



# WESTFORD FIRE DEPARTMENT (FTF) AUDIO TEST 5/5/2020

## Abstract

Audio test were performed from the proposed (FTF) training site, to be located off Forge Village Rd., to evaluate the impact on the setting within Pine Grove Cemetery

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## **Audio Test Report**

This report deals with the measurement of audio noise levels, within the Pine Grove Cemetery that could be generated by the Westford fire Department (WFD) at the proposed training site (FTF). The site abuts the Cemetery approximately 168 Yds to the garage/office building.

### **Background**

The 35-Town Farm Rd Task Force (35TFRTF)) sub-committee approach this Cemetery Commission regarding a proposed site for fire Department training. (Reference 1)

The Cemetery Commission(CEMCO) was concerned for the Pine Grove environment with regards to the peace and quiet of the Cemetery when visitors', families, and others who come by to pay their respects and spend some time with those who have passed.

### **Planning**

To evaluate the noise levels, a plan was designed to coordinate with the (WFD) at the proposed test site to produce sound levels from equipment that they are expected will be used during training exercises. The (WFD) furnished a map outing the area the (FTF) would occupy and conduct training.

Selected locations within (PG) were selected that covered the existing burial area and the proposed burial addition towards the Russian Cemetery. (Figure1)

### **Testing**

The tests were conducted on the 5th of may commencing at 10:00 o'clock in the morning. The weather conditions were clear with clear air and low humidly.

A Ladder truck, Pumper engine and Ambulance were stationed 200 ft in from Forge Village Rd on the newly cut roadway, this is the proposed site for the (FTF). Views, along the road and to (PG) were documented. (Figure 2)

Noise sources would be the pumper truck would be running, as they would be using water during drills. The tower truck was there generating noise as they deployed their outriggers. The also supplied and operated two chain saws as required, that would be part of training. (Figure 2)

## **Data Collection**

Audio noise data in the test area, was obtained utilizing three Apps, downloaded to a I-Phone XS.

The information that was collected was transferred to a PC computer for analysis. (Figure 3)

## **Procedure**

At the proposed training site, with the pumper truck in the pumping mode, the Ladder out riggers were cycled, and the chain saws were run at full speed. A set of baseline measurement were obtained for ST-0

We then we moved on to Pine Grove, to the pre-selected spots and coordinated, by radio, with the (WFD) to start and stop the noise when we are ready to take measurements. (Figure 1)

Measurements were made with the decibel meter app on a cell phone, that displayed real-time, time stamped data, audio recorded the event and photographed the site with the data superimposed on the photograph. The GPS coordinates were also recorded with a different app. All this data can be downloaded to storage for further analysis. (Figure 3)

Of the proposed 7 sites, we were able to collect data at 5, due to the fact (WFD) had to terminate do to time constraints.

The measurements were collected on a windy day. background winds added a little bit to the baseline noise and these background noise measurements were repeated later that afternoon when things were quiet, and the winds were a low breeze. (Figure 5)

## **Results**

Results are displayed in (Figure 4)

Location Coordinates and ranges are for reference to the included maps or if the exercise was to be repeated

The plot of levels (dbA) collected for each test point are consistent with noise drop off vs range.

The wind did play a factor in raising the levels by approximately 2 dbA The path from (FTS) to the cemetery runs from ST-0 to the right side of the Cemetery garage, as seen from the rear, it follows to the left side of the Gazebo and in the direction to Rooks Way.

The attached scale relates the noise levels to everyday occurrences. (Figure 6)

The AVG level increase as well as the peaks are contributions from the Ambulance siren and the industrial lawn mower in operation at 9 Rooks Way, at test point ST- 4 and ST-5a.

## **Conclusions**

The quick look shows that the Fire Department noise sources would not have an impact or a disturbance to those visiting in Pine Grove Cemetery.

The loudest of the noise sources, in the Pine Grove area, during our measurements was provided by the landscaper, using an industrial mower, cutting the grass at 9 Rooks Way and the ambulance departure with the siren going.

The invited observers walking around in the Cemetery various test locations, appeared to have no problems conversing with each other as they practiced distancing.

Looking towards the Cemetery from the proposed site, the maximum noise is attenuated and scattered by a lot of vegetation, by the time it reaches Pine Grove it appears to have dropped quickly in level.

From the results of the testing, it appears the (WFD) proposed training site (FTF) will not have a detrimental effect on the Pine Grove Cemetery. (PG)

## **Recommendations**

The (FTF) design order of conditions includes No or Limited removal of trees or vegetation that faces (PG)

Once completed, and (FTF) is operational, repeat audio noise measurements based on what was learned during this exercise.

## **Acknowledgments**

All members of (WFD) who setup and operated the equipment at (ST-0)

All members of (35TRTF), (CEMCO), (TOW) Officials for being present and supplied valuable input from their observation.

**Participants:**

(WFD)

Members of the (35TFRTF) sub-committee

Members of (CEMCO)

(TOW) Officials

**Distribution:**

Deputy Daniel Britko, Westford Fire Department (WFD)

Ms. Lisa Groves, Chairperson Westford Cemetery Commission (CEMCO)

Mr. George Murray, Chairperson Westford 35 Town Farm Sub-Committee (35TFRTF)

Ms. Jody Ross, Westford Town Manager (TOW)

**References:**

1. Reference from Lisa Groves email

Lisa Grove email memo

The Select Board has appointed a Town Farm Task Force, to explore repurposing the Town Farm at 35 Town Farm Road into affordable housing for the elderly, and an expansion of the Westford Food Pantry. They have determined that the project might not be feasible because of space restrictions unless they can find another home for the Fire Department training facility located there.

The Task Force has begun discussions with the Water Commissioners about locating the training facility at 60 Forge Village Road, to the North of the Water Department headquarters. The proposed location would be about 300' from the northeasterly border of the Pine Grove Cemetery property, set back about 100' from Forge Village Road. The 300' distance would include a 50' clearing around the facility, a 200' natural tree buffer and the 50' power company right of way which directly abuts the cemetery border.

The Water Commissioners seem generally agreeable to the proposal, although they have been clear there would be conditions attached. If the Water Commissioners approve, they would proceed to a

discussion with neighbors and abutters, to answer questions and concerns they might have. They would then make a recommendation to the Select Board. George's purpose in writing was just to inform us of what is being considered, and to solicit any feedback we might have. They will also invite us to attend the abutters' meeting when that is held (which might be virtual).

An agreement would be made between the Cemetery Department and Fire Department that NO TRAININGS WOULD TAKE PLACE DURING A FUNERAL (for traffic and noise reasons). A training can be cancelled with noticeably short notice, if necessary.

The majority of trainings DON'T INVOLVE LIVE BURNS (more on live burns below, which only happen 2-3x/year), but would involve ground ladders, hose line advancements, interior search & rescue with the aid of a smoke machine, vehicle extrication (no vehicle fires) and such. These types of trainings typically take place 3-4 days per week, usually in the morning hours M-F, but very often emergency calls interrupt plans, forcing them to move training to the afternoons.

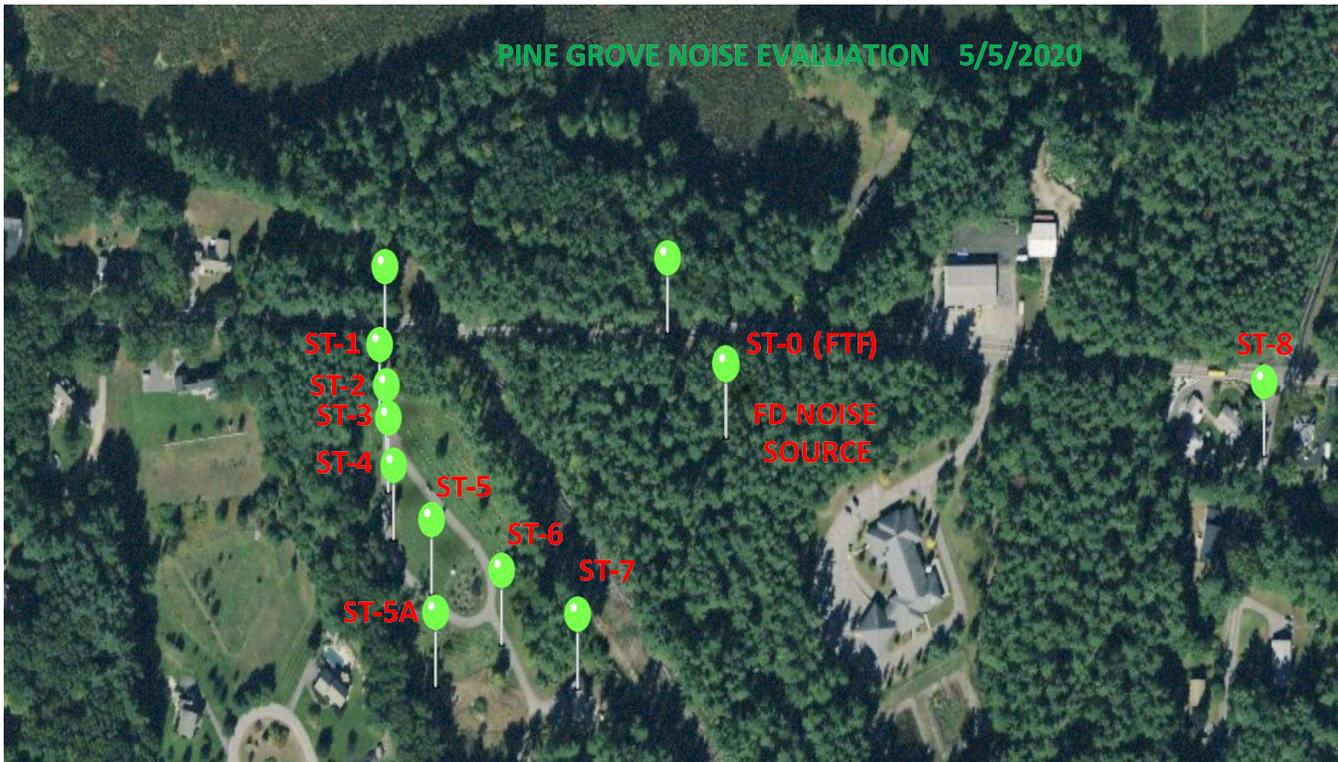
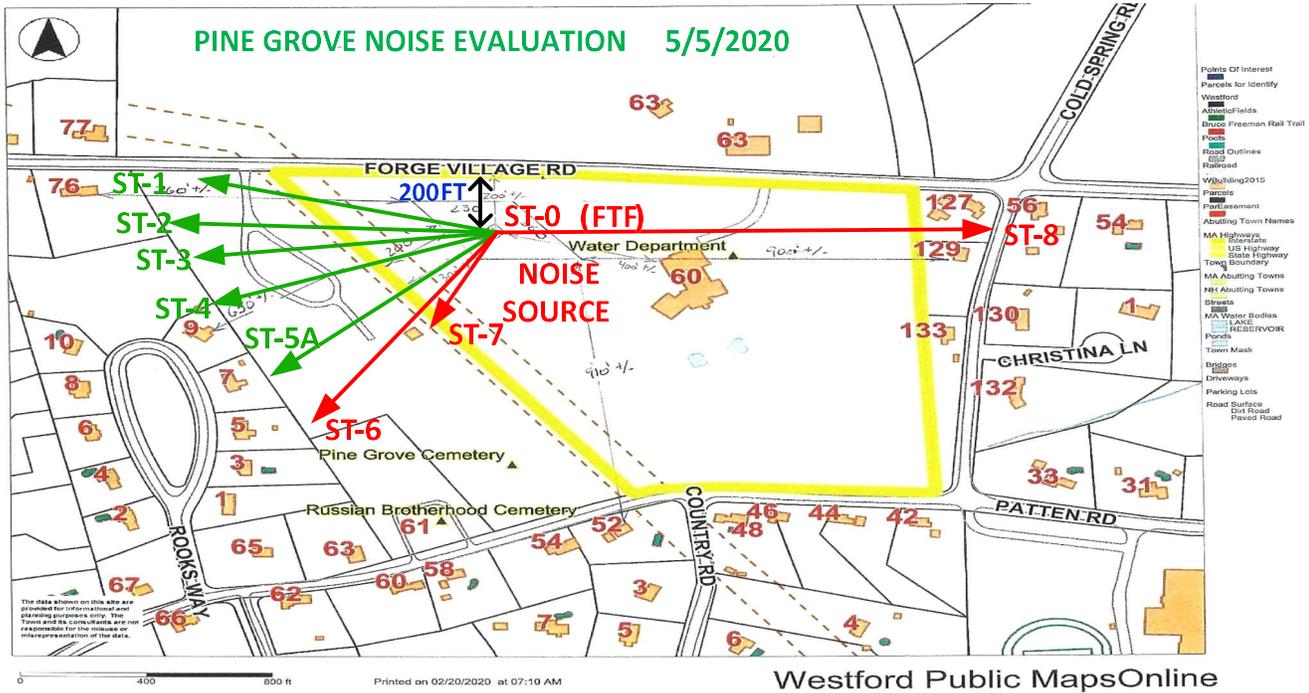
When a shift is on site for training, there would be 3 Engines, 1 Tower Ladder, 1 Ambulance and 1 officer car. During the warmer weather above 40 degrees, the vehicles can be shut down except for maybe one that is part of the exercise. Colder weather requires the vehicles to stay running to avoid freeze up of the water lines in the pump. Portable radios would remain on as they must be in constant contact with the communications center.

LIVE BURNS trainings are conducted 2-3 times a year. They would have a type of training structure referred to as a "burn" building, which would give them the capability to conduct "live fire" burns involving ordinary combustible materials such as wood pallets and straw. The smoke generated from this type of burn is like that generated from a homeowner doing open air burning of brush in the spring in their yards. Due to the logistics, on the Fire Department's part, to plan and safely implement such training, they generally schedule this type of training for a Saturday morning. Also, the atmospheric conditions that day can influence live fire training.

2.

Cemetery Commission minutes of May 12, 2020

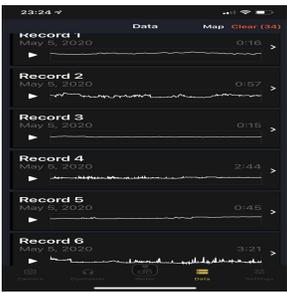
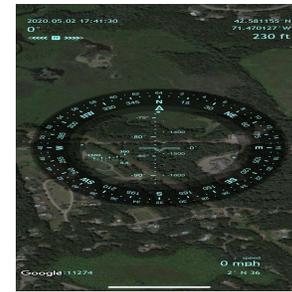
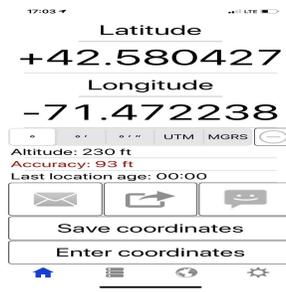
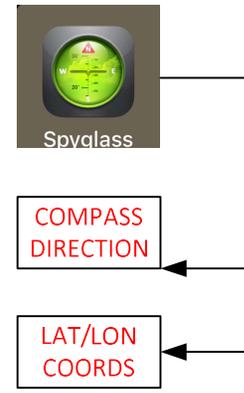
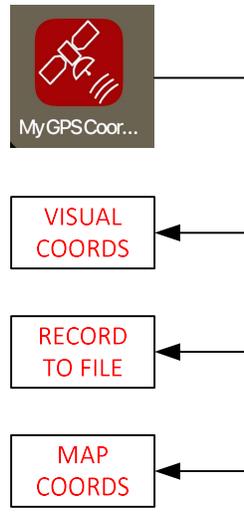
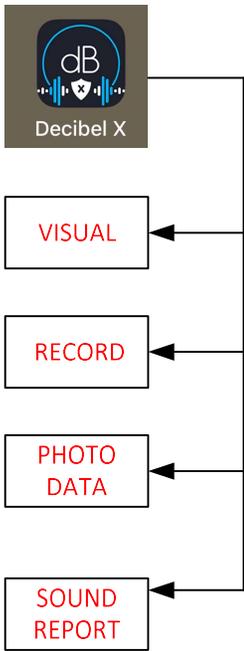
The consensus from attending Board members was that the exercise produced no more noise than what already exists from the neighbor's and roadway.



(FIGURE 1)



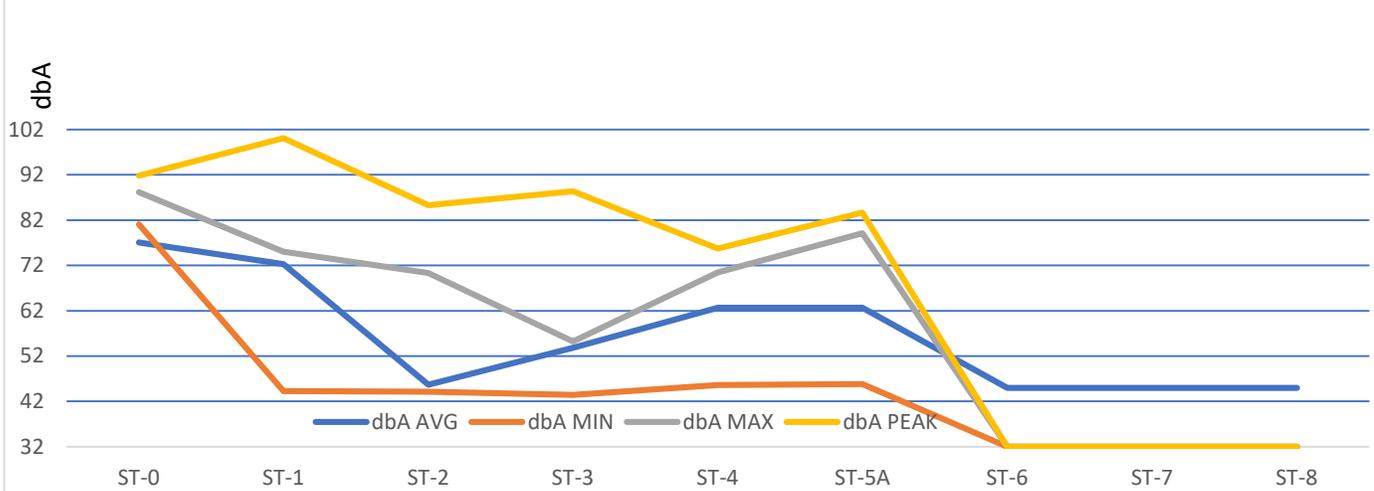
(Figure - 2)



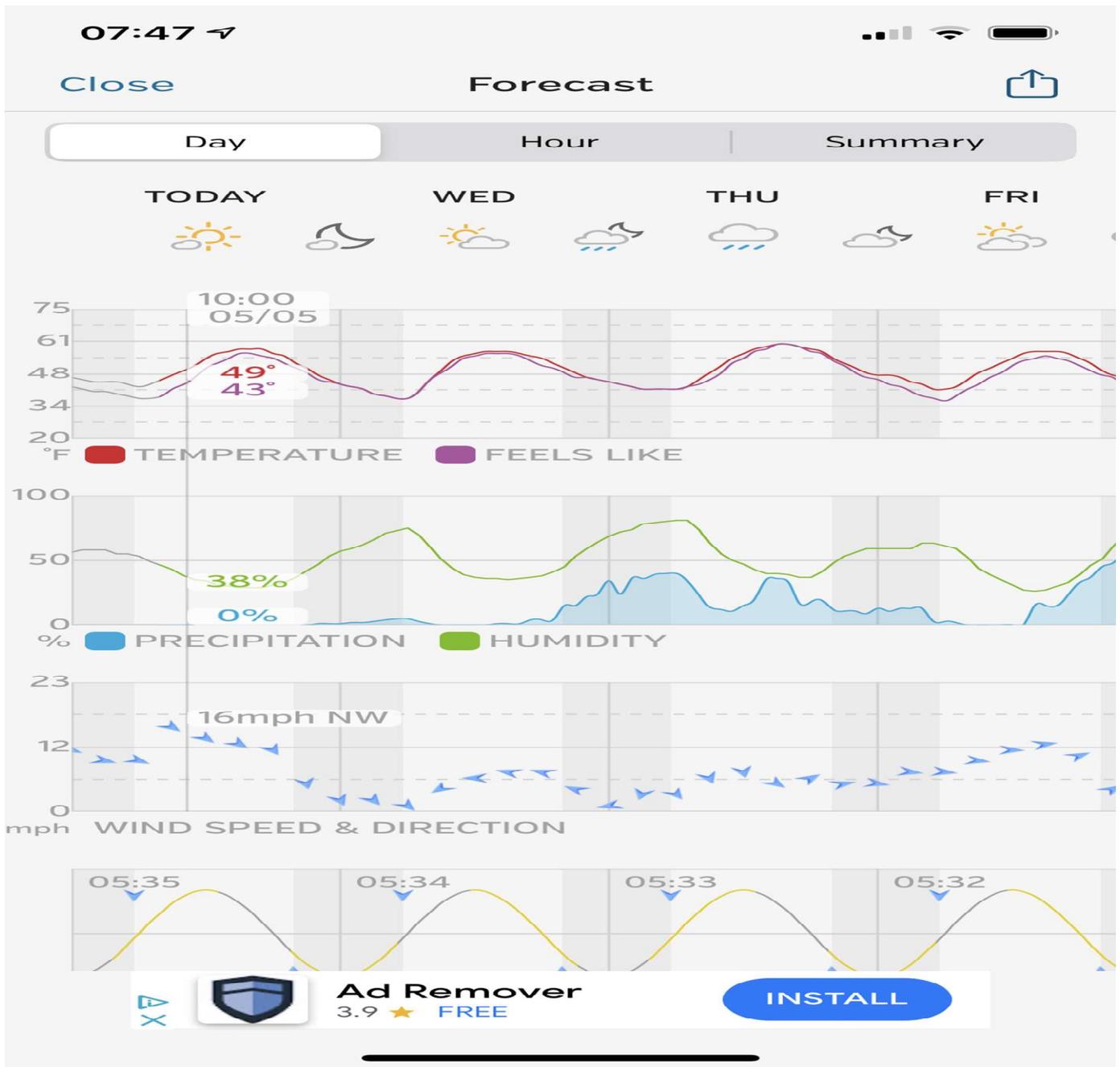
( Figure 3 )

5/5/2020	(FTF) /CEM COM AUDIO TEST				dbA	dbA	dbA	dbA		
SITE	LAT	LONG	RANGE (YDS)		AVG	MIN	MAX	PEAK	NOTE	
ST-0	42.581010	-71.4690	0	ST-0	77.1	81.1	88.2	91.8	(FTF) EQUIPMENT	
ST-1	42.581097	-71.4723	233	ST-1	72.3	44.3	75.01	100.1		
ST-2	42.580925	-71.472254	231	ST-2	45.7	44.1	70.3	85.3		
ST-3	42.580786	-71.472236	230	ST-3	53.8	43.4	55.2	88.4		
ST-4	42.580585	-71.472197	232	ST-4	62.7	45.6	70.5	75.7		
ST-5	42.580359	-71.471914	214	ST-5	SEE 5A	SEE 5A	SEE 5A	SEE 5A		
ST-5A	42.579970	-71.471883	240	ST-5A	62.7	45.8	79.1	83.7		
ST-6	42.80144	-71.471390	234	ST-6	45	32	32	32	(FTF) LEFT TEST SITE	
ST-7	42.579961	-71.470820	168	ST-7	45	32	32	32	PG GARAGE	
ST-8	42.580939	-71.465687	359	ST-8	45	32	32	32	COLDSPRING RD	
	42.581461	-71.470150	67						FV to (FTF)	
	42.581423	-71.4723							FVR PINE GROVE	
	42.578483	-71.468375	381						PATTERN RD	
	42.581526	-71.473604	313						FVR HOUSES	
	42.5815	-71.4722	67						FVR TO TEST SITE	

AUDIO SURVEY PINE GROVE CEMETERY 5/5/2020



( Figure-4 )



( Figure 5 )

# Noise Level Chart

A noise level chart showing examples of sounds with dB levels ranging from 0 to 180 decibels.

dBA	Example	Home & Yard Appliances	Workshop & Construction
0	healthy hearing threshold		
10	a pin dropping		
20	rustling leaves		
30	whisper		
40	babbling brook	computer	
50	light traffic	refrigerator	
60	conversational speech	air conditioner	
70	shower	dishwasher	
75	toilet flushing	vacuum cleaner	
80	alarm clock	garbage disposal	
85	passing diesel truck	snow blower	
90	squeeze toy	lawn mower	arc welder
95	inside subway car	food processor	belt sander
100	motorcycle (riding)		handheld drill
105	sporting event		table saw
110	rock band		jackhammer
115	emergency vehicle siren		riveter
120	thunderclap		oxygen torch
125	balloon popping		
130	peak stadium crowd noise		
135	air raid siren		
140	jet engine at takeoff		
145	firecracker		
150	fighter jet launch		
155	cap gun		
160	shotgun		
165	.357 magnum revolver		
170	safety airbag		
175	howitzer cannon		
180	rocket launch		
...			
194	sound waves become shock waves		

Figure – 6)