

Environmental Noise Assessment

TopGolf Noise Monitoring Survey

Roseville, CA

BAC Job # 2016-184

Prepared For:

Arco National Construction - KC

Attn: Tyler Reed
5015 NW Canal Street, Suite 110
Riverside, MO 64150

Prepared By:

Bollard Acoustical Consultants, Inc.



Paul Bollard, President

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Introduction

Bollard Acoustical Consultants, Inc. (BAC) was retained by Arco Construction to conduct a noise survey of Topgolf Roseville operations pursuant to project conditions of approval. Specifically, COA #3 for conditional use permit PL14-0252 states the following with respect to the noise survey:

- 3. The operator shall be responsible for having a noise monitoring evaluation completed within three months of normal operations from the start of operation, or if requested by the Planning Division. The noise evaluation shall analyze noise levels during operation over a Friday to Sunday period, including one evening with live entrainment occurring on the open air terrace. The noise evaluation shall be performed consistent with the standards established in the Noise Study. Once completed, the noise monitoring evaluation shall be submitted to the satisfaction of the Planning Division. If the noise monitoring evaluation shows Topgolf to be in violation on the noise level standards established for the business, additional noise reduction measures will be required.*

This report contains the applicable noise criteria, noise measurement methodology, results of the noise survey, and interpretation of those results relative to the noise level limits established for the project.

Criteria for Acceptable Noise Exposure

The noise level standards established for the Topgolf Roseville project were developed using a combination of adopted City of Roseville noise level standards and the results of pre-project ambient noise surveys conducted adjacent to the nearest residences located to the Topgolf project site.

The City of Roseville Planning Department staff recognized that the nearest residences are currently exposed to noise from traffic on Highway 65 which exceeds the City's noise standards during the hours of proposed Topgolf operations. As a result, the City adopted exterior noise level standards for Topgolf operations equal to measured existing ambient noise levels along the property lines of the nearest residences to the west. Because pre-project noise levels from Highway 65 decrease during the late night and early morning hours, the noise level standards developed for the Topgolf project similarly decrease during those periods. The specific noise level standards which have been adopted for the Topgolf project are provided in Table 1.

It is important to note that the noise level standards shown in Table 1 are for noise generated by Topgolf operations alone. Because the Table 1 standards applicable to Topgolf operations are set to equal measured pre-project ambient conditions, the combined Topgolf and existing ambient noise levels would exceed the Table 1 standards. Due to decibel addition, when two noise sources of equal sound pressure level are combined, the resulting sound level is 3 dB higher than the two individual sound levels. Because Highway 65 traffic noise levels cannot be discontinued during the monitoring of Topgolf noise levels, the noise levels applicable to this project when measured in the presence of Highway 65 traffic noise are the Table 1 standards plus 3 dB.

Table 1
Noise Level Standards Applied to the Topgolf Facility by the City of Roseville

Hour of Day	Hourly Average Level – L_{eq} , dBA	Maximum Level – L_{max} , dBA
Facility opening to 8 pm	60	65
8 pm – 9 pm	59	64
9 pm – 10 pm:	56	61
10 pm – 11 pm:	53	60
11 pm – Midnight:	50	57
Midnight – 1 am	49	56
1 am – 2 am:	47	55

Source: City of Roseville

Appendix A contains definitions of acoustic terminology used in this report.

Noise Monitoring Program Methodology

Noise monitoring dates and locations

To quantify noise levels for the Topgolf project, BAC conducted continuous noise level surveys at seven (7) locations adjacent to the nearest residential uses from 4 pm on Friday, October 21st through noon on Sunday, October 23rd, 2016. The noise monitoring sites, which are shown on Figure 1, were approved by City of Roseville Planning Department staff prior to commencement of the noise survey. Photographs of representative noise measurement locations are shown in Appendix B.

Noise Monitoring Equipment and Calibration

Larson-Davis Laboratories (LDL) 820 and LDL 831 precision integrating sound level meters were used to complete the noise level measurement surveys. The meters were calibrated before and after use with a LDL Model CA200 calibrator to ensure the accuracy of the measurements. The equipment used meets all pertinent specifications of the American National Standards Institute for Type 1 sound level meters (ANSI S1.4).

At noise measurement Sites 1, 2, 4, and 7, Larson Davis Model 820 sound level meters were used for the survey. The meters were programmed to log data at 15 minute intervals (L_{eq} , L_{max} , L_n , etc.). In addition, these meters were programmed to log 1-second time histories for subsequent evaluation of discrete maximum noise levels. Due to memory limitations of the 820's, the logging of ambient survey at Sites 1, 2, 4, and 7 concluded at 1:45 am Sunday morning, after Topgolf operations concluded for the night. As a result, however, the data for the 10 am to noon operations of Topgolf on Sunday morning were not captured at these sites.



Legend

-  Approximate Project Area
-  Noise Measurement Sites

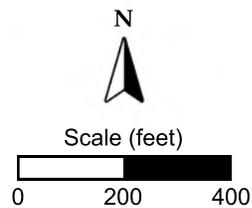


Figure 1
Noise Monitoring Locations
Topgolf - Roseville, California

At noise measurement Sites 3, 5 and 6, Larson Davis Model 831 sound level meters were utilized. These meters were also programmed to log data at 15 minute intervals and capture 1-second time histories. In addition, the advanced capabilities of the LDL 831 sound level meters allowed continuous recording of sound during the entire duration of the noise survey. With the exception of a brief period Saturday morning where these meters were suspended to allow downloading of the data, they operated for the entire duration of the survey (including Sunday morning until noon). All sound level meters were time-synchronized and the continuous recordings (.wav files) created at Sites 3, 5 and 6 were used to identify specific sources responsible for measured elevated maximum noise levels.

Atmospheric Conditions Present during Noise Survey

Weather conditions during the survey consisted of temperatures ranging from a low of approximately 60 degrees at 1 am on both Saturday and Sunday mornings, with daytime high temperatures of 80 to 84 degrees Fahrenheit on Friday, Saturday and Sunday. Cloud cover was light during the survey and there was no precipitation. Relative humidity ranged from 50 to 60% for the duration of the survey. Winds were calm to light (less than 5 mph) during the entire survey period. In summary, there were no atmospheric conditions which would have contributed to anomalous noise measurement data.

BAC Staff Observations during Survey

BAC staff conducted observations of activity occurring at the Topgolf at various times during the weekend noise survey period. Specifically, BAC staff conducted observations at all locations during equipment setup, servicing, and retrieval on the Friday and Sunday afternoons, and on Saturday morning. BAC also conducted visual inspections from within the Topgolf facility and at each monitoring site on Friday evening. Finally, BAC staff conducted nighttime observations from approximately 11 pm to 12:30 am on both Friday and Saturday nights. The following information was obtained during the observations.

1. The Topgolf Roseville facility was heavily utilized during the noise survey period. Specifically, observations conducted between 11pm and midnight on both Friday and Saturday night indicated that the parking lot was nearly full and the drive bays appeared to be near 100% occupied. Similar conditions were noted during inspections conducted within the facility at Friday evening between 5 and 6 pm.
2. During inspections within the Topgolf facility on Friday afternoon it was observed that the house sound system speakers and sound absorbing materials had been installed pursuant to the recommendations of the noise study.
3. The Topgolf manager reported that they have a specific schedule of reducing the house sound system output as it gets later into the evening and night.

4. The audibility of noise generated by Topgolf operations varied by measurement location, as expected. At the northern sites (Sites 1, 2 and 3), the open drive bays were not visible and the audibility of Topgolf operations was very low. The predominant noise source at these locations was traffic on Washington Boulevard and Highway 65.
5. At sites 4 through 7, Topgolf operations were more audible than at the northern sites, but noise from traffic on Highway 65 remained the dominant source. During the very late night hours it was clear that music levels had been reduced as the greatest audibility of Topgolf operations was observed to be caused by patron's conversations.
6. Security personnel were observed to be present in the parking lot areas on both Friday and Saturday nights. Periodically, noise generated by parking lot movements and patrons walking to or from their cars was clearly audible at the nearest noise-measurement locations. In some limited cases, maximum noise levels generated by patrons in the parking area were identified as exceeding the project's maximum noise level criteria. The vast majority of the time, however, noise generated by parking lot activities was inconsequential relative to Highway 65 traffic noise.
7. The weatherproof cases used by BAC to house the sound level meters create a loud and unavoidable "snap" when being fastened closed. As a result, some of the higher measured individual maximum noise levels were caused by BAC staff during checking of the sound level meters during observations.

Noise Survey Results

The noise survey results, including identification of the noise sources responsible for the highest measured noise levels, are contained in Appendix C. Appendix C also shows the maximum and average noise level standards applicable to the Topgolf project.

BAC staff observations and collected audio recordings, summarized in the previous section, were instrumental in determining whether or not the measured sound levels were attributable to Topgolf operations or other noise sources. As noted previously, the dominant noise source at each of the noise measurement sites was Highway 65, with Washington Boulevard contributing to measured ambient noise levels at the northernmost measurement sites. Noise generated by aircraft overflights, local noise sources (yard maintenance equipment, barking dogs, residents using the bike path, residential traffic, etc.), was also identified as being accountable for many of the highest measured maximum noise levels during the survey.

Measurement Site 1 Results:

Examination of the noise level data for Measurement Site 1, shown in Appendices C1 and C2, indicates that, while measured maximum noise levels exceeded the Topgolf L_{max} thresholds during various times of the day and night, those exceedances were caused by aircraft, sirens, Washington Boulevard and Highway 65 traffic, and other sources. Noise from Topgolf operations was not identified as resulting in exceedance of the L_{max} thresholds. Even during the late night hours when traffic noise levels were lower.

Measured average noise levels at Site 1 were also above the Topgolf L_{eq} thresholds from approximately 10 pm on Friday night, but not on Saturday night. However, BAC staff observations conducted during the late-night hours indicated that noise from Topgolf music and patrons was completely inaudible at measurement Site 1 during the late-night hours. As a result, it was concluded that Topgolf operations were well within compliance with the project L_{eq} noise thresholds at Site 1.

Measurement Site 2 Results:

Examination of the noise level data for Measurement Site 2, shown in Appendices C3 and C4, indicates that, while measured maximum noise levels exceeded the Topgolf L_{max} thresholds during various times of the day and night, those exceedances were caused by aircraft, sirens, Washington Boulevard and Highway 65 traffic, and other sources. Although not the main noise source, noise from Topgolf operations was identified as resulting in an exceedance of the 60 dB L_{max} standard during a brief period of Topgolf patrons talking in raised voices in the parking lot area around 10:15 pm on Saturday. The measured exceedance was 5 dB above the noise level standard.

Measured average noise levels at Site 2 were also above the Topgolf L_{eq} thresholds from approximately 10 pm on Friday night, but not on Saturday night. However, BAC staff observations conducted during the late-night hours indicated that noise from Topgolf music and patrons was virtually inaudible at measurement Site 2 during the late-night hours (with the exception of the noted maximum noise standard exceedance noted above). Observed average noise levels resulting from Topgolf operations were below the City's noise thresholds applied to the project at measurement site 2.

Measurement Site 3 Results:

Measurement Site 3 was located closest to the main Topgolf parking area, but was shielded from view of the open drive bays. Examination of the noise level data for Measurement Site 3, shown in Appendices C5 - C7, indicates that, while measured maximum noise levels exceeded the Topgolf L_{max} thresholds during various times of the day and night, those exceedances were caused by aircraft, sirens, Washington Boulevard and Highway 65 traffic, and other sources. Although not the main noise source, noise from Topgolf operations was identified as resulting in an exceedance of the 60 dB L_{max} standard during a brief period of Topgolf patrons talking in raised voices in the parking lot area around 10:15 pm on Saturday. This is the same exceedance which was identified at measurement Site 2. The measured exceedance was 7 dB above the noise level standard at measurement Site 3.

Measured average noise levels at Site 3 which were attributable to Topgolf, and not Highway 65 traffic, were below the project's average (L_{eq}) noise thresholds during the entire noise monitoring period. The spike in the measured L_{eq} value at 12:45 am on Saturday morning was due to people talking in close proximity to the microphone, well away from the Topgolf parking area and driving range. After isolating Topgolf noise sources at this location, it was determined that average noise levels resulting from those operations were within compliance with the project's average noise standards.

Measurement Site 4 Results:

Measurement Site 4 was located at the closest point to the Topgolf structure, but the open driving range bays were blocked from view by the structure. Examination of the noise level data for Measurement Site 4, shown in Appendices C8 and C9, indicates that, while measured maximum noise levels exceeded the Topgolf L_{max} thresholds during various times of the day and night, those exceedances were caused by aircraft, sirens, Highway 65 traffic, local traffic and other sources not attributable to Topgolf operations. Maximum noise levels from Topgolf operations were identified as being within compliance with the project's maximum noise level standards at Site 4.

Measured average noise levels at Site 4 which were attributable to Topgolf, and not Highway 65 traffic or other local noise sources, were below the project's average (L_{eq}) noise thresholds during the entire noise monitoring period.

Measurement Site 5 Results:

Measurement Site 5 was the closest noise measurement site to the open drive bays, and had full view of those bays. Examination of the noise level data for Measurement Site 5, shown in Appendices C10 and C11, indicates that, while measured maximum noise levels exceeded the Topgolf L_{max} thresholds during various times of the day and night, those exceedances were caused by aircraft, sirens, Highway 65 traffic, local traffic and other sources not attributable to Topgolf operations. Maximum noise levels from Topgolf operations were identified as being within compliance with the project's maximum noise level standards at Site 5.

It should be noted that both music and Topgolf patron voices were audible at measurement Site 5. However, average noise levels reported in Appendices C10 and C11 were below the project's L_{eq} thresholds even when added to existing Highway 65 traffic noise. As a result, no exceedance of the project's average noise thresholds were registered at the measurement Site 5, despite that location being the closest to the open drive bays.

Measurement Site 6 Results:

Examination of the noise level data for Measurement Site 6, shown in Appendices C13 through C15 indicates that, while measured maximum noise levels exceeded the Topgolf L_{max} thresholds during various times of the day and night, with two exceptions those exceedances were caused by aircraft, sirens, Washington Boulevard and Highway 65 traffic, and other sources. Although not the main noise source, noise from cheering Topgolf patrons was identified as resulting in an exceedance of the 65 dB L_{max} standard at 7:45 pm and exceedance of the 57 dB L_{max} standard at 11:30 pm. The measured exceedances were 1 and 6 dB above the noise level standards, respectively.

Measured average noise levels at Site 6 were also above the Topgolf L_{eq} thresholds from approximately 10 pm on Friday night and 11 pm on Saturday night. However, BAC staff observations conducted during the late-night hours indicated that noise from Topgolf music and patrons was low at Site 6, and within compliance with the project's average noise level standards. By comparison, Appendix C-14 shows that noise generated during neighborhood yard maintenance activities generated average noise levels of approximately 60 dB L_{eq} at measurement Site 6, whereas Topgolf noise was observed to be less than 50 dB during the same period.

Measurement Site 7 Results:

Measurement Site 7 was located at the south end of the adjacent residential development, as indicated in Figure 1. Because the driveway of the adjacent residence was approximately 25 feet from the microphone, the resident arriving and departing his property resulted in several exceedances of the noise standard applied to Topgolf. However, in no case were Topgolf operations observed or identified as having resulted in exceedance of the L_{max} standards applicable to Topgolf operations at Site 7. At 7:45 pm on Saturday night, a cheer from the Topgolf patrons in a drive bay was registered, but it was measured to be 2 dB below the L_{max} threshold applicable to Topgolf operations.

Measured average noise levels at Site 7 were measured as slightly exceeding the Topgolf L_{eq} thresholds during some periods after 10 pm on Friday and Saturday nights. However, BAC staff observations conducted during the late-night hours indicated Topgolf music and patrons were not responsible for those exceedances, and that Topgolf noise was within compliance with the project's average noise level standards at Site 7.

Conclusions

BAC concludes from the noise monitoring conducted over the weekend of October 21 to 23, 2016, that average noise levels generated by Topgolf operations were within compliance with the project's average noise level standards at each measurement site. This conclusion indicates that the noise mitigation measures implemented within the drive bays are effective and that the Topgolf management did progressively lower house music sound levels during the late-night hours.

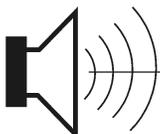
Although this analysis indicates that the Topgolf noise generation was in compliance with the average noise level limits, one exceedance of the project's maximum (L_{max}) noise standard was observed at Sites 2 and 3 due to Topgolf patrons speaking in raised voices in the parking lot area. The exceedances at the two locations were due to the same event. In addition, two exceedances of the project's maximum (L_{max}) noise standards were observed at measurement Site 6 resulting from Topgolf patrons cheering from within the drive bay. In total, three (3) exceedances of the project's L_{max} noise thresholds were identified as having resulted from Topgolf Operations during the weekend noise monitoring program.

It should be noted that these Topgolf-generated exceedances ranged from 3 to 7 dB above the applicable noise standards. By comparison, noise generated by emergency vehicle sirens, motorcycles and other loud vehicles on Highway 65, aircraft, barking dogs, and lawn maintenance activities resulted in exceedances of the maximum noise level limits applicable to Topgolf operations by considerably higher margins (up to 15 dB over the standard) and with much higher frequency. Nonetheless, because some exceedances of the project's maximum noise thresholds were identified, BAC recommends that Topgolf management continue to refine parking lot supervision procedures and investigate strategies to minimize noise from patrons in the parking areas as well as very noisy patrons within the drive bays. Given the variable nature of human voice and the very limited exceedance of the project's maximum noise level limits, it is BAC's professional opinion that the Topgolf operations were within substantial conformance with the project's conditions of approval pertaining to noise during the weekend noise monitoring survey conducted in October of 2016.

This concludes our noise analysis for the Topgolf Project in Roseville, California. Please contact BAC at (916) 663-0500 or paulb@bacnoise.com with any questions or requests for additional information.

Appendix A Acoustical Terminology

Acoustics	The science of sound.
Ambient Noise	The distinctive acoustical characteristics of a given space consisting of all noise sources audible at that location. In many cases, the term ambient is used to describe an existing or pre-project condition such as the setting in an environmental noise study.
Attenuation	The reduction of an acoustic signal.
A-Weighting	A frequency-response adjustment of a sound level meter that conditions the output signal to approximate human response.
Decibel or dB	Fundamental unit of sound, A Bell is defined as the logarithm of the ratio of the sound pressure squared over the reference pressure squared. A Decibel is one-tenth of a Bell.
CNEL	Community Noise Equivalent Level. Defined as the 24-hour average noise level with noise occurring during evening hours (7 - 10 p.m.) weighted by a factor of three and nighttime hours weighted by a factor of 10 prior to averaging.
Frequency	The measure of the rapidity of alterations of a periodic signal, expressed in cycles per second or hertz.
L_{dn}	Day/Night Average Sound Level. Similar to CNEL but with no evening weighting.
Leq	Equivalent or energy-averaged sound level.
L_{max}	The highest root-mean-square (RMS) sound level measured over a given period of time.
Loudness	A subjective term for the sensation of the magnitude of sound.
Masking	The amount (or the process) by which the threshold of audibility is for one sound is raised by the presence of another (masking) sound.
Noise	Unwanted sound.
Peak Noise	The level corresponding to the highest (not RMS) sound pressure measured over a given period of time. This term is often confused with the Maximum level, which is the highest RMS level.
RT₆₀	The time it takes reverberant sound to decay by 60 dB once the source has been removed.
Sabin	The unit of sound absorption. One square foot of material absorbing 100% of incident sound has an absorption of 1 sabin.
SEL	A rating, in decibels, of a discrete event, such as an aircraft flyover or train passby, that compresses the total sound energy of the event into a 1-s time period.
Threshold of Hearing	The lowest sound that can be perceived by the human auditory system, generally considered to be 0 dB for persons with perfect hearing.
Threshold of Pain	Approximately 120 dB above the threshold of hearing.



B O L L A R D

Acoustical Consultants

Appendix B-1
Representative TopGolf Roseville Noise Measurement Site Photographs
Site 1



Microphone at end of 5 foot
PVC boom attached to tree
stake at location indicated.

Appendix B-2
TopGolf Roseville Noise Measurement Site Photographs
Site 2



Microphone at end of 5 foot
PVC boom ultimately
attached to tree stake.

Appendix B-3
TopGolf Roseville Noise Measurement Site Photographs
Site 3



Microphone at end of 5 foot
PVC boom – photo shows
calibrator attached during
setup.

Microphone at end of 5 foot
PVC boom – both photos
shows Mr. Armenta's
residence in background.



Appendix B-4
TopGolf Roseville Noise Measurement Site Photographs
Site 4



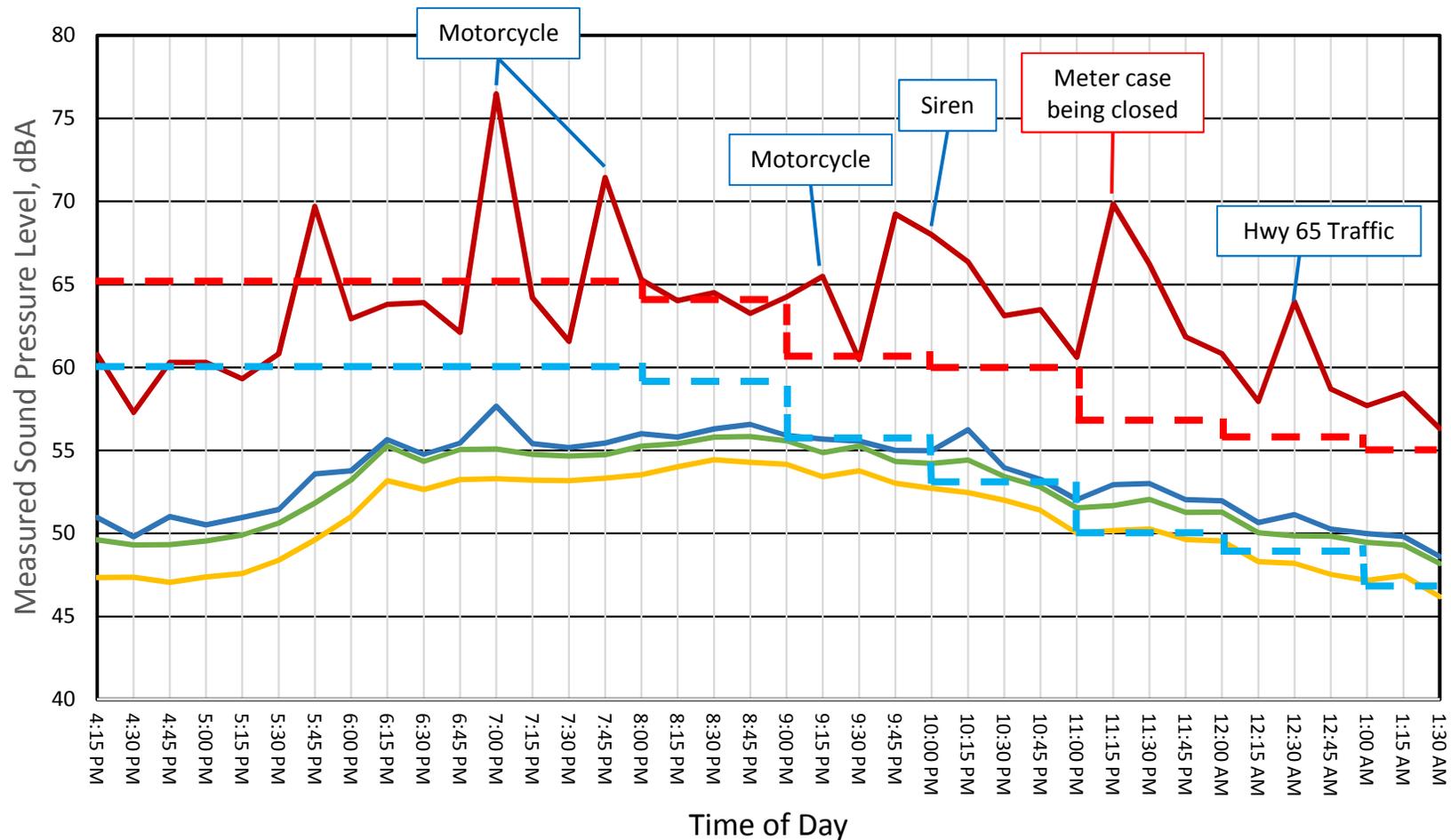
Microphone ultimately placed at end of 5 foot PVC boom attached to tree stake at location indicated. Mic not yet installed when this photo taken.

Appendix B-5
TopGolf Roseville Noise Measurement Site Photographs
Site 5



Microphone ultimately placed
at end of 5 foot PVC boom
attached to tree stake at
location indicated.

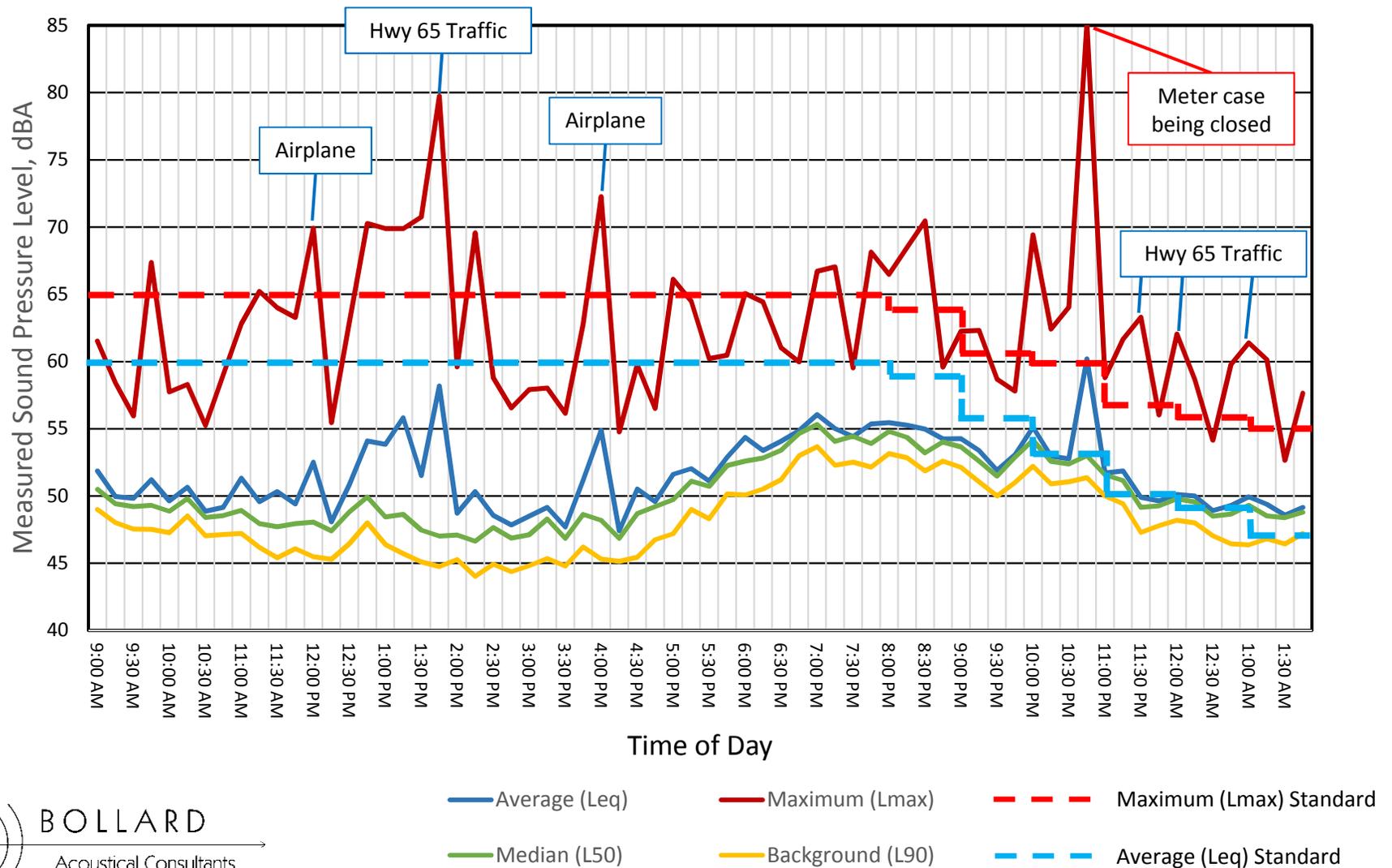
Appendix C-1
 TopGolf Roseville Noise Survey Results - Site 1
 Afternoon of Friday, October 21 through early morning hours of Saturday, October 22nd, 2016



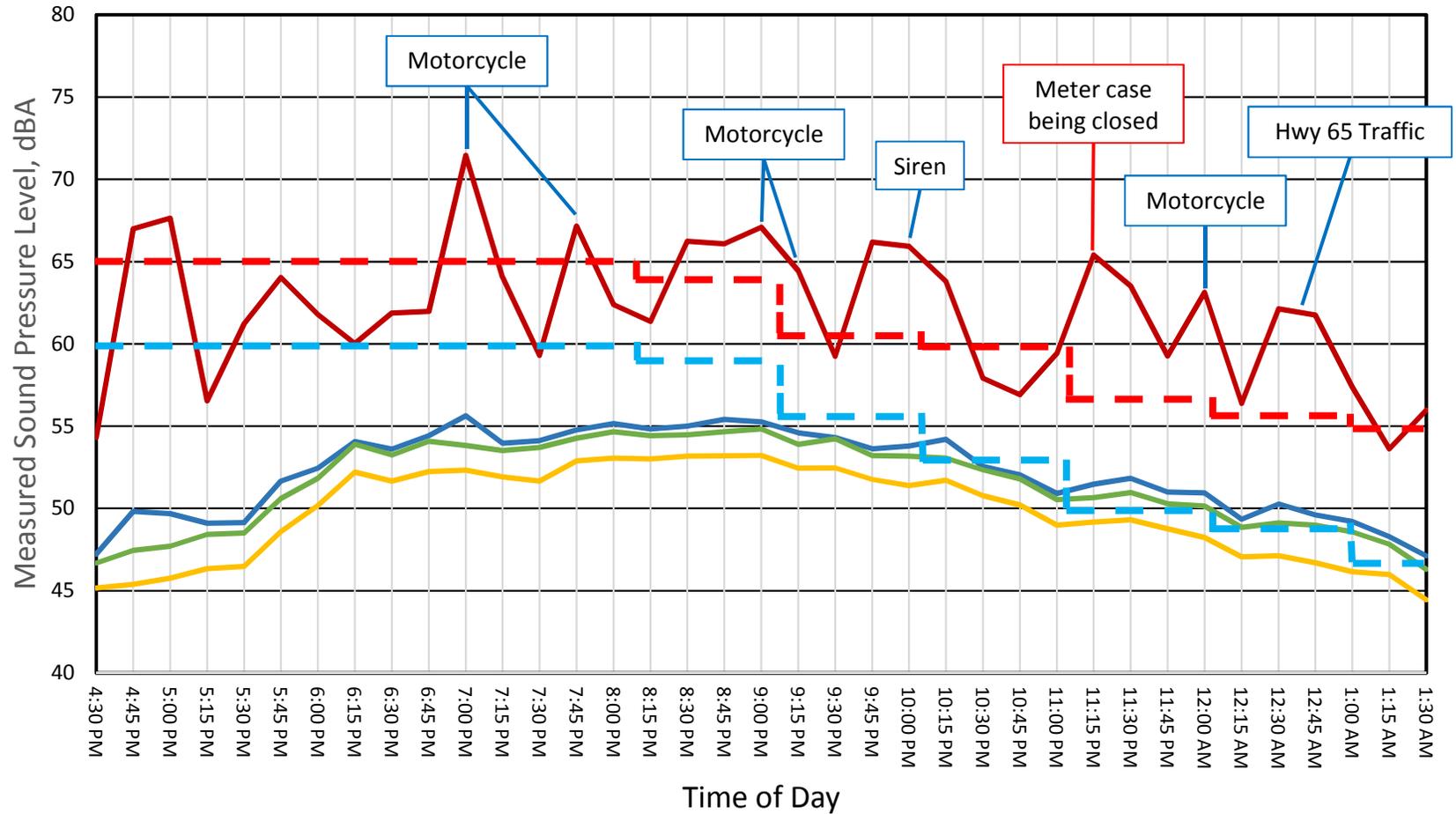
- Average (Leq)
- Maximum (Lmax)
- - - Maximum (Lmax) Standard
- Median (L50)
- Background (L90)
- - - Average (Leq) Standard



Appendix C-2
 TopGolf Roseville Noise Survey Results - Site 1
 Morning of Saturday, October 22 through early morning hours of Sunday, October 23rd, 2016

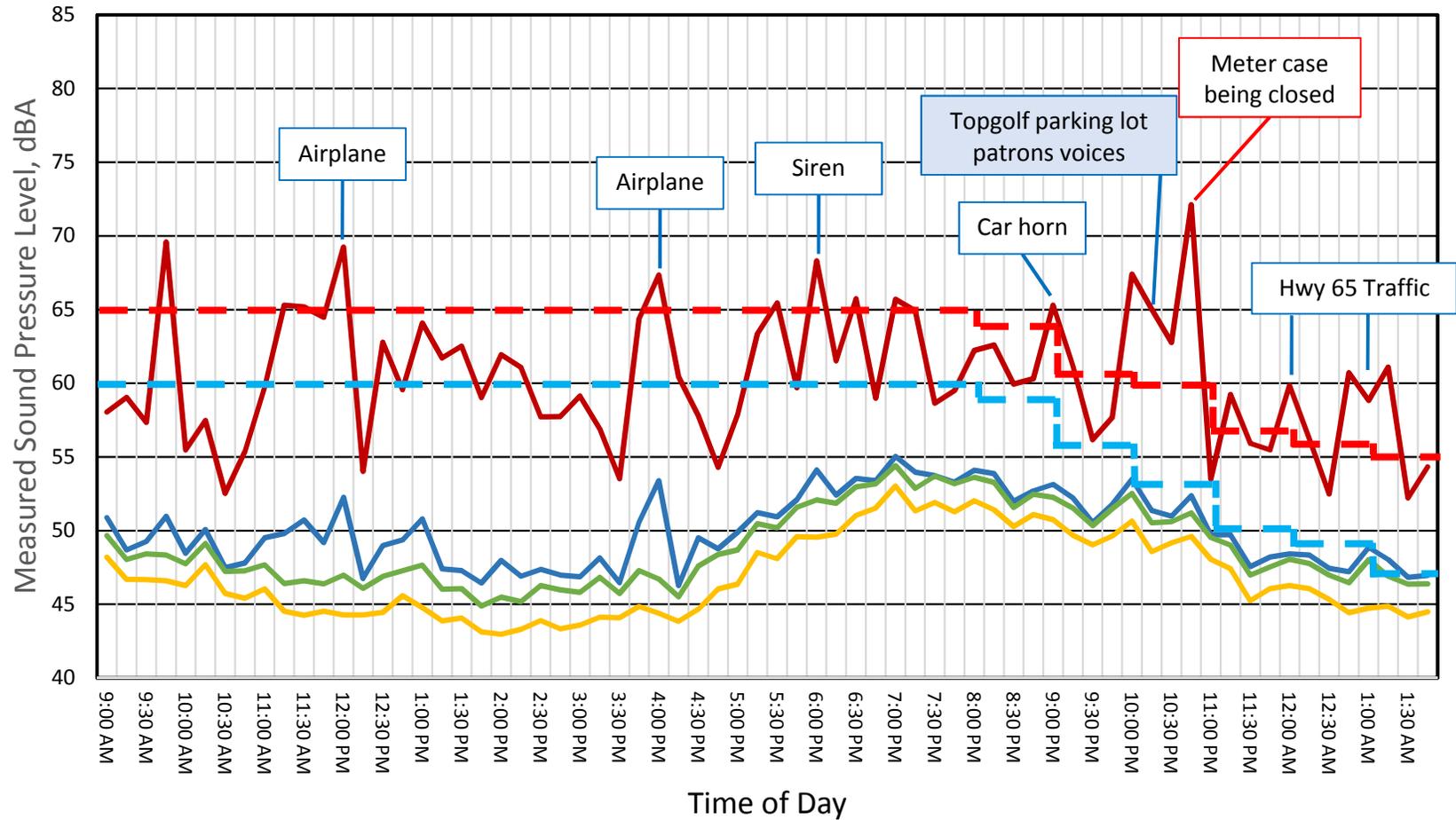


Appendix C-3
 TopGolf Roseville Noise Survey Results - Site 2
 Afternoon of Friday, October 21 through early morning hours of Saturday, October 22nd, 2016



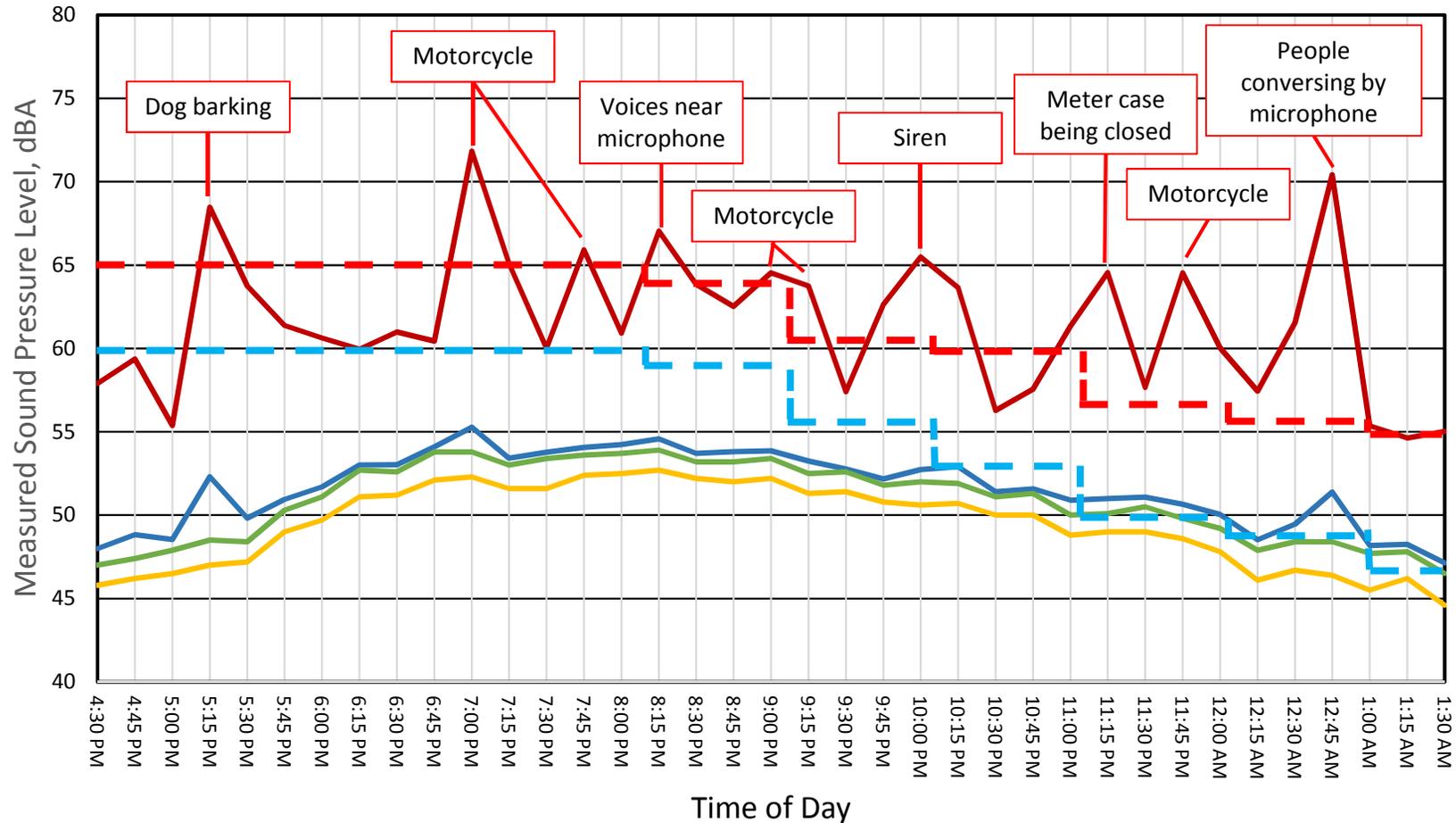
- Average (Leq)
- Median (L50)
- Maximum (Lmax)
- Background (L90)
- - - Maximum (Lmax) Standard
- - - Average (Leq) Standard

Appendix C-4
 TopGolf Roseville Noise Survey Results - Site 2
 Morning of Saturday, October 22 through early morning hours of Sunday, October 23rd, 2016



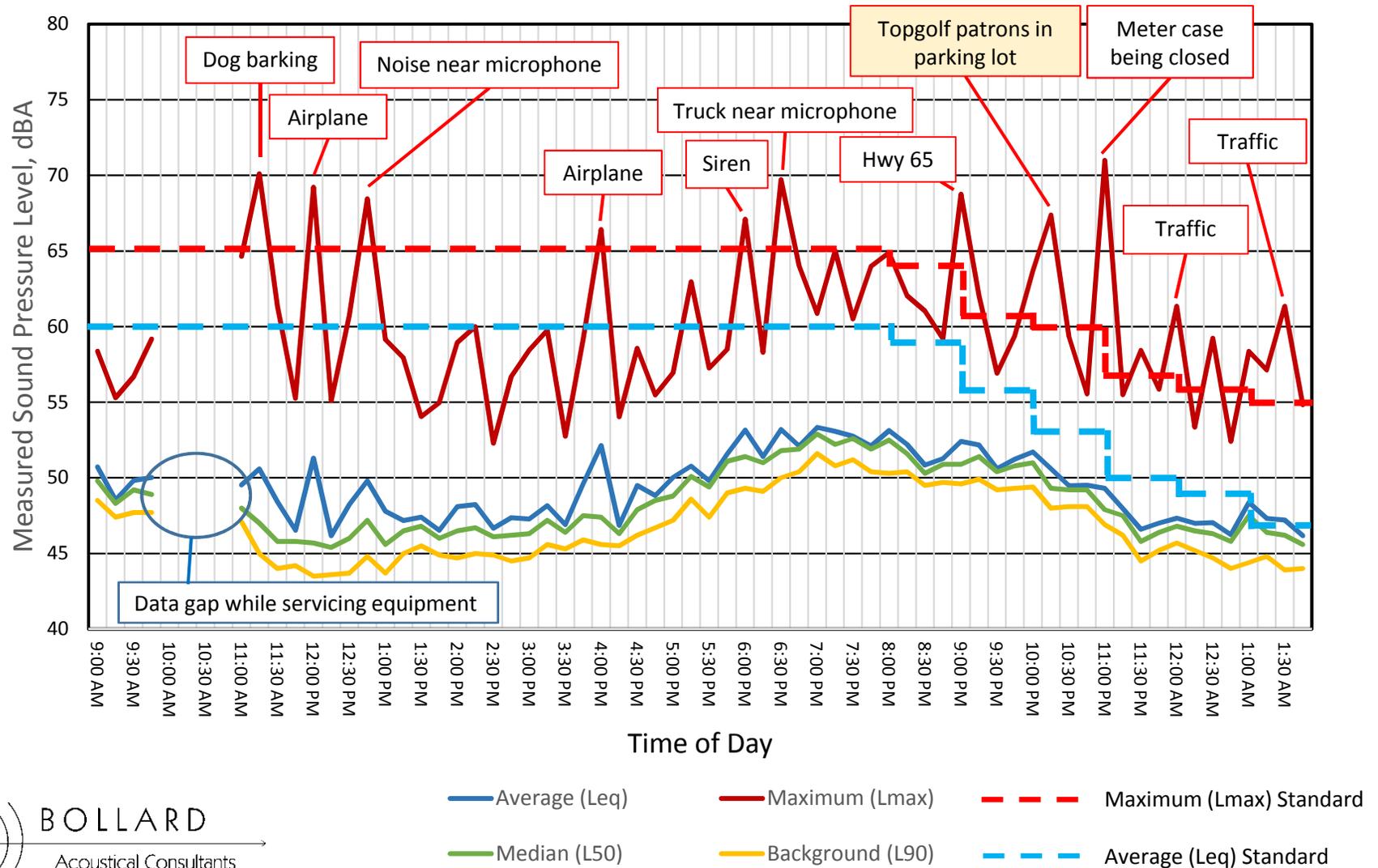
- Average (Leq)
- Median (L50)
- Maximum (Lmax)
- Background (L90)
- - - Maximum (Lmax) Standard
- - - Average (Leq) Standard

Appendix C-5
 TopGolf Roseville Noise Survey Results - Site 3
 Afternoon of Friday, October 21 through early morning hours of Saturday, October 22nd, 2016

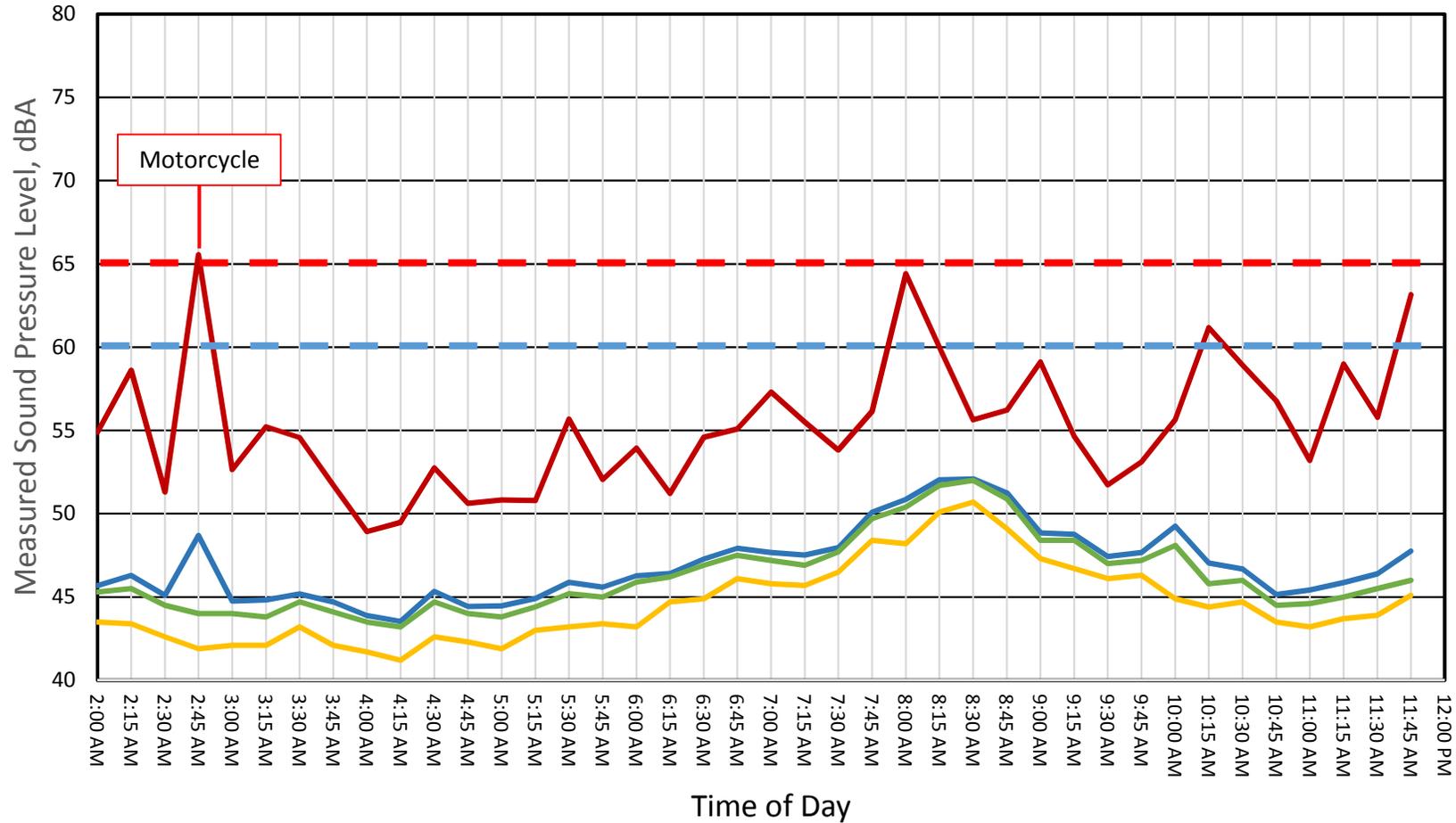


- Average (Leq)
- Maximum (Lmax)
- - - Maximum (Lmax) Standard
- Median (L50)
- Background (L90)
- - - Average (Leq) Standard

Appendix C-6
 TopGolf Roseville Noise Survey Results - Site 3
 Morning of Saturday, October 22 through early morning hours of Sunday, October 23rd, 2016

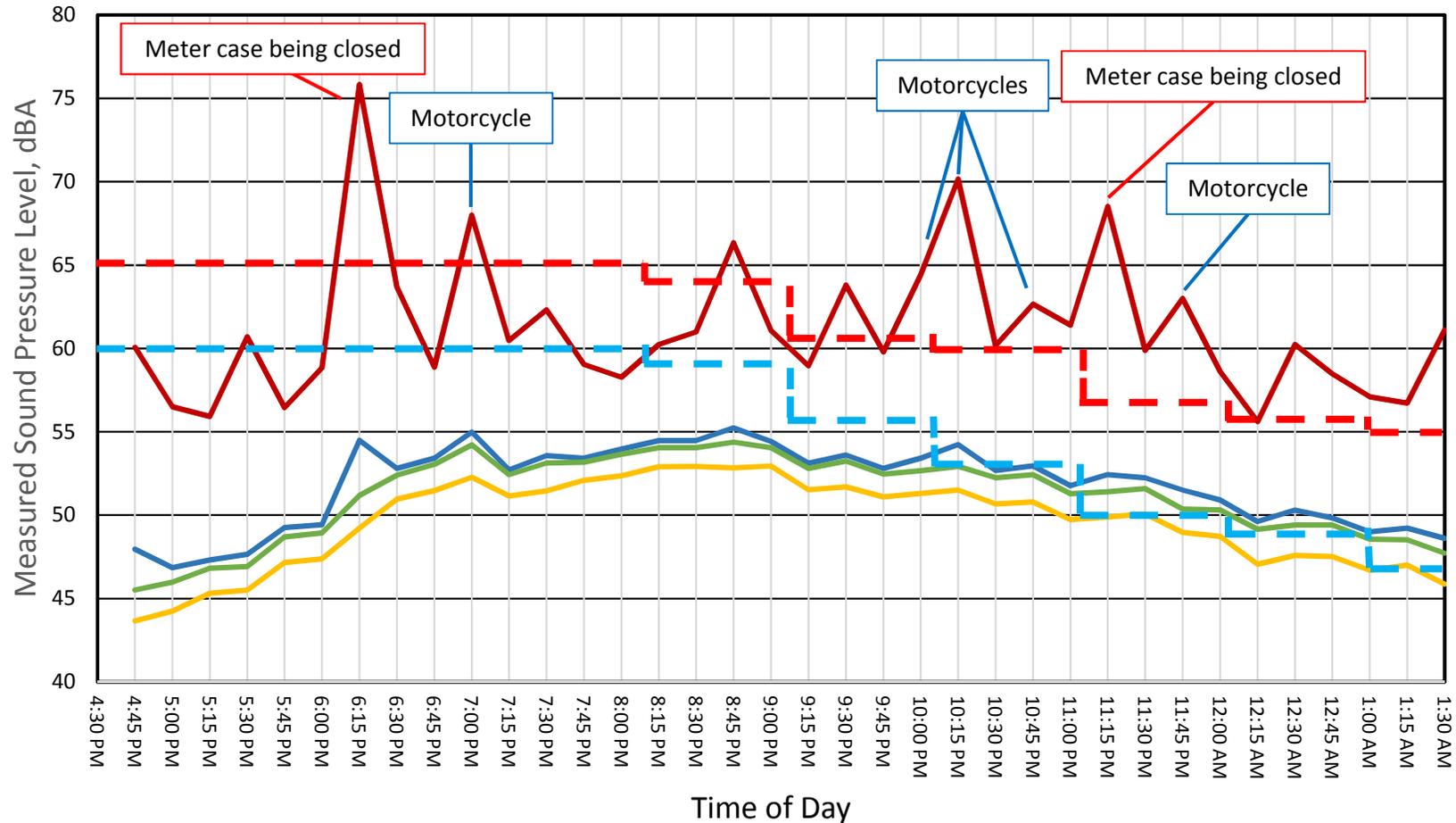


Appendix C-7
 TopGolf Roseville Noise Survey Results - Site 3
 Morning of Sunday, October 23rd, 2016



- Average (Leq)
- Maximum (Lmax)
- - - Maximum (Lmax) Standard
- Median (L50)
- Background (L90)
- - - Average (Leq) Standard

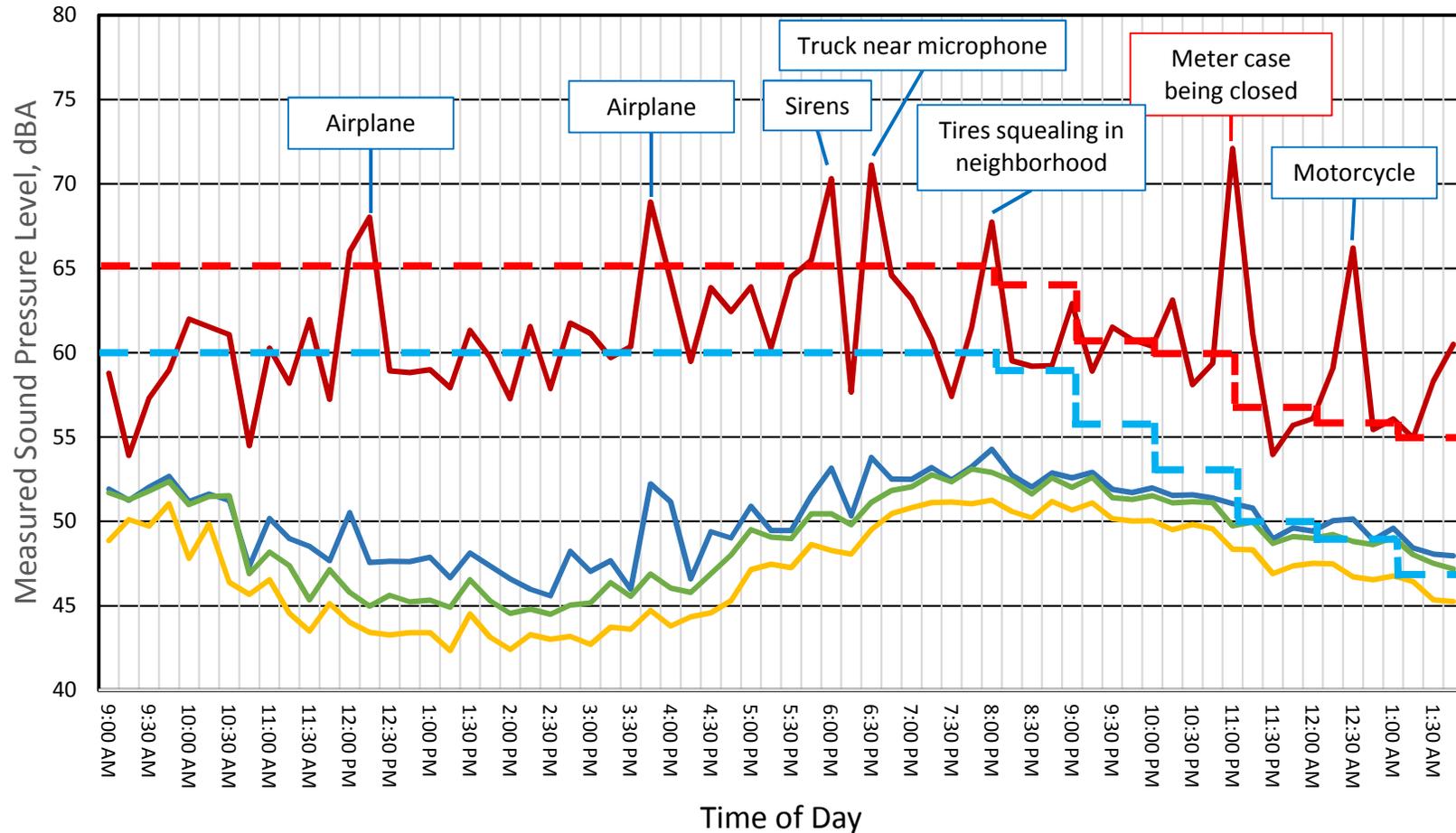
Appendix C-8
 TopGolf Roseville Noise Survey Results - Site 4
 Afternoon of Friday, October 21 through early morning hours of Saturday, October 22nd, 2016



- Average (Leq)
- Median (L50)
- Maximum (Lmax)
- Background (L90)
- - - Maximum (Lmax) Standard
- - - Average (Leq) Standard

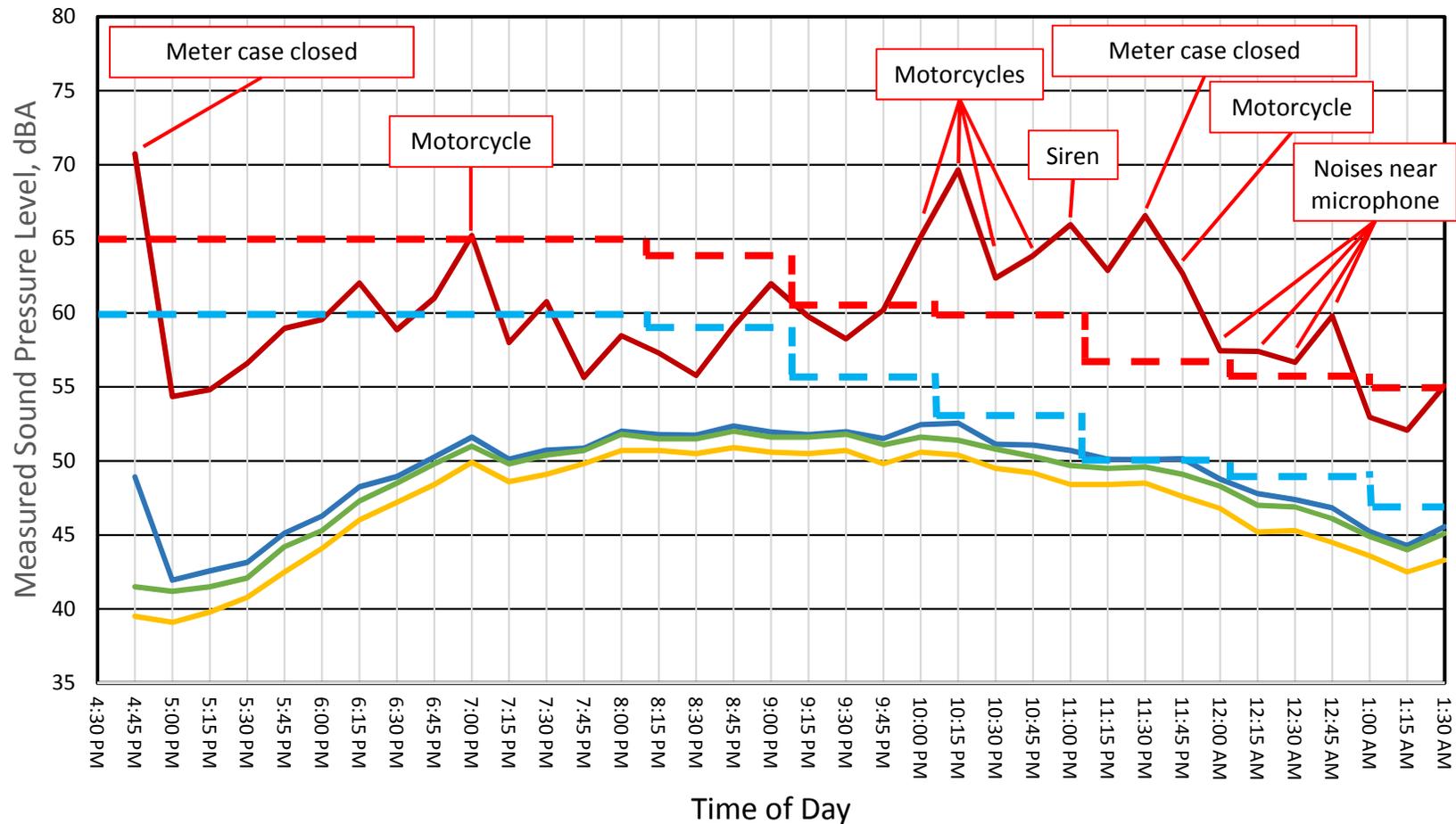


Appendix C-9
 TopGolf Roseville Noise Survey Results - Site 4
 Morning of Saturday, October 22 through early morning hours of Sunday, October 23rd, 2016



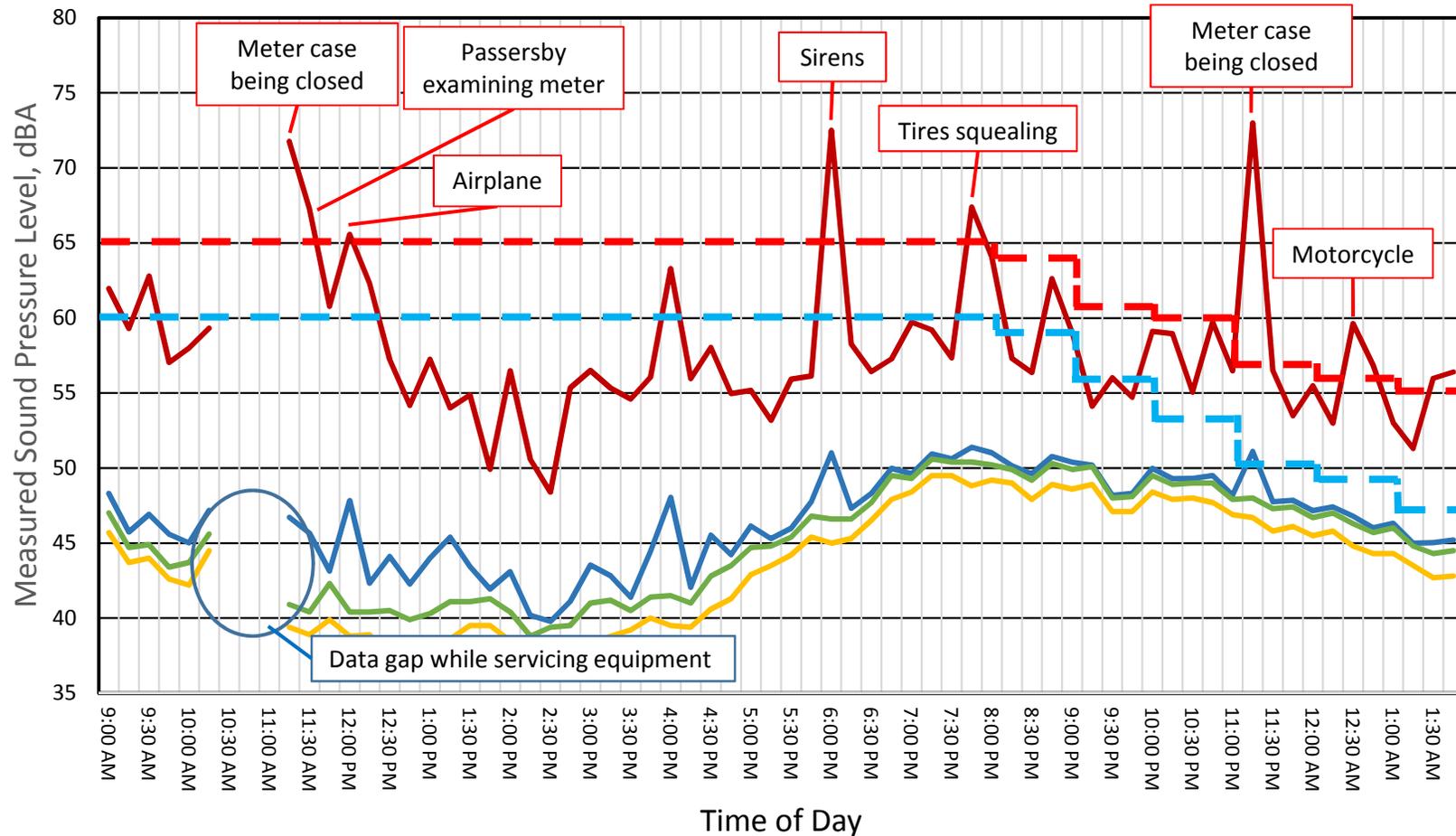
- Average (Leq)
- Median (L50)
- Maximum (Lmax)
- Background (L90)
- Maximum (Lmax) Standard
- Average (Leq) Standard

Appendix C-10
 TopGolf Roseville Noise Survey Results - Site 5
 Afternoon of Friday, October 21 through early morning hours of Saturday, October 22nd, 2016



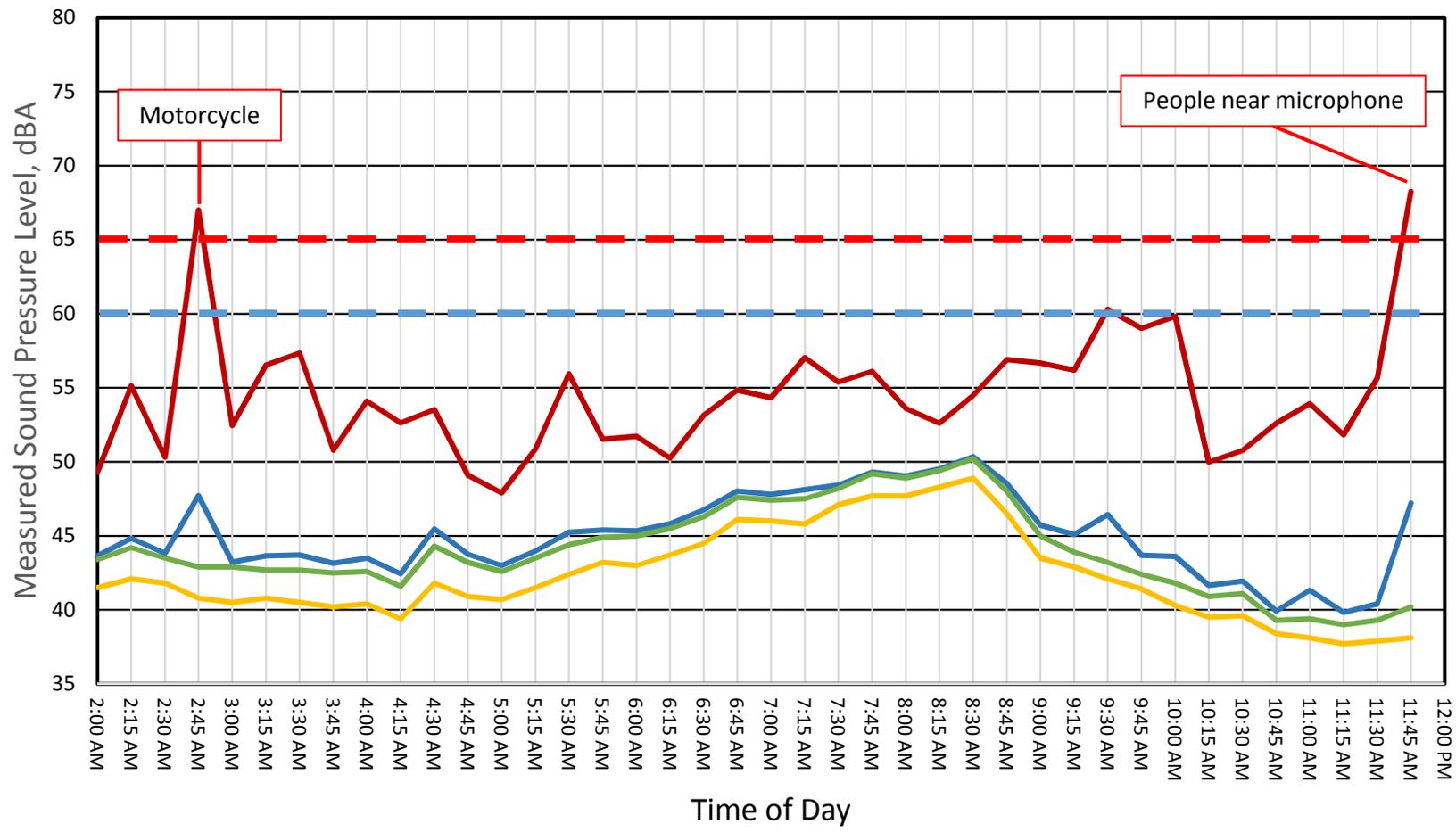
- Average (Leq)
- Maximum (Lmax)
- - - Maximum (Lmax) Standard
- Median (L50)
- Background (L90)
- - - Average (Leq) Standard

Appendix C-11
 TopGolf Roseville Noise Survey Results - Site 5
 Morning of Saturday, October 22 through early morning hours of Sunday, October 23rd, 2016



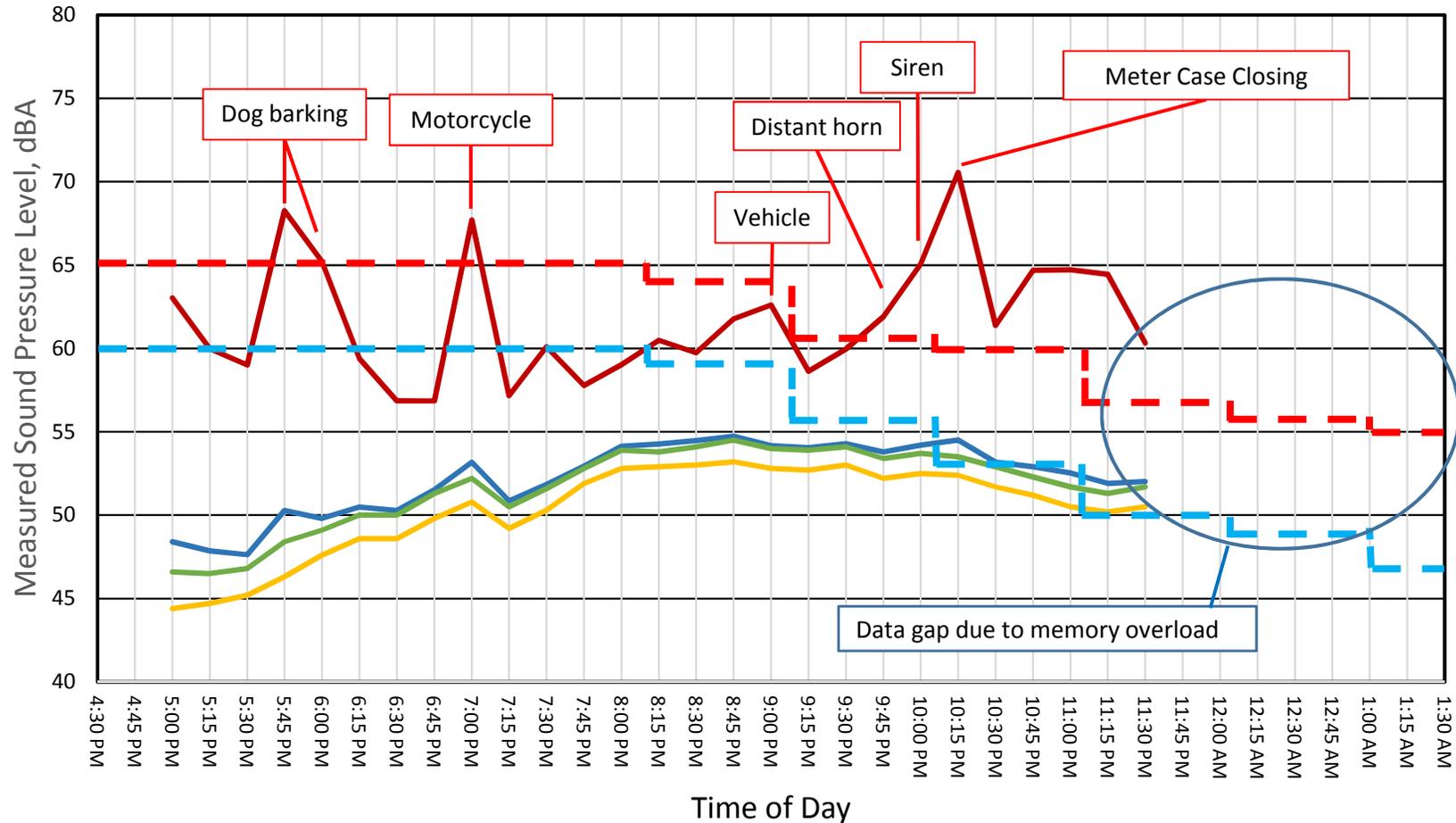
- Average (Leq)
- Maximum (Lmax)
- - - Maximum (Lmax) Standard
- Median (L50)
- Background (L90)
- - - Average (Leq) Standard

Appendix C-12
 TopGolf Roseville Noise Survey Results - Site 5
 Morning of Sunday, October 23rd, 2016



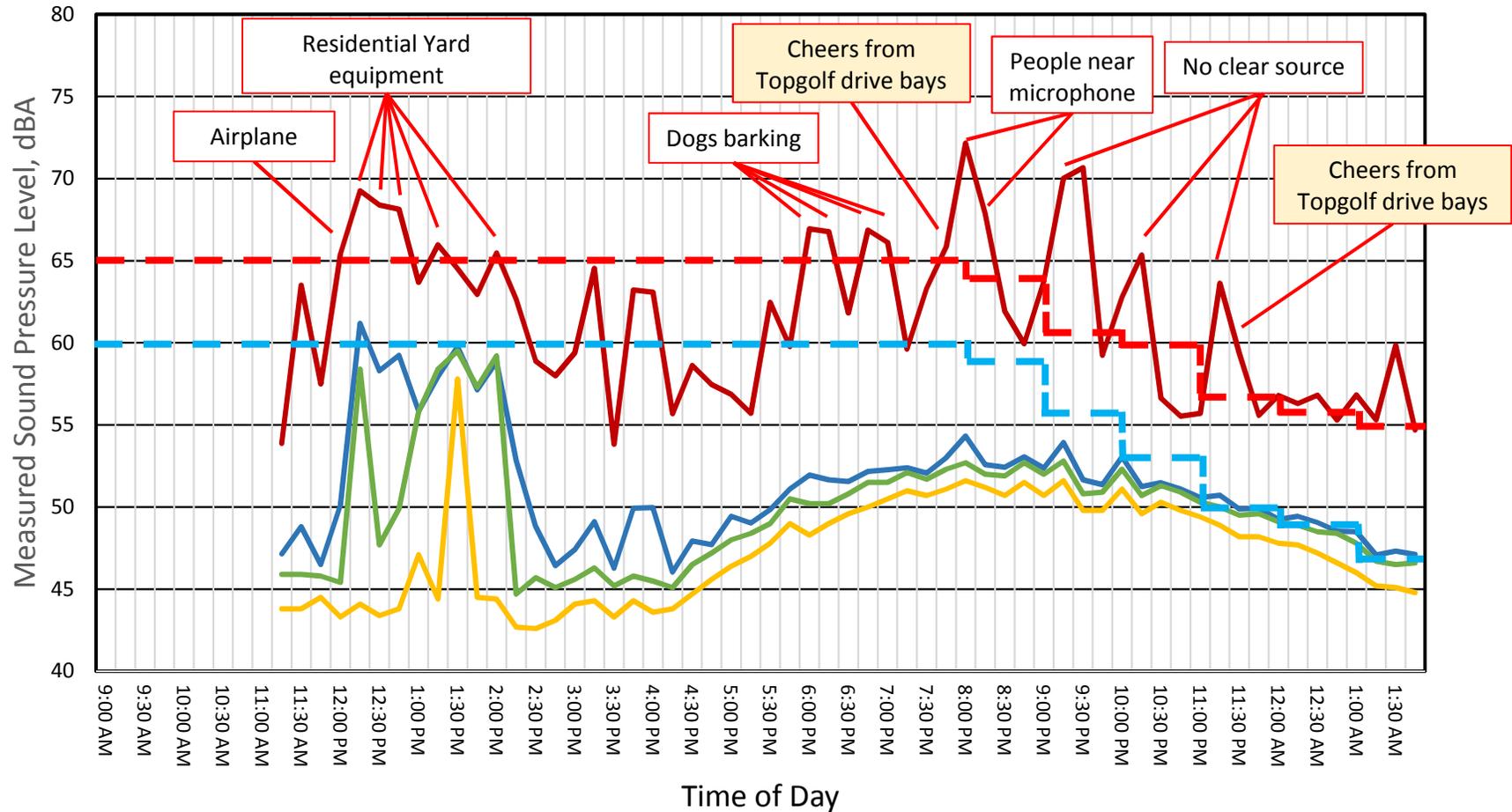
- Average (Leq)
- Maximum (Lmax)
- - - Maximum (Lmax) Standard
- Median (L50)
- Background (L90)
- - - Average (Leq) Standard

Appendix C-13
 TopGolf Roseville Noise Survey Results - Site 6
 Afternoon of Friday, October 21 through early morning hours of Saturday, October 22nd, 2016



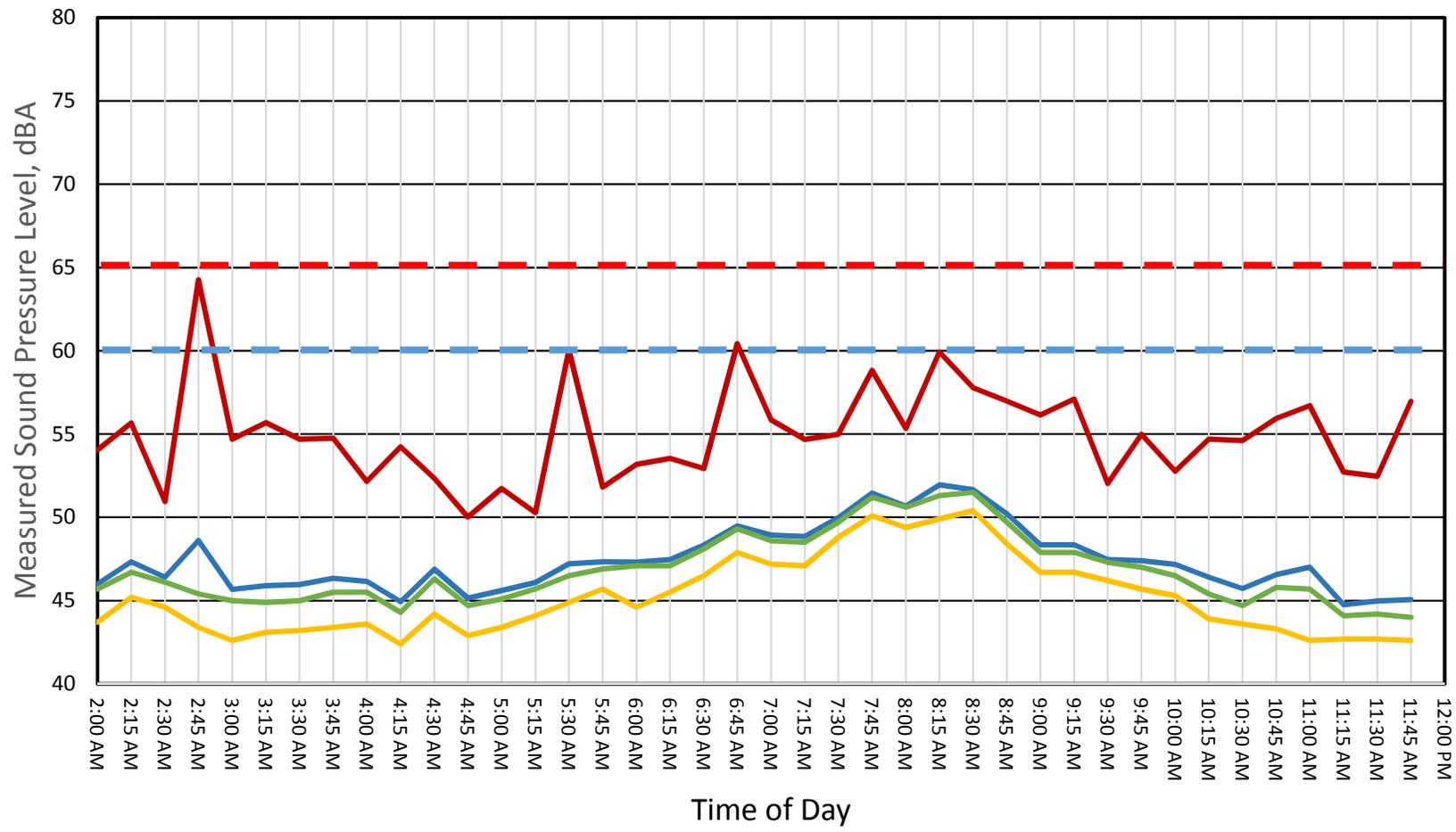
- Average (Leq)
- Median (L50)
- Maximum (Lmax)
- Background (L90)
- - - Maximum (Lmax) Standard
- - - Average (Leq) Standard

Appendix C-14
 TopGolf Roseville Noise Survey Results - Site 6
 Morning of Saturday, October 22 through early morning hours of Sunday, October 23rd, 2016



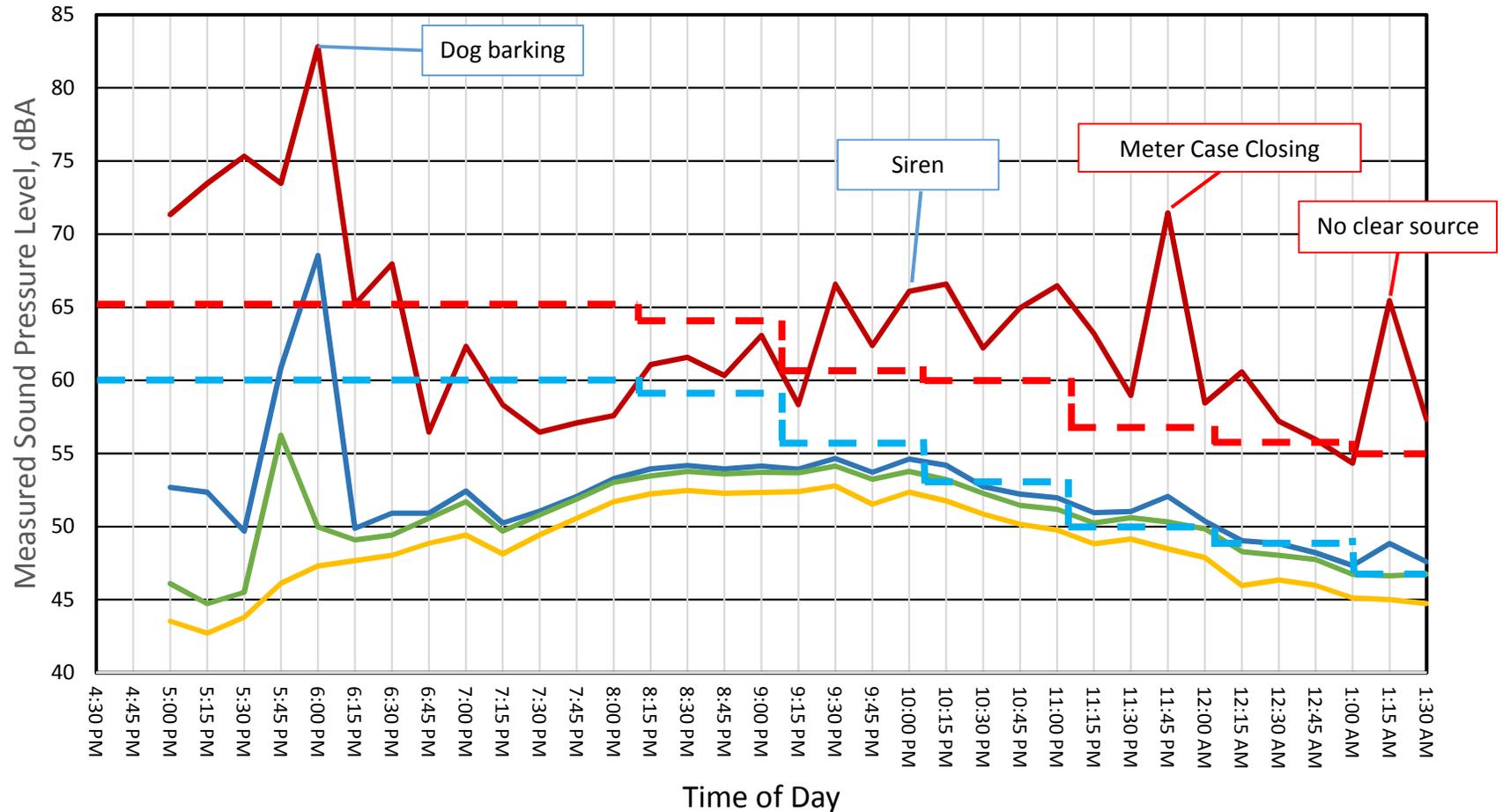
- Average (Leq)
- Maximum (Lmax)
- - - Maximum (Lmax) Standard
- Median (L50)
- Background (L90)
- - - Average (Leq) Standard

Appendix C-15
 TopGolf Roseville Noise Survey Results - Site 6
 Morning of Sunday, October 23rd, 2016



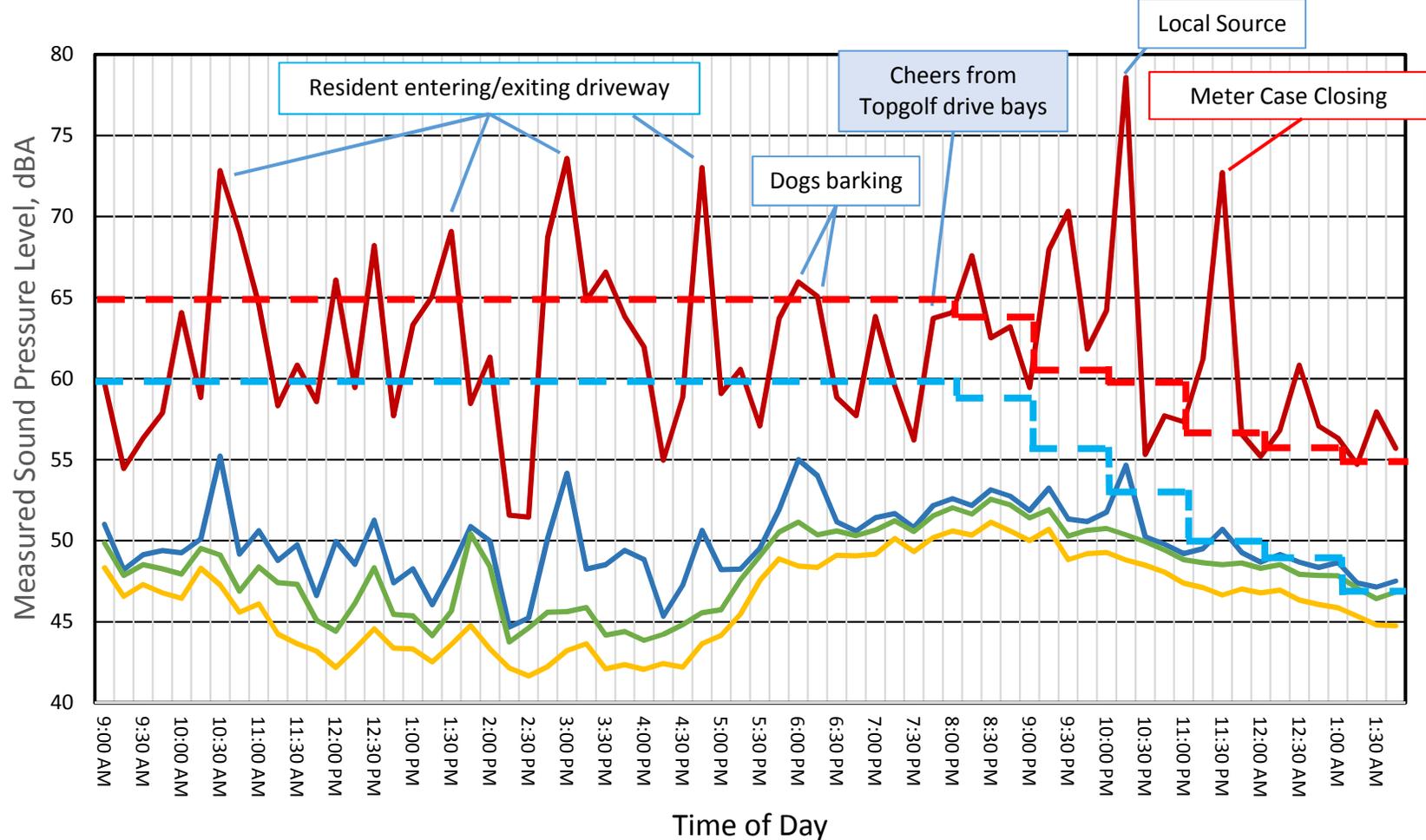
- Average (Leq)
- Maximum (Lmax)
- - - Maximum (Lmax) Standard
- Median (L50)
- Background (L90)
- - - Average (Leq) Standard

Appendix C-16
 TopGolf Roseville Noise Survey Results - Site 7
 Afternoon of Friday, October 21 through early morning hours of Saturday, October 22nd, 2016



- Average (Leq)
- Maximum (Lmax)
- - - Maximum (Lmax) Standard
- Median (L50)
- Background (L90)
- - - Average (Leq) Standard

Appendix C-17
 TopGolf Roseville Noise Survey Results - Site 7
 Morning of Saturday, October 22 through early morning hours of Sunday, October 23rd, 2016



- Average (Leq)
- Median (L50)
- Maximum (Lmax)
- Background (L90)
- - - Maximum (Lmax) Standard
- - - Average (Leq) Standard