilities consult your Cat dealer. Air flow restriction (system) is added to existing restriction from factory.

[2] The nominal emissions data shown is subject to instrumentation, measurement, facility and engine to engine variations. Emissions data is based on 100% Prime load. This information should not be used for permitting purposes and is subject to change without notice. Contact your Caterpillar dealer for further details.

[3] Generator temperature rise is based on a 40°C (104°F) ambient per NEMA MG1-32

APPLICABLE CODES AND STANDARDS:

AS1359, CSA C22.2 No 100-04, UL142, UL489, UL601, UL869, UL2200, NFPA 37, NFPA 70, NFPA 99, NFPA 110, IBC,IEC60034-1, ISO3046, ISO8528, NEMA MG 1-22, NEMA MG 1-33, 72/23/EEC, 98/37/EC, 2004/108/EC.

PRIME: Output available with varying load for an unlimited time. Average power output is 70% of the prime power rating.Typical peak demand is 100% of prime rated ekW with 10% overload capability for emergency use for a maximum of 1 hour in 12. Overload operation cannot exceed 25 hours per year.

STANDBY: Output available with varying load for the duration of the interruption of the normal source power. Average power output is 70% of the standby power rating. Typical operation is 200 hours per year, with maximum expected usage of 500 hours per year.

Ratings are based on SAE J1349 standard conditions. These ratings also apply at ISO3046 standard conditions.

Fuel Rates are based on fuel oil to specification EPA 2D 89.330-96 with a density of 0.845 – 0.850 kg/L (7.052 – 7.094 lbs/U.S. gal.) @ 15°C (59°F) and fuel inlet temperature 40°C (104°F). Additional ratings may be available for specific customer requirements, contact your Cat representative for details.

LEHE1582-00 (03/18)

BUILT FOR IT.™

* CUSTOMER:	Peterson Power		* QUOTATION #:	0
* PROJECT NAME:	California Water		* DATE:	07/01/2021
* SKIDED GEN-SET SIZI	CAT C7.1 125kW	0		

		Octave Band Center Frequency (Hz.)								
		31.5	63	125	250	500	1000	2000	4000	8000
Step	Description:									
1	GEN-SET Casing PWL	92.8	93.7	97.2	104.1	100.2	98.0	96.1	93.2	91.0
2	SILENCER D.I.L. (36")	-5.3	-7.9	-10.5	-15.1	-26.7	-37.2	-37.2	-29.3	-16.1
3	NO Discharge Elbow	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	Distance Attenuation	-21.0	-21.0	-21.0	-21.0	-21.0	-21.0	-21.0	-21.0	-21.0
5	SPL @ Distance (dB)	66.5	64.8	65.7	68.0	52.5	39.8	37.9	42.9	53.9
6	"A"-Weighting	-39.0	-26.0	-16.0	-9.0	-3.0	0.0	1.0	1.0	-1.0
7	SPL @ Distance (dBA)	27.5	38.8	49.7	59.0	49.5	39.8	38.9	43.9	52.9

	PERFORMANCE:	65.0	dBA AT	23.0	FEET =	7.0	Meters
	Baffle Panels:	36.0 " Deep					
	ACTUAL PERFORMANCE:	60.8	dBA AT	23.0	FEET =	7.0	Meters

ATTACHMENT D