

April 22, 2014

R.M. Towill Corporation
2024 N. King Street, Suite 200
Honolulu, Hawaii 96819

Attn: Mr. Craig Luke

RE: Central Maui Regional Park Noise Assessment (DLAA #14-22)

Dear Mr. Luke:

We have completed our assessment of park noises from the proposed Central Maui Regional Park. The following memo summarizes the results of our noise analysis and comments.

Project Description

Central Maui Regional Park will have soccer, baseball, and softball fields for recreational purposes as well as a parking lot, and comfort stations. The proposed park will cover approximately 65 acres and is currently bordered by Kuihelani Highway to the east, Maui Lani residential subdivision to the north, and light industrial areas to the west and south.

Noise Analysis

The proposed Central Maui Regional park is focused on field sports such as soccer, baseball, and softball and not competitive or spectator sporting events. Bleacher seating for spectators will not be provided, so large crowds of spectators are not expected. Park activities fluctuate throughout the day and fields are typically used during part of the day (generally in the afternoon and evening hours on weekdays), rather than on a constant basis. More use is expected on the weekend. The main source of noise at recreational parks is typically the human voice. Noise levels are dependent on what types of activities occur, how many people participate in the activity, and the level of voice used.

Sound level measurements were conducted at two parks during sports events to characterize the noise levels associated with these activities. As stated above, the primary noise source was the human voice. Research was also conducted to gather more sporting event noise data. All data is presented at a distance of 100 feet (from the home plate or from the center line of the soccer field) as a maximum noise level (L_{max}). Noise levels were also calculated to the nearest residential community, Maui Lani, where the property line is approximately 350 feet from the nearest home plate.

Table 1. Park Activity Noise Events (dBA)

Noise Source	L_{max} at 100 feet	L_{max} at 350 feet
Adult Baseball Game ¹	70	59
Adult Kickball Game ¹	74	63
Youth Baseball Game ²	75	64
Youth Soccer Game ²	75	64
Adult Soccer Game ²	69	58
Youth Softball Game ³	68	57

Source:

1. Measurement at Kailua District Park or Palolo District Park
2. Sand Point Magnuson Park Final EIS
3. City of Morgan Hill Citywide Agriculture Preservation Program and Southeast Quadrant Land Use Plan Draft EIR

Comments

The noise levels in the table represent single noise events that occur during a game. These maximum noise levels will occur intermittently during the sporting event, usually when players or spectators are shouting or cheering. However, the current plans for Central Maui Regional Park show multiple fields where sporting events will likely occur simultaneously. Because of this, multiple noise events will occur at the same time and more frequently. Noise levels will increase by 3 to 5 dB when multiple games occur, depending on how many fields will be used and what types of activities take place on the fields. These activities will be audible in the backyards of the adjacent residences and may be considered intrusive. Noise levels during single games are not expected to interfere with speech communication in the backyards. When multiple games occur simultaneously, speech may have to occur in a raised voice in order to be intelligible. As a comparison, talking in a normal voice equates to a sound level of 60 dBA at 3 feet.

Most of the Maui Lani homes are set back from the property line 15 to 25 feet. Construction is assumed to be wood frame with operable storm windows, but these details are not confirmed. Based on documents from the EPA and HUD, the estimated reduction in sound level from outside to inside a home for typical residential structures is 12 to 24 dB when windows are open or closed, respectively. Therefore, when multiple sporting events occur the Maui Lani homes may experience interior noise levels in the range of 50 to 57 dBA when the windows are open and 38 to 45 dBA when the windows are closed. For comparison, please refer to the enclosure "Typical Noise Levels" which provides examples of common household items and their approximate noise levels. Interior noise levels inside residences are typically 30 to 45 dBA or less depending on whether the home is air-conditioned. Mechanical noise from the air conditioning system may mask most noises from the park. Sporting event noises will likely only be audible inside the residences when there is a significant amount of cheering and shouting on the athletic fields.

The attenuation of sound over short distances, or sound propagation, is minimally effected by meteorological conditions. However, wind speed and temperature gradients can cause variations in the speed of sound at distances greater than 300 feet. It should be noted that Central Maui Regional Park is located downwind of the nearby Maui Lani residential subdivision. Under certain atmospheric conditions, i.e., wind blowing in the direction opposite of the sound propagation and/or a negative temperature gradient, it is possible that an upward refraction of noise from the park could occur. This means that the sound rays are bent upwards into the atmosphere which would make park noises less audible at the nearby residences.

Please feel free to contact us if you have any questions or comments.

Sincerely,

Dana Dorsch

Encl. Typical Noise Levels

Typical Noise Levels

All sounds are measured at the distance that a person would typically be from the source.

Device	dBA
Grand Canyon at Night (no roads, birds, wind)	10
Quiet basement w/o mechanical equipment	20
Quiet Room	28-33
Computer	37-45
Refrigerator	40-43
Typical Living Room	40
Forced Hot Air Heating System	42-52
Radio Playing in Background	45-50
Background Music	50
Bathroom Exhaust Fan	54-55
Microwave	55-59
Normal Conversation	55-65
Clothes Dryer	56-58
Printer	58-65
Window Fan on High	60-66
Alarm Clock	60-80
Dishwasher	63-66
Clothes Washer	65-70
Phone	66-75
Push Reel Mower	68-72
Inside Car, Windows Closed, 30 MPH	68-73
Handheld Electronic Games	68-76
Kitchen Exhaust Fan, High	69-71
Inside Car, Windows Open, 30 MPH	72-76
Garbage Disposal	76-83
Air Popcorn Popper	78-85
Hairdryer	80-95
Electric Can Opener	81-83
Vacuum Cleaner	84-89
Coffee Grinder	84-95
Handheld Electric Mixer	86-91
Lawn Mower	88-94
Air Compressor	90-93
1/4" Drill	92-95
Food Processor	93-100
Weed Whacker	94-96
Leaf Blower	95-105
Circular Saw	100-104
Maximum Output of Stereo	100-110