BACKGROUND SOUND-LEVEL STUDY
WHARF RESOURCES

FOR

THE GOLDEN REWARD AND WHARF MINE EXPANSIONS

PREPARED FOR:

Wharf Resources (USA) Inc.
10928 Wharf Road
Lead, SD 57754-3742

by

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INTRODUCTION

Wharf Resources (USA) Inc. operates the Wharf open pit gold mine and heap-leach operation in the Bald Mountain Mining District of South Dakota[1]. Wharf Resources (USA) Inc. is one of the operation assets of Goldcorp, a leading gold producer engaged in gold mining and related activities, including exploration, extraction, processing and reclamation.

The Wharf mine is seeking a permit before the SD Board of Minerals and Environment for expansion of the Trojan/Foley/Portland pit complex towards the south and southeast, and for operations within the Golden Reward property, including the expansion to the west of the Liberty/Harmony pit area (Figure 1).

Wharf Resources is the only gold mining company still actively mining in South Dakota. In 2009, Wharf reported producing 67,738 ounces of gold and 234,751 ounces of silver; they mined 2,776,530 tons of ore and 10,386,671 tons of waste rock and overburden during the period[2].

The Golden Reward Mining Company started as a joint venture between three companies: Coin Lake Gold Mines, Ltd. of Toronto, Ontario, Canada; Moruya Gold Mines of Sydney, Australia and Tucson, Arizona; and VenturesTrident, L.P. of Denver, Colorado (through MinVen Gold, a company into which it had a significant investment)[3]. The Golden Reward mine started production in 1991 and continued operation until suspension of mining operations in 1996.

Through its merger in 1991 with United Coin Mines, MinVen Gold of Denver, CO ended with a substantial position in Golden Reward. In mid-1992 a transaction was completed whereby MinVen sold 60 percent of Golden Reward to Wharf Resources Ltd[4].

In June 1999, wholly owned subsidiaries of Wharf acquired the remaining 40% interest in the Golden Reward Mine from Dakota Mining Corporation, parent company of Brohm Mining which was having problems, at the time, at its Gilt Edge Mine[5]. The Golden Reward Mine is adjacent to the Wharf Mine and the property consists of 434 patented and 76 unpatented mining claims covering 4,199 acres. Golden Reward entered an approved period of temporary cessation in December 1996. The mine has commenced permanent closure and reclamation, which was completed in 2002. As of 2009, the SD BME had granted bond release to Golden Reward (Wharf Resources) of 402.90 acres[2].

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[1] http://www.goldcorp.com/operations/

[2] *Summary of the Mining Industry in South Dakota 2009*, http://denr.sd.gov/des/mm/documents/Goldrpt09.pdf

[3] *Golden Reward Mining Company Application for Permit, Lawrence County, South Dakota*, December 1, 1987.

[4] *MINVEN Gold, United Coin Mines and Wharf Resources Reach Settlement Agreement Regarding Ownership of Golden Reward*, http://www.thefreelibrary.com/MINVEN+GOLD,+UNITED+COIN+MINES+AND+WHARF+RESOURCES+REACH+SETTLEMENT...-a012217601

[5] http://www.secinfo.com/dPSyf.7b.htm

Figure 1 goes here

Wharf Resources has been able to push back its planned closure date from 2007[6], to mid-2008, then 2010[7], and now later through focused exploration and the proving up of reserves around the Bald Mountain Mining District.

REQUIREMENT FOR THE SOUND STUDY

The general requirement for a baseline sound study is set out in **SDCL 45-6B-92**[8], which states:

Description of critical resources affected by reclamation plan. The applicant shall, as part of the reclamation plan, include a description of all critical resources potentially affected by the mining operation and plans for mitigating potential impacts to such critical resources. Critical resources shall be addressed by the applicant during the evidentiary portion of a contested case hearing before the board on the mine permit application.

For purposes of this chapter, critical resources include the following:

(1)

(2)

(3)

(4)

(5)

(6)

(7)

(8)

(9) Noise--areas near potential receptors including residences and recreational areas; and

(10)

Furthermore, the baseline sampling plan for the Golden Reward and Wharf expansions, as submitted to the SD DENR by RESPEC, states:

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[6] *Wharf Resources (USA) Inc. 2005 Sustainability Report*, http://www.goldcorp.com/_resources/project_pdfs/wharf_sustainability_report05.pdf

[7] *Wharf Resources (USA) Inc. 2007 Sustainability Report*, http://www.goldcorp.com/_resources/project_pdfs/wharf_sustain_report_07.pdf

[8] *South Dakota Legislature, South Dakota Codified Laws*, http://legis.state.sd.us/statutes/DisplayStatute.aspx?Type=Statute&Statute=45-6B-92

For Wharf:

A sound study will be conducted at Wharf with noise monitoring at the Bearfoot condominium area. In addition to newly gathered data, past studies will be referenced as appropriate.

For Golden Reward:

A sound study will be conducted at Golden Reward with noise monitoring from the base of the blue and red chair lines at Terry Peak. In addition to newly gathered data, past studies will be referenced as appropriate.

PREVIOUS SOUND STUDIES

Two pertinent baseline sound level studies, both performed by MartyAnn Apa, M.S., Lead, SD, were located. The earlier of these two reports was conducted for the Golden Reward Mining Company in 1987[9]. For this study, background sound measurements were obtained at 12 locations in and around Golden Reward's proposed open pit mine sites. Ms. Apa concluded in this report: "The average background noise levels from all sites fall within or near environmental noise levels for rural areas. With the exception of site 7, noise levels were highest at sites along roadways where moderate vehicle traffic contributed to overall sound levels. Site 7 is along Terry Gulch road which had no traffic during monitoring times. At a (sic) site along U.S. Highway 85, traffic noise levels of up to 76 dB(A) were recorded. Lowest sound level measurements were recorded at the more isolated sites, most of which are also heavily wooded."

The second pertinent baseline study conducted by MartyAnn Apa was for the Wharf Resources Clinton extension in 1992[10]. For this study, baseline sound level measurements were taken at 10 locations around the proposed Clinton Extension. Ms. Apa concluded in this report: "Sound levels at 8 of the 10 sites around the proposed Clinton expansion were consistent with typical sound levels for rural areas." And: "The sound level readings taken on December 17th were 10 to 15 dB higher than those taken on December 18th due to the high winds on the 17th. Sites more in the open were affected most by the wind…. The highest readings were the result of traffic noise."

A comparison of the results from Ms. Apa's background studies with the results of the just completed baseline monitoring is included below under **SUMMARY AND DISCUSSION OF RESULTS**.

Two additional sound studies pertinent to this discussion were located. They should both be taken together. The first, conducted in late 1988 by Erickson[11], "was to quantify the sound coming from the mine operation with respect to its impact on the area beyond the mine permit boundary." The second report, which must be taken together with Erickson's, was "an analysis of the data compiled by Professor Erickson and

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[9] *Background Sound Analysis for Proposed Mining Site*, Prepared for Golden Reward Mining Company, by MartyAnn Apa, November 15, 1987.

[10] *Baseline Sound Level Studies Wharf Resources Clinton Extension*, Prepared for Wharf Resources, by MartyAnn Apa, January 18, 1993.

[11] *Wharf Resources Mining Company Sound Level Study*, John Duff Erickson, 1988.

presents octave band analysis performed by the author," by MartyAnn Apa[12]. In this report, Ms. Apa included a table of decibel levels for some common environments and sounds, similar to Table 1 below.

The conclusions of these two reports state that

- the sound levels coming from the mine, excluding blasts, as recorded in the vicinity of the occupied dwellings were generally in the 35 to 50 decibel range (Erickson, 1988); and
- with the exception of blasts, measured sound levels from mining activity would be expected to have little if any appreciable affect on speech communication or sleep (Apa, 1989).

Table 1

(dBA)	Sources
100	Pneumatic drill
80 – 90	Noisy factory of urban street
70 – 80	Heavy truck
60 – 70	Business office
50 – 65	Conversation speech
40	Living room
25 – 30	Rural area forest

MONITORING PROCEDURE

➢ **Instrumentation:** All sound level measurements were made with a Pulsar Model 30 type-1 integrating-average sound level meter and spectrum analyzer[13]. The Model 30 is a hand-held, portable instrument capable of measuring simultaneously

In <u>sound-level meter</u> mode:

- the sound pressure level with "S" (slow), "F" (fast) and "I" (impulse) time averaging and their maximum and minimum values during the measurement period;
- the peak sound pressure level;
- the sound exposure level;
- the equivalent continuous sound pressure level with programmable consecutive integration time, T, and its maximum and minimum values (L_{eq});

[12] *Impact Analysis of Sound Level Study*, Prepared for Wharf Resources, by MartyAnn Apa, May 1989.
[13] *Manual: Model 30 Sound Level Meter & Spectrum Analyzer, ver 1.0-0.1*, Pulsar Instruments Plc.

- the equivalent continuous sound pressure level (L_{eq}) during the measurement period; and
- the total percentile levels corresponding to 1, 5, 10, 50, 90, 95, and 99% of the entire measurement and the partial levels of each chosen time interval (T).

All these functions are measured simultaneously with the following frequency weightings:

- Frequency weighting, A;
- Frequency weighting, C;
- Frequency weighting, Z (zero): frequency weighting equivalent to 0 dB from 10 Hz to 20 kHz.

In its spectrum analyzer mode, it measures the following functions simultaneously and in real time:

- the equivalent continuous sound pressure level with programmable consecutive integration time, T, and without frequency weighting for each octave band centered on frequencies of 31.5, 63, 125, 250, 500, 1000, 2000, 4000, 8000, and 16000 Hz;
- the maximum of the peak sound pressure level of the integration interval (T) for each of the octave bands; and
- the equivalent continuous sound pressure level of the integration level (T) with two frequency weightings, chosen from A, C or Z.

The Model 30 is equipped with communications software allowing one to configure the instrument and download all the recorded data and real-time measurements into a personal computer. This way they can be viewed in electronic format and selected information can be printed out for reporting purposes.

➢ **Field Procedure:** Between mid-March and mid-August, 2010, I traveled to the Terry Peak area several times for the purpose of establishing sound monitoring points and conducting the monitoring.

- On March 11th, I met Mr. Ken Nelson of Wharf at the Barefoot Condos access road to establish the monitoring points. We drove around the area, including the Golden Reward mine site, to locate and mark points where the monitoring would be conducted. Photos of the monitoring points are attached as Appendix A.
- On June 22nd, I met with Mr. Troy Anderson of Wharf to again review the points and set 3 new ones (Monitor Points 9, 10 & 11). Mr. Anderson, the Wharf surveyor, located all the points of Wharf Mine Grid. Wharf coordinates for the points are tabulated below in Table 2.

Table 2

Name	Northing	Easing	Elevation
Point 1	47282.139	52747.734	6405.267
Point 2	45008.985	50709.305	6195.946
Point 3	46682.361	54981.549	6482.631
Point 4	48377.318	55214.586	6444.529
Point 5	47288.179	59440.852	5904.400
Point 6	46888.343	65044.411	5563.441
Point 7	45412.135	60271.115	5944.970
Point 8	48736.444	63459.454	5610.854
Point 9	47744.070	52453.680	6442.431
Point 10	47098.051	54886.179	6542.829
Point 11	49169.574	55919.573	6429.163

The monitoring sites are shown on Figure 1; Appendix A is a photo log of the 11 sites. A brief description of the sites follows:

Point 1 Intersection of Last Chance Trail with Whitetail Trail;

Point 2 Near the SW end of Last Chance Trail;

Point 3 Entrance to Terry Peak Ski Lodge parking lot;

Point 4 In front of the Terry Fire Station building;

Point 5 The parking lot at the base of the Blue Chair Lift;

Point 6 The Golden Reward main gate at the end of Fantail Creek Road;

Point 7 At the base of the Red Chair Lift on the Golden Reward property;

Point 8 In the meadow adjacent to the Cudmore residence;

Point 9 Behind the Thaler residence at the end of Moose Trail;

Point 10 At the edge of the pavement parking lot at Barefoot Condominiums; and

Point 11 At the intersection of Nevada Gulch Road/Wharf Road with Stewart Slope Road.

- On July 5th, I traveled to the Terry Peak area and conducted the first sound monitoring series during the mid-morning until early afternoon. Monitoring at each point was conducted for a (nominal) 10-minute constant period and the

summary data was down-loaded to a PC. Summaries of this data are presented in Appendix B.

- On July 13th, I traveled to the Terry Peak area and conducted the second sound monitoring series during the early morning until mid-morning. Monitoring at each point was conducted for a (nominal) 10-minute constant period and the summary data was down-loaded to a PC. Summaries of this data are presented in Appendix B.
- On July 27th, I traveled to the Terry Peak area and conducted the third sound monitoring series during the early morning through the mid-afternoon. For this series, the Model 30 was interfaced directly to the PC (see Figure 2) and continuous sound data was stored on the PC. Instead of monitoring for a continuous 10-minute period, monitoring at each site was conducted for a (nominal) 5-minute period (except for Points 6 & 7 at the GR gate and base of the Red Chair Lift, respectively, which were each monitored for 10 minutes), and then the cycle was repeated for another (nominal) 5-minutes each. Annotated plots of the time histories of this data are attached in Appendix B.
- On August 10th (during the Sturgis motorcycle rally), I traveled to the Terry Peak area and conducted the fourth sound monitoring series during the mid-morning through the late-afternoon. The purpose for this series of sound-level measurements was to document the additional sound intensity (if any) from the vehicles of people attending Sturgis Rally 2010. For this series, the Model 30 was interfaced directly to the PC and continuous sound data was stored on the PC. Instead of monitoring for a continuous 10-minute period, monitoring at each site was conducted for a (nominal) 5-minute period (except for Points 6 & 7 at the GR gate and base of the Red Chair Lift which were each monitored for 7 minutes), and then the cycle was repeated for another (nominal) 5-minutes each. Annotated plots of the time histories of this data are attached in Appendix B.

Figure 2. Pulsar Model 30 sound-level meter and spectrum analyzer interfaced with a notebook PC for data acquisition.

SUMMARY AND DISCUSSION OF RESULTS

➢ **Tables Summarizing Results:**

Presented below are summary tables of the recorded sound level data for the dates July 5, July 13, July 27 and August 10, 2010 (Tables 3, 4, 5 and 6). Reasons for missing data for certain dates and points are:

- Point 7 on July 13, 2010. I did not have the combination for the Golden Reward gate at the end of Fantail Gulch Road at this time. The combination was provided by Mr. Troy Anderson at a later date but before the next series of sound-level recordings.
- Points 6 & 7 (second set) on July 27 and August 10. The first recording period was intentionally for a longer period (appx twice as long). The points were quite remote from any noise source so it was deemed unnecessary to record at different times during the day.
- Points 4 & 9 (second set) on August 10. The battery was running low on the computer. I had given it a small charge via a converter I had purchased for this purpose while traveling point-to-point, but it was deemed necessary to cut out a couple of sites that good sound data had been recorded at earlier. Sites 4 (the Fire Station) and 9 (behind the Thaler's house) were chosen.

Table 3--Monitoring Date: July 5, 2010					
Sound Study Point	**Time Start Monitoring, H:M:S**	**Monitoring Duration, min:sec**	**Maximum Reading (LAF_{max}), dBA**	**Minimum Reading (LAF_{min}), dBA**	**Average of the Readings (L_{50}), dBA**
1	09:46:53	10:00	78.5	31.2	40.4
2	10:10:32	10:00	67.4	29.5	37.7
3	12:30:03	10:00	78.7	34.4	41.2
4	12:15:34	10:00	84.4	34.0	39.2
5	11:44:05	10:00	57.6	31.9	38.8
6	10:36:59	10:13	72.2	29.0	42.3
7	10:57:43	10:00	62.9	31.6	39.3
8	11:24:48	10:00	76.9	32.2	37.5
9	13:01:37	10:00	74.9	27.7	35.4
10	12:44:14	10:00	67.0	32.3	38.1
11	12:01:03	10:00	63.2	36.5	45.9

Table 4--Monitoring Date: July 13, 2010					
Sound Study Point	**Time Start Monitoring, H:M:S**	**Monitoring Duration, min:sec**	**Maximum Reading (LAF_{max}), dBA**	**Minimum Reading (LAF_{min}), dBA**	**Average of the Readings (L_{50}), dBA**
1	8:01:47	10:00	63.3	28.4	41.6
2	8:22:36	10:00	67.5	25.1	38.1
3	7:12:50	10:00	66.9	45.6	47.4
4	6:58:42	10:00	75.3	28.4	34.2
5	6:23:14	10:00	53.1	27.4	33.8
6	8:49:48	10:00	59.0	25.1	30.7
7	-----	-----	-----	-----	-----
8	6:04:56	10:00	66.5	30.4	33.5
9	7:47:04	10:00	60.4	29.2	34.5
10	7:27:29	10:00	59.8	33.5	41.6
11	6:43:34	10:00	86.5	35.4	42.3

Table 5--Monitoring Date: July 27, 2010						
	Sound Study Point	**Time Start Monitoring, H:M:S**	**Monitoring Duration, min:sec**	**Maximum Reading (LAF_{max}), dBA**	**Minimum Reading (LAF_{min}), dBA**	**Average of the Readings (L_{50}), dBA**
First Series of Sound Recordings	1	8:03:02	5:02	42.5	38.4	35.0
	2	8:14:21	4:59	52.8	26.9	29.4
	3	7:17:06	4:58	69.5	39.7	46.7
	4	7:01:43	5:03	61.9	34.5	41.1
	5	6:32:58	5:01	54.5	25.0	31.7
	6	8:42:15	10:00	47.8	28.6	32.7
	7	9:06:12	10:02	50.8	32.6	36.7
	8	6:16:30	5:00	63.3	27.3	34.3
	9	7:50:34	4:59	61.6	37.3	37.7
	10	7:30:15	5:01	60.2	36.0	42.3
	11	6:51:24	4:59	56.4	29.5	34.1
Second Series of Sound Recordings	1	11:29:53	5:00	53.5	41.4	46.0
	2	11:45:58	3:48	53.0	37.6	43.1
	2	11:50:23	3:05	40.1	39.4	39.9
	3	10:40:39	5:01	75.9	45.9	52.9
	4	10:26:41	6:01	73.0	42.9	48.9
	5	9:55:04	5:11	52.6	30.0	37.3
	6	-----	-----	-----	-----	-----
	7	-----	-----	-----	-----	-----
	8	9:38:47	5:01	69.9	27.4	32.6
	9	11:16:00	5:01	49.7	41.2	46.0
	10	10:52:38	5:15	70.3	45.0	47.8
	11	10:10:49	5:17	70.0	55.0	63.7

Table 6--Monitoring Date: August 10, 2010						
	Sound Study Point	**Time Start Monitoring, H:M:S**	**Monitoring Duration, min:sec**	**Maximum Reading (LAF_{max}), dBA**	**Minimum Reading (LAF_{min}), dBA**	**Average of the Readings (L_{50}), dBA**
First Series of Sound Recordings	1	11:34:55	5:00	47.4	32.8	41.4
	2	11:48:16	5:01	47.8	30.1	35.0
	3	10:38:16	5:25	104.3	42.7	57.5
	4	10:26:14	5:17	89.5	38.3	51.1
	5	9:51:06	4:58	81.8	34.0	54.7
	6	12:58:50	7:03	42.4	31.6	31.6
	7	12:37:56	7:02	53.6	30.0	32.8
	8	9:36:29	5:04	67.6	29.4	42.0
	9	11:16:54	5:02	51.8	39.8	47.9
	10	11:01:29	5:03	65.6	38.3	49.2
	11	10:14:34	5:54	83.9	43.8	55.5
Second Series of Sound Recordings	1	12:05:27	5:03	88.0	36.1	38.1
	2	11:55:07	5:01	57.2	33.1	39.5
	3	14:04:59	5:03	86.7	37.9	52.0
	4	-----	-----	-----	-----	-----
	5	13:28:50	5:01	55.4	33.8	40.1
	6	-----	-----	-----	-----	-----
	7	-----	-----	-----	-----	-----
	8	13:16:02	5:11	76.8	33.7	43.5
	9	-----	-----	-----	-----	-----
	10	13:54:12	5:01	71.3	41.2	49.9
	11	13:42:41	5:03	62.4	43.7	48.5

- **Discussion of Results:**

It is apparent (it is also intuitive) that the average sound level (L_{50}) and the peak sound level (LAF_{max}) were quite a bit higher for the August 10th readings (readings taken during the Sturgis motorcycle rally) compared to earlier readings for all points except the very isolated ones (Points 1, 2, 6, 7, and 9) It is also apparent that sound readings are

quite a bit higher for readings taken later in the morning and into the afternoon compared to early morning readings, except for the isolated points which tend to get a bit noisier later in the day due to the wind.

For the baseline sound monitoring for the Clinton Extension (Apa, 1993), MartyAnn Apa monitored in the following locations:

Site #1 Along the road to Richmond Hill near the entrance to Perkins' driveway.

Site #2 Off a dead-end residential road near Breccia point.

Site #3 At intersection of the residential dead end and Richmond Hill road. Approximately 100 yards east of stop sign.

Site #4 At the substation intersection.

Site #5 Near the Begeman complex, just in front of the red garage.

Site #6 Warbonnet parking lot.

Site #7 Crowders' driveway.

Site #8 Bestgens' driveway, just off the road to Terry Peak Ski area.

Site #9 Below the Terry peak Lodge in the parking lot.

Site #10 Miller's driveway in front of the house.

From the description in Ms. Apa's report, it appears that her points #4, #9 and #10 (in bold and underlined above) correspond closely with some of mine:

- Apa's Site #4 corresponds closely to my Point #11 (intersection of Nevada gulch Road, Wharf Road and Stewart Slope Road);
- Apa's Site #9 corresponds to my Point #3 at the Terry Peak Lodge parking lot; and
- Apa's Site #10 corresponds somewhat to my Points #1 & #2 (the old Paul Miller residence is located about half-way between my Points #1 & #2 on Last Chance Trail).

Table 7 shows a comparison between Apa's 1993 measurements and Kliche's current measurements at the abovementioned corresponding sites.

Table 7

Site	Apa's Average, dBA[1]	Kliche's Average on the Date (dBA):			
		7/5/10	7/13/10	7/27/10[3]	8/10/10[3]
Apa #4	30	45.9	42.3	34.1	55.5
Kliche #11	44			63.7	48.5
Apa #9	42.2	41.2	47.4	46.7	57.5
Kliche #3	54.6			52.9	52.0
Apa #10	27.4	#1 #2	#1 #2	#1 #2	#1 #2
Kliche #1&2[2]	36.6	40.4 37.7	41.6 38.1	35.0 29.4	41.4 35.0
				46.0 43.1	38.1 39.5

[1] MartyAnn Apa's measurements were taken on December 17, 1992 and December 18, 1992. Two averages are provided in her report for each site.

[2] "1 & 2" designates measurements taken at Point #1 (NE end of Last Chance Trail) and Point #2 (SW end of Last Chance Trail)

[3] Two recordings (See Appendix C) were taken at each date at each point.

MartyAnn Apa also conducted the baseline sound study for the Golden Reward mine (Apa, 1987). For this baseline analysis, Ms. Apa monitored in the following locations:

Site #1 Approximately 25 yards off the south side of Nevada Gulch Road and 50 yards west of the Cudmore home.

Site #2 Approximately 10 feet off the north side of Nevada Gulch Road and some 50 yards the southwest of the Portillo-Sterner home.

Site #3 At the Nevada Gulch base camp of Terry Peak Ski Area and the parking lot 15 feet from the lodge.

Site #4 Liberty Hill located on heavily wooded hillside.

Site #5 The base of the Red Chair Lift on a hillside clear cut for skiing.

Site #6 Pet Hill – an isolated heavily wooded ridge.

Site #7 Approximately 5 feet south of Terry Gulch Road and 100 yards west of the Covell home.

Site #8 Approximately 100 yards south of Terry Gulch Road on a hillside which is wooded to the south and an open valley to the north.

Site #9 An isolated and heavily wooded ridge.

Site #10 A high, isolated meadow.

Site #11 Approximately 100 yards off the road to Deer Mountain Ski Area on an old railroad grade, sheltered and heavily wooded.

Site #12 Twenty-five feet west of U.S. Highway 85 and approximately 100 yards south of the Merkel residence.

Again, from Ms. Apa's descriptions, it appears that some of her monitoring points (in bold and underlined above) correspond closely to mine, to wit:

- Apa's Site #1 corresponds to my Point #8 at the field adjacent to the Cudmore house.
- Apa's Site #3 corresponds to my Point #5 at the base of the Blue Chair Lift.
- Apa's Site #4 and Site #5 correspond closely to my Point #7 at the base of the Red Chair Lift.
- Apa's Site #7 corresponds closely to my Point #6 at the Golden Reward gate at the end of Fantail Creed Road (NOTE: Looking back at my old reports (Kliche, 1989) of work I performed for Golden Reward Mining Company in 1989, I see that the old Covell home was located adjacent to the main gate of GRMC).

Table 8 shows a comparison between Apa's 1987 measurements and Kliche's current measurements at the abovementioned corresponding sites.

Table 8

Site	**Apa's Average, dBA**	**Kliche's Average on the Date (dBA):**			
		7/5/10	**7/13/10**	**7/27/10**[4]	**8/10/10**[4]
Apa #1 Kliche #8	35	37.5	33.5	34.3 32.6	42.0 43.5
Apa #3 Kliche #5	39	38.8	33.8	31.7 37.3	54.7 40.1
Apa #4&5 Kliche #7	36 (Apa 4) 31 (Apa 5)	39.3	-----	36.7	32.8
Apa #7 Kliche #6	31	42.3	30.7	32.7	31.6

[4] Two recordings (See Appendix C) were taken at each date at each point, except for Points #6 and #7 (the Golden Reward main gate and inside the Golden Reward property).

Reviewing the summary tables of data from July 5, July 13, July 27 and August 10 (Tables 3, 4, 5 and 6), it can be seen that

- the Minimum Reading values for early morning readings are within the range of the sound level tabulated by Apa for rural area forest and/or living rooms;

- the Maximum Reading values are, on average, about 10 dB higher later in the day than early in the morning at all locations;
- the Minimum Reading values recorded during the Rally were within the same range as the Minimum Reading values recorded later in the day at the earlier dates, but the Maximum Reading values and Average of the Readings values recorded during the Rally were much higher than the values recorded at earlier dates;
- the only noticeable difference between Kliche's current data and Apa's recordings of 1987 and 1993 (Tables 7 and 8), was Apa #4 vs Kliche #11 in Table 7. It would appear from this variance that the traffic has increased over the time from 1993 to present at the Nevada Gulch/Wharf Road and Stewart Slope Road intersection.
- the Last Chance Trail area, the Moose Trail area, and (at present) the Golden Reward reclaimed mine area had sound level readings very close to background rural area forest values at all times. Most of the high values of "noise" recorded at these sites was from wind, wildlife (woodpeckers) or far off traffic noise.
- The only verifiable mine activities I recorded during all sound-level monitoring sessions was (1) a low boy hauling a back hoe, (2) the Wharf water truck, (3) very low level back up alarms that "blipped" the time vs sound intensity charts only slightly, and (4) shift change and other (possible) mine traffic on Nevada Gulch Road. Even at Thaler's, the closest position to the Wharf mine, I recorded no mine noise.

REFERENCES

1) http://www.goldcorp.com/operations/

2) Summary of the Mining Industry in South Dakota 2009. http://denr.sd.gov/des/mm/documents/Goldrpt09.pdf

3) *Golden Reward Mining Company Application for Permit, Lawrence County, South Dakota*, December 1, 1987.

4) *MINVEN Gold, United Coin Mines and Wharf Resources Reach Settlement Agreement Regarding Ownership of Golden Reward*, http://www.thefreelibrary.com/MINVEN+GOLD,+UNITED+COIN+MINES+AND+WHARF+RESOURCES+REACH+SETTLEMENT...-a012217601

5) http://www.secinfo.com/dPSyf.7b.htm

6) *Wharf Resources (USA) Inc. 2005 Sustainability Report*, http://www.goldcorp.com/_resources/project_pdfs/wharf_sustainability_report05.pdf

7) *Wharf Resources (USA) Inc. 2007 Sustainability Report*, http://www.goldcorp.com/_resources/project_pdfs/wharf_sustain_report_07.pdf

8) *South Dakota Legislature, South Dakota Codified Laws*, http://legis.state.sd.us/statutes/DisplayStatute.aspx?Type=Statute&Statute=45-6B-92

9) *Background Sound Analysis for Proposed Mining Site*, Prepared for Golden Reward Mining Company, by MartyAnn Apa, November 15, 1987.

10) *Baseline Sound Level Studies Wharf Resources Clinton Extension*, Prepared for Wharf Resources, by MartyAnn Apa, January 18, 1993.

11) *Wharf Resources Mining Company Sound Level Study*, John Duff Erickson, 1988.

12) *Impact Analysis of Sound Level Study*, Prepared for Wharf Resources, by MartyAnn Apa, May 1989.

13) *Manual: Model 30 Sound Level Meter & Spectrum Analyzer, ver 1.0-0.1*, Pulsar Instruments Plc.

14) Investigation of alleged blasting damage to the Covell well. Report by Charles A. Kliche to Ms. Carol Koener, Public Affairs Director, The Golden Reward Mining Company, December 9, 1989.

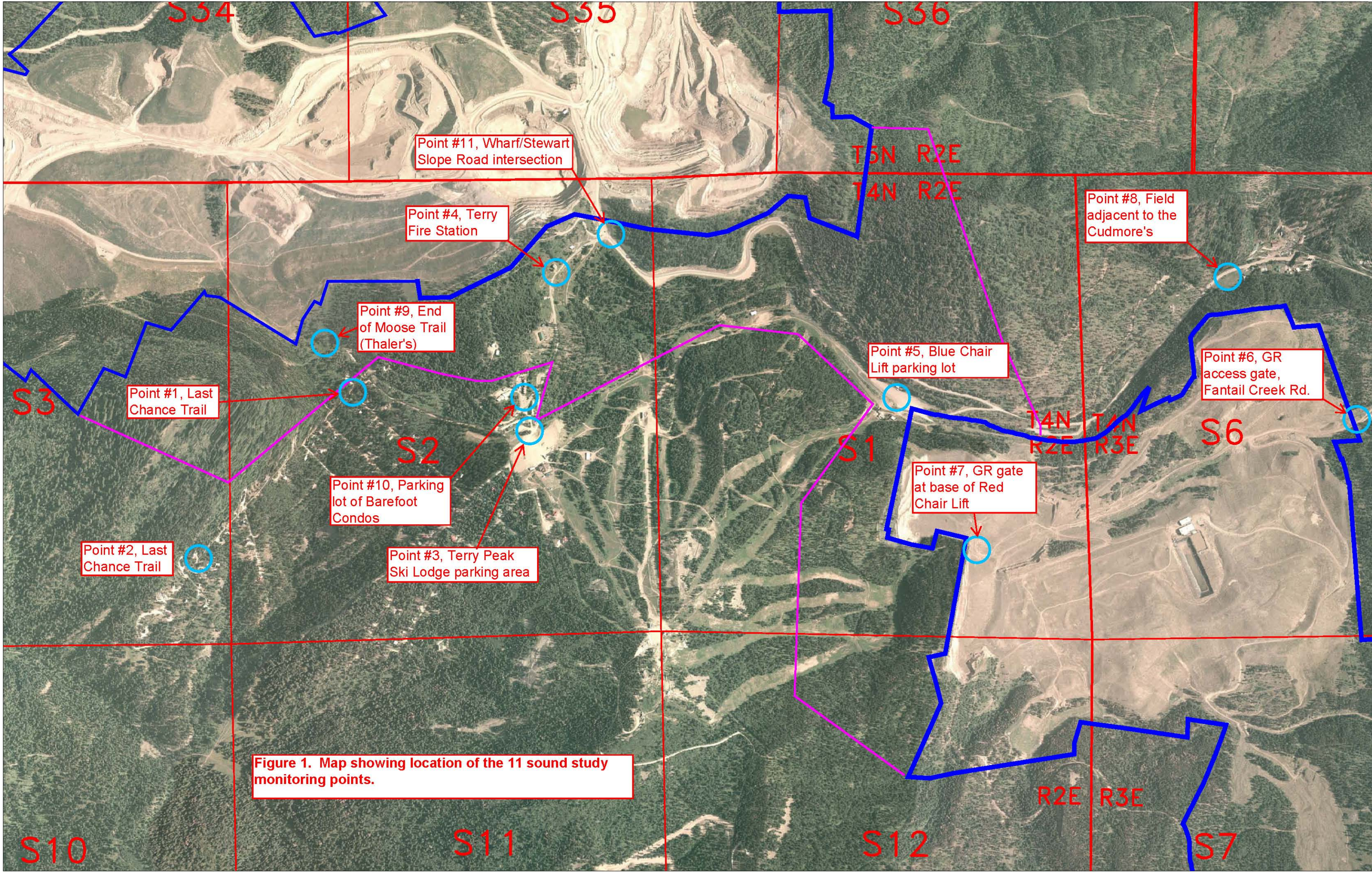


Figure 1. Map showing location of the 11 sound study monitoring points.

APPENDIX A

Photos (Plus Wharf Mine Coordinates) of Each Sound Study Monitoring Site

Sound Study Point #1. Intersection of Last Chance Trail and Whitetail Trail. Wharf coordinates = 47282.14, 52747.73, 6405.27

Sound Study Point #2. Near SW end of Last Chance Trail. Wharf coordinates = 45008.99, 50709.31, 6195.95

Sound Study Point #3. Entrance to Terry Peak Ski Lodge parking lot. Wharf coordinates = 46682.36, 54981.55, 6482.63

Sound Study Point #4. Terry Fire Station building. Wharf coordinates = 48377.32, 55214.59, 6444.53

Sound Study Point #5. Parking lot at base of Blue Chair Lift. Wharf coordinates = 47288.18, 59440.85, 5904.40

Sound Study Point #6. GRMC main gate at end of Fantail Creek Road. Wharf coordinates = 46888.34, 65044.41, 5563.44

Sound Study Point #7. GRMC property at the base of the Red Chairlift. Wharf coordinates = 45412.14, 60271.12, 5944.97

Sound Study Point #8. Field adjacent to the Cudmore's along Nevada Gulch Road. Wharf coordinates = 48736.44, 63459.45, 5610.85

Sound Study Point #9. Behind the Thaler residence at the end of Moose Trail. Wharf coordinates = 47744.07, 52453.68, 6442.43

Sound Study Point #10. Parking lot at the Barefoot Condominiums. Wharf coordinates = 47098.05, 54886.18, 6542.83

Sound Study Point #11. Intersection of Nevada Gulch Road/Wharf Road with Stewart Slope Road. Wharf coordinates = 49169.57, 55919.57, 6429.16

APPENDIX B

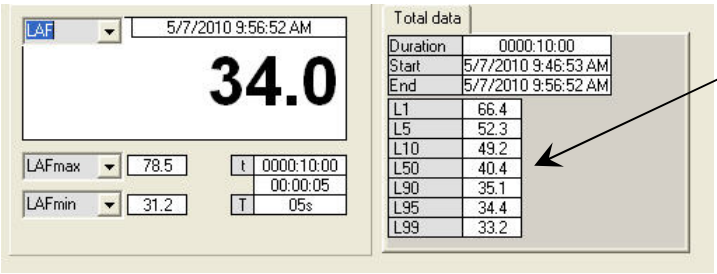
Summary Tables of Sound-Level (LAF) Values

for

10-Minute Periods for Each Monitoring Site

(Monitoring on 7/5/10 & 7/13/10)

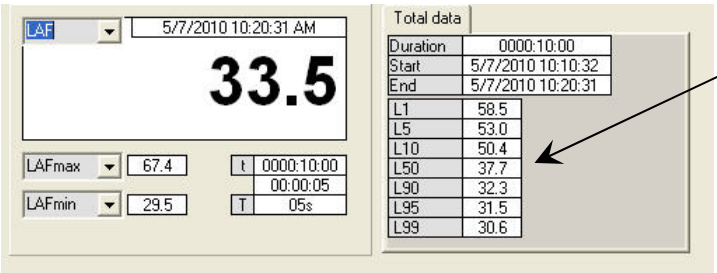
Point #1, 10 Minutes Monitoring on 7/5/10—Summary.



Mean = 40.4 dB(A)

Maximum = 78.5 dB(A)
Minimum = 31.2 dB(A)
10:00 min. duration
5 sec. bin size
Maximum value from car going by at t = 7:30

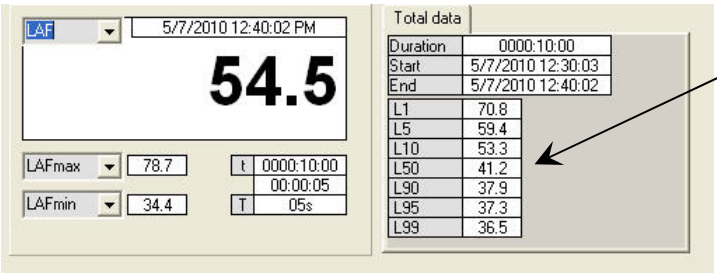
Point #2, 10 Minutes Monitoring on 7/5/10—Summary.



Mean = 37.7 dB(A)

Maximum = 67.4 dB(A)
Minimum = 29.5 dB(A)
10:00 min. duration
5 sec. bin size
Maximum value from wind

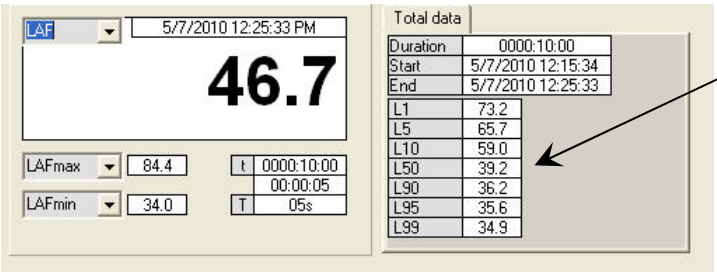
Point #3, 10 Minutes Monitoring on 7/5/10—Summary.



Mean = 41.2 dB(A)

Maximum = 78.7 dB(A)
Minimum = 34.4 dB(A)
10:00 min. duration
5 sec. bin size
Maximum value from 4-wheeler going by

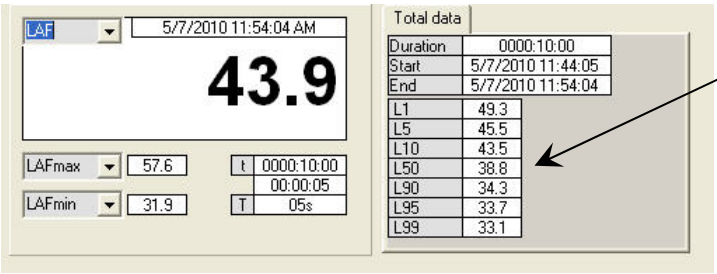
Point #4, 10 Minutes Monitoring on 7/5/10—Summary.



Mean = 39.2 dB(A)

Maximum = 84.4 dB(A)
Minimum = 34.0 dB(A)
10:00 min. duration
5 sec. bin size
Maximum value from gravel truck going by

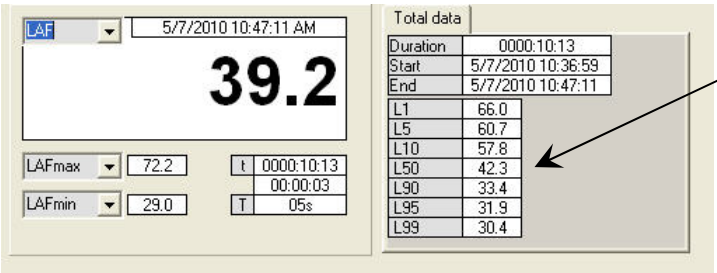
Point #5, 10 Minutes Monitoring on 7/5/10—Summary.



Mean = 38.8 dB(A)

Maximum = 57.6 dB(A)
Minimum = 31.9 dB(A)
10:00 min. duration
5 sec. bin size
Maximum value from wind + some traffic

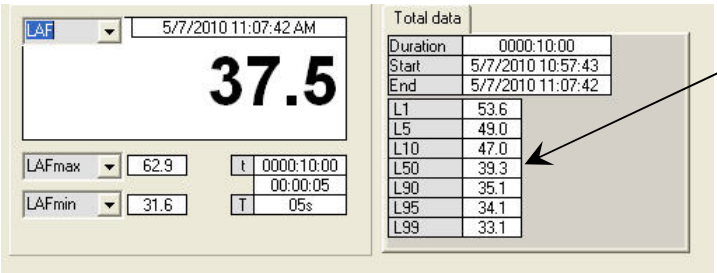
Point #6, 10 Minutes Monitoring on 7/5/10—Summary.



Mean = 42.3 dB(A)

Maximum = 72.7 dB(A)
Minimum = 29.0 dB(A)
10:13min. duration
5 sec. bin size
Maximum value from wind

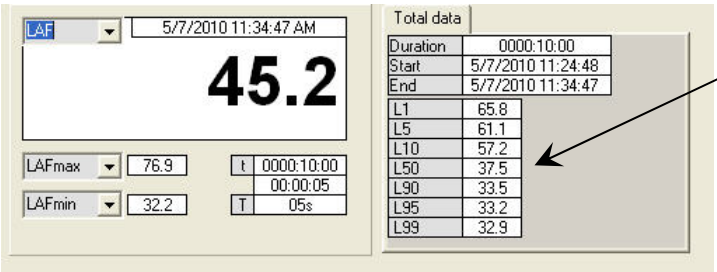
Point #7, 10 Minutes Monitoring on 7/5/10—Summary.



Mean = 39.3 dB(A)

Maximum = 62.9 dB(A)
Minimum = 31.6 dB(A)
10:00 min. duration
5 sec. bin size
Maximum value from wind

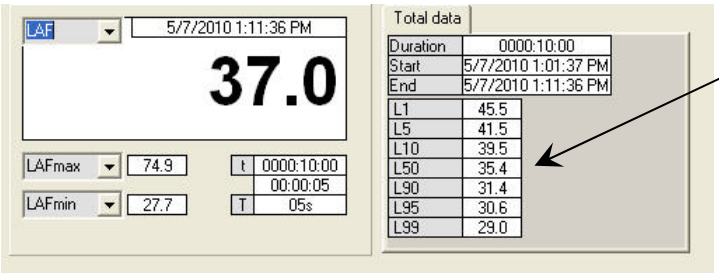
Point #8, 10 Minutes Monitoring on 7/5/10—Summary.



Mean = 37.5 dB(A)

Maximum = 76.9 dB(A)
Minimum = 32.2 dB(A)
10:00 min. duration
5 sec. bin size
Maximum value from traffic + woodpecker

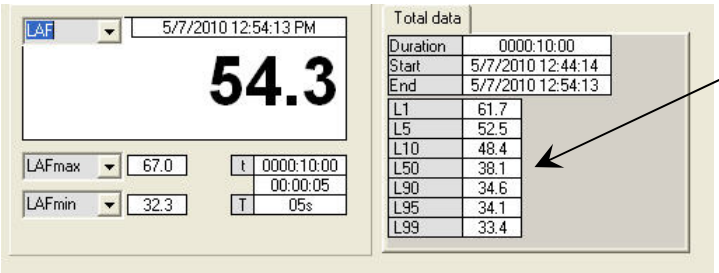
Point #9, 10 Minutes Monitoring on 7/5/10—Summary.



Mean = 35.4 dB(A)

Maximum = 74.9 dB(A)
Minimum = 27.7 dB(A)
10:00 min. duration
5 sec. bin size
Maximum value from wind

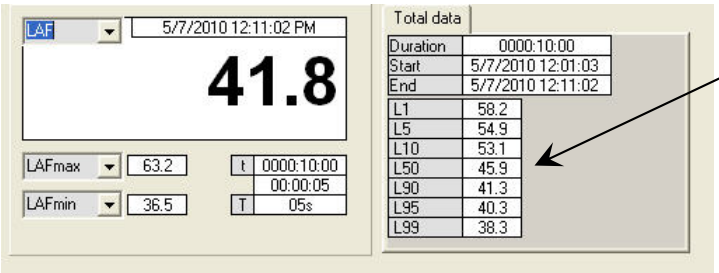
Point #10, 10 Minutes Monitoring on 7/5/10—Summary.



Mean = 38.1 dB(A)

Maximum = 67.0 dB(A)
Minimum = 32.3 dB(A)
10:00 min. duration
5 sec. bin size
Maximum value from tourist talking on cell phone next to monitor

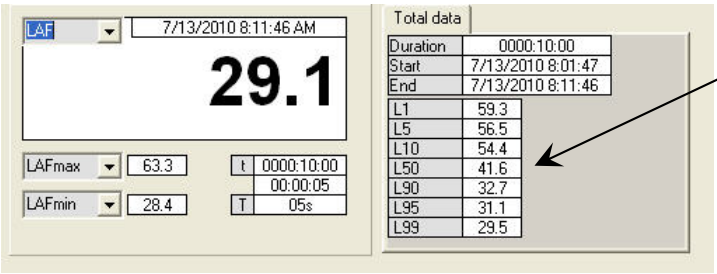
Point #11, 10 Minutes Monitoring on 7/5/10—Summary.



Mean = 45.9 dB(A)

Maximum = 63.2 dB(A)
Minimum = 36.5 dB(A)
10:00 min. duration
5 sec. bin size
Lots of wind noise.
Maximum value from wind

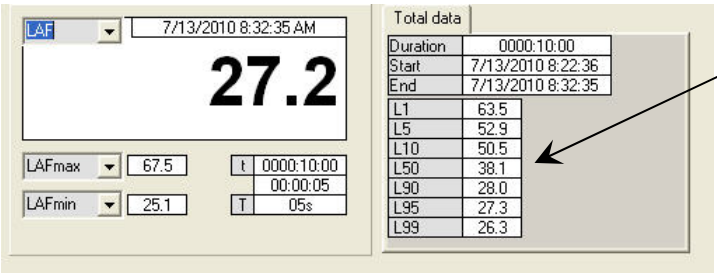
Point #1, 10 Minutes Monitoring on 7/13/10—Summary.



Mean = 41.6 dB(A)

Maximum = 63.3 dB(A)
Minimum = 28.4 dB(A)
10:00 min. duration
5 sec. bin size
Maximum value from bird chirping

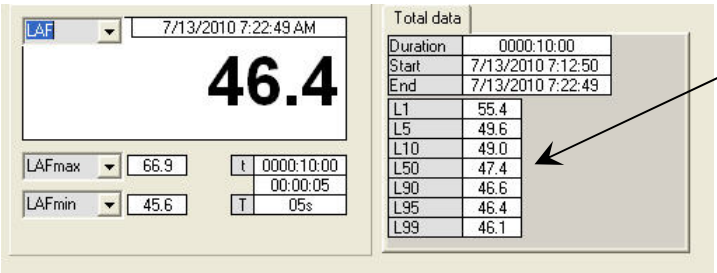
Point #2, 10 Minutes Monitoring on 7/13/10—Summary.



Mean = 38.1 dB(A)

Maximum = 67.5 dB(A)
Minimum = 25.1 dB(A)
10:00 min. duration
5 sec. bin size
Maximum value from garbage truck making the rounds

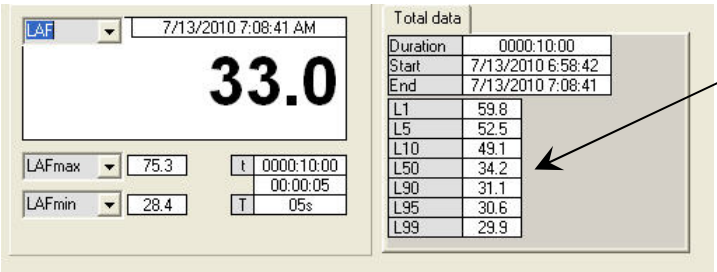
Point #3, 10 Minutes Monitoring on 7/13/10—Summary.



Mean = 47.4 dB(A)

Maximum = 66.9 dB(A)
Minimum = 45.6 dB(A)
10:00 min. duration
5 sec. bin size
Lowboy idling near by the whole time. Maximum value from a car

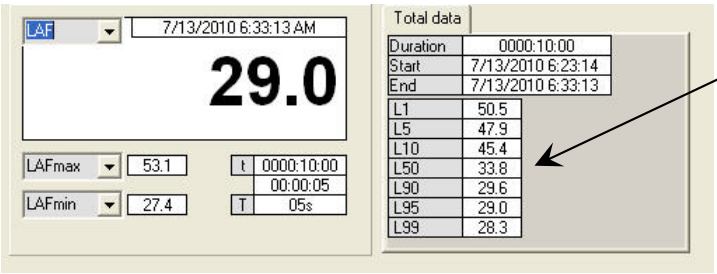
Point #4, 10 Minutes Monitoring on 7/13/10—Summary.



Mean = 34.2 dB(A)

Maximum = 75.3 dB(A)
Minimum = 28.4 dB(A)
10:00 min. duration
5 sec. bin size
Maximum value from car passing by

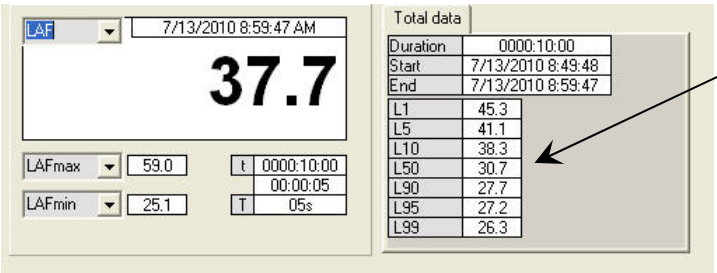
Point #5, 10 Minutes Monitoring on 7/13/10—Summary.



Mean = 33.8 dB(A)

Maximum = 53.1 dB(A)
Minimum = 27.4 dB(A)
10:00 min. duration
5 sec. bin size
Maximum value from traffic (shift change?)

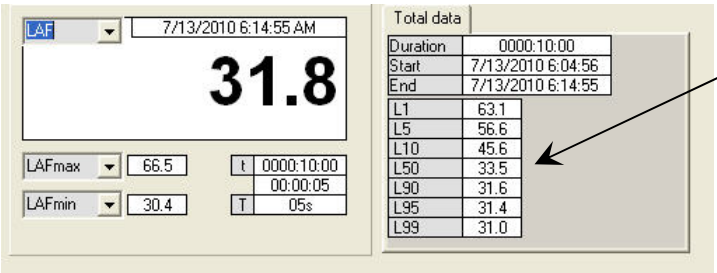
Point #6, 10 Minutes Monitoring on 7/13/10—Summary.



Mean = 30.7 dB(A)

Maximum = 59.0 dB(A)
Minimum = 25.1 dB(A)
10:00 min. duration
5 sec. bin size
Maximum value from wind

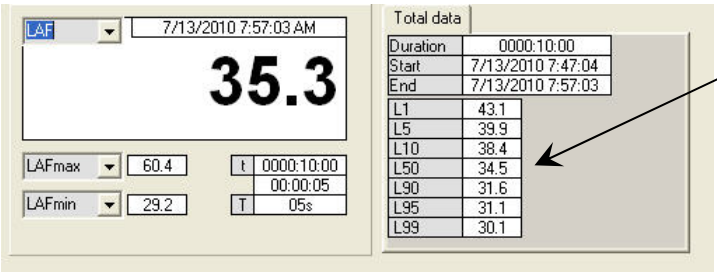
Point #8, 10 Minutes Monitoring on 7/13/10—Summary.



Mean = 33.5 dB(A)

Maximum = 66.5 dB(A)
Minimum = 30.4 dB(A)
10:00 min. duration
5 sec. bin size
Maximum value from truck on Nevada Gulch Rd.

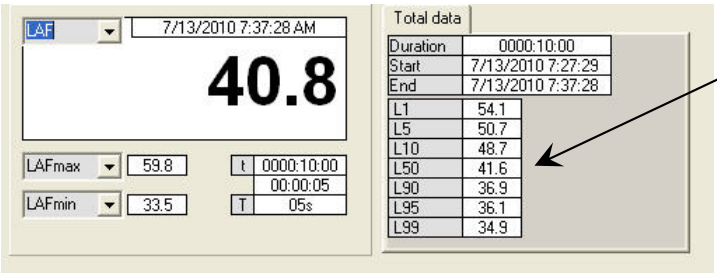
Point #9, 10 Minutes Monitoring on 7/13/10—Summary.



Mean = 34.5 dB(A)

Maximum = 60.4 dB(A)
Minimum = 29.2 dB(A)
10:00 min. duration
5 sec. bin size
Maximum value from wind

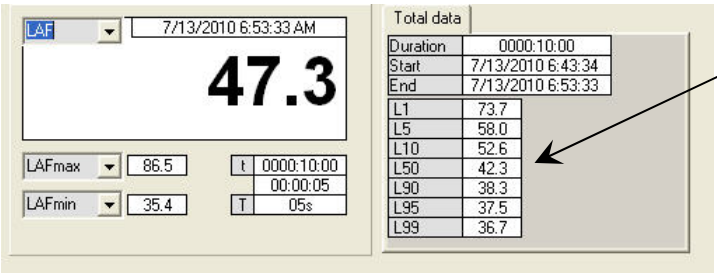
Point #10, 10 Minutes Monitoring on 7/13/10—Summary.



Mean = 41.6 dB(A)

Maximum = 59.8 dB(A)
Minimum = 33.5 dB(A)
10:00 min. duration
5 sec. bin size
Maximum value from vehicle passing below

Point #11, 10 Minutes Monitoring on 7/13/10—Summary.



Mean = 42.3 dB(A)

Maximum = 86.5 dB(A)
Minimum = 35.4 dB(A)
10:00 min. duration
5 sec. bin size
Maximum value from lowboy hauling a back hoe

APPENDIX C

Summary Data

Plus

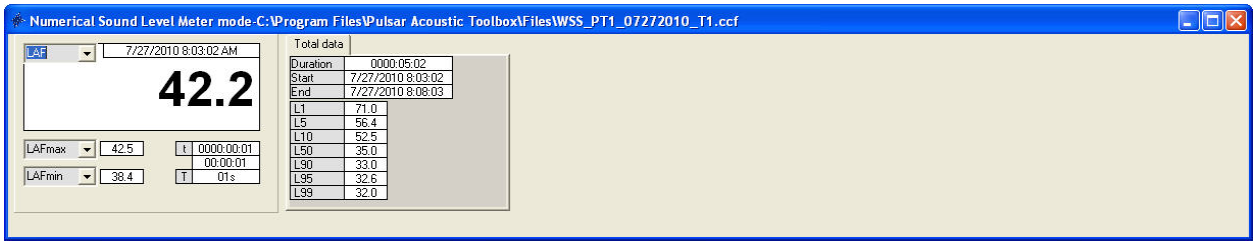
Annotated Plots of *t(s) vs* L_P*(dB)*

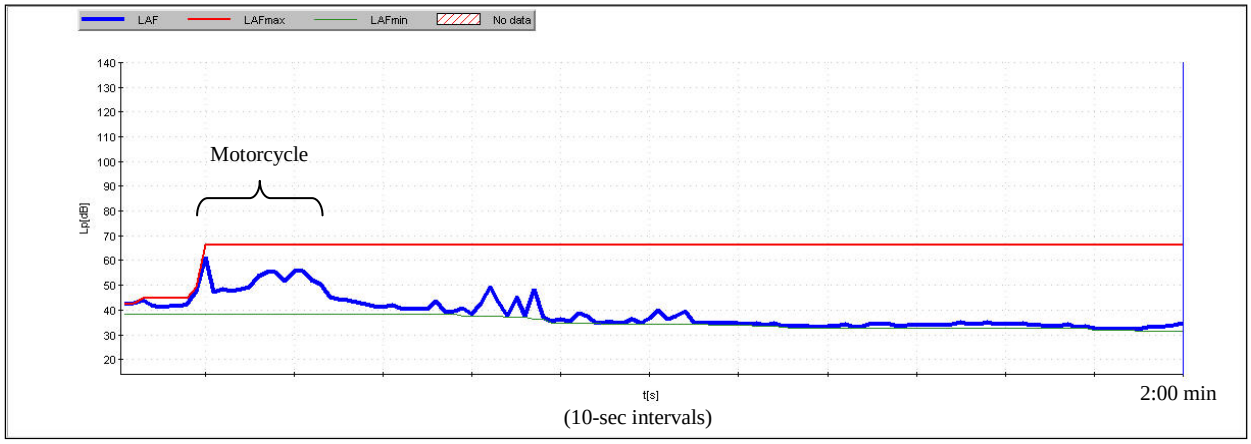
for

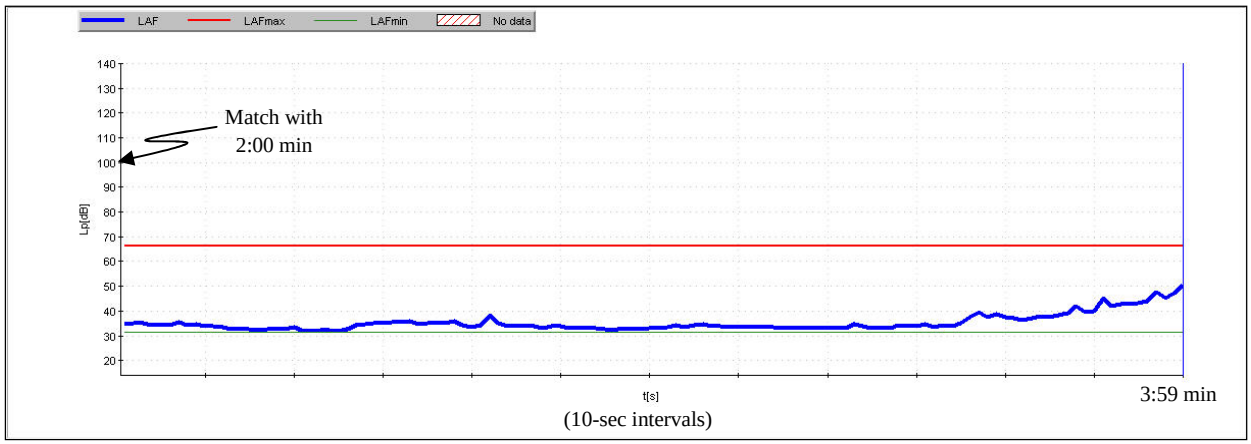
Each Monitoring Site

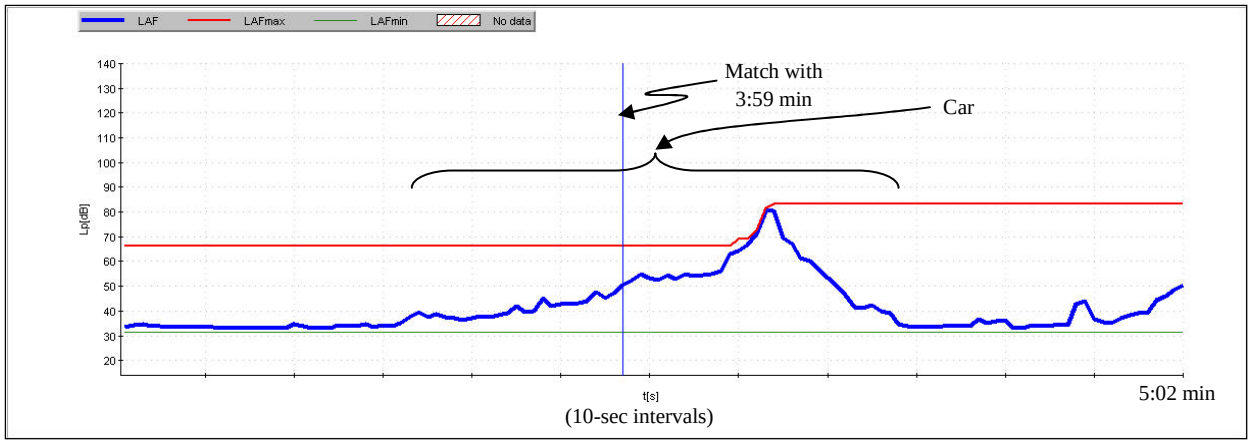
(Monitoring on 7/27/10 & 8/10/10)

Point #1, 1st Monitoring Segment (5:02 min) on 7/27/10.

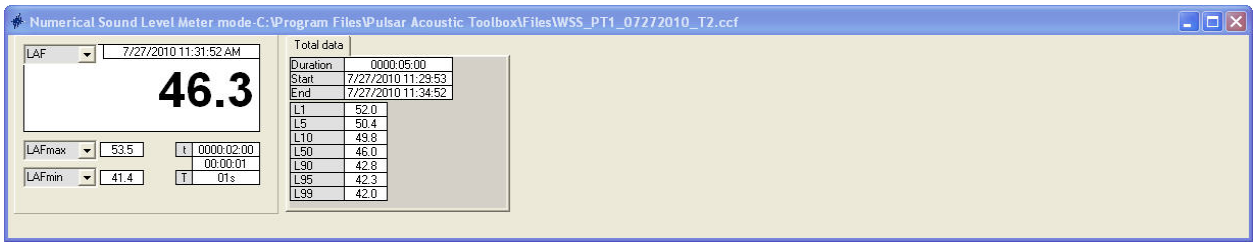


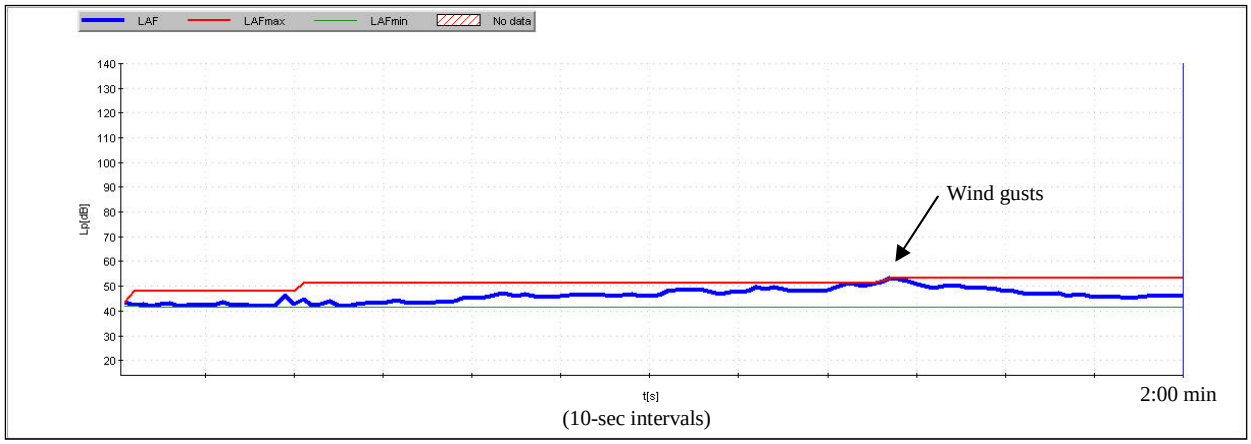


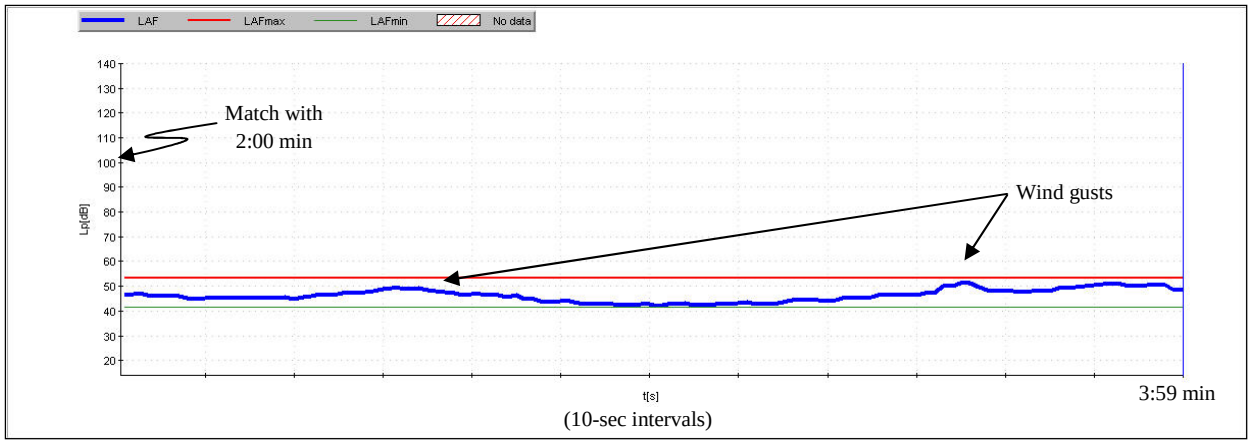


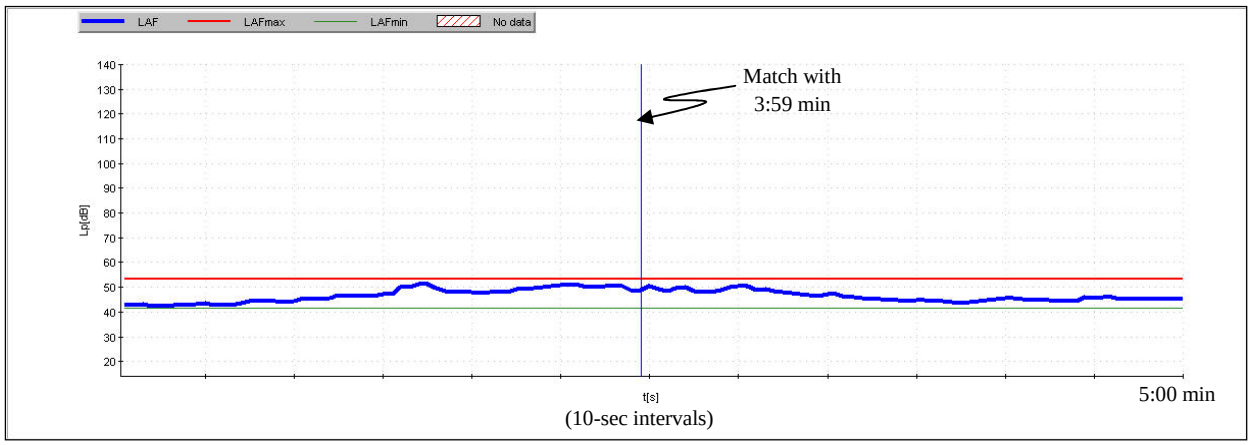


Point #1, 2nd Monitoring Segment (5:00 min) on 7/27/10.

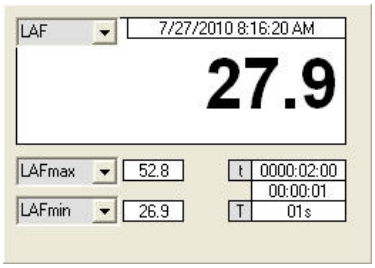




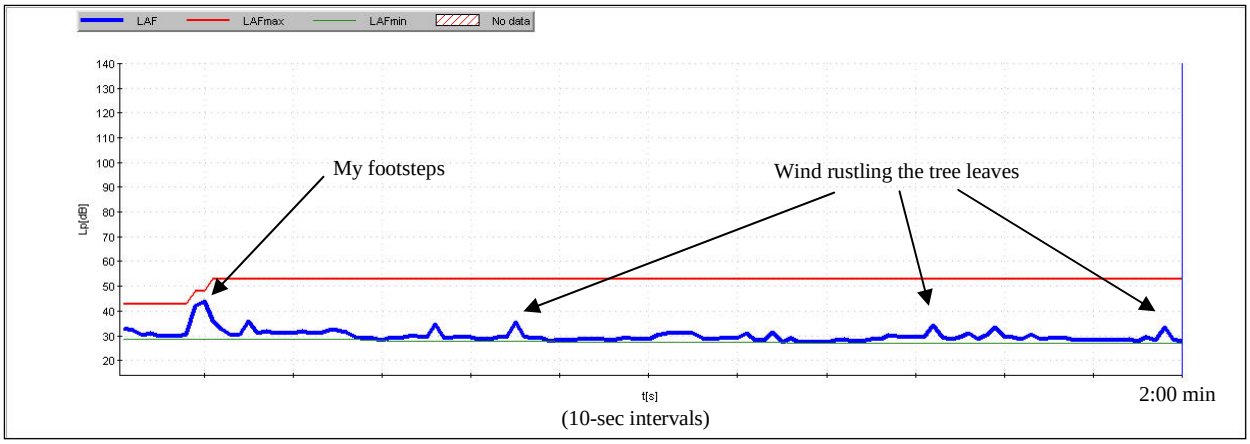


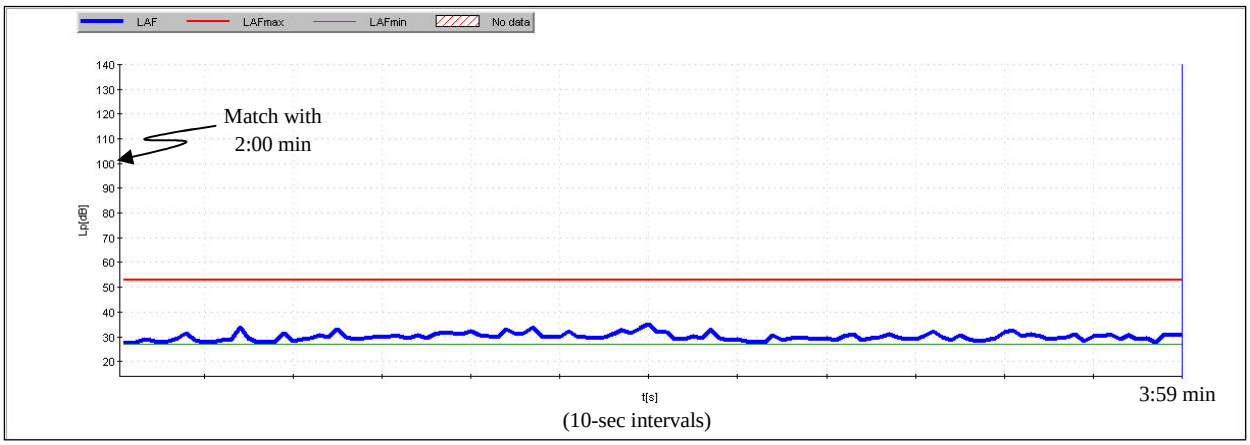


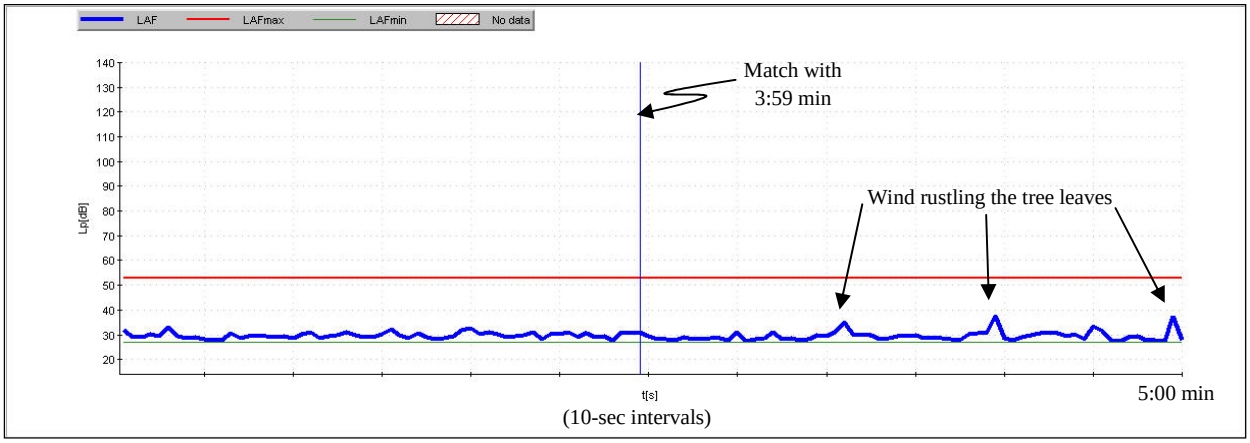
Point #2, 1st Monitoring Segment (4:59 min) on 7/27/10.



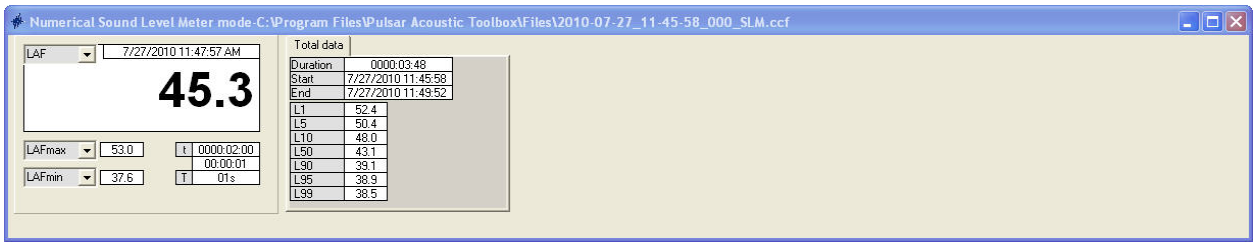
Total Data		
Duration	0000:04:59	
Start	7/27/2010 8:14:21 AM	
End	7/27/2010 8:19:20 AM	
L1	37.3	
L5	33.5	
L10	32.0	
L50	29.4	
L90	27.9	
L95	27.7	
L99	27.4	

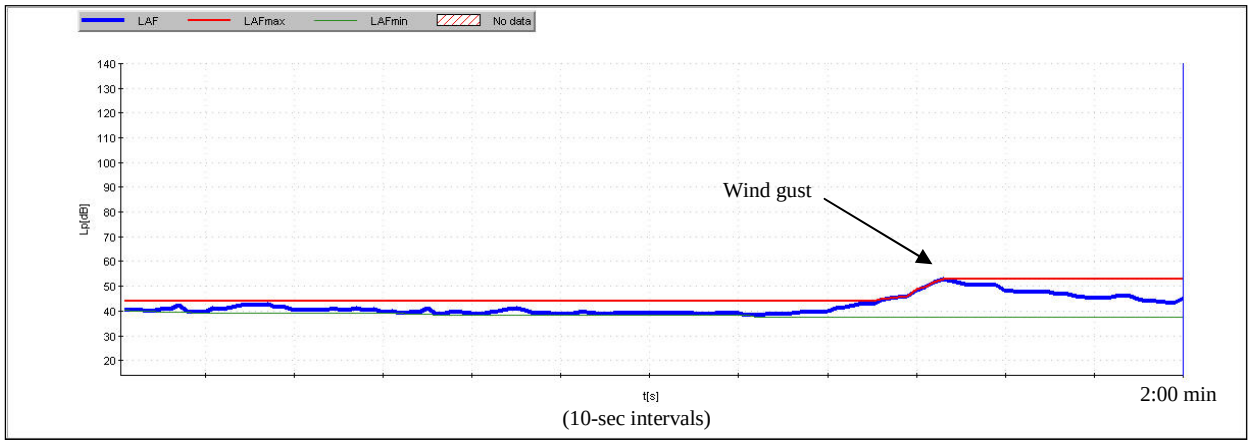

LAF
LAFmax
LAFmin
No data
Lp[dB]
My footsteps
Wind rustling the tree leaves
t[s]
2:00 min
(10-sec intervals)

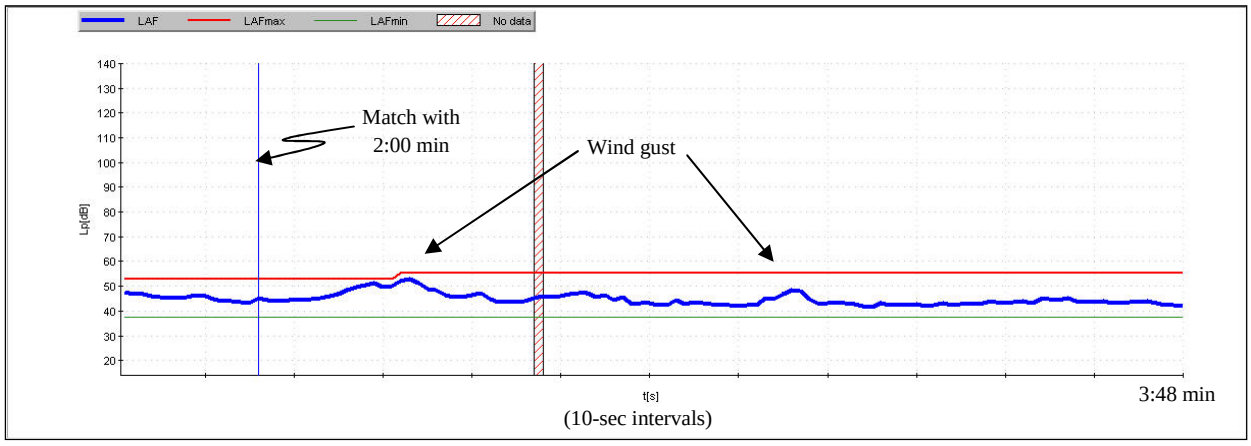

LAF
LAFmax
LAFmin
No data
Lp[dB]
Match with
2:00 min
t[s]
3:59 min
(10-sec intervals)

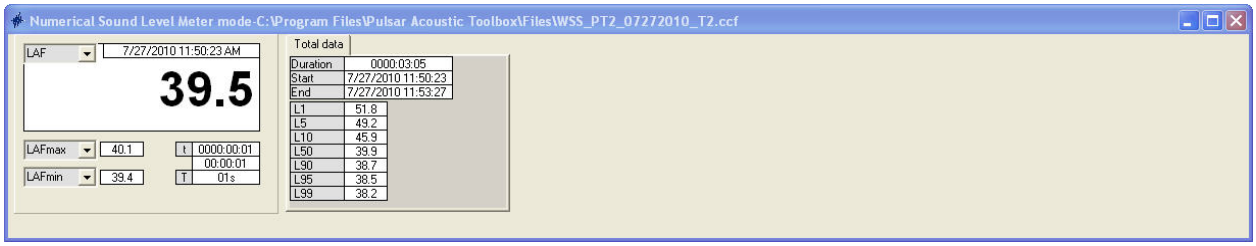

LAF
LAFmax
LAFmin
No data
Lp[dB]
Match with
3:59 min
Wind rustling the tree leaves
t[s]
5:00 min
(10-sec intervals)

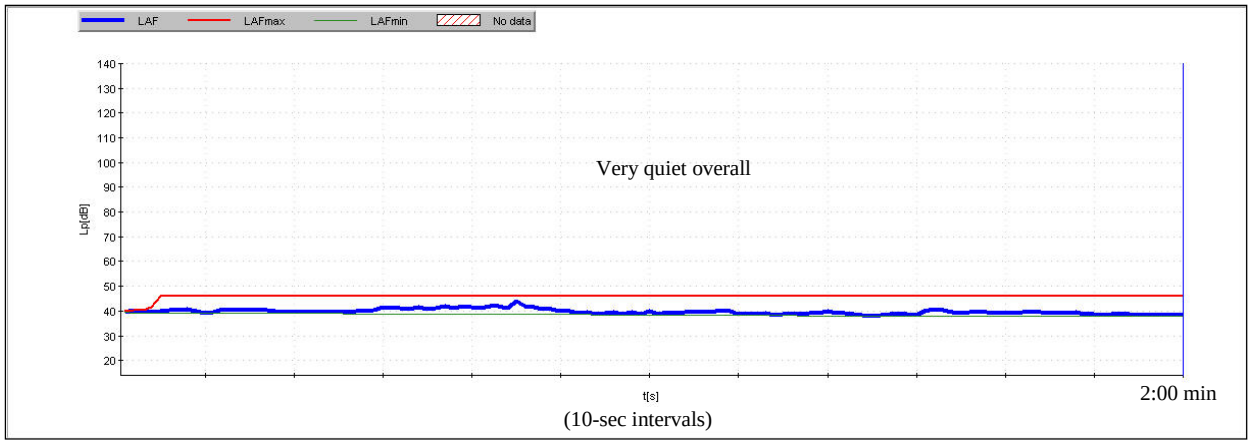
Point #2, 2nd Monitoring Segments (3:48 min + 3:05 min) on 7/27/10.

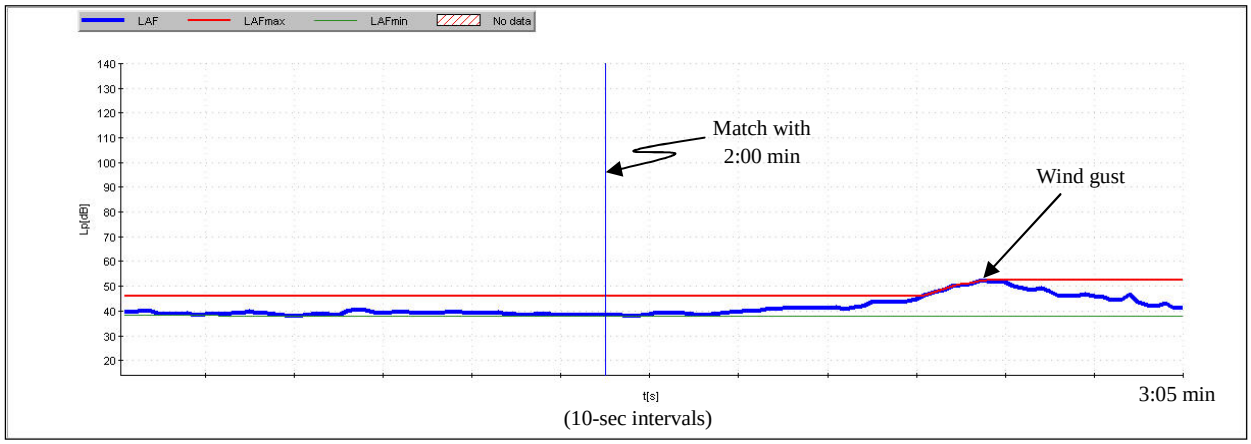




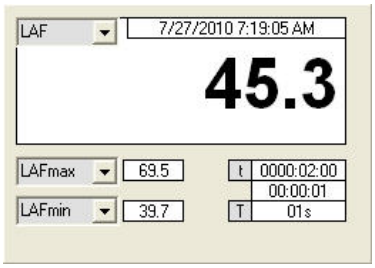



Numerical Sound Level Meter mode-C:\Program Files\Pulsar Acoustic Toolbox\Files\WSS_PT2_07272010_T2.ccf
LAF
7/27/2010 11:50:23 AM
39.5
LAFmax
40.1
LAFmin
39.4
t
0000:00:01
00:00:01
T
01s
Total data
Duration 0000:03:05
Start 7/27/2010 11:50:23
End 7/27/2010 11:53:27
L1 51.8
L5 49.2
L10 45.9
L50 39.9
L90 38.7
L95 38.5
L99 38.2

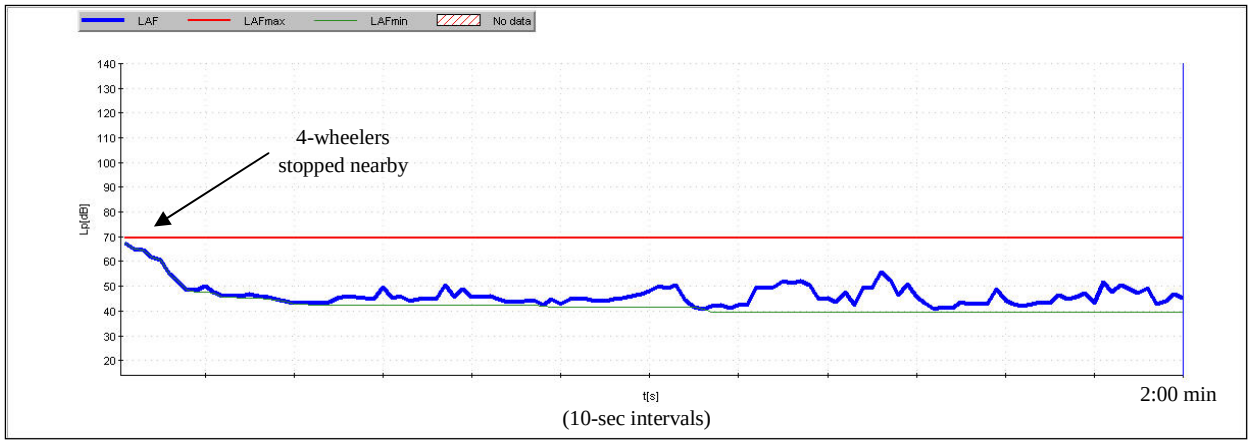

LAF
LAFmax
LAFmin
No data
Lp[dB]
Very quiet overall
t[s]
2:00 min
(10-sec intervals)

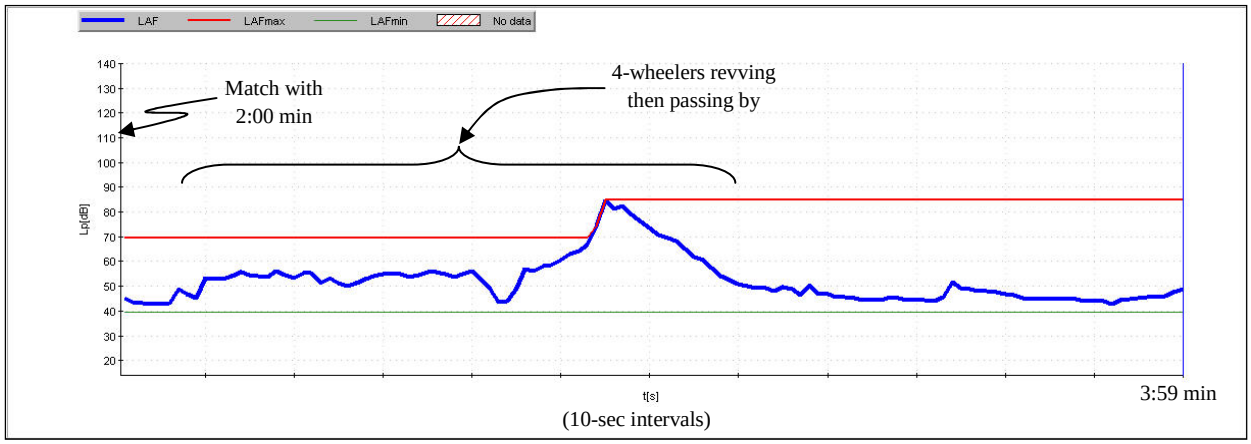

LAF
LAFmax
LAFmin
No data
Lp[dB]
Match with
2:00 min
Wind gust
t[s]
3:05 min
(10-sec intervals)

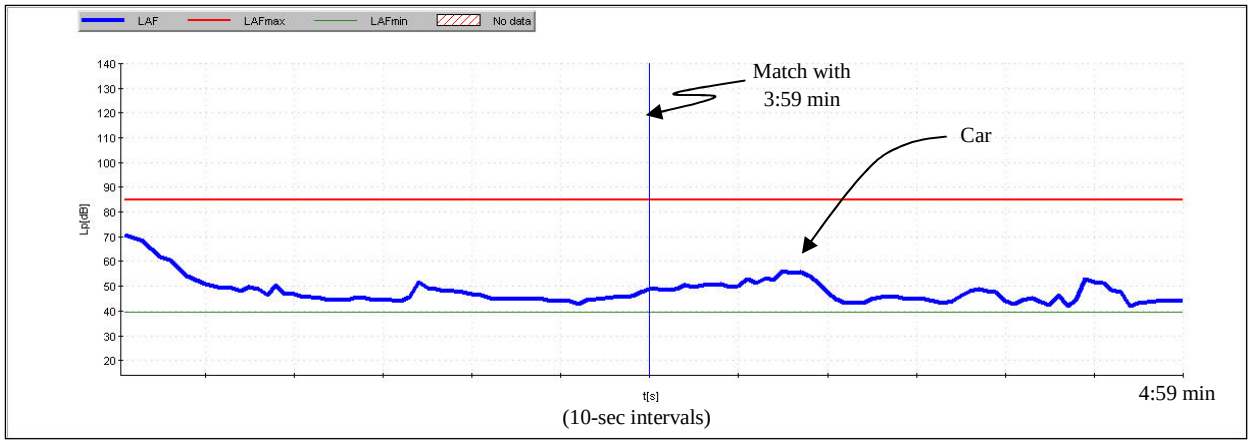
Point #3, 1st Monitoring Segment (4:58 min) on 7/27/10.



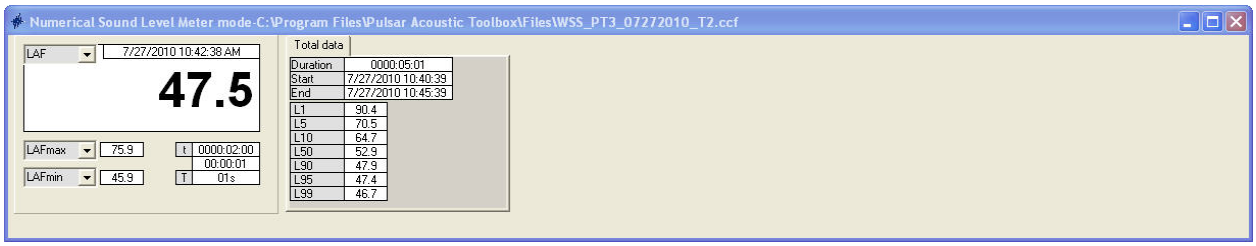
Total Data		
Duration	0000:04:58	
Start	7/27/2010 7:17:06 AM	
End	7/27/2010 7:22:04 AM	
L1	78.9	
L5	64.4	
L10	55.8	
L50	46.7	
L90	43.0	
L95	42.4	
L99	41.0	

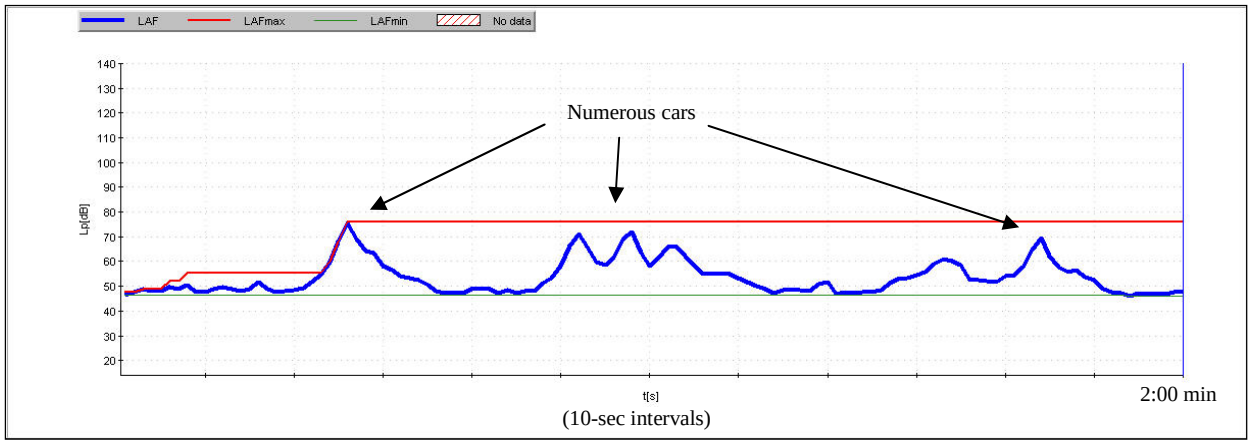


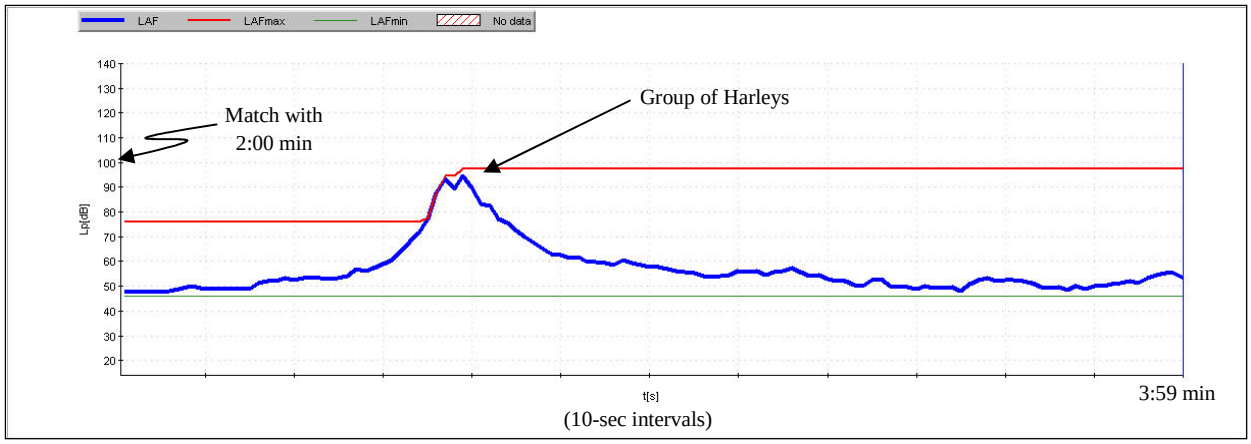


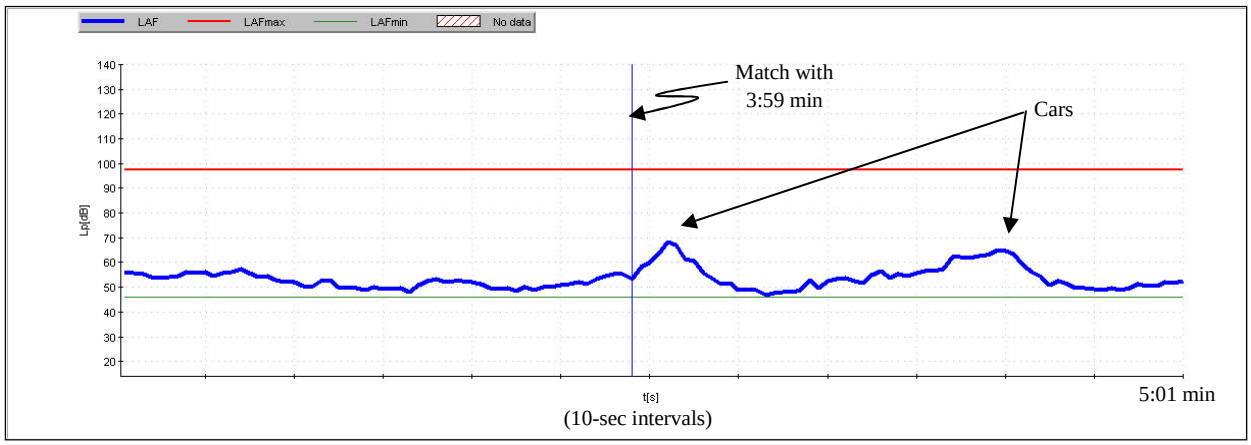


Point #3, 2nd Monitoring Segment (5:01 min) on 7/27/10.

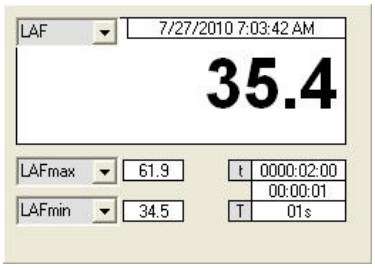




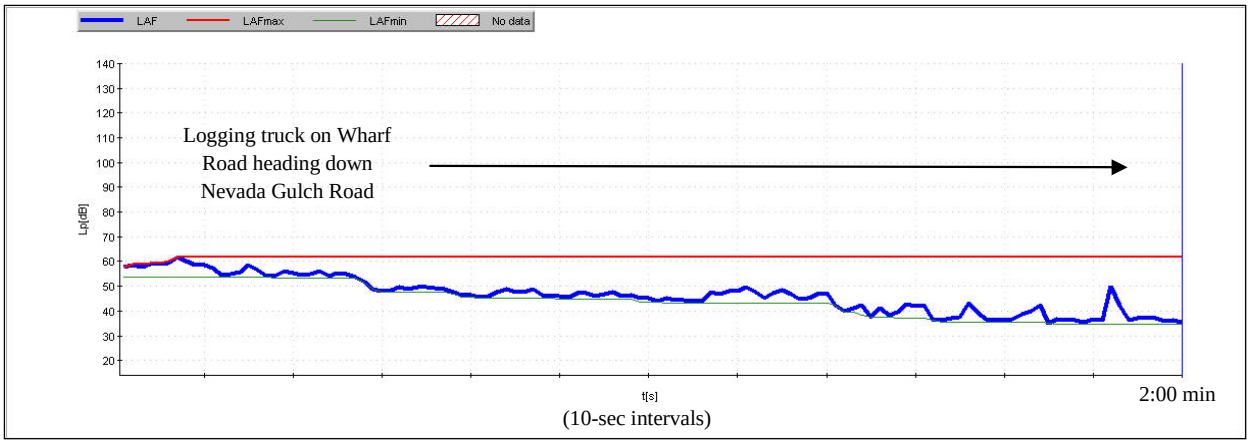


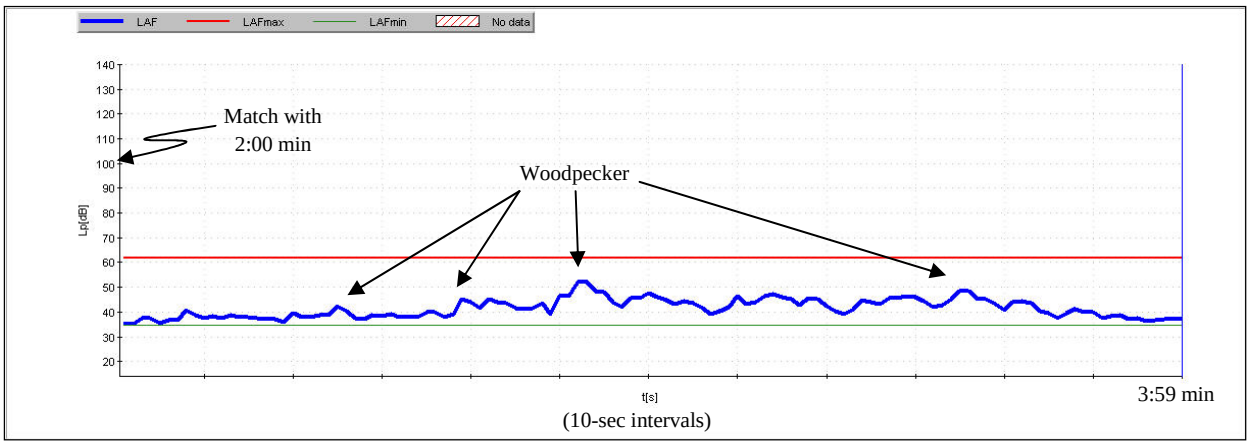


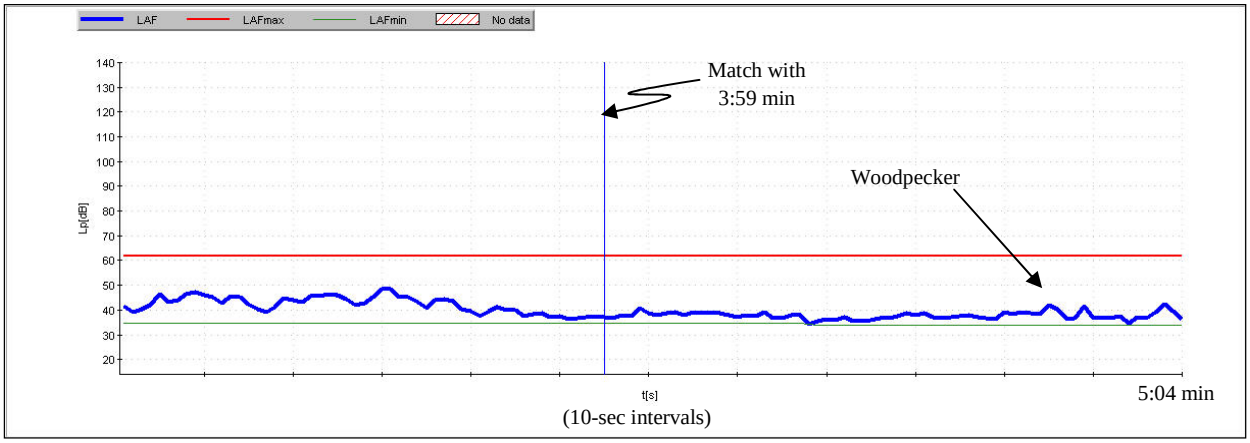
Point #4, 1st Monitoring Segment (5:03 min) on 7/27/10.



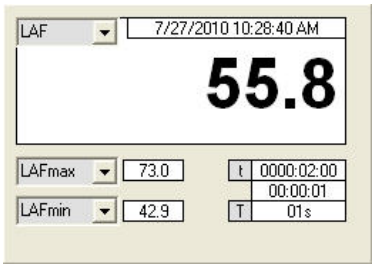
Total Data	
Duration	0000:05:03
Start	7/27/2010 7:01:43 AM
End	7/27/2010 7:06:46 AM
L1	59.1
L5	55.7
L10	50.1
L50	41.1
L90	36.5
L95	36.1
L99	35.1


LAF
LAFmax
LAFmin
No data
Logging truck on Wharf
Road heading down
Nevada Gulch Road
Lq[dB]
t[s]
2:00 min
(10-sec intervals)

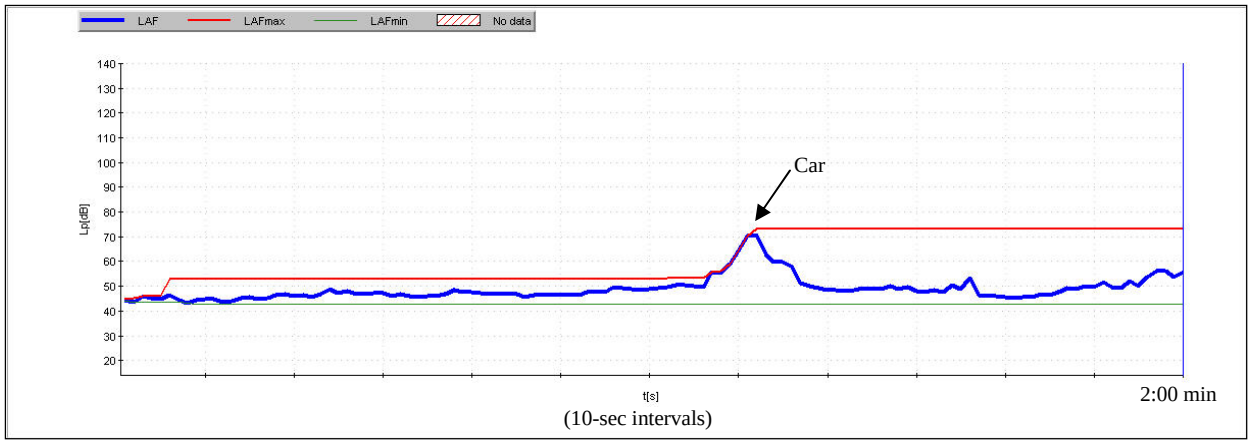

LAF
LAFmax
LAFmin
No data
Match with
2:00 min
Woodpecker
Lq[dB]
t[s]
3:59 min
(10-sec intervals)

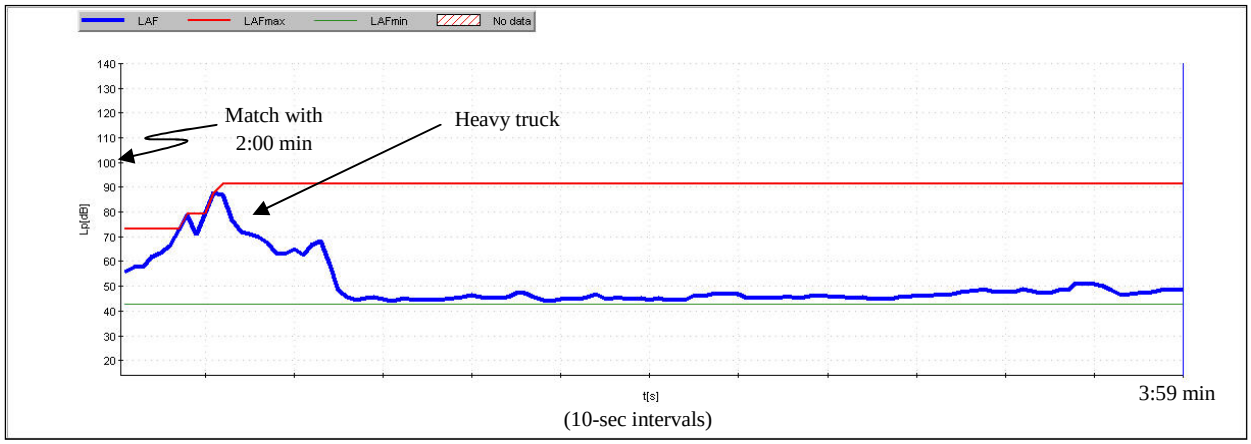

LAF
LAFmax
LAFmin
No data
Match with
3:59 min
Woodpecker
Lq[dB]
t[s]
5:04 min
(10-sec intervals)

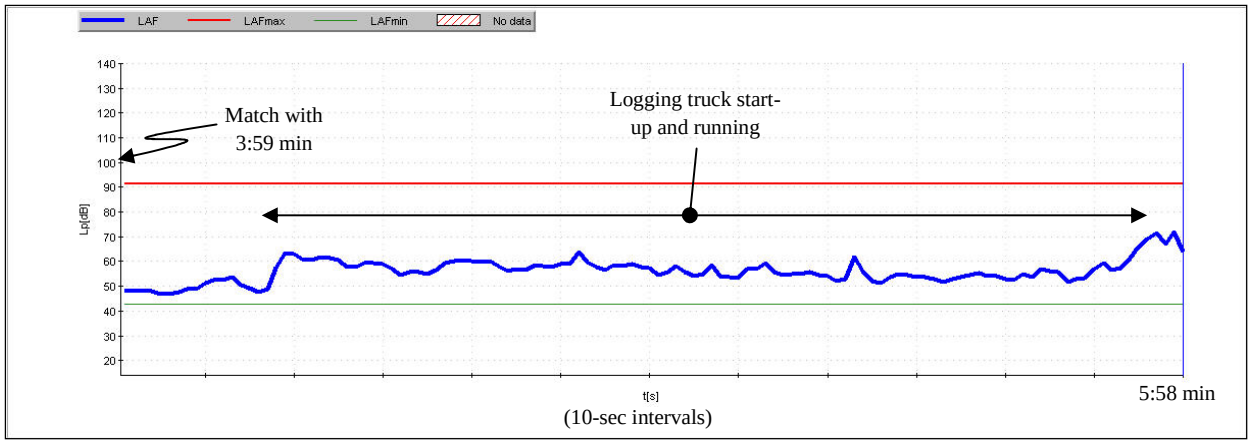
Point #4, 2nd Monitoring Segment (6:01 min) on 7/27/10.



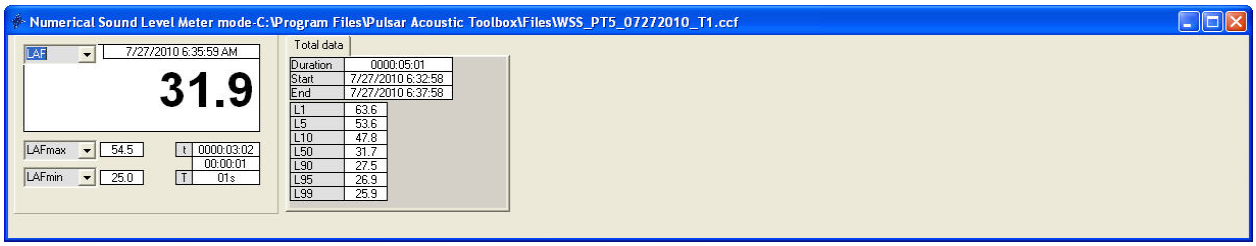
Total Data		
Duration	0000:06:01	
Start	7/27/2010 10:26:41 AM	
End	7/27/2010 10:32:42 AM	
L1	76.7	
L5	66.6	
L10	61.5	
L50	48.9	
L90	45.0	
L95	44.5	
L99	43.8	

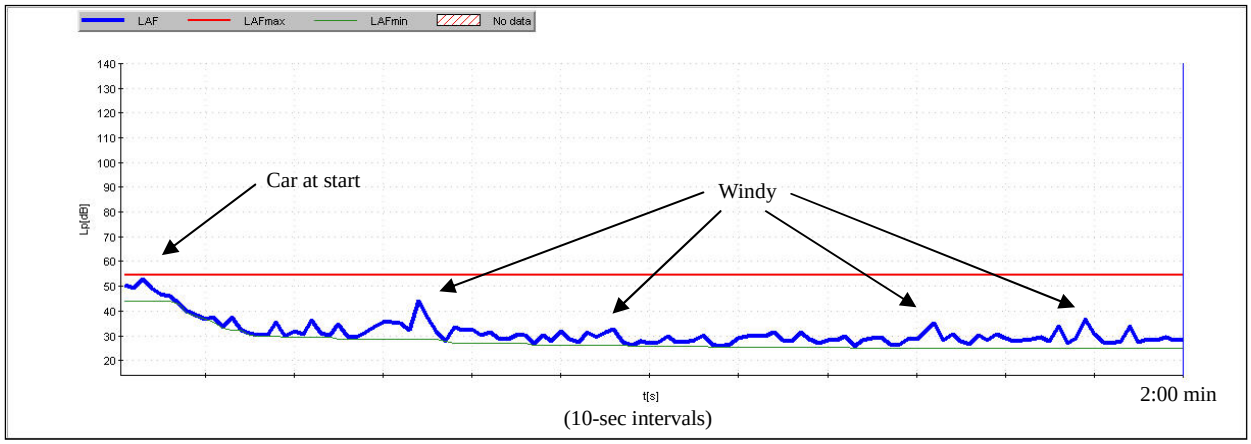


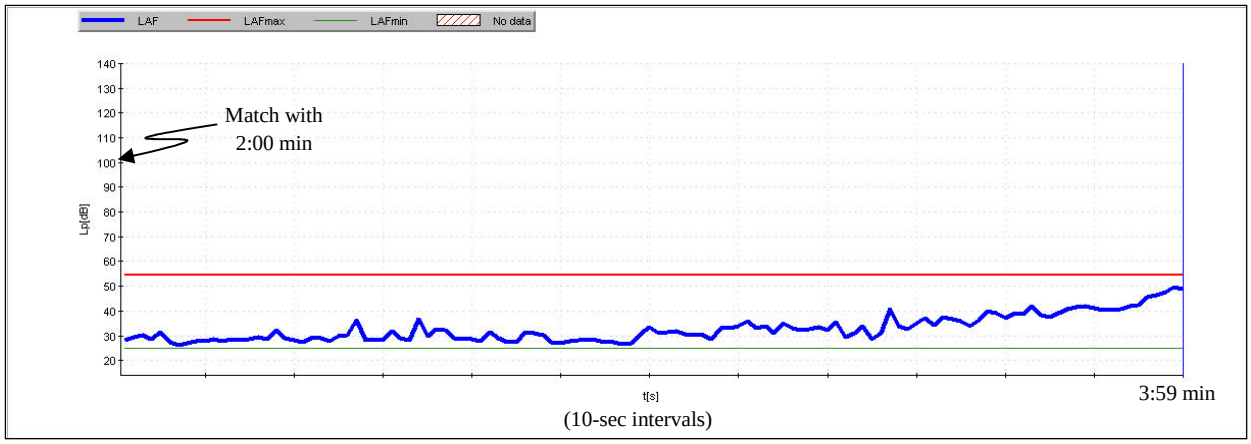


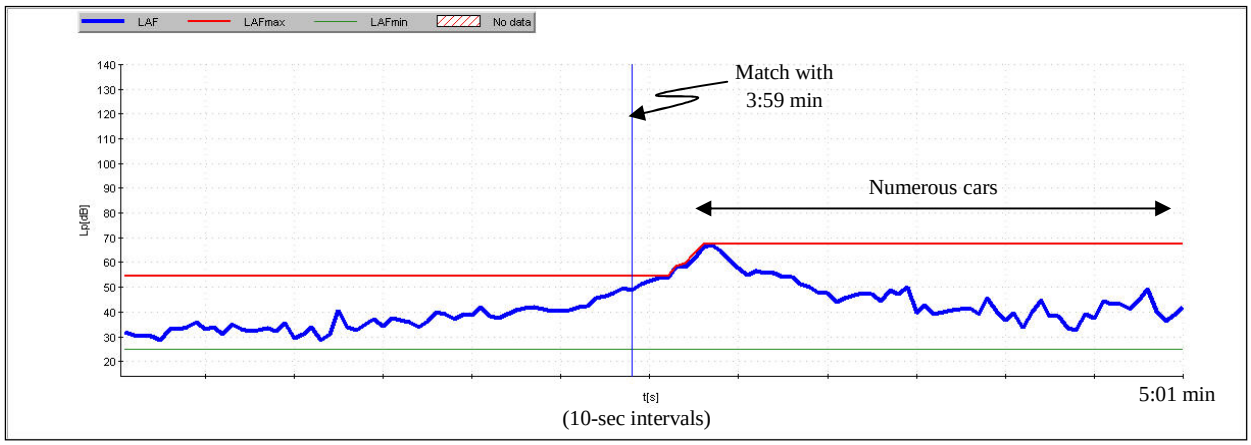


Point #5, 1st Monitoring Segment (5:01 min) on 7/27/10.

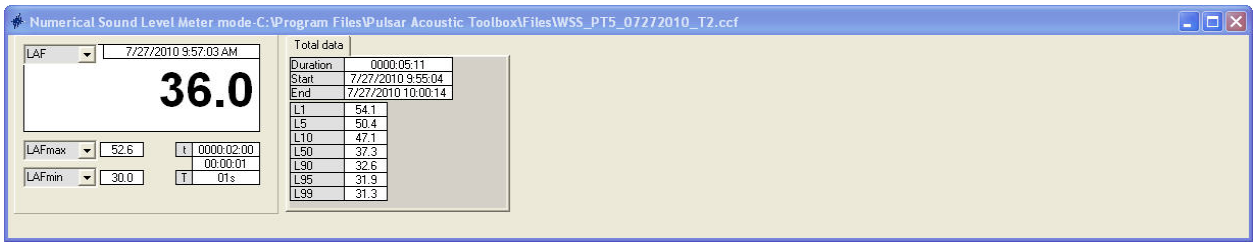


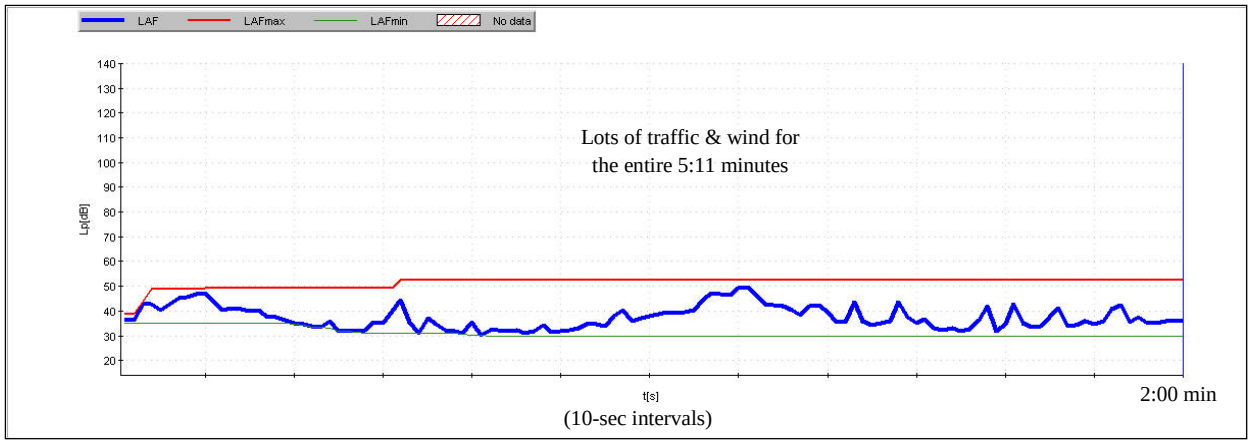


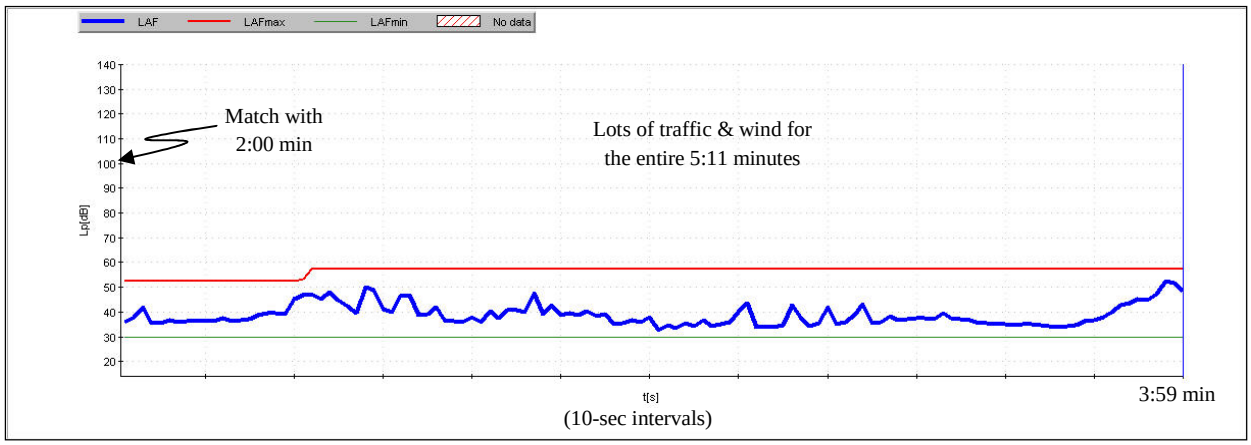


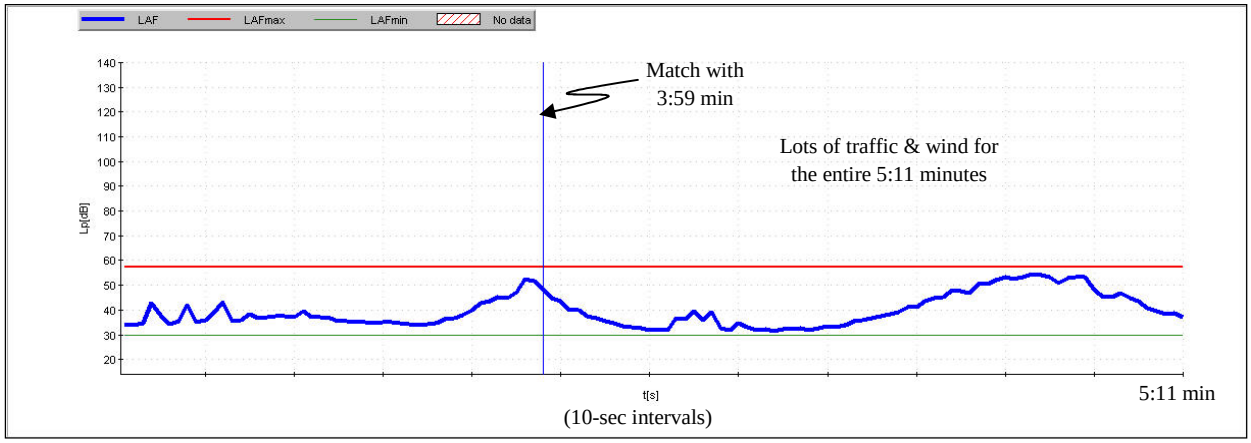


<u>Point #5, 2nd Monitoring Segment (5:11 min) on 7/27/10</u>.

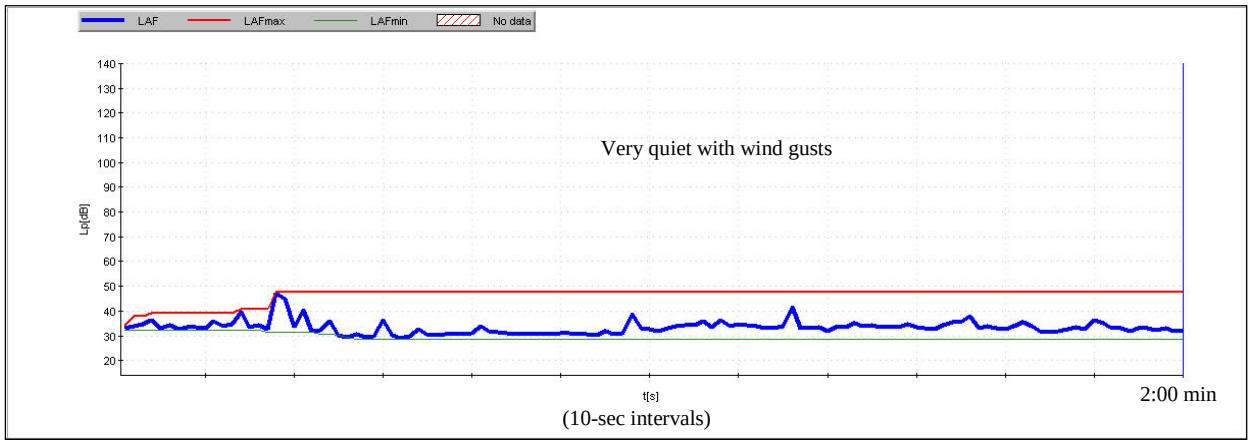


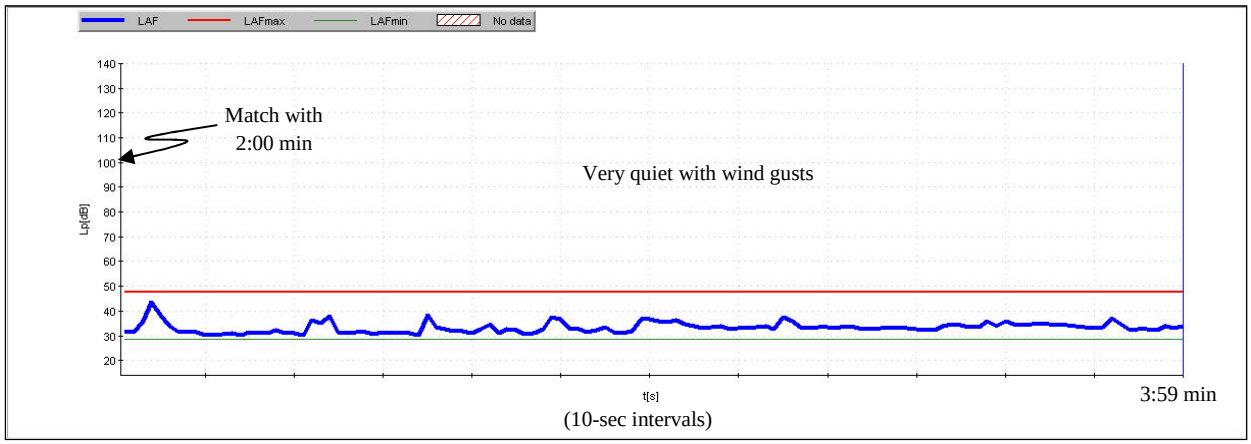

LAF
LAFmax
LAFmin
No data
Lq[dB]
Lots of traffic & wind for
the entire 5:11 minutes
t[s]
2:00 min
(10-sec intervals)

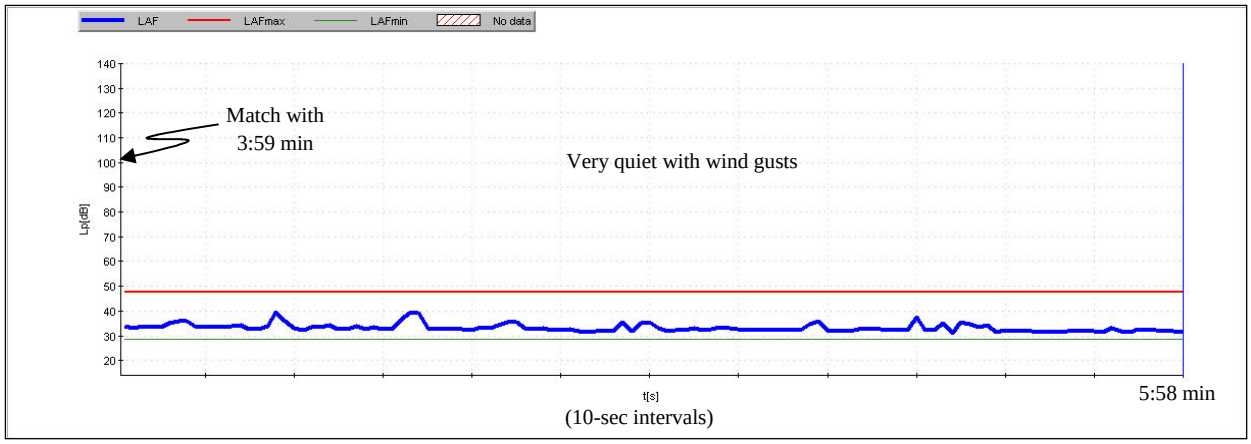

LAF
LAFmax
LAFmin
No data
Lq[dB]
Match with
2:00 min
Lots of traffic & wind for
the entire 5:11 minutes
t[s]
3:59 min
(10-sec intervals)

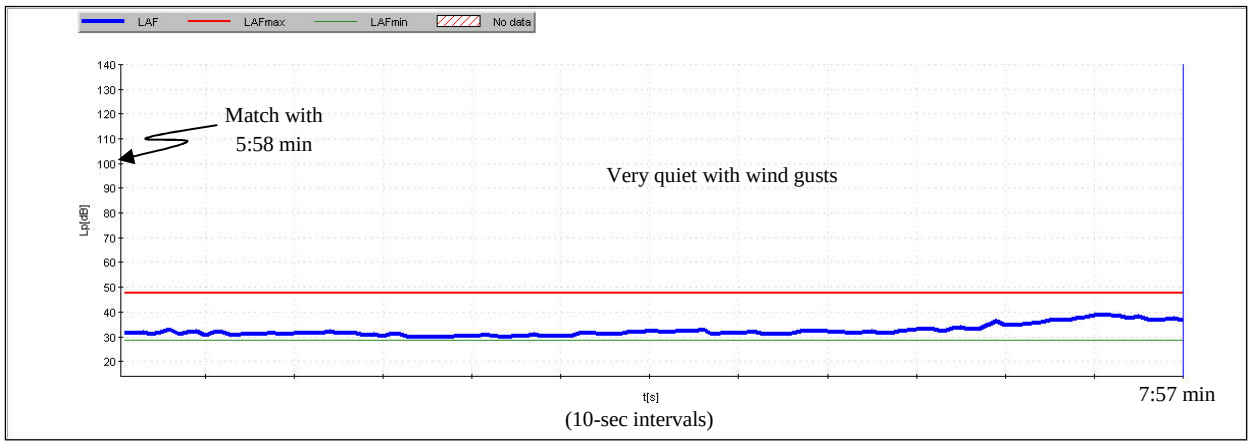

LAF
LAFmax
LAFmin
No data
Lq[dB]
Match with
3:59 min
Lots of traffic & wind for
the entire 5:11 minutes
t[s]
5:11 min
(10-sec intervals)

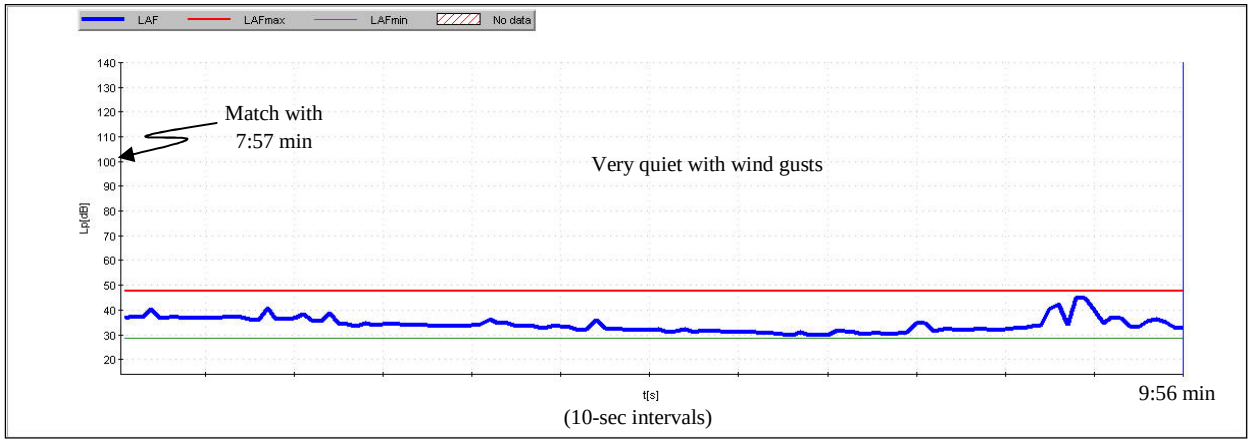
Point #6, 1st & 2nd Monitoring Segments (10:00 min) on 7/27/10.



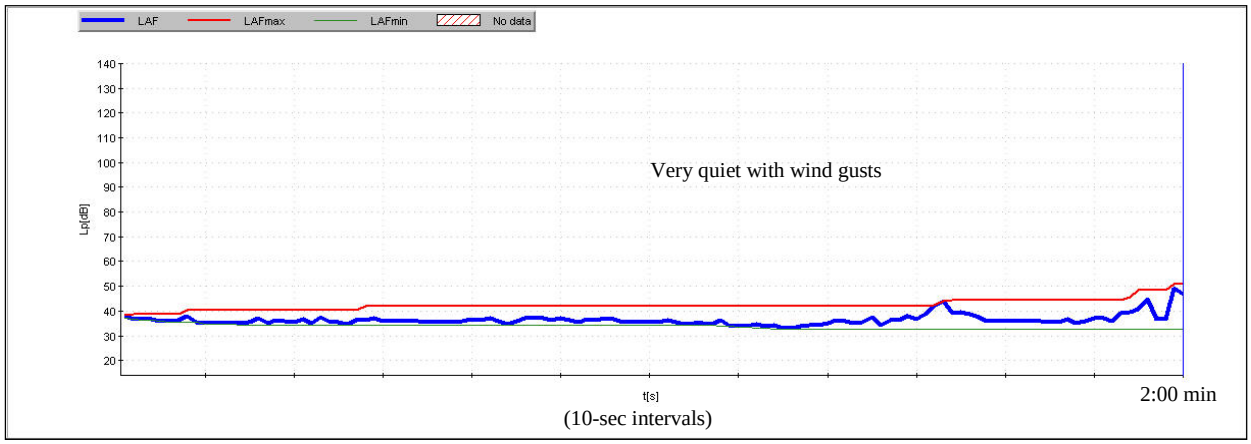


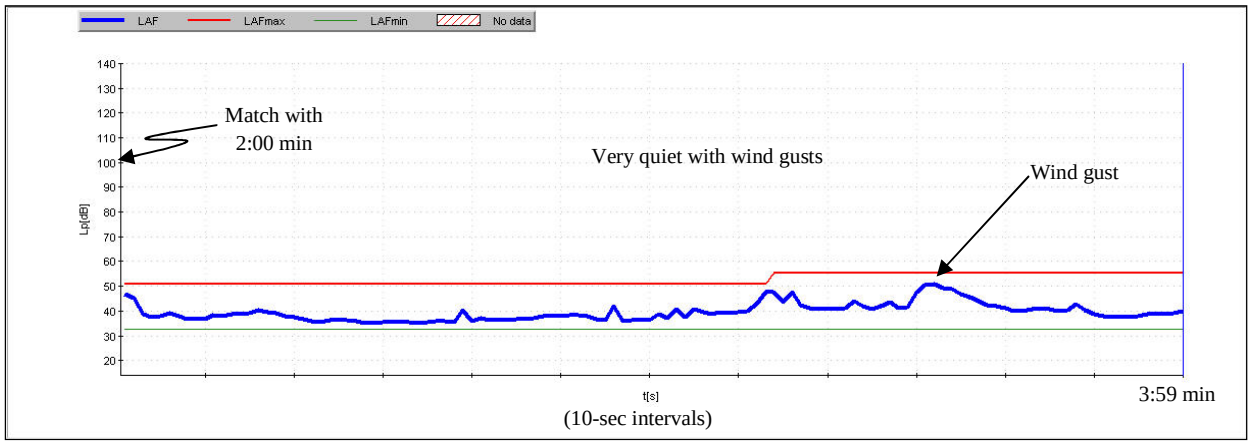

LAF
LAFmax
LAFmin
No data
Match with
3:59 min
Very quiet with wind gusts
Lq[dB]
t[s]
5:58 min
(10-sec intervals)

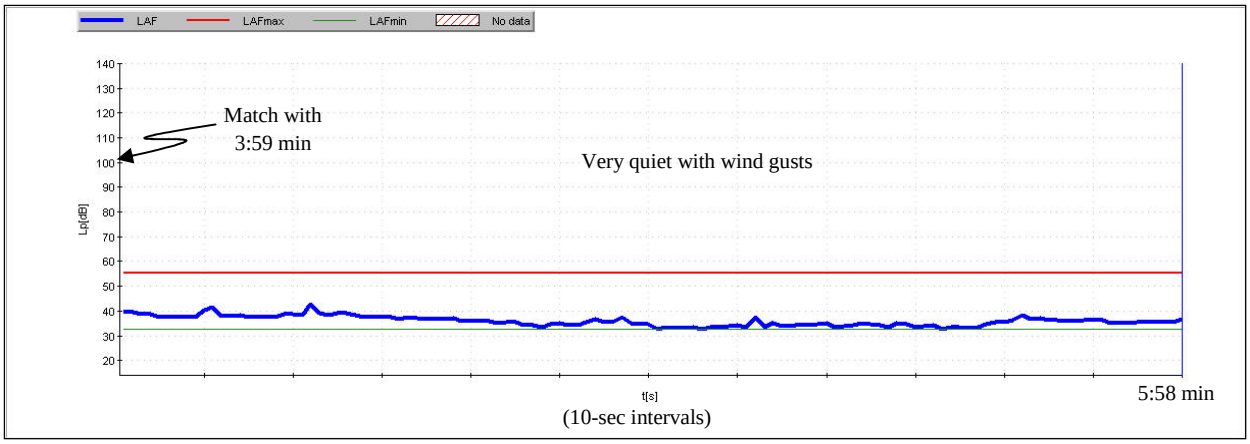

LAF
LAFmax
LAFmin
No data
Match with
5:58 min
Very quiet with wind gusts
Lq[dB]
t[s]
7:57 min
(10-sec intervals)

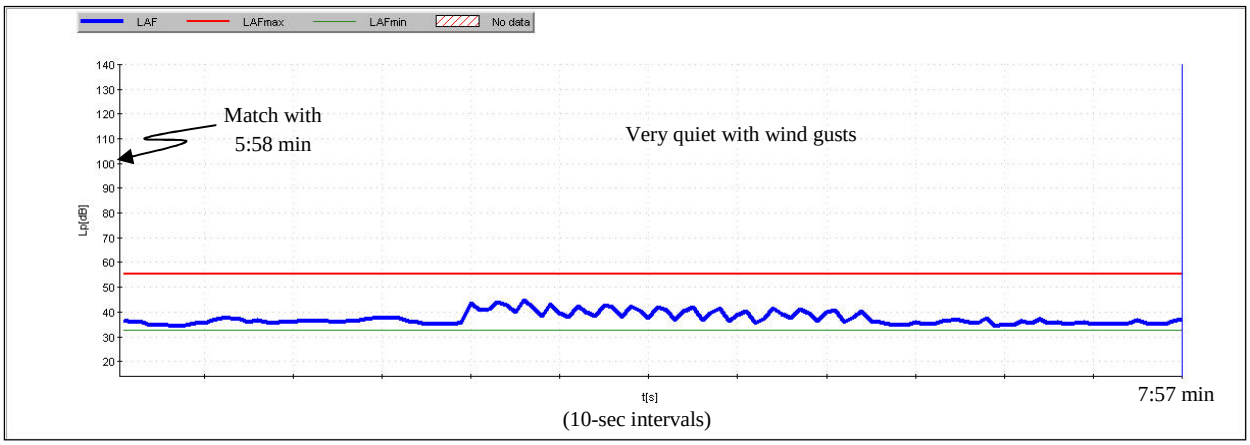

LAF
LAFmax
LAFmin
No data
Match with
7:57 min
Very quiet with wind gusts
Lq[dB]
t[s]
9:56 min
(10-sec intervals)

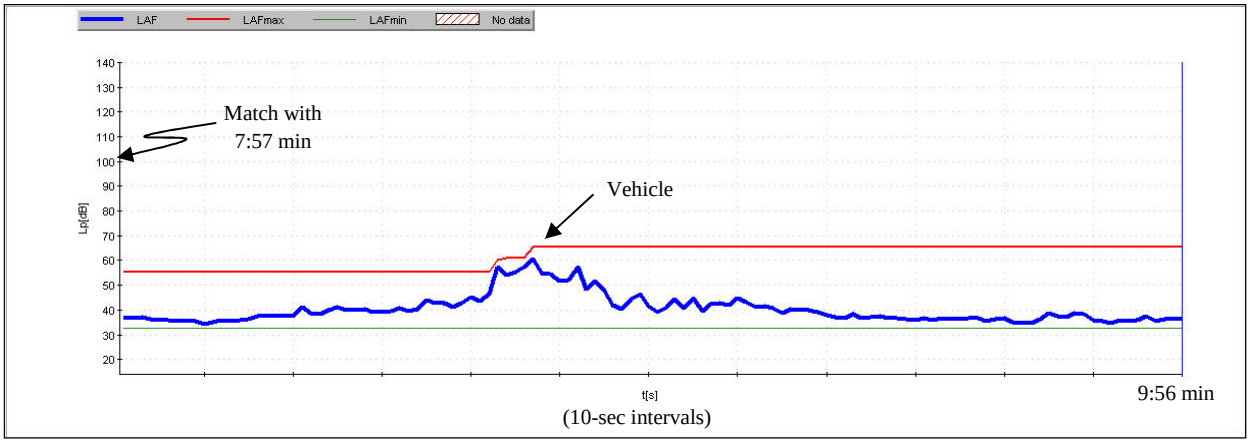
Point #7, 1st & 2nd Monitoring Segments (10:02 min) on 7/27/10.



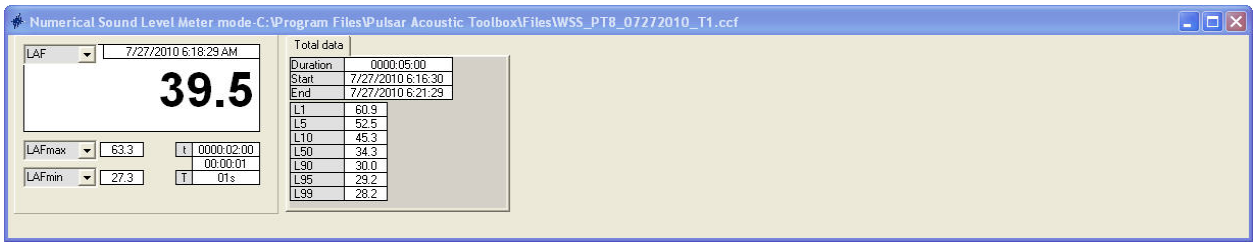


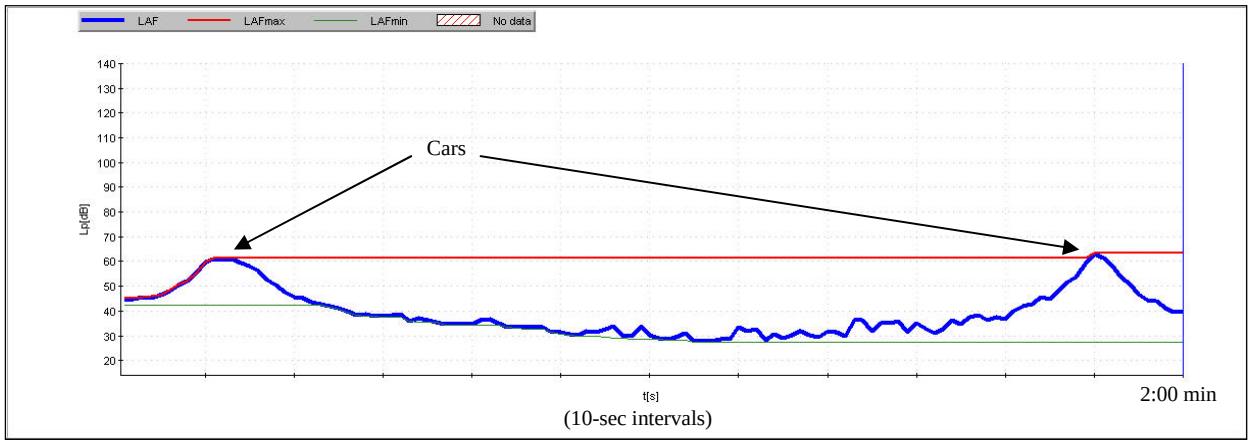

LAF
LAFmax
LAFmin
No data
Match with
3:59 min
Very quiet with wind gusts
Lq[dB]
t[s]
5:58 min
(10-sec intervals)

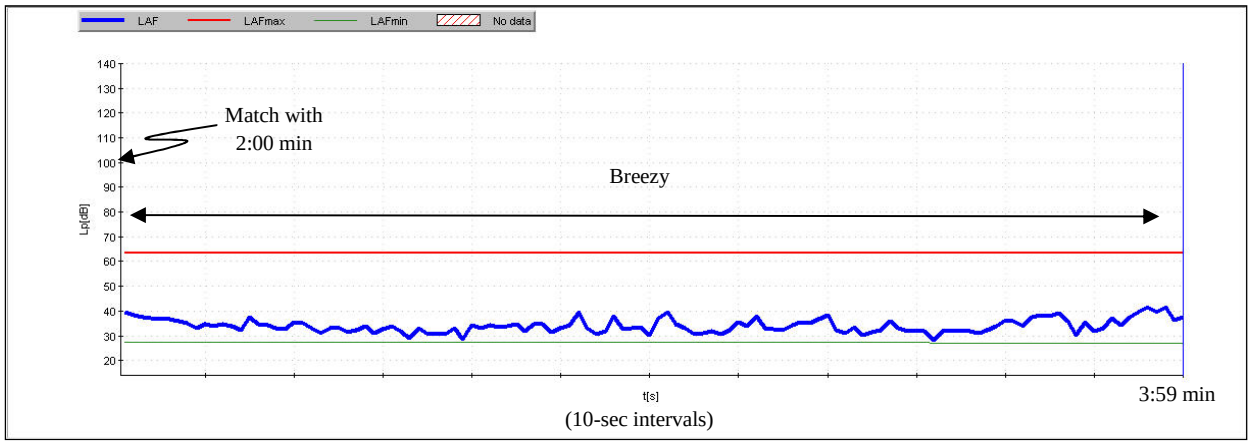

LAF
LAFmax
LAFmin
No data
Match with
5:58 min
Very quiet with wind gusts
Lq[dB]
t[s]
7:57 min
(10-sec intervals)

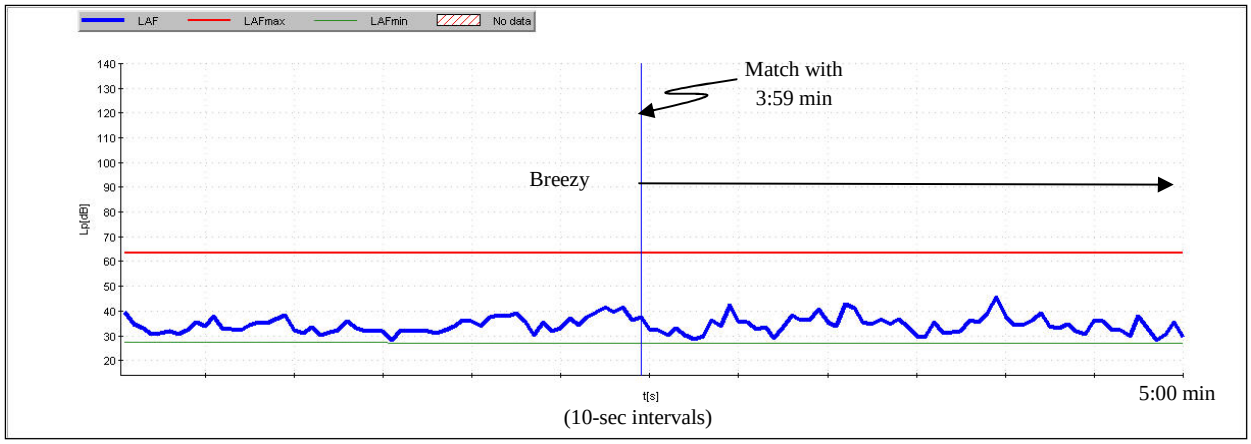

LAF
LAFmax
LAFmin
No data
Match with
7:57 min
Vehicle
Lq[dB]
t[s]
9:56 min
(10-sec intervals)

Point #8, 1st Monitoring Segment (5:00 min) on 7/27/10.

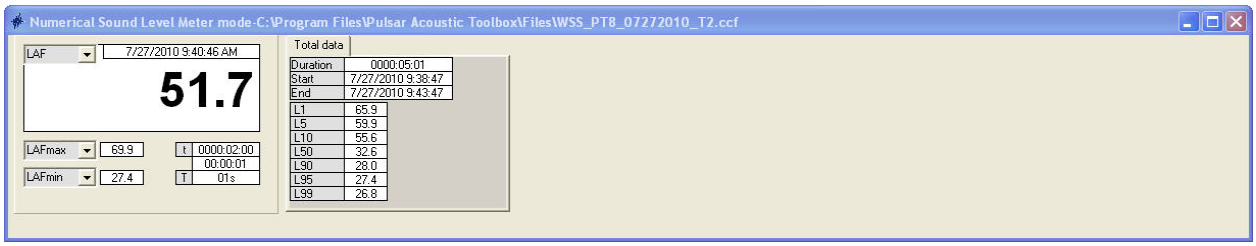


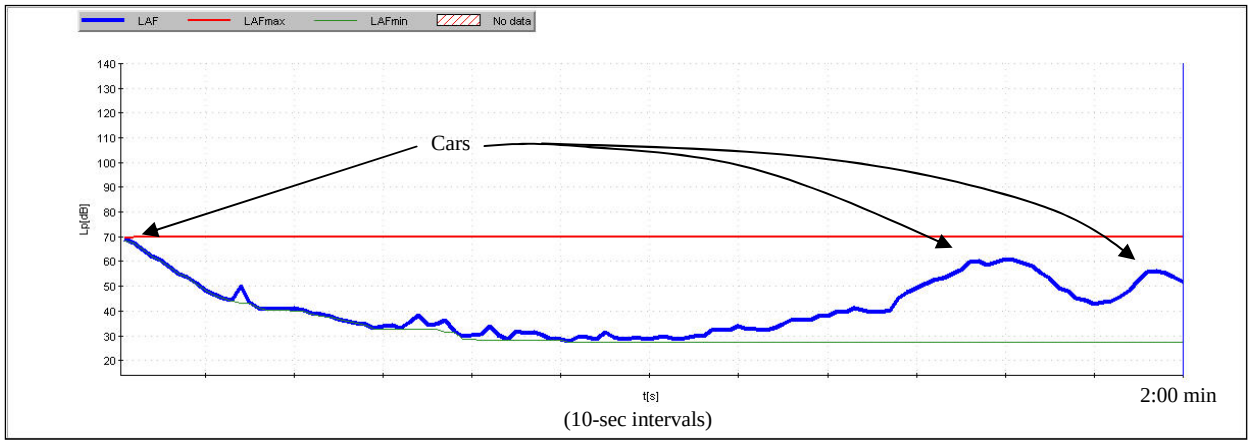


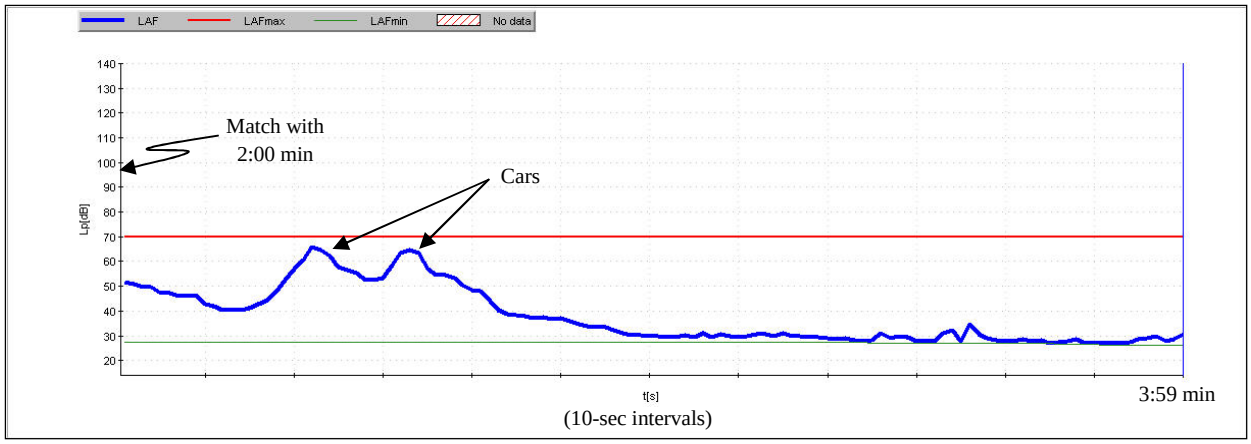


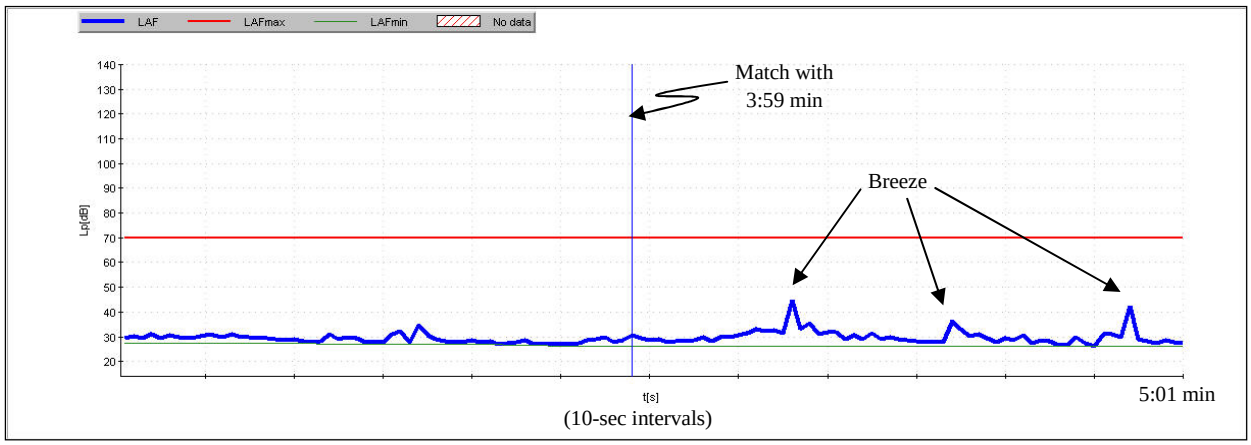


Point #8, 2nd Monitoring Segment (5:01 min) on 7/27/10.

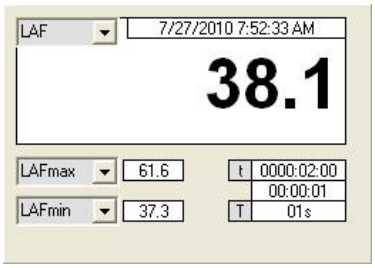




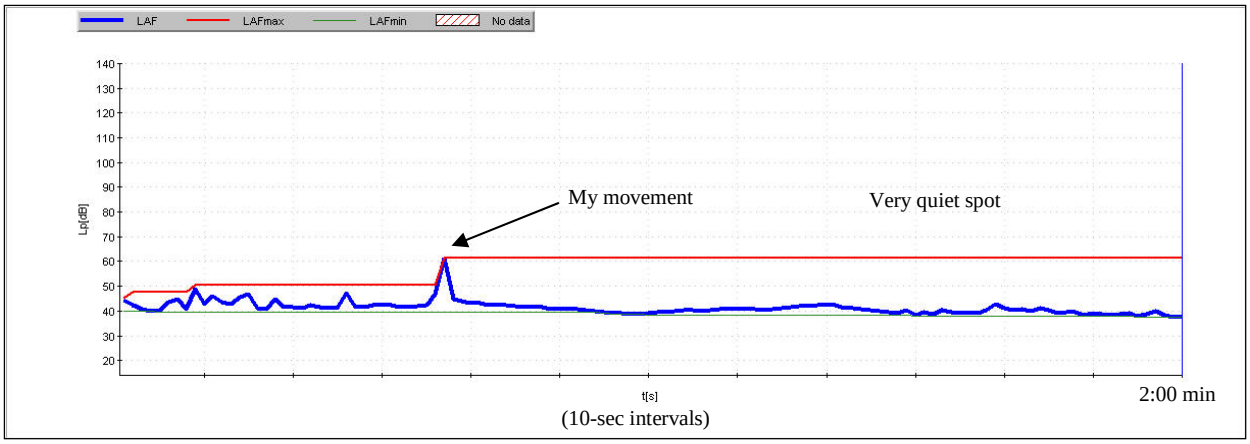


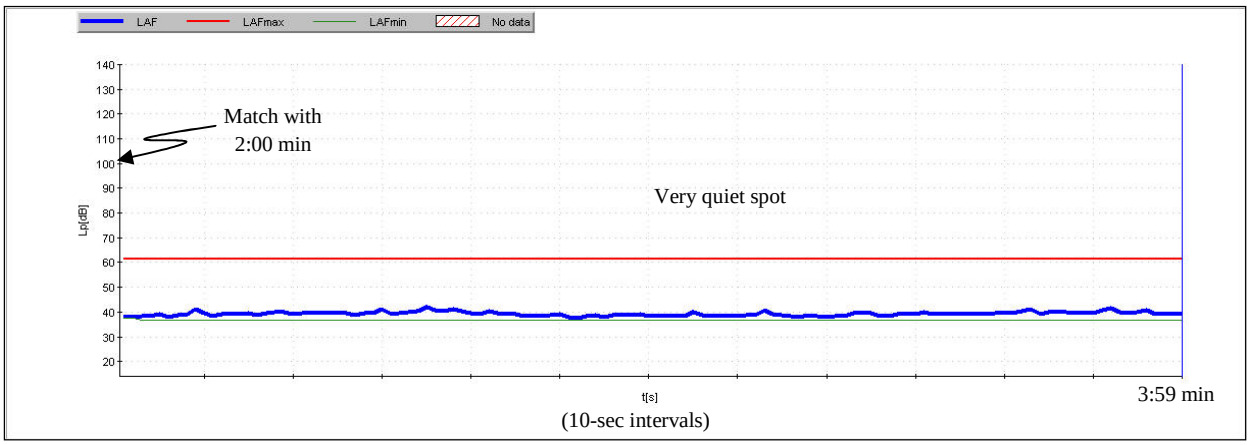


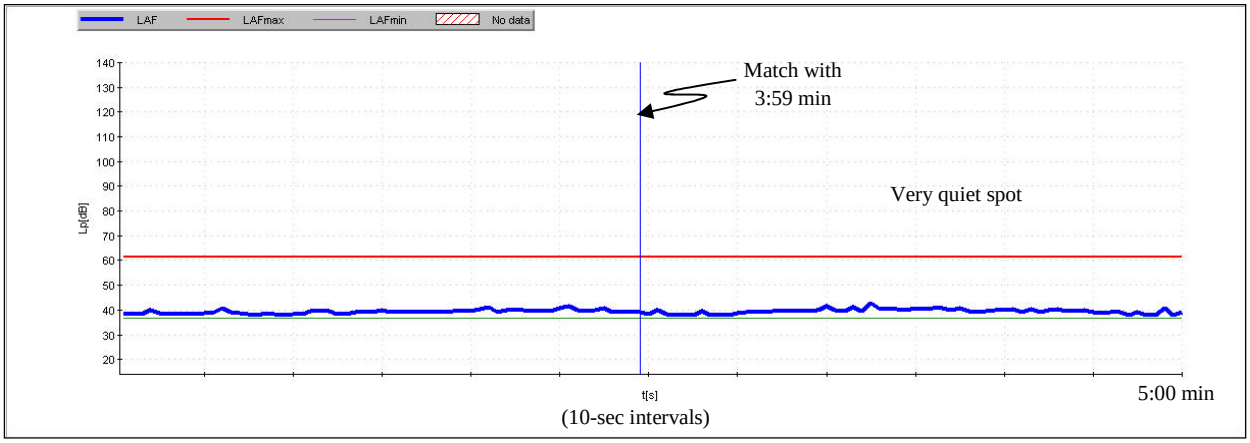
Point #9, 1st Monitoring Segment (4:59 min) on 7/27/10.



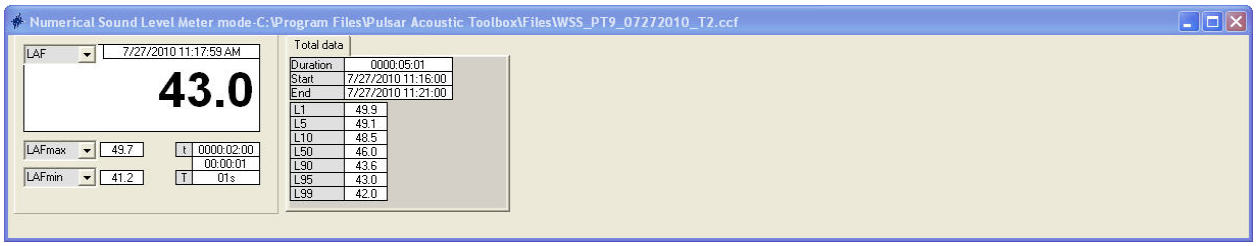
Total Data	
Duration	0000:04:59
Start	7/27/2010 7:50:34 AM
End	7/27/2010 7:55:33 AM
L1	46.8
L5	43.0
L10	42.2
L50	39.7
L90	38.3
L95	38.0
L99	37.8

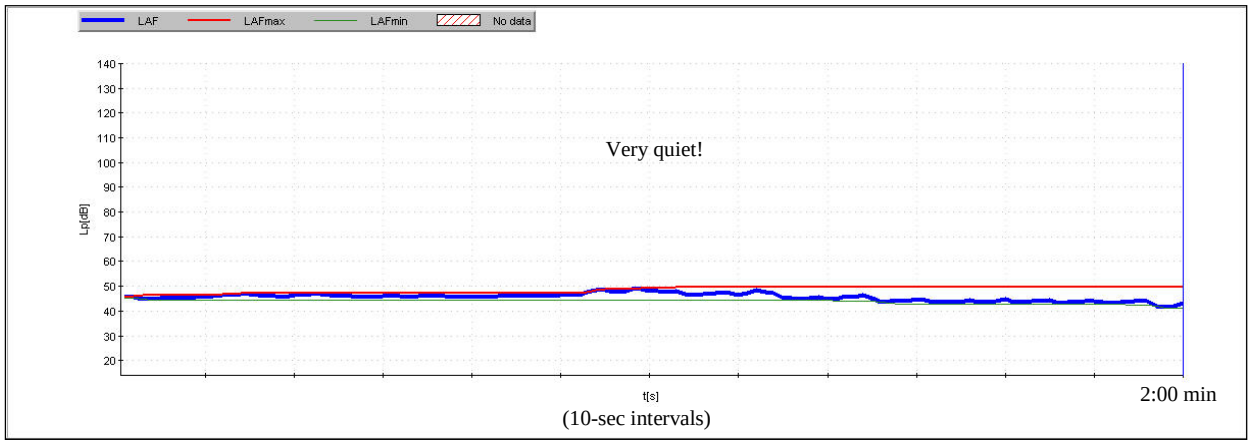

LAF
LAFmax
LAFmin
No data
Lq[dB]
My movement
Very quiet spot
t[s]
2:00 min
(10-sec intervals)

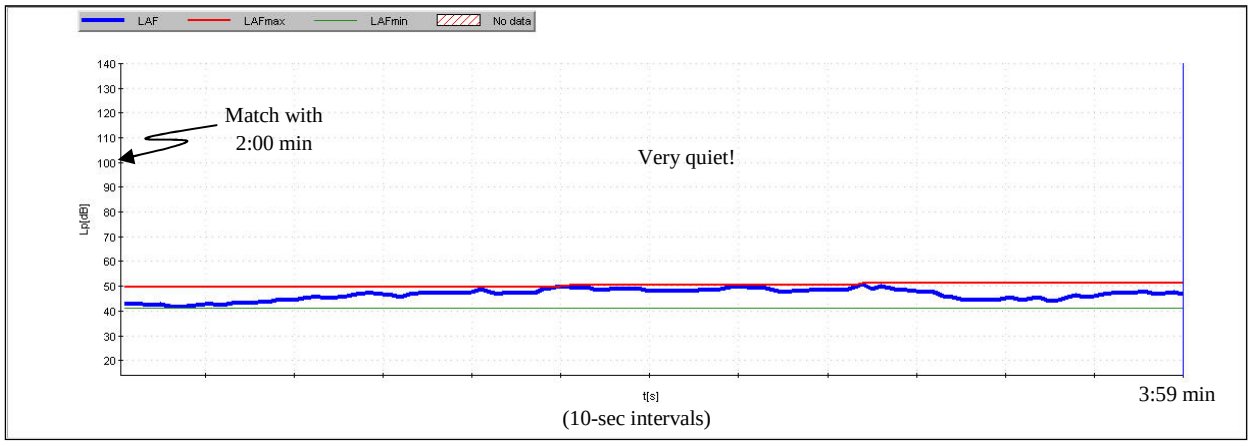

LAF
LAFmax
LAFmin
No data
Lq[dB]
Match with
2:00 min
Very quiet spot
t[s]
3:59 min
(10-sec intervals)

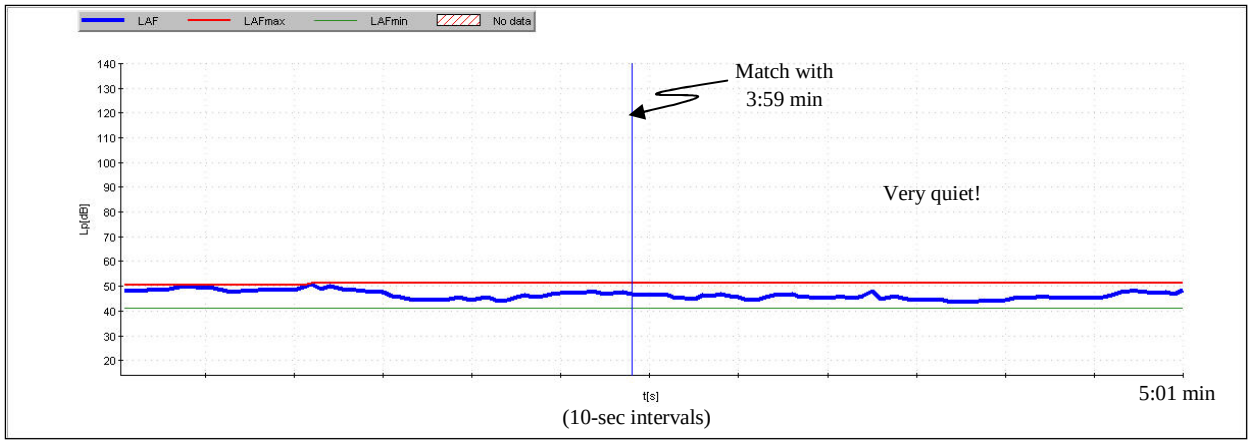

LAF
LAFmax
LAFmin
No data
Lq[dB]
Match with
3:59 min
Very quiet spot
t[s]
5:00 min
(10-sec intervals)

Point #9, 2nd Monitoring Segment (5:01 min) on 7/27/10.

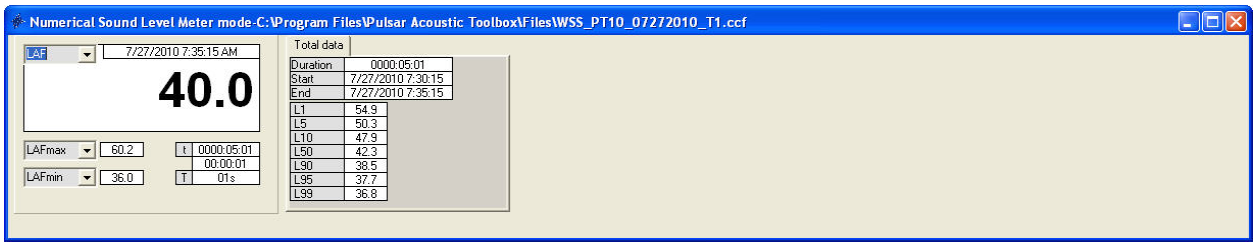


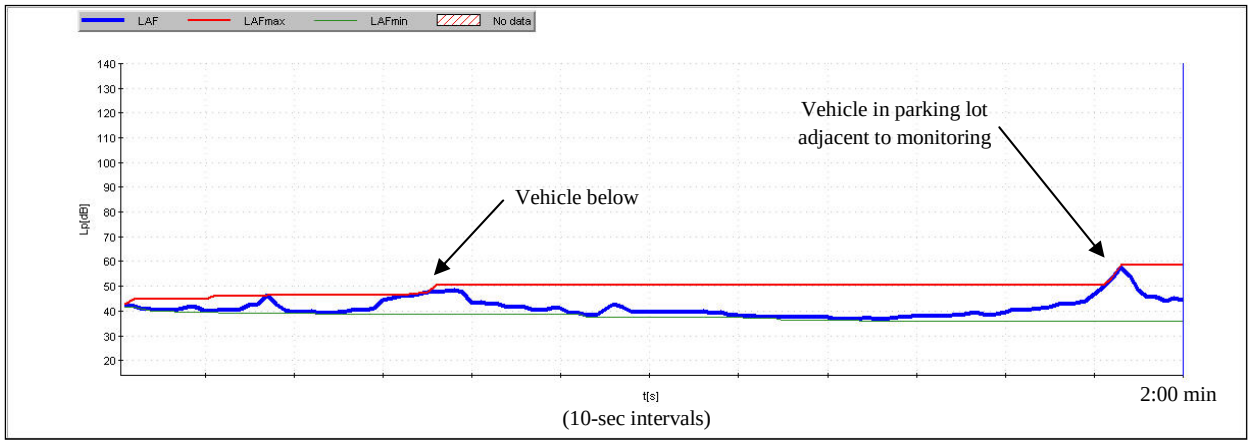


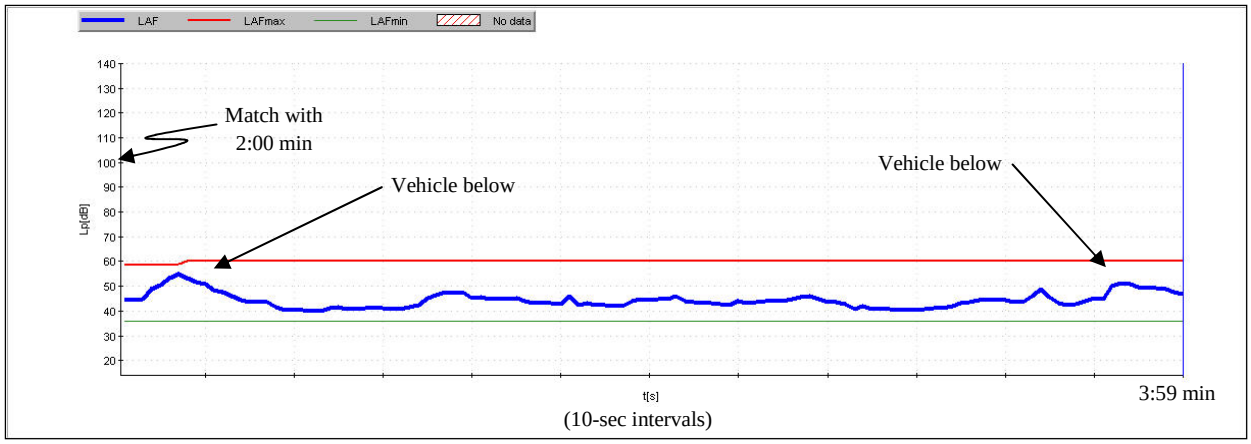


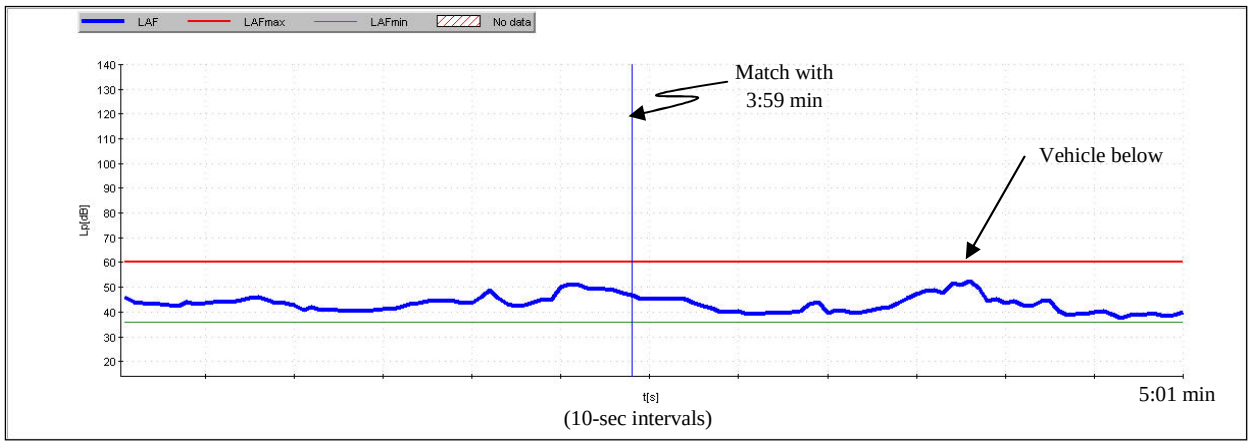


Point #10, 1st Monitoring Segment (5:01 min) on 7/27/10.

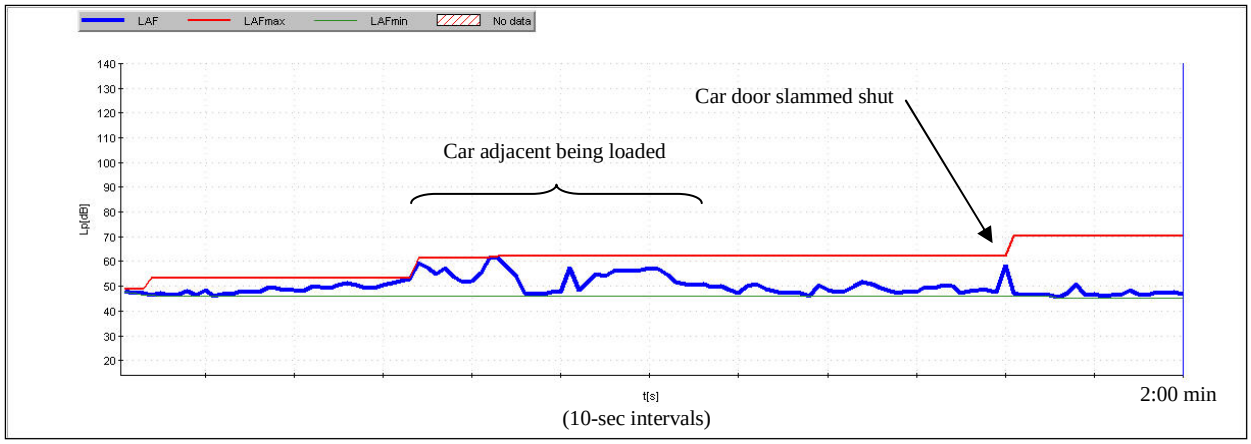


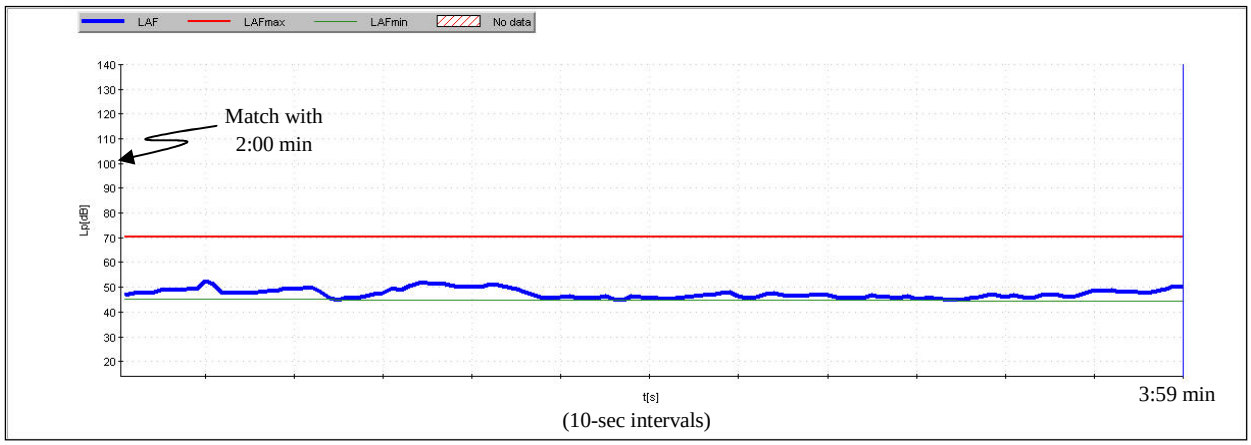


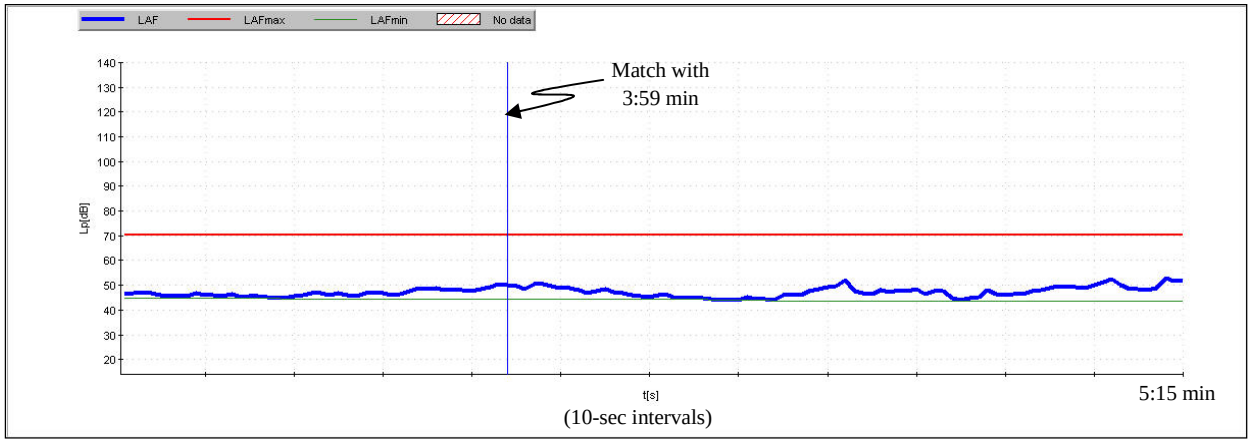




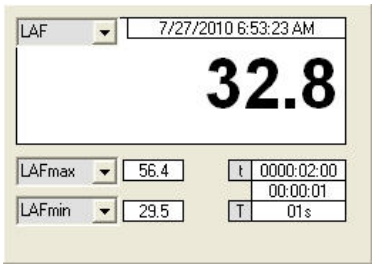
<u>Point #10, 2nd Monitoring Segment (5:15 min) on 7/27/10</u>.


LAF
LAFmax
LAFmin
No data
Car door slammed shut
Car adjacent being loaded
Lq[dB]
t[s]
2:00 min
(10-sec intervals)

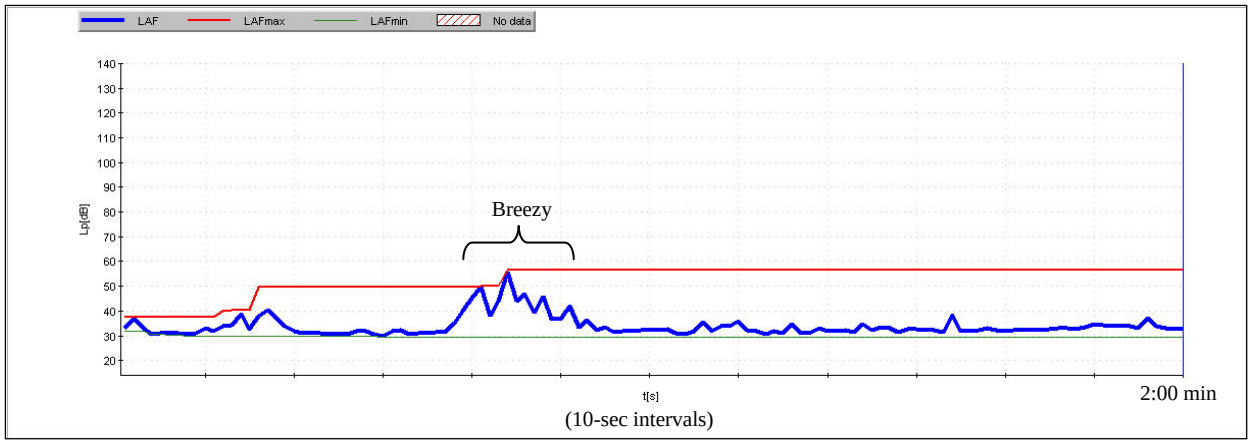

LAF
LAFmax
LAFmin
No data
Match with
2:00 min
Lq[dB]
t[s]
3:59 min
(10-sec intervals)

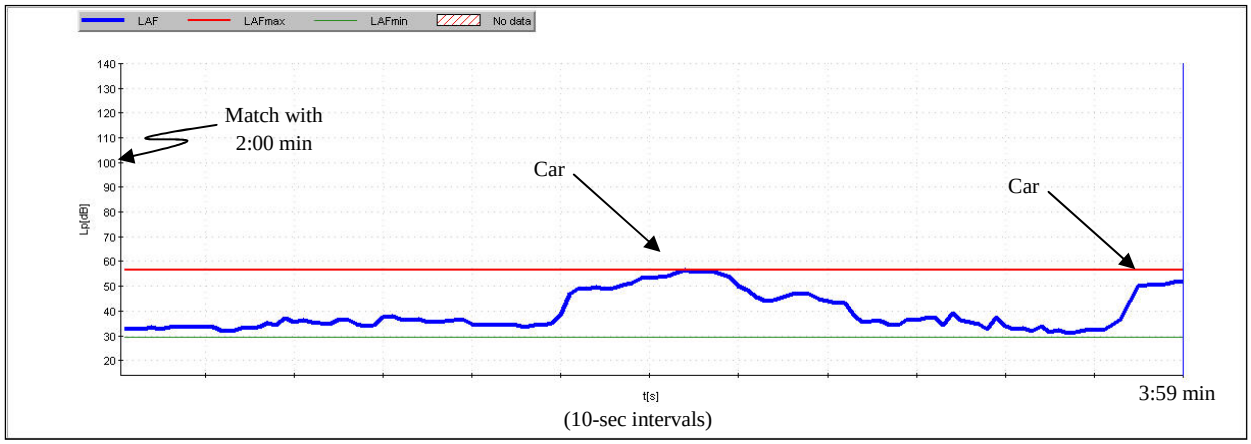

LAF
LAFmax
LAFmin
No data
Match with
3:59 min
Lq[dB]
t[s]
5:15 min
(10-sec intervals)

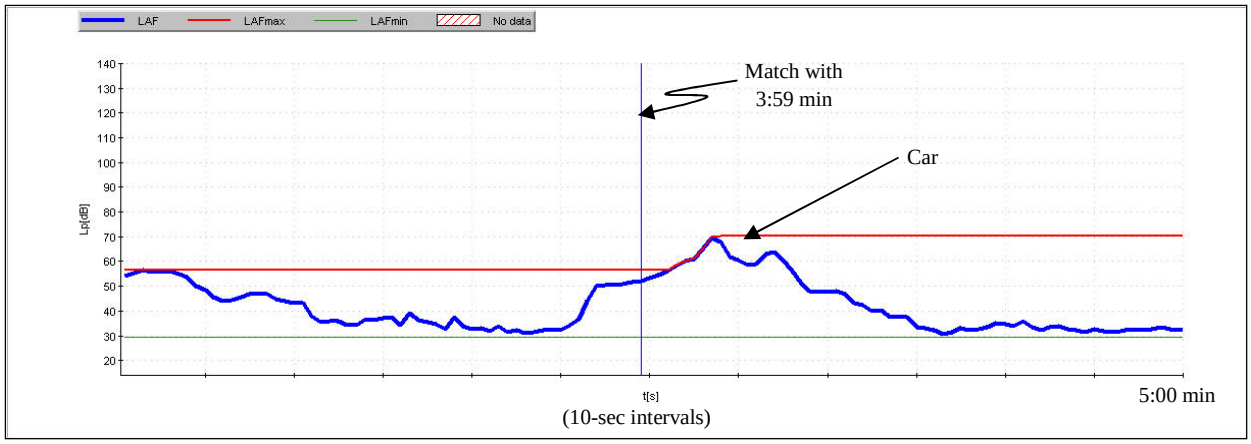
Point #11, 1st Monitoring Segment (4:59 min) on 7/27/10.



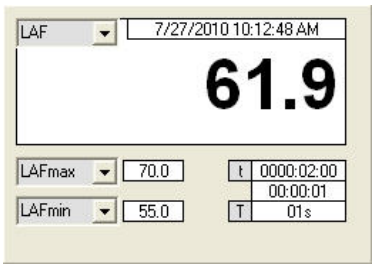
Total Data	
Duration	0000:04:59
Start	7/27/2010 6:51:24 AM
End	7/27/2010 6:56:23 AM
L1	63.8
L5	56.2
L10	51.8
L50	34.1
L90	31.4
L95	31.0
L99	30.7



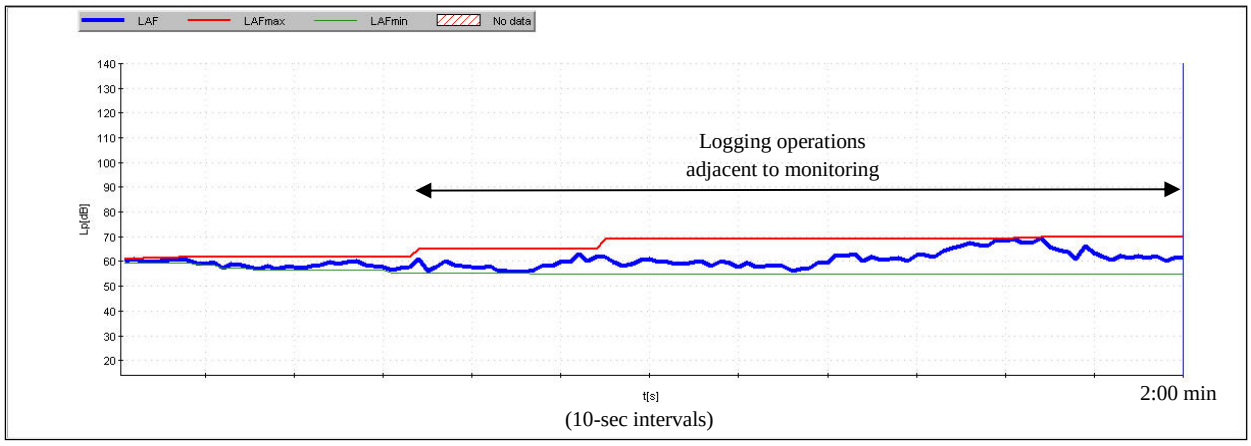


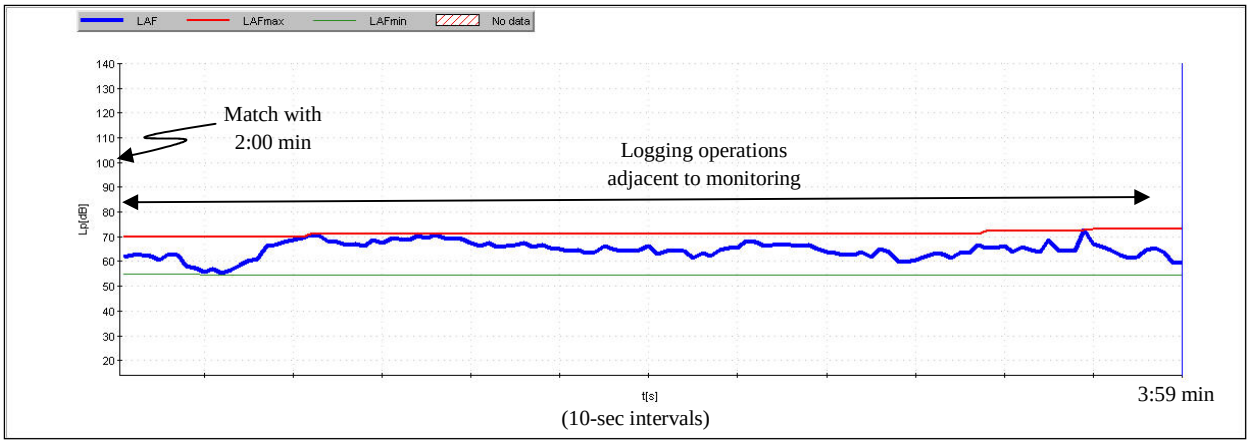


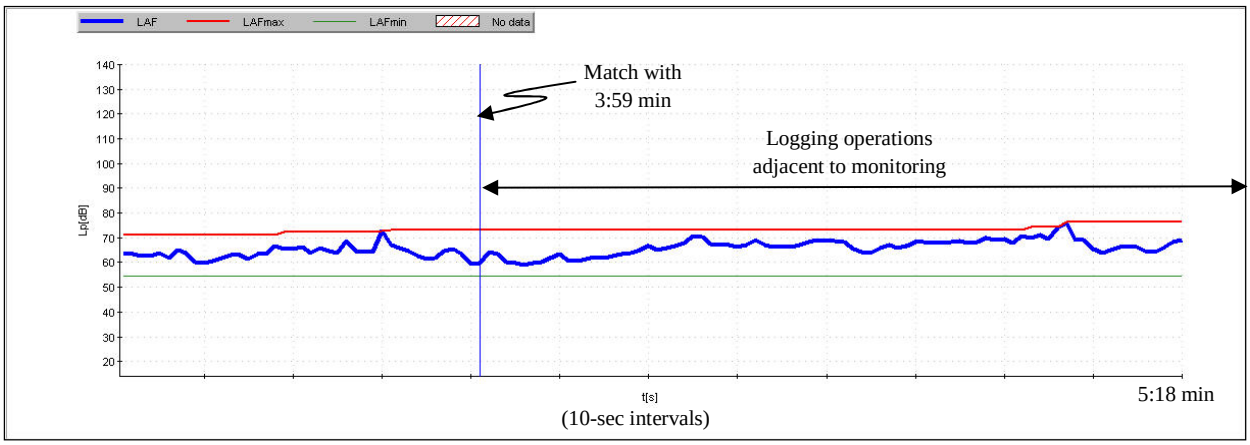
Point #11, 2nd Monitoring Segment (5:17 min) on 7/27/10.



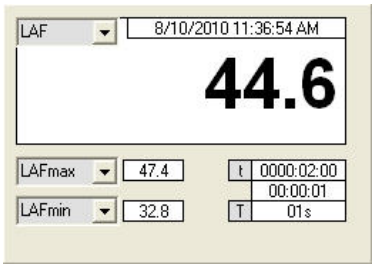
Total Data	
Duration	0000:05:17
Start	7/27/2010 10:10:49 AM
End	7/27/2010 10:16:06 AM
L1	71.0
L5	69.5
L10	68.7
L50	63.7
L90	58.0
L95	57.3
L99	55.8



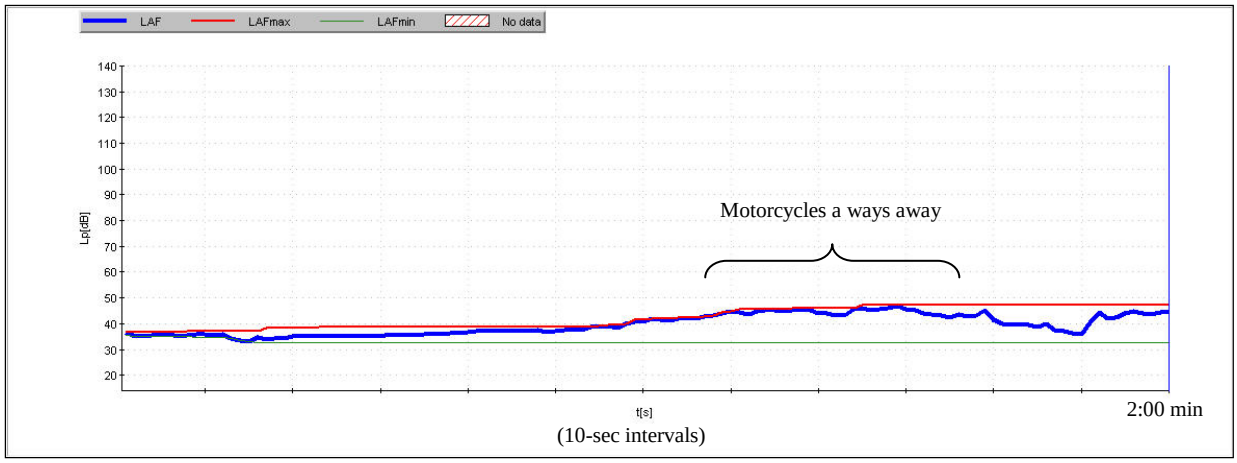

LAF
LAFmax
LAFmin
No data
Match with
2:00 min
Logging operations
adjacent to monitoring
Lp[dB]
t[s]
3:59 min
(10-sec intervals)


LAF
LAFmax
LAFmin
No data
Match with
3:59 min
Logging operations
adjacent to monitoring
Lp[dB]
t[s]
5:18 min
(10-sec intervals)

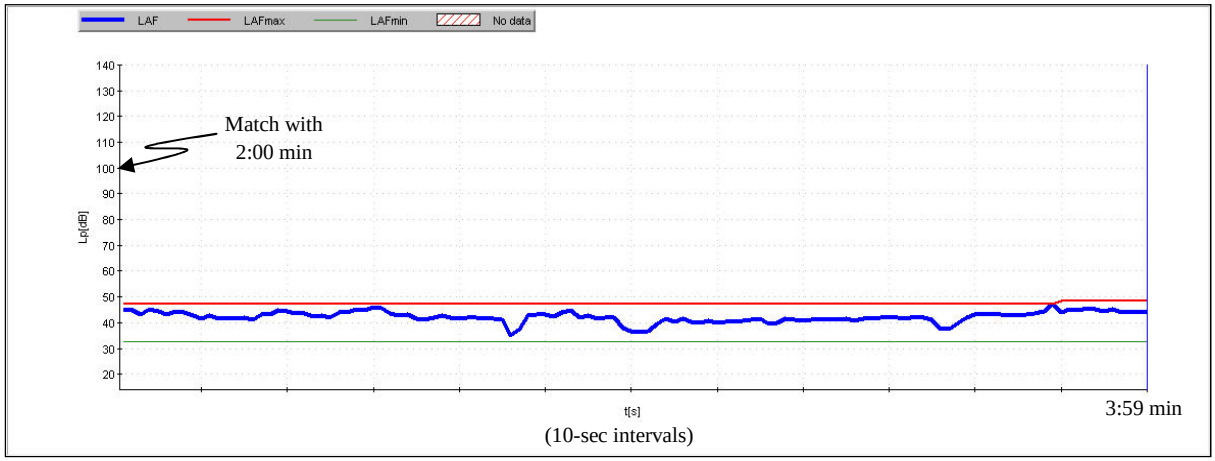
Point #1, 1st Monitoring Segment (5:00 min) on 8/10/10.



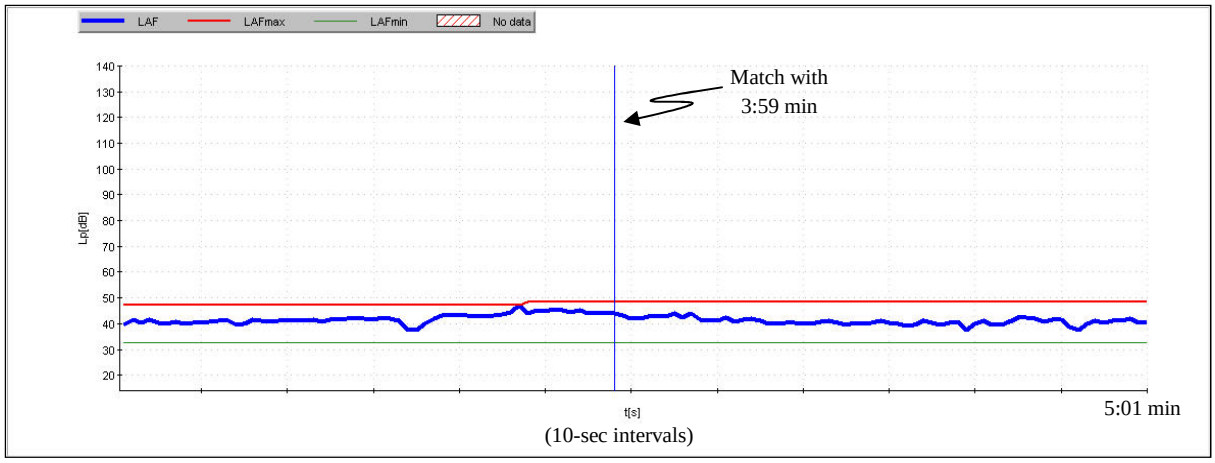
Total Data		
Duration	0000:05:00	
Start	8/10/2010 11:34:55 AM	
End	8/10/2010 11:39:55 AM	
L1	46.2	
L5	45.2	
L10	44.6	
L50	41.4	
L90	35.7	
L95	35.1	
L99	33.8	



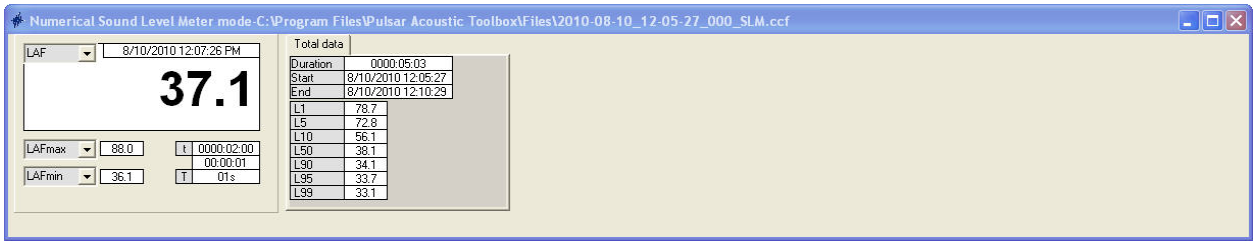
(10-sec intervals)

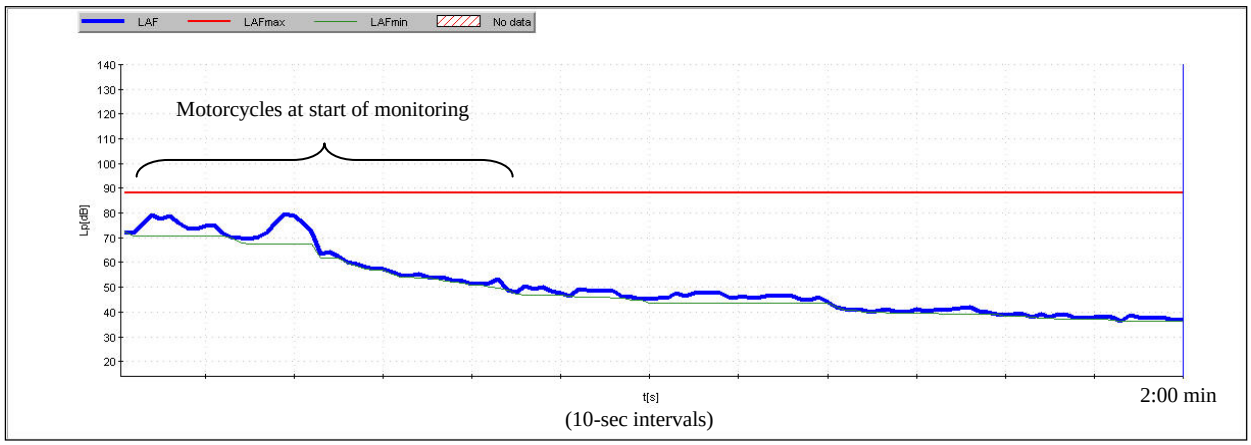


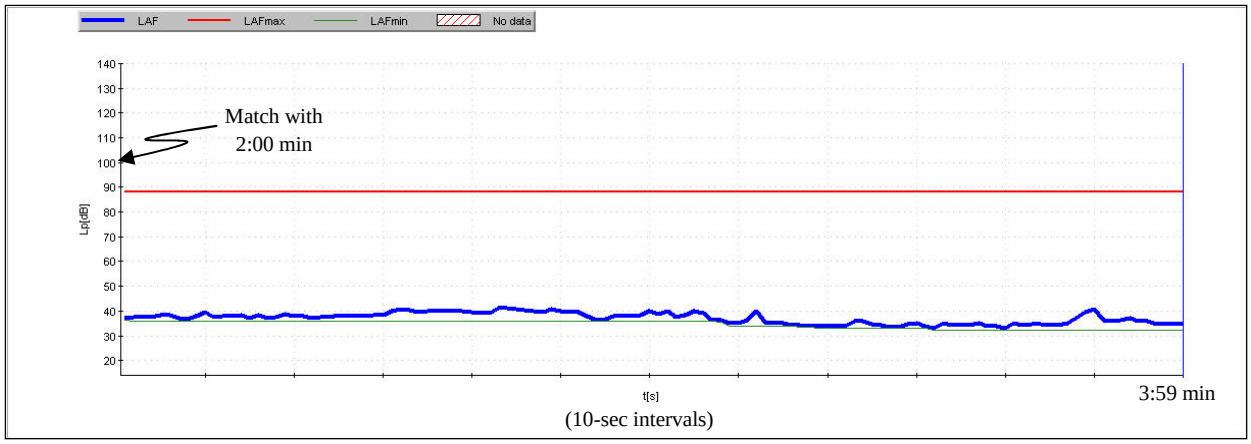
(10-sec intervals)

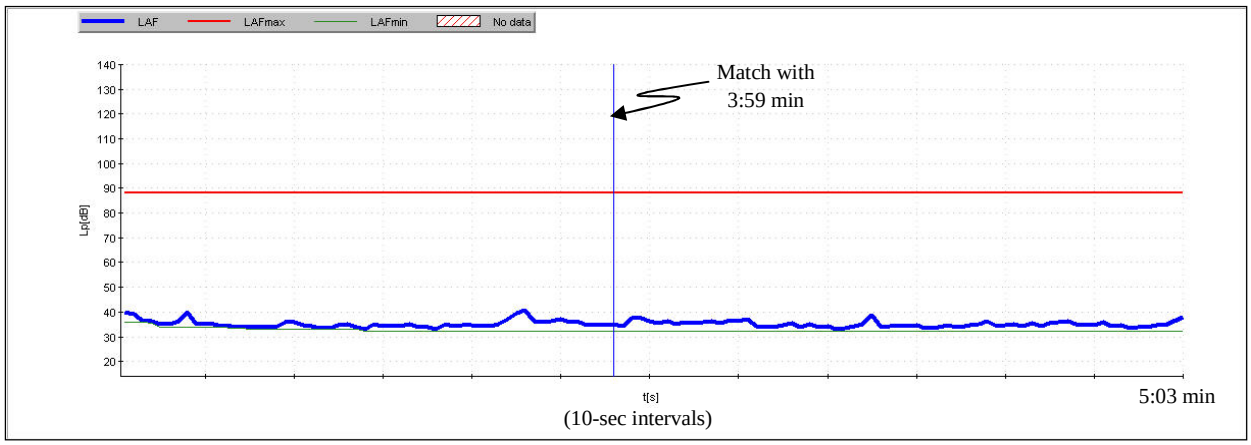


<u>Point #1, 2nd Monitoring Segment (5:03 min) on 8/10/10</u>.

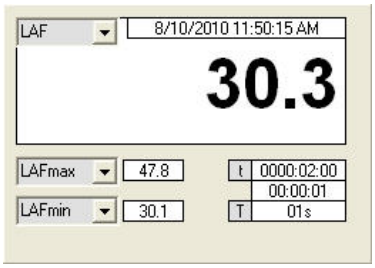




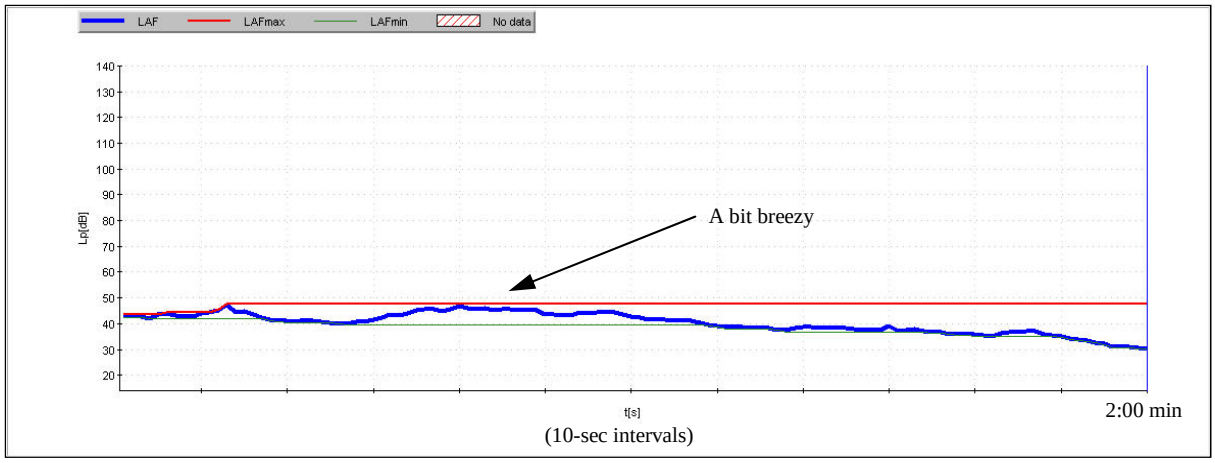




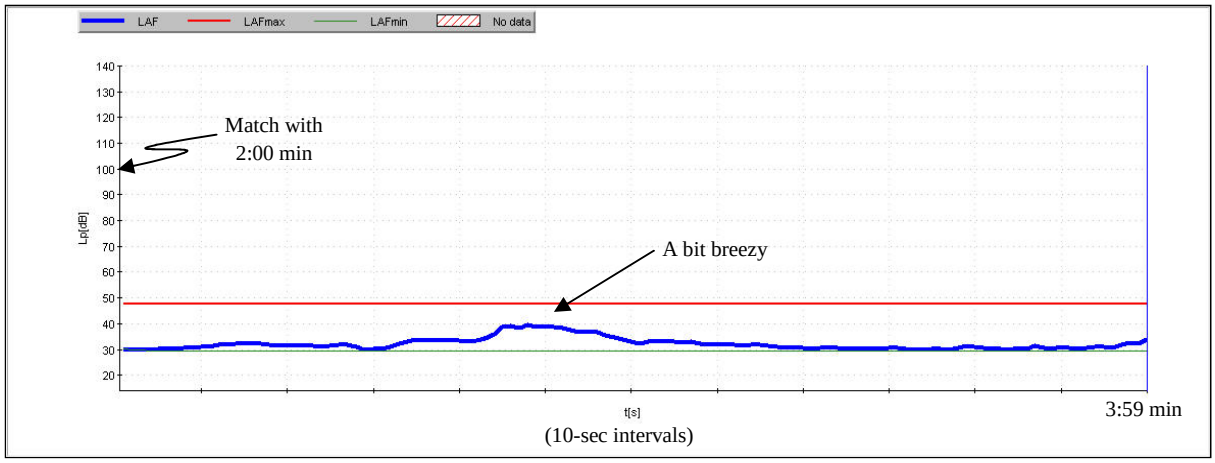
Point #2, 1st Monitoring Segment (5:01 min) on 8/10/10.



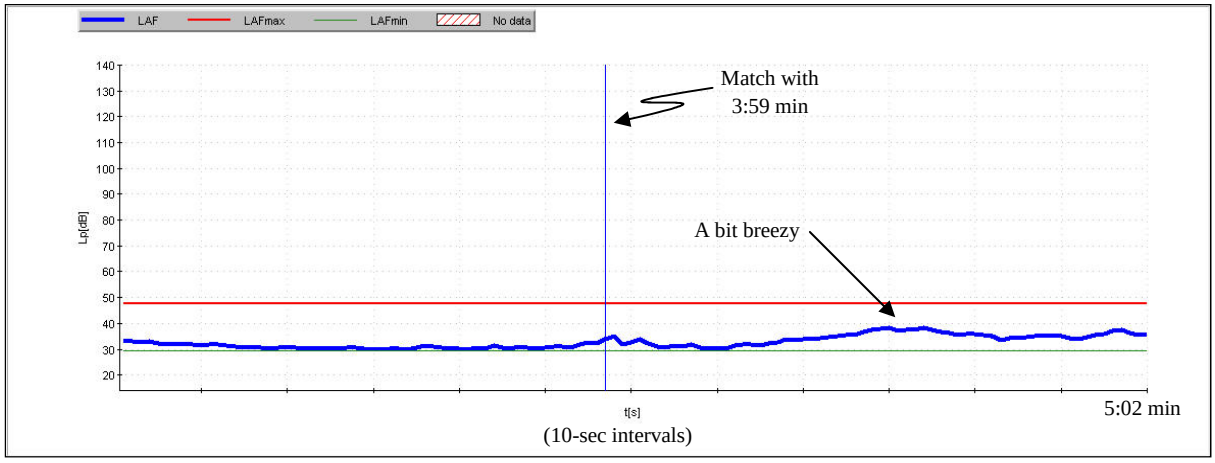
Total Data	
Duration	0000:05:01
Start	8/10/2010 11:48:16 AM
End	8/10/2010 11:53:17 AM
L1	46.1
L5	45.1
L10	43.6
L50	35.0
L90	30.4
L95	30.1
L99	29.8



(10-sec intervals)

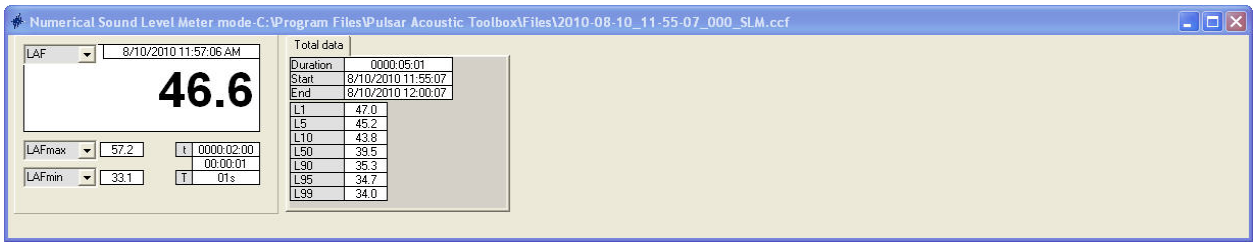


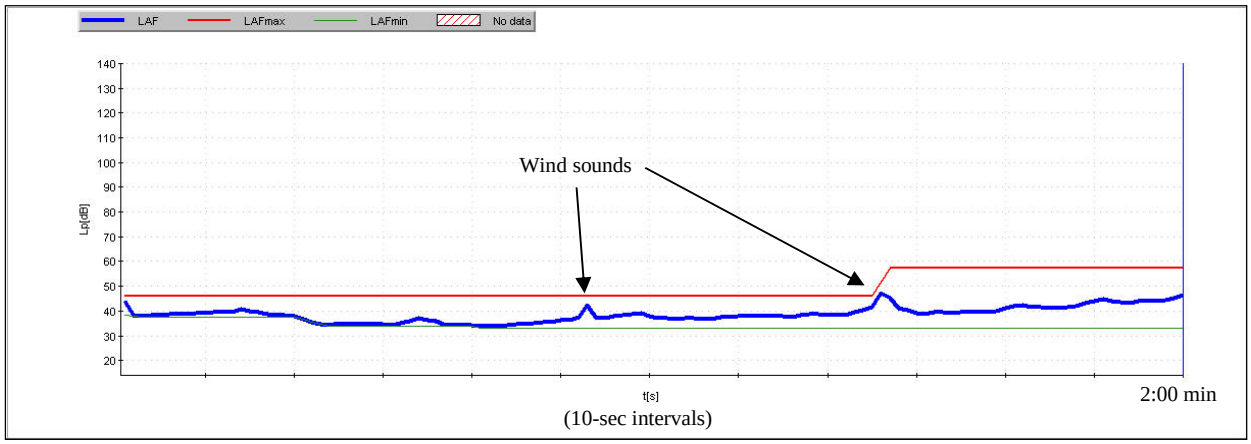
(10-sec intervals)

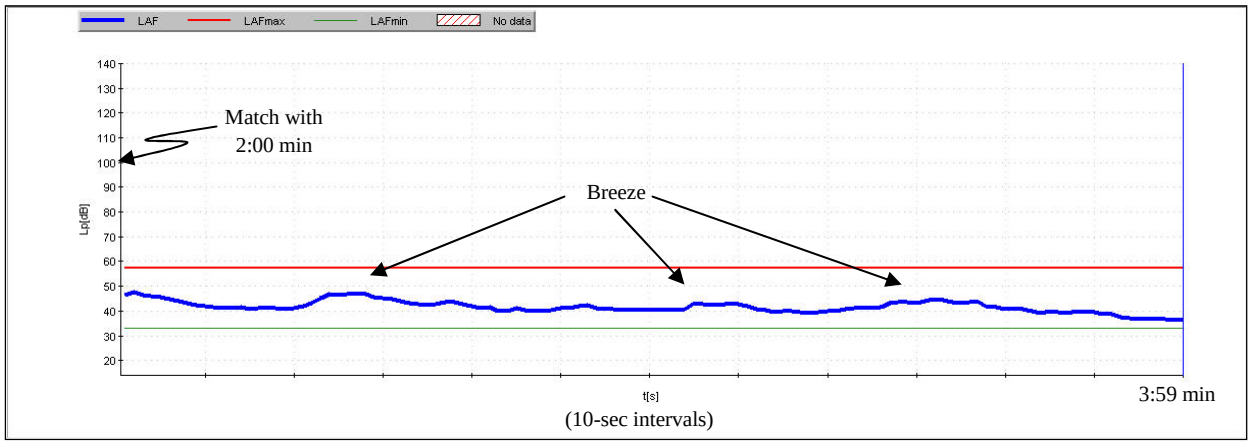


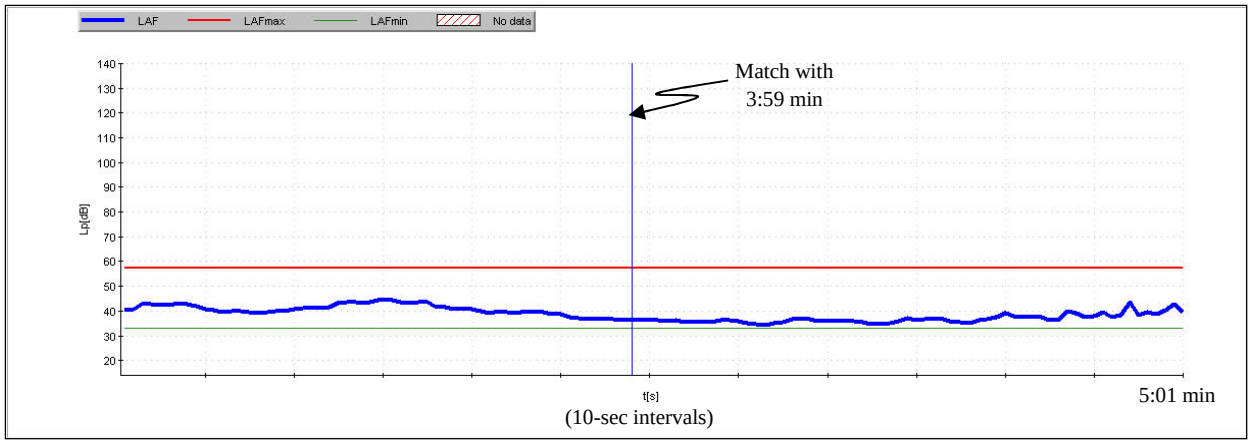
(10-sec intervals)

Point #2, 2nd Monitoring Segment (5:01 min) on 8/10/10.

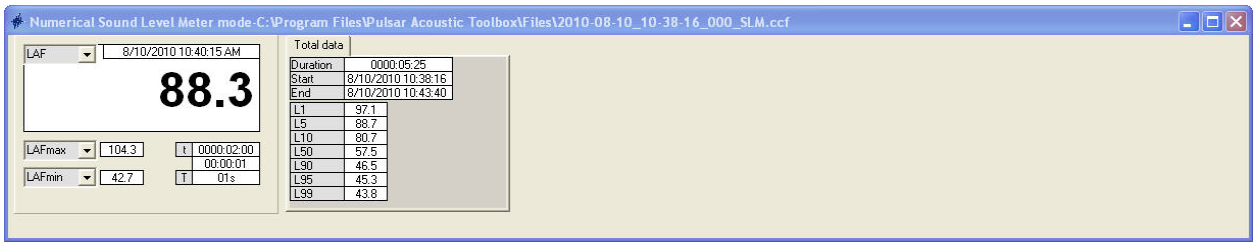


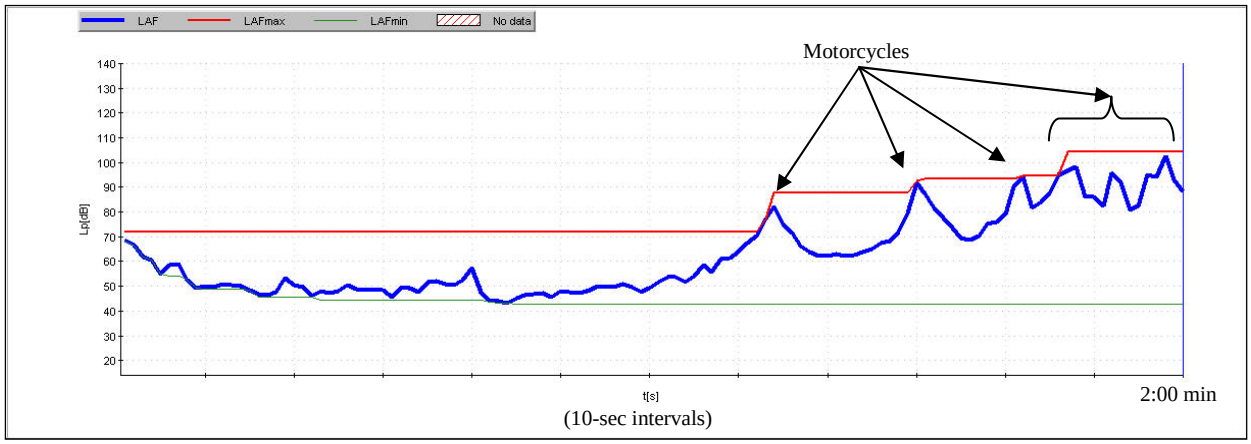


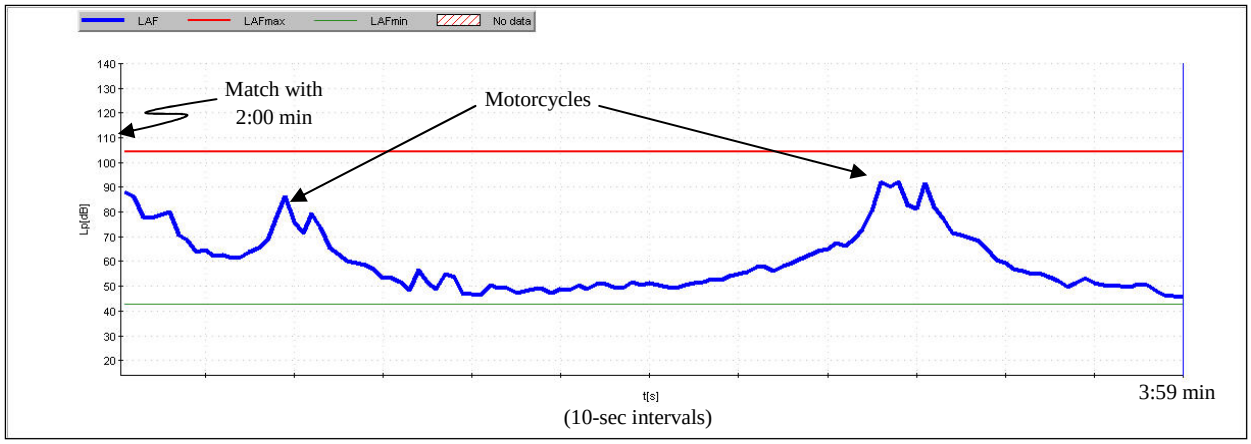


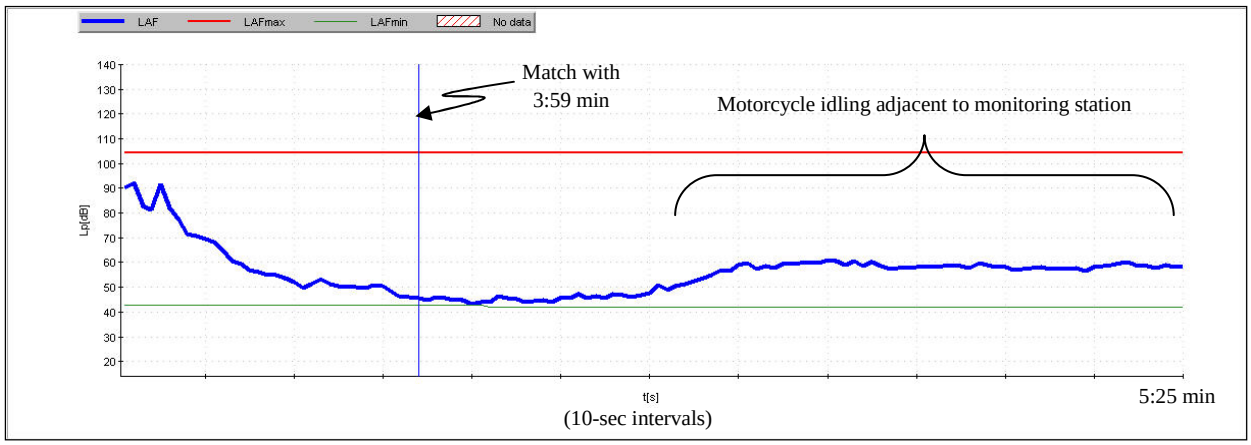


Point #3, 1st Monitoring Segment (5:25 min) on 8/10/10.

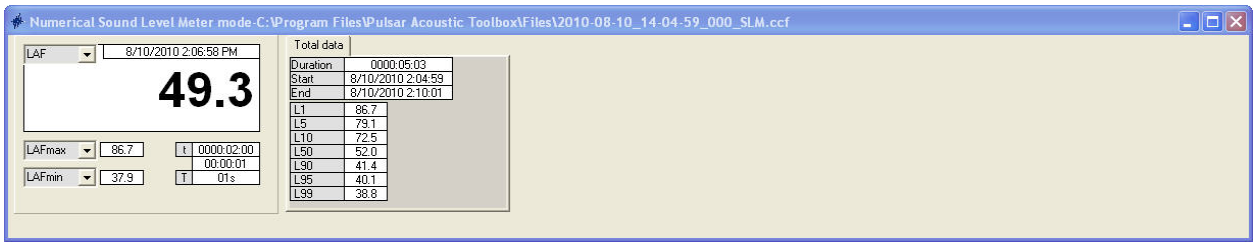


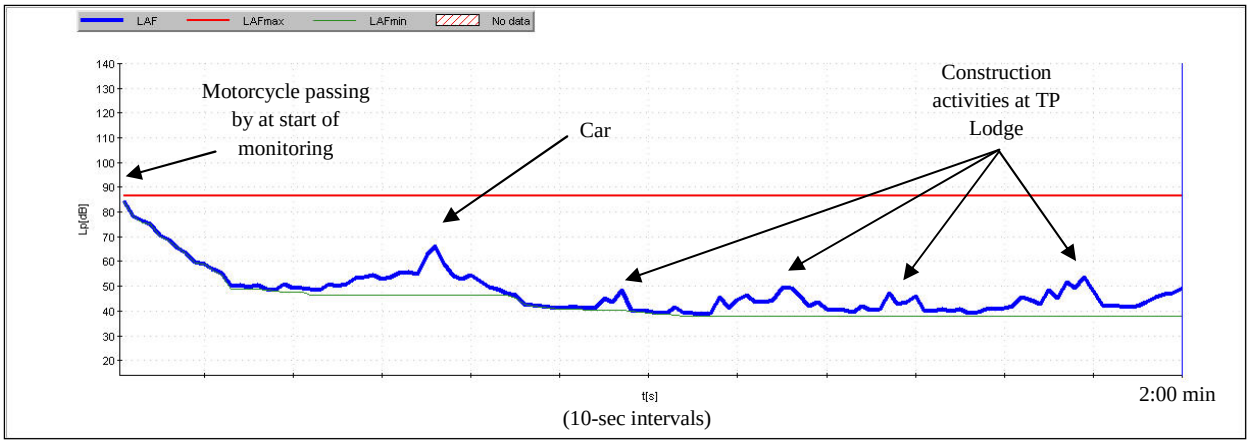


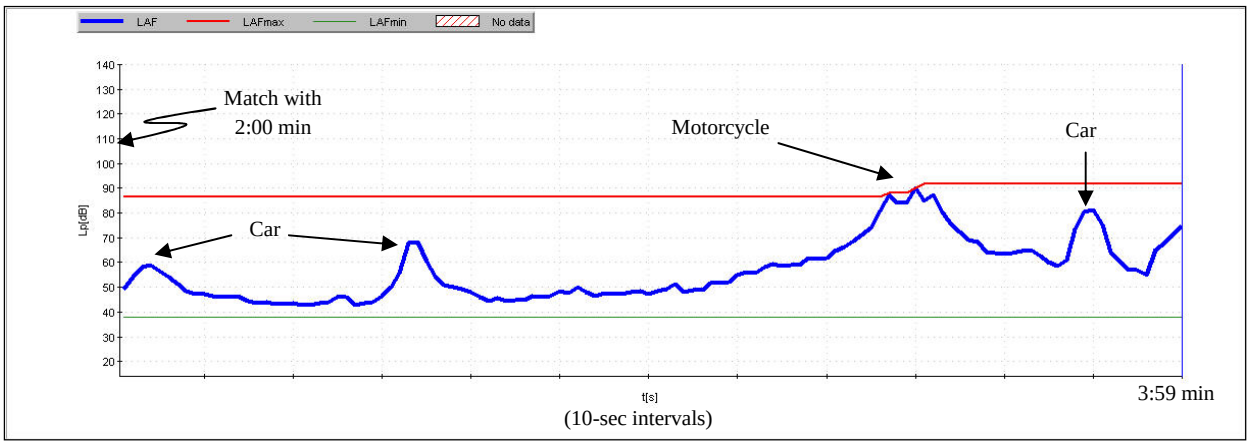


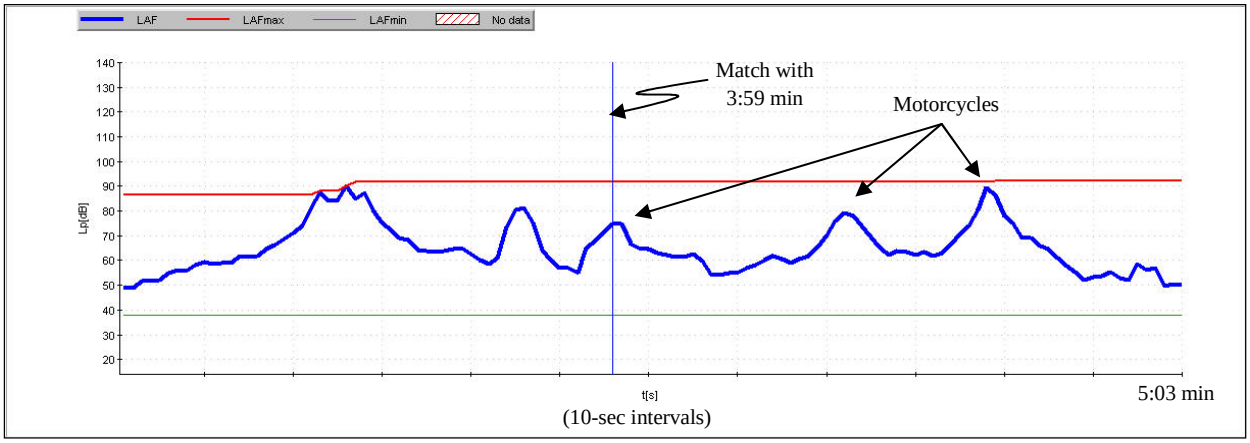


<u>Point #3, 2nd Monitoring Segment (5:03 min) on 8/10/10</u>.

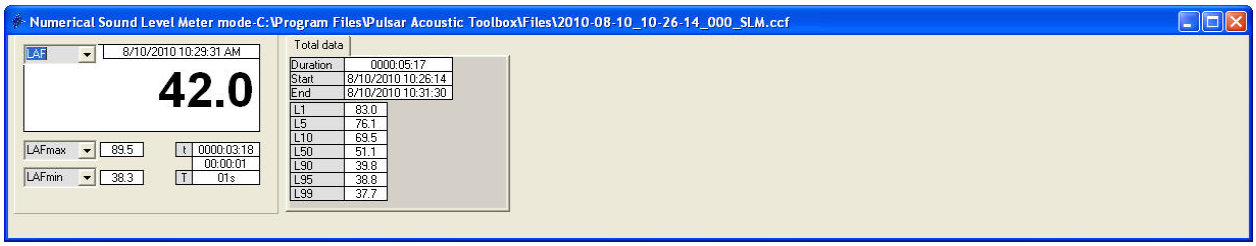


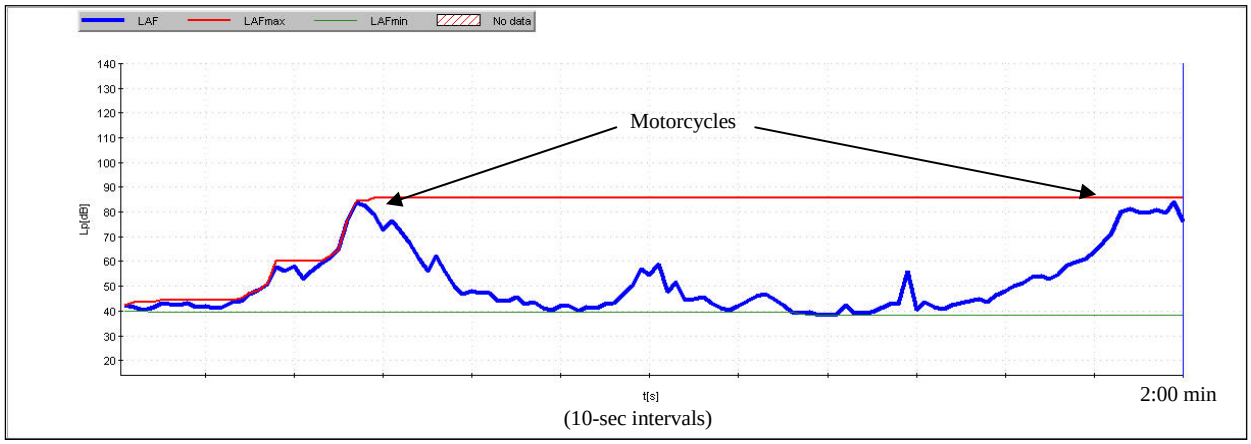

LAF
LAFmax
LAFmin
No data
Motorcycle passing by at start of monitoring
Car
Construction activities at TP Lodge
Lq[dB]
t[s]
2:00 min
(10-sec intervals)

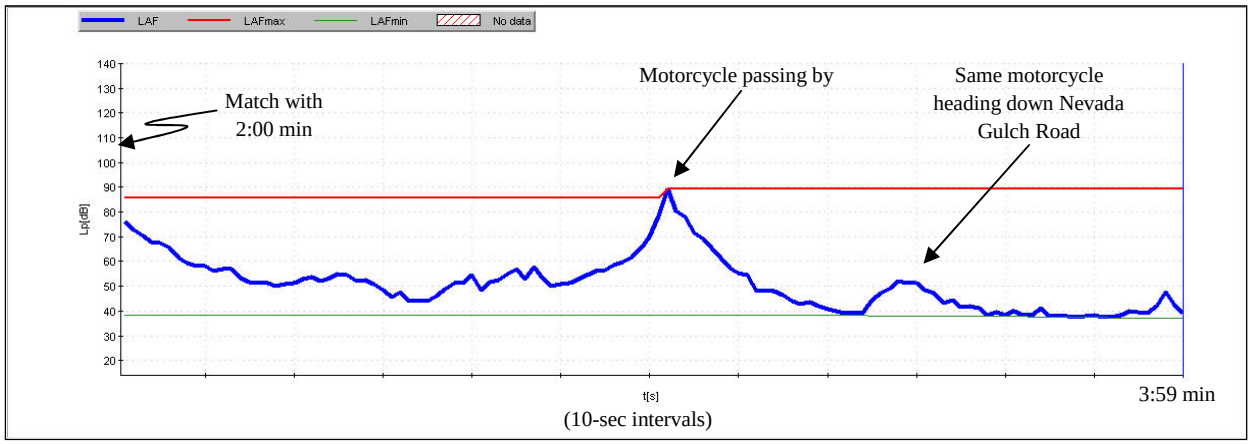

LAF
LAFmax
LAFmin
No data
Match with 2:00 min
Motorcycle
Car
Car
Lq[dB]
t[s]
3:59 min
(10-sec intervals)

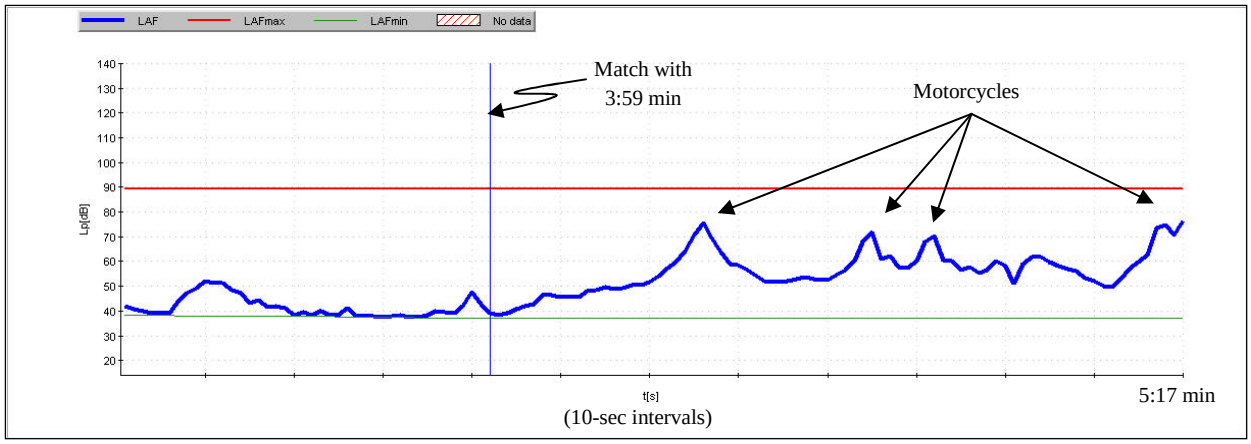

LAF
LAFmax
LAFmin
No data
Match with 3:59 min
Motorcycles
Lq[dB]
t[s]
5:03 min
(10-sec intervals)

Point #4, 1st Monitoring Segment (5:17 min) on 8/10/10.

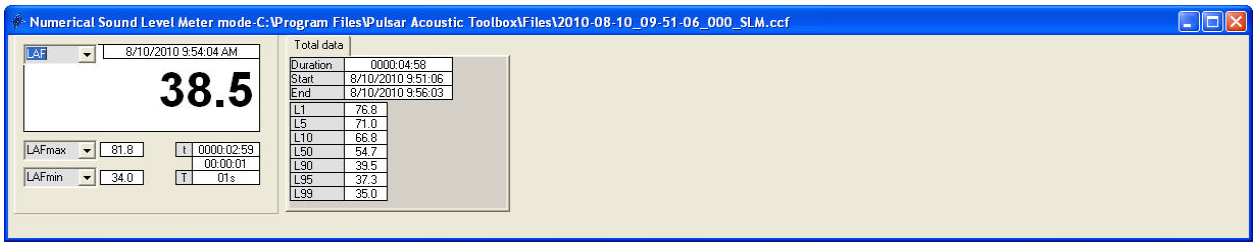


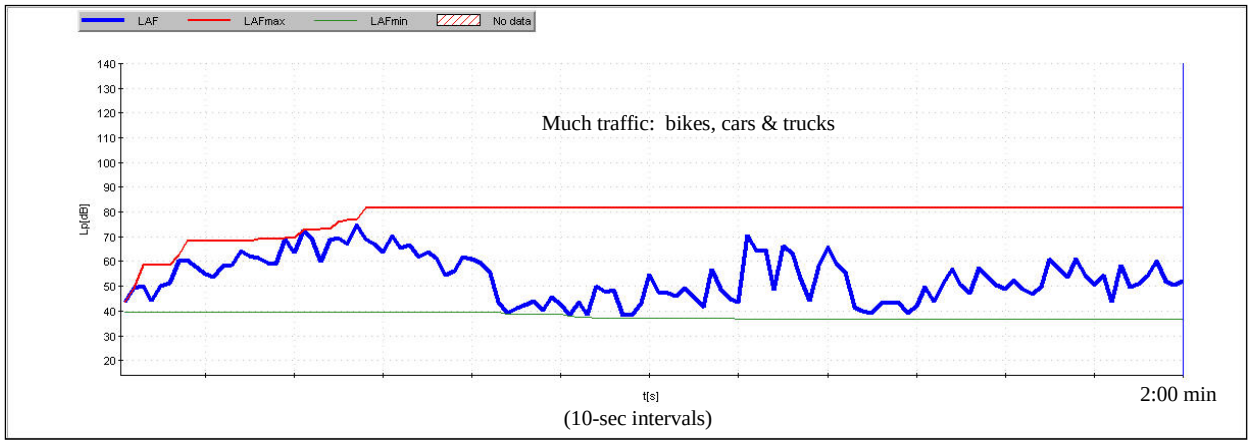


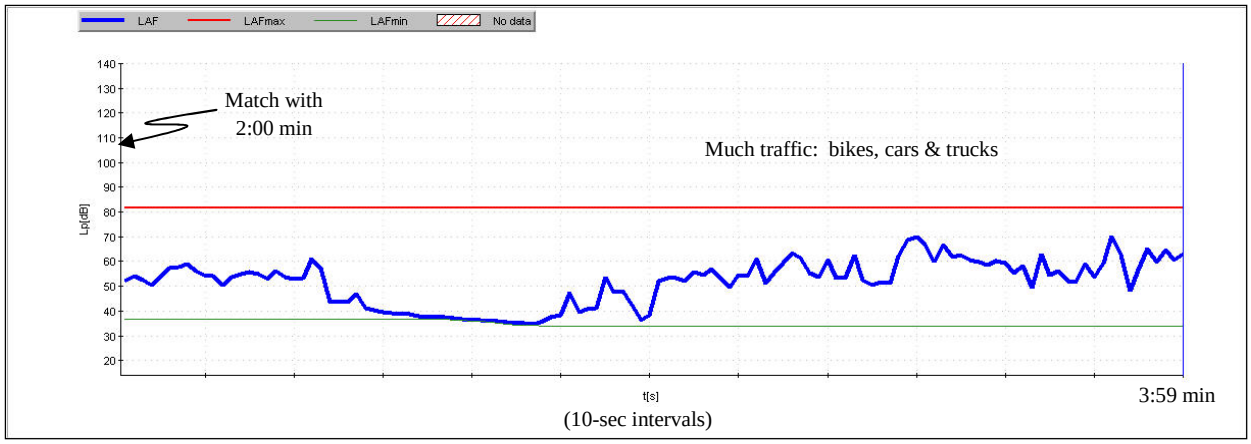


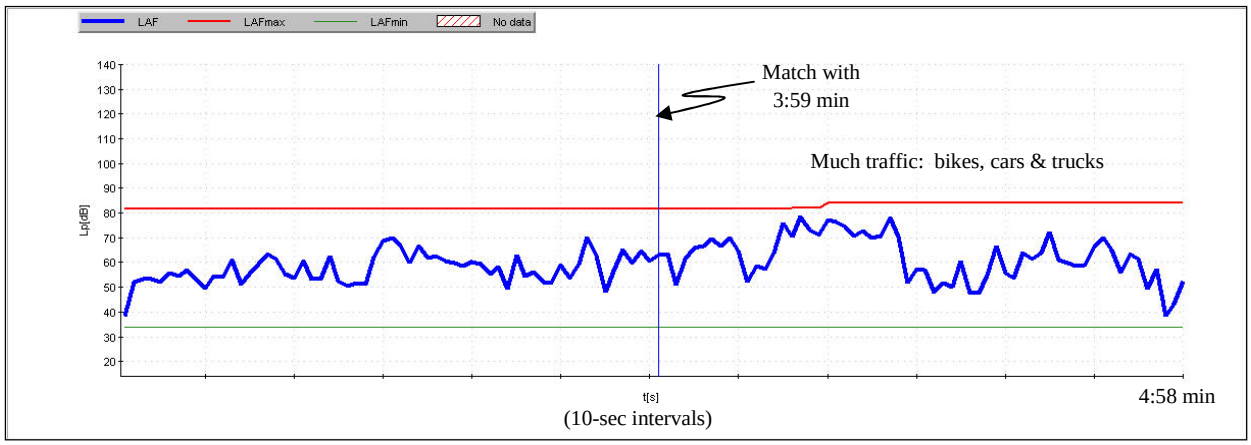


Point #5, 1st Monitoring Segment (4:58 min) on 8/10/10.

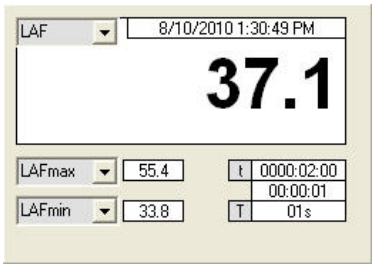




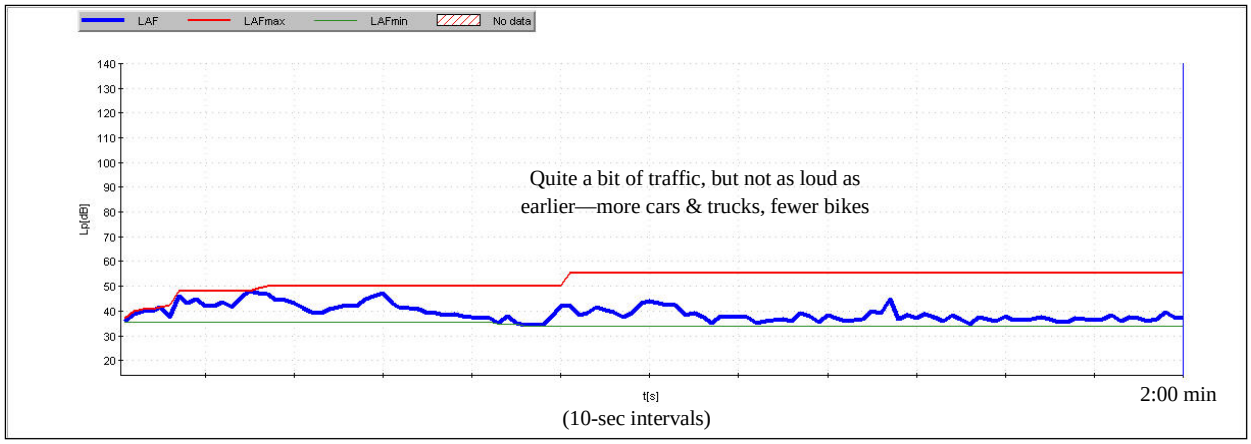


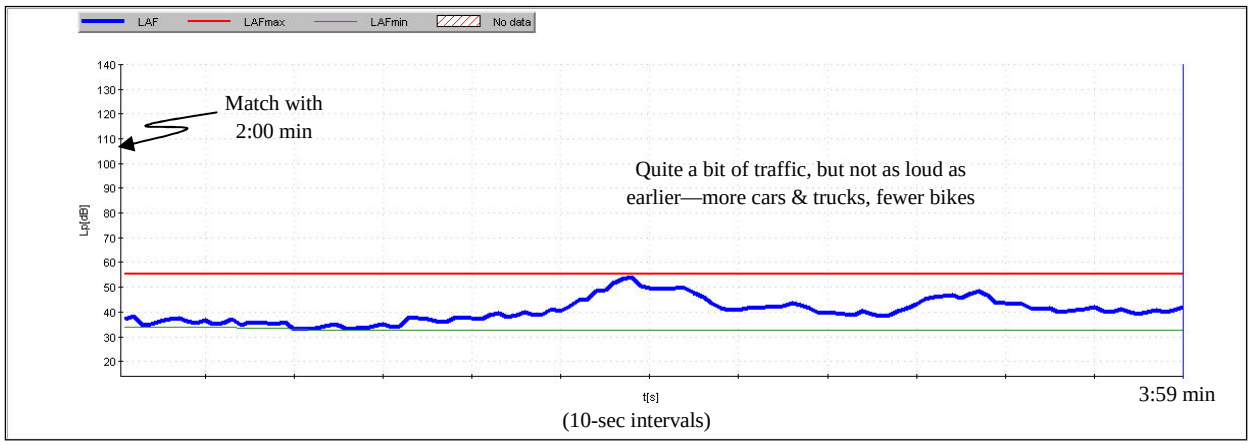


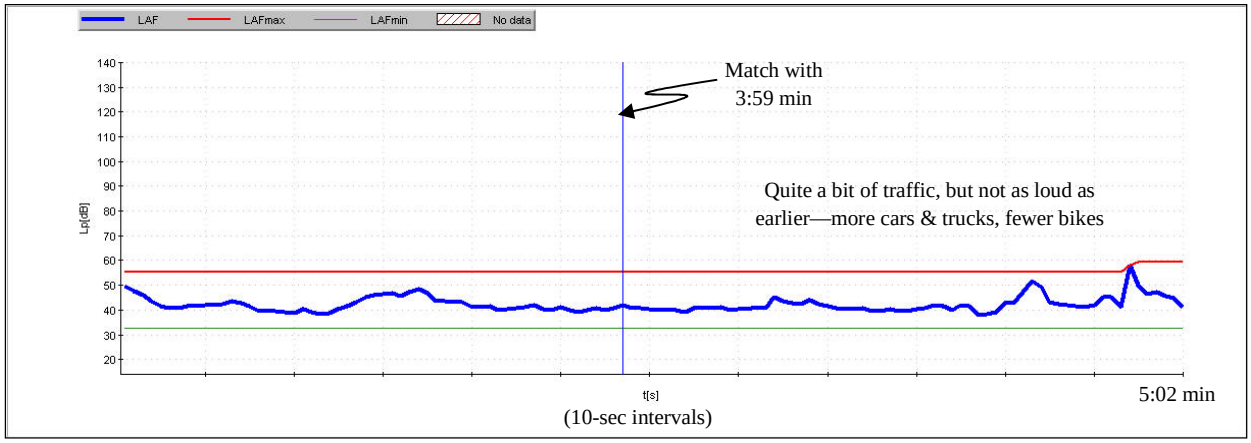
Point #5, 2nd Monitoring Segment (5:01 min) on 8/10/10.



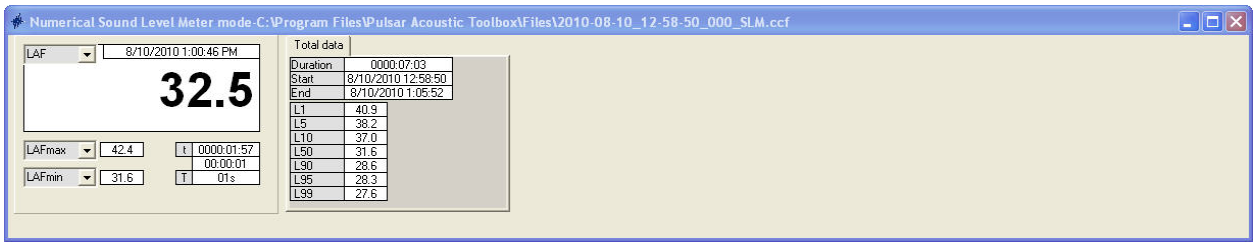
Total Data	
Duration	0000:05:01
Start	8/10/2010 1:28:50 PM
End	8/10/2010 1:33:51 PM
L1	51.8
L5	48.3
L10	46.0
L50	40.1
L90	35.4
L95	34.6
L99	33.2

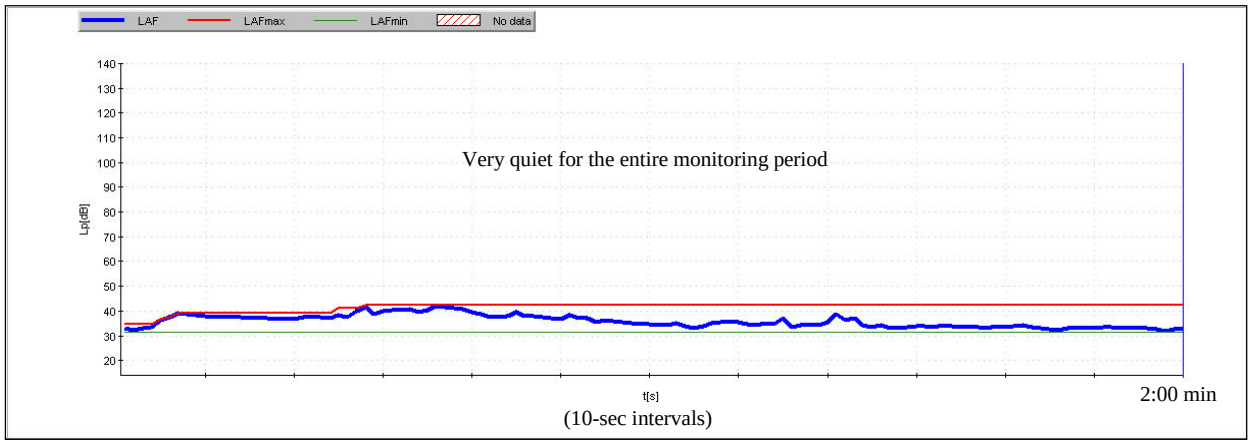

LAF
LAFmax
LAFmin
No data
Lq[dB]
Quite a bit of traffic, but not as loud as
earlier—more cars & trucks, fewer bikes
t[s]
2:00 min
(10-sec intervals)

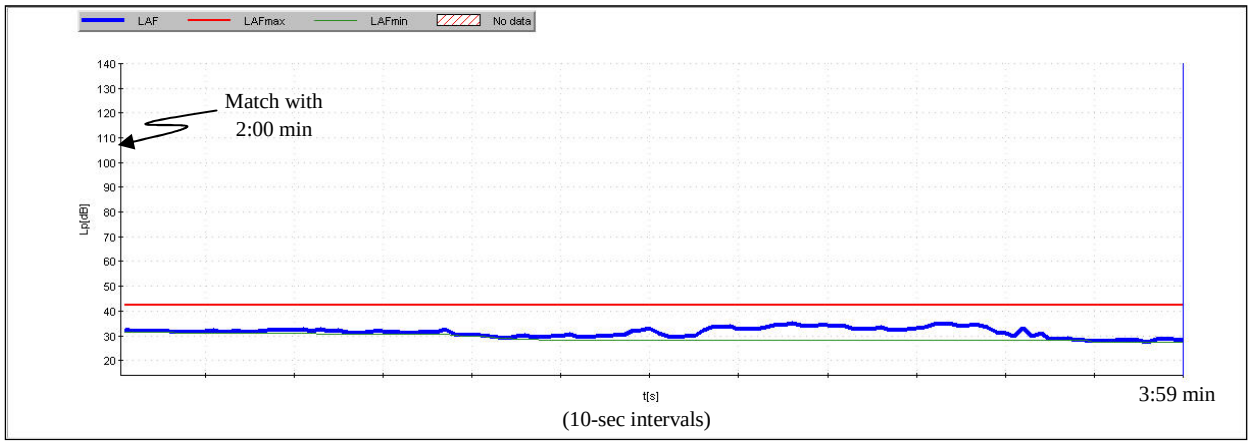

LAF
LAFmax
LAFmin
No data
Lq[dB]
Match with
2:00 min
Quite a bit of traffic, but not as loud as
earlier—more cars & trucks, fewer bikes
t[s]
3:59 min
(10-sec intervals)

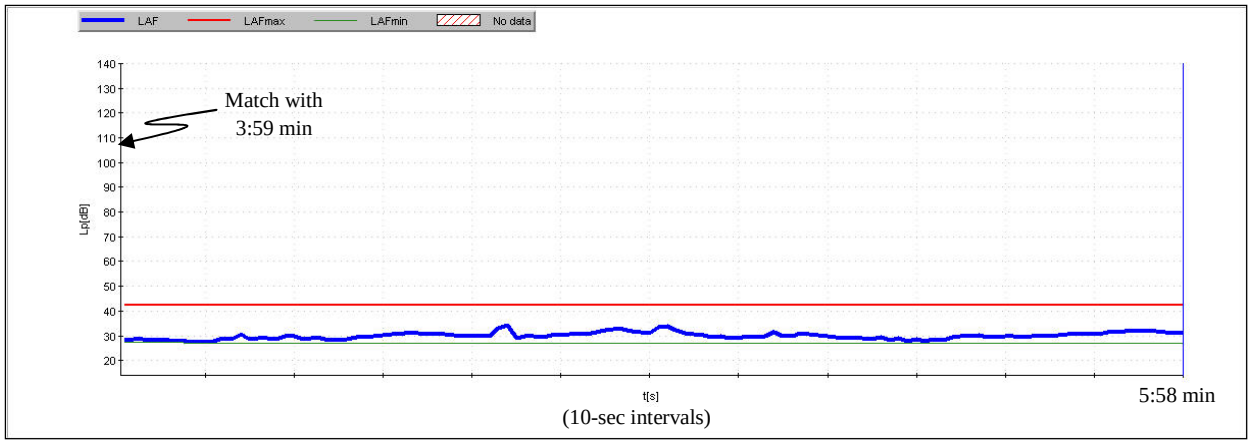

LAF
LAFmax
LAFmin
No data
Lq[dB]
Match with
3:59 min
Quite a bit of traffic, but not as loud as
earlier—more cars & trucks, fewer bikes
t[s]
5:02 min
(10-sec intervals)

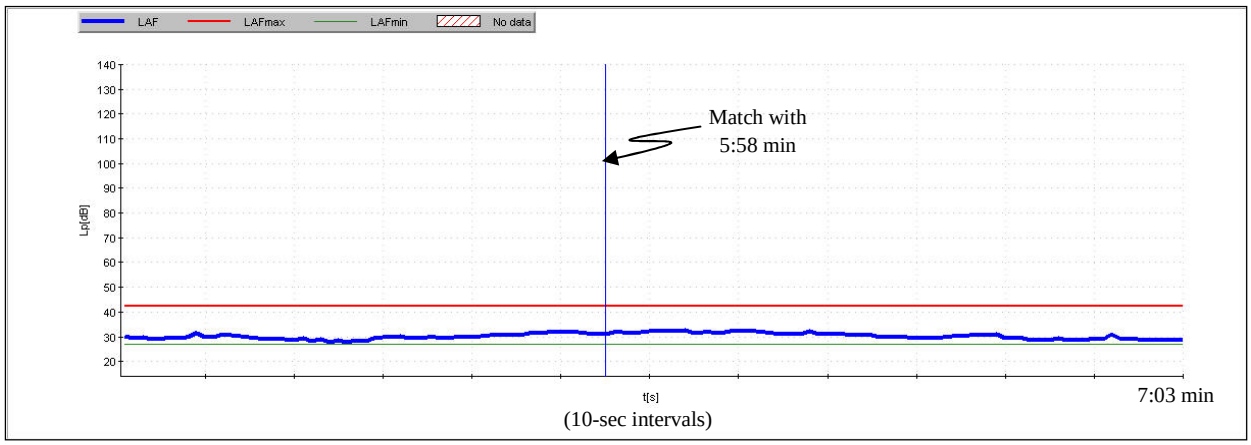
Point #6, 1st & 2nd Monitoring Segments (7:03 min) on 8/10/10.



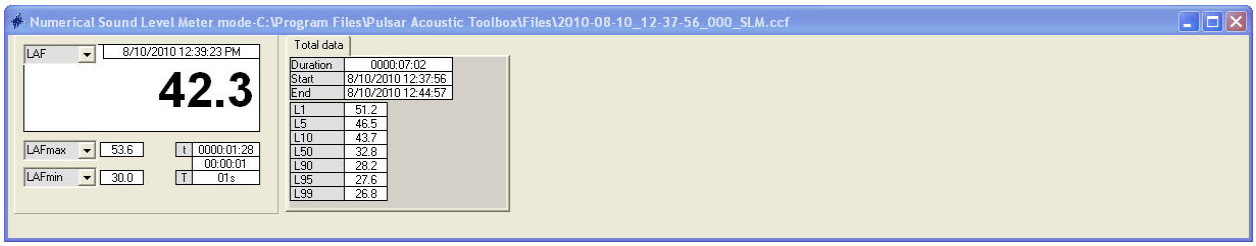


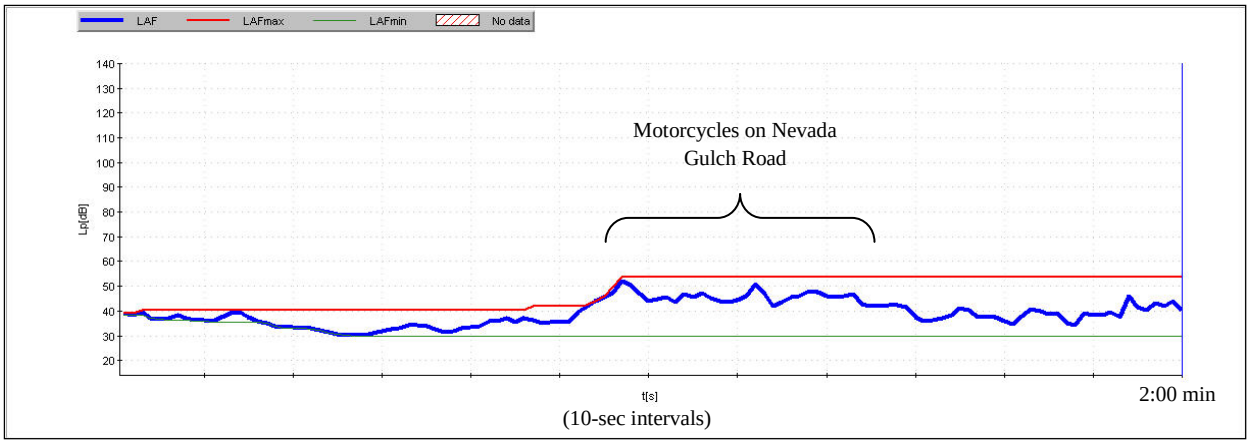


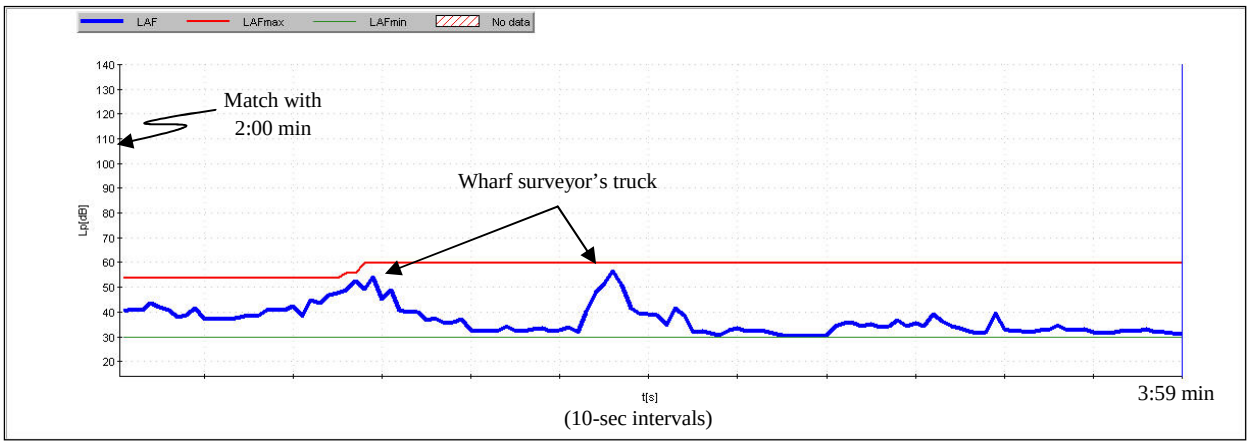


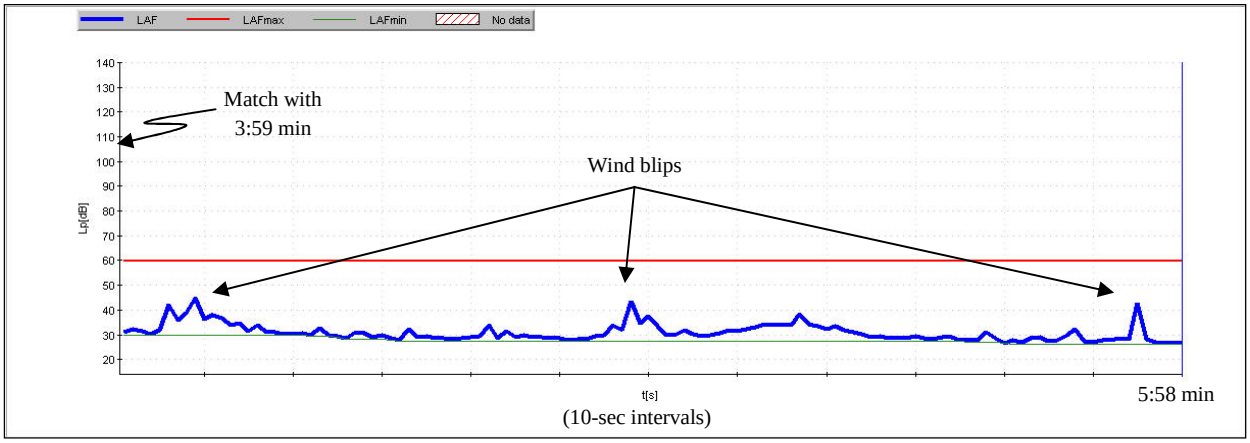


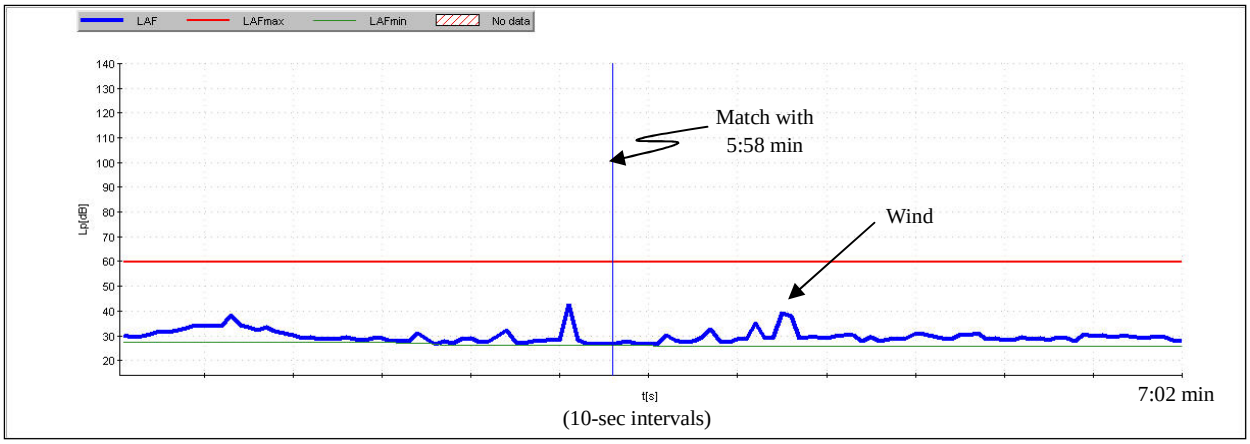
<u>Point #7, 1st & 2nd Monitoring Segments (7:02 min) on 8/10/10</u>.



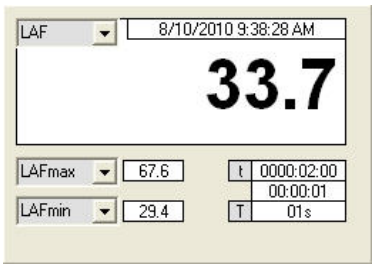

LAF
LAFmax
LAFmin
No data
Motorcycles on Nevada Gulch Road
Lp[dB]
t[s]
2:00 min
(10-sec intervals)


LAF
LAFmax
LAFmin
No data
Match with 2:00 min
Wharf surveyor's truck
Lp[dB]
t[s]
3:59 min
(10-sec intervals)

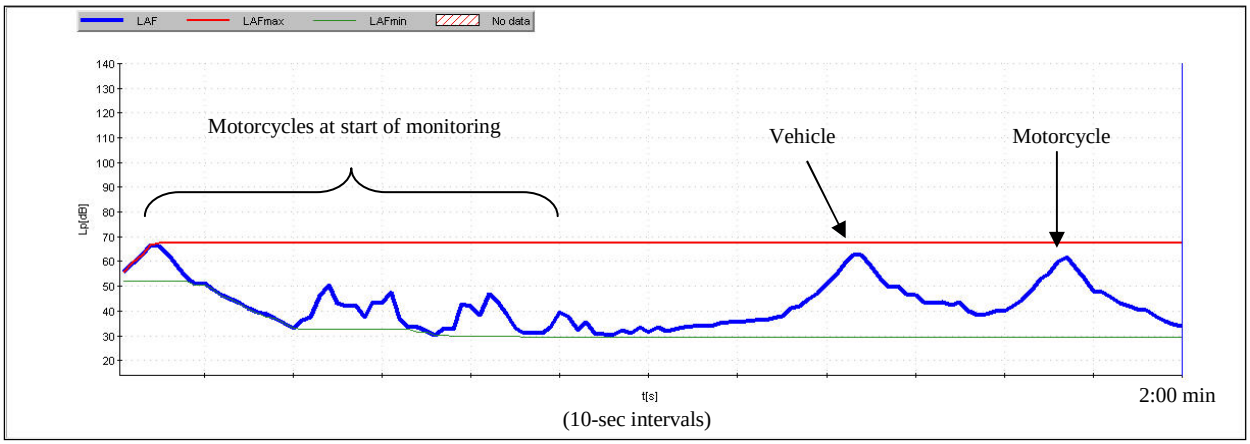

LAF
LAFmax
LAFmin
No data
Match with 3:59 min
Wind blips
Lp[dB]
t[s]
5:58 min
(10-sec intervals)

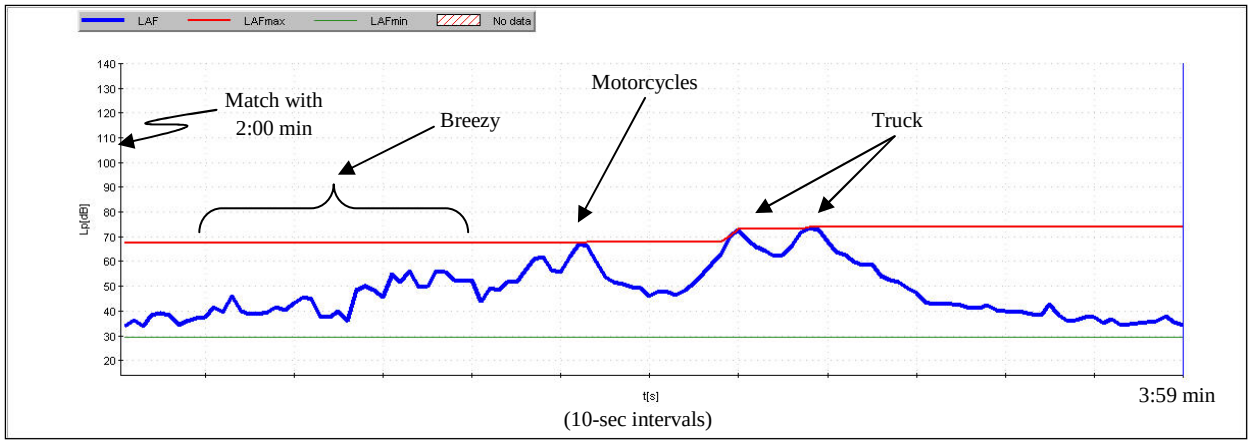


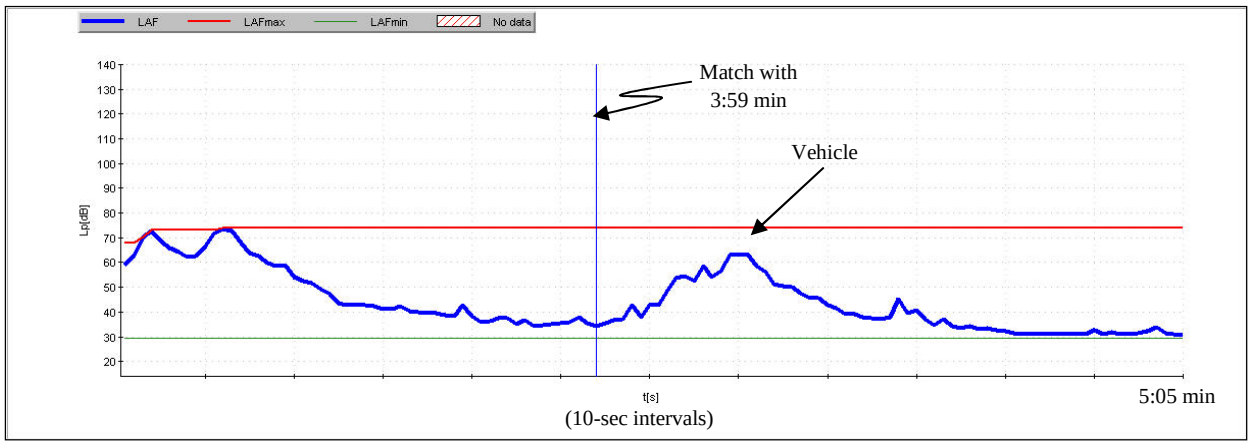
Point #8, 1st Monitoring Segment (5:04 min) on 8/10/10.



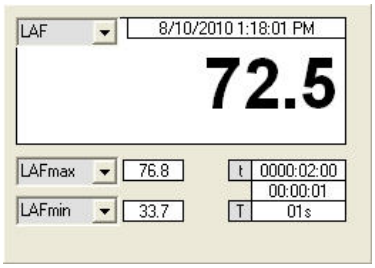
Total Data	
Duration	0000:05:04
Start	8/10/2010 9:36:29 AM
End	8/10/2010 9:41:33 AM
L1	71.4
L5	63.5
L10	59.9
L50	42.0
L90	32.3
L95	31.2
L99	30.5



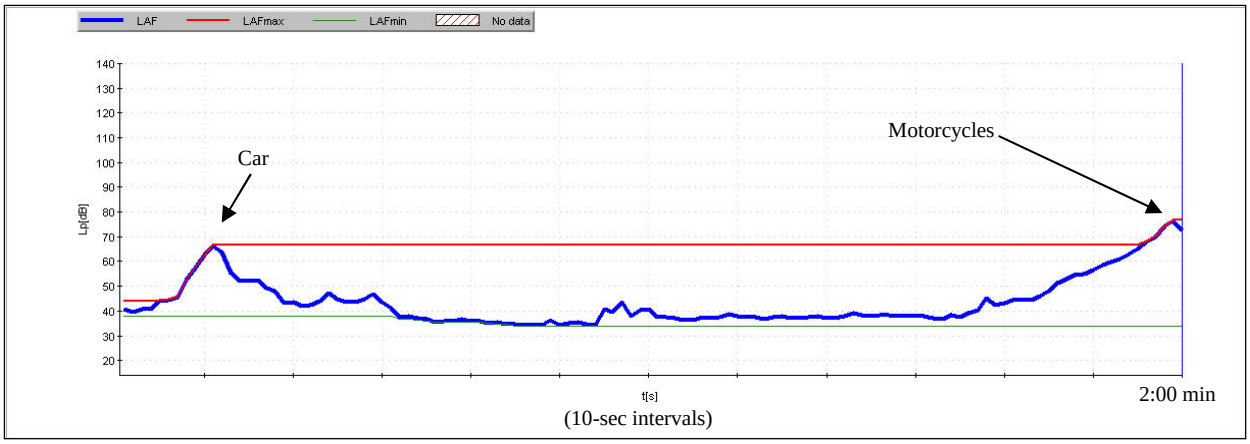


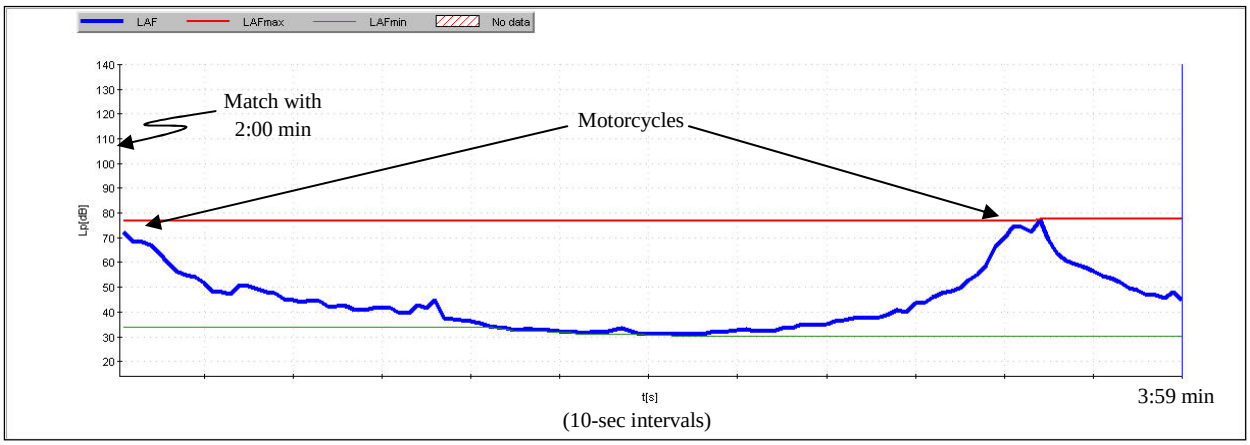


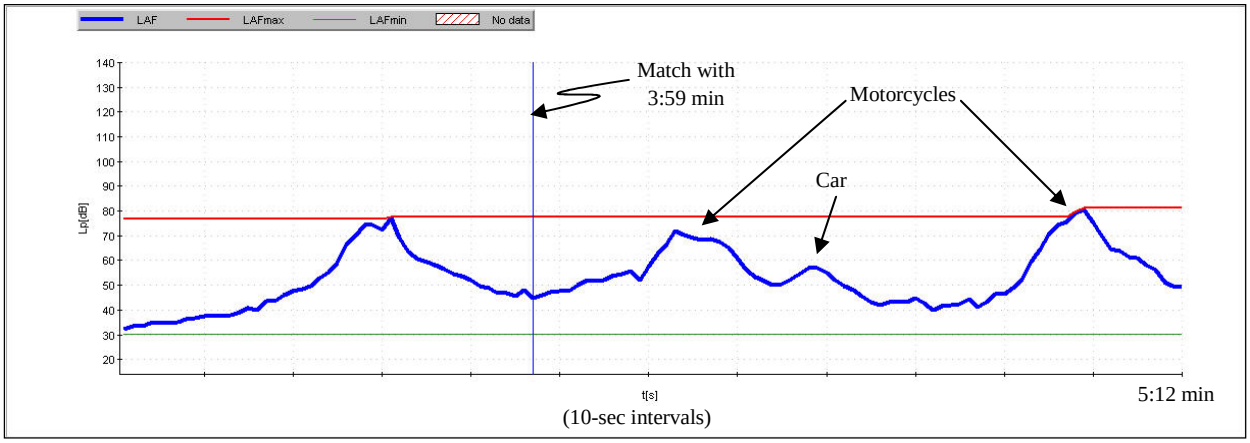
Point #8, 2nd Monitoring Segment (5:11 min) on 8/10/10.



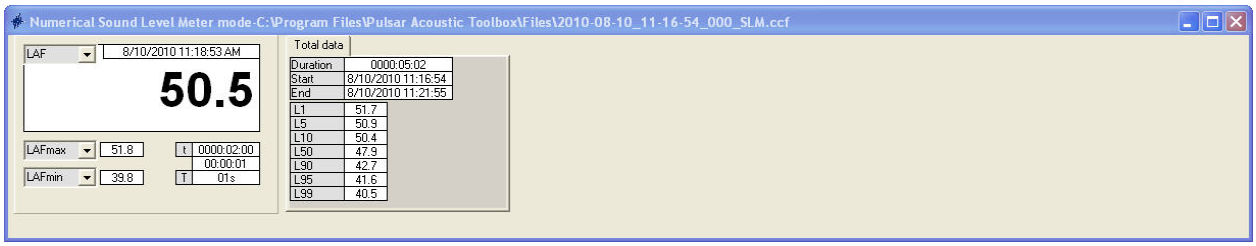
Total Data	
Duration	0000:05:11
Start	8/10/2010 1:16:02 PM
End	8/10/2010 1:21:13 PM
L1	76.5
L5	70.0
L10	64.9
L50	43.5
L90	33.4
L95	32.2
L99	31.0

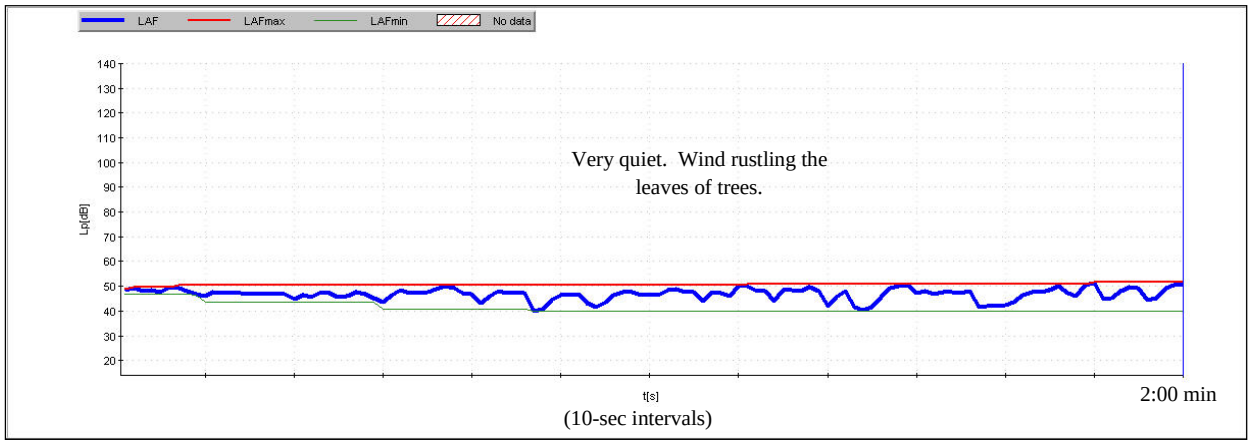

LAF
LAFmax
LAFmin
No data
Lq[dB]
Car
Motorcycles
t[s]
2:00 min
(10-sec intervals)

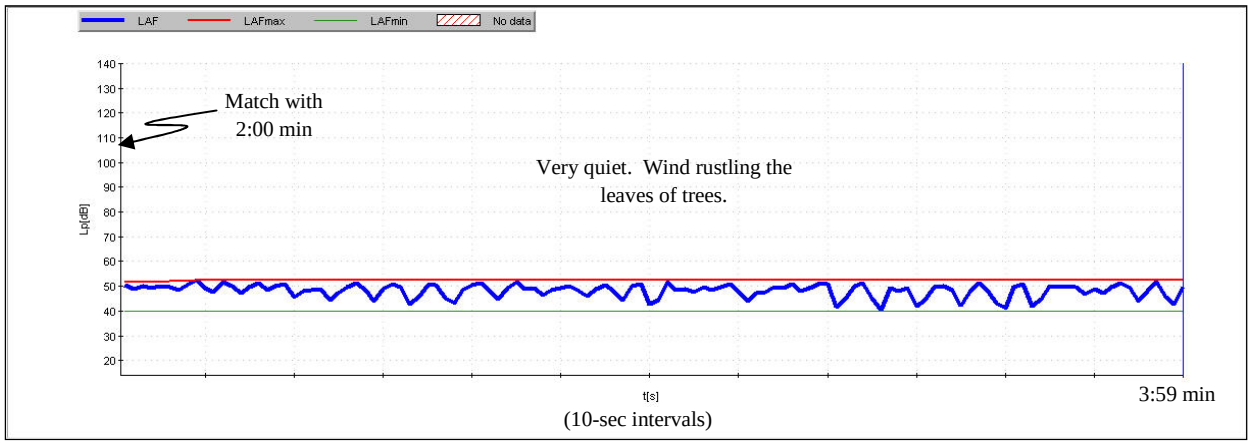

LAF
LAFmax
LAFmin
No data
Lq[dB]
Match with
2:00 min
Motorcycles
t[s]
3:59 min
(10-sec intervals)

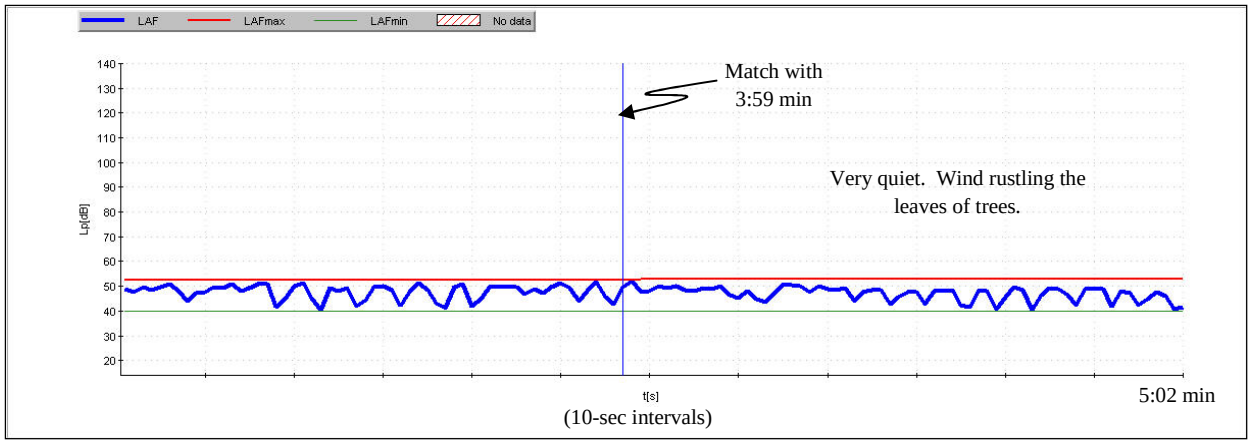

LAF
LAFmax
LAFmin
No data
Lq[dB]
Match with
3:59 min
Motorcycles
Car
t[s]
5:12 min
(10-sec intervals)

Point #9, 1st Monitoring Segment (5:02 min) on 8/10/10.

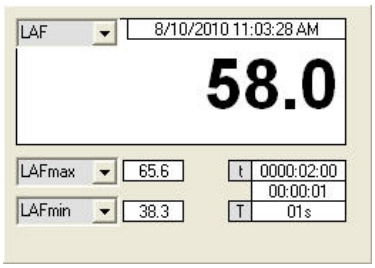




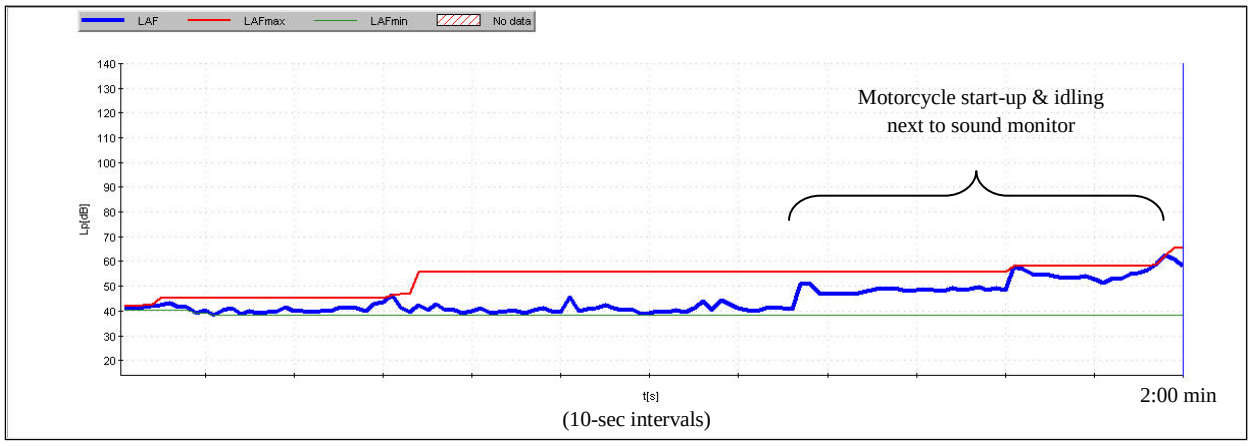


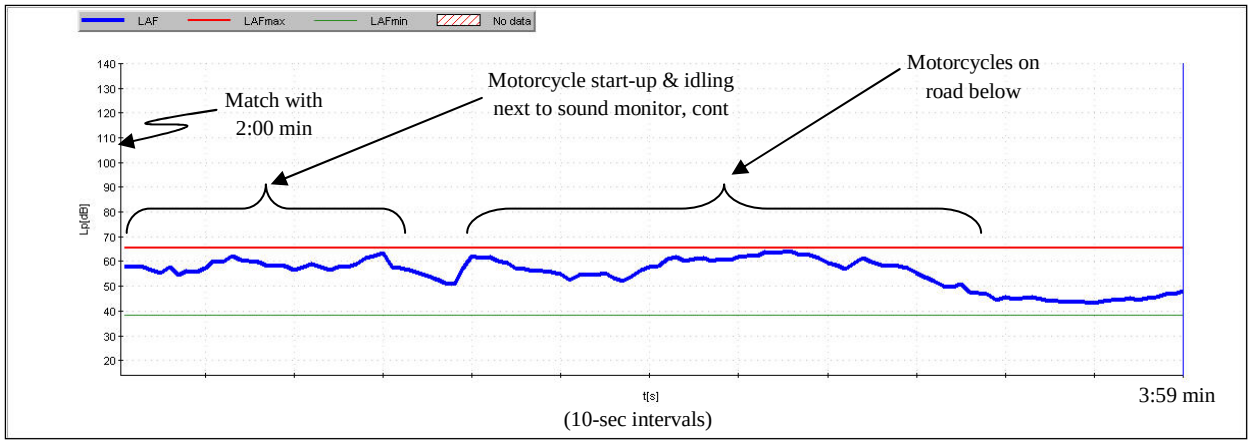


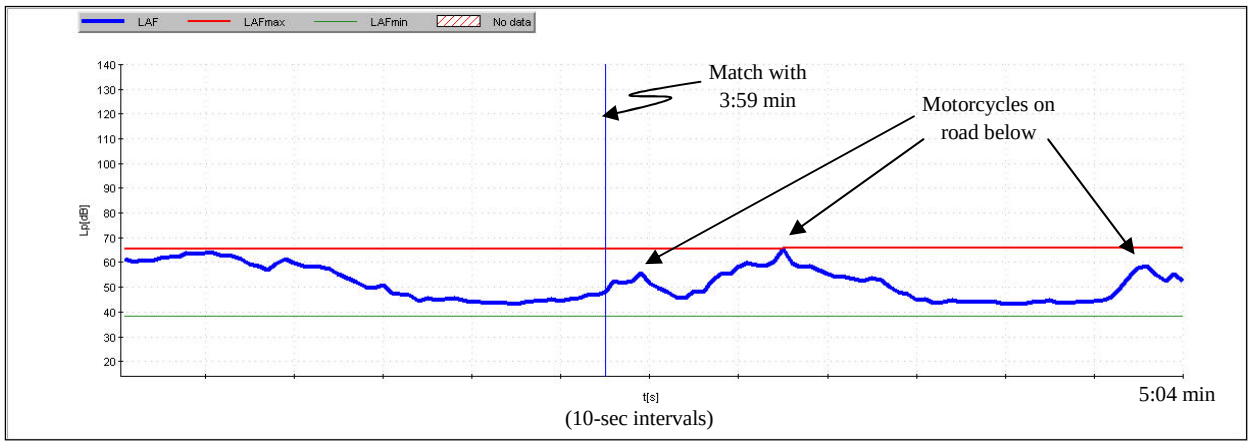
Point #10, 1st Monitoring Segment (5:03 min) on 8/10/10.



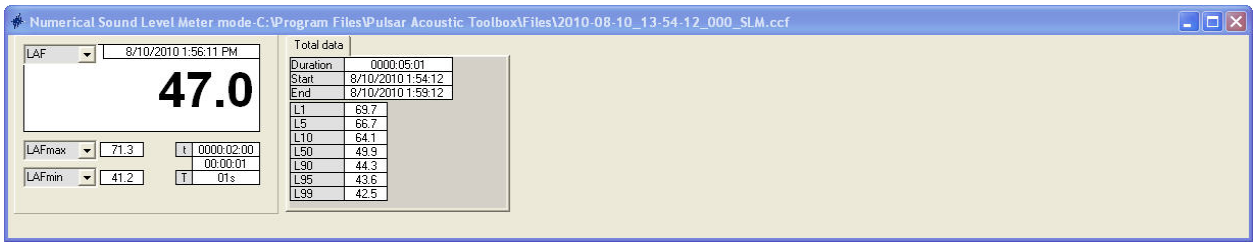
Total Data	
Duration	0000:05:03
Start	8/10/2010 11:01:29 AM
End	8/10/2010 11:06:32 AM
L1	63.8
L5	61.9
L10	60.2
L50	49.2
L90	40.1
L95	39.7
L99	38.9

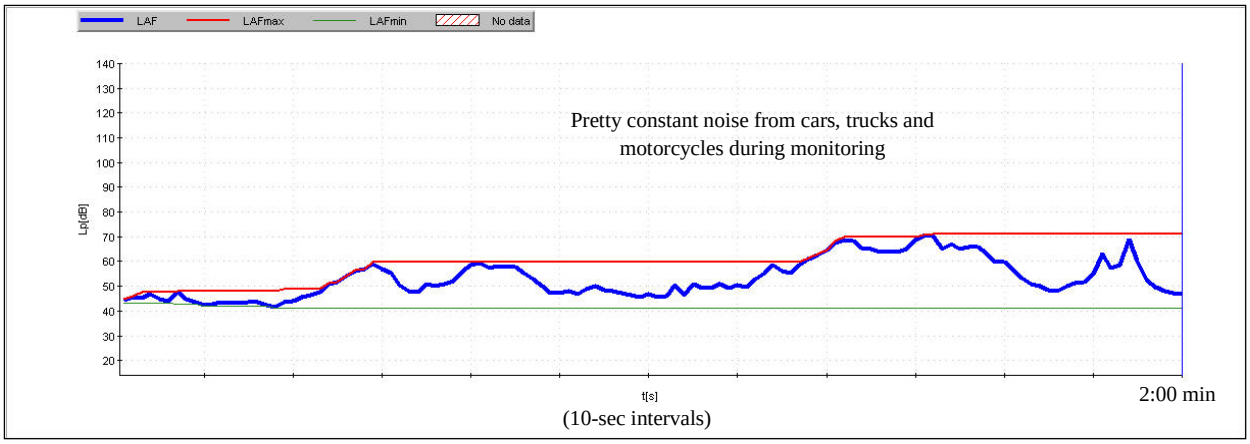


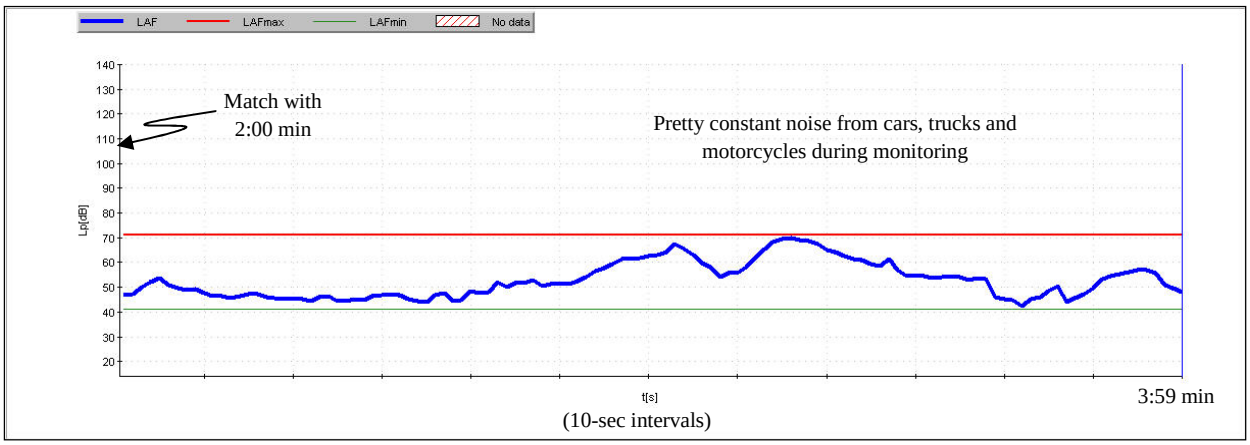


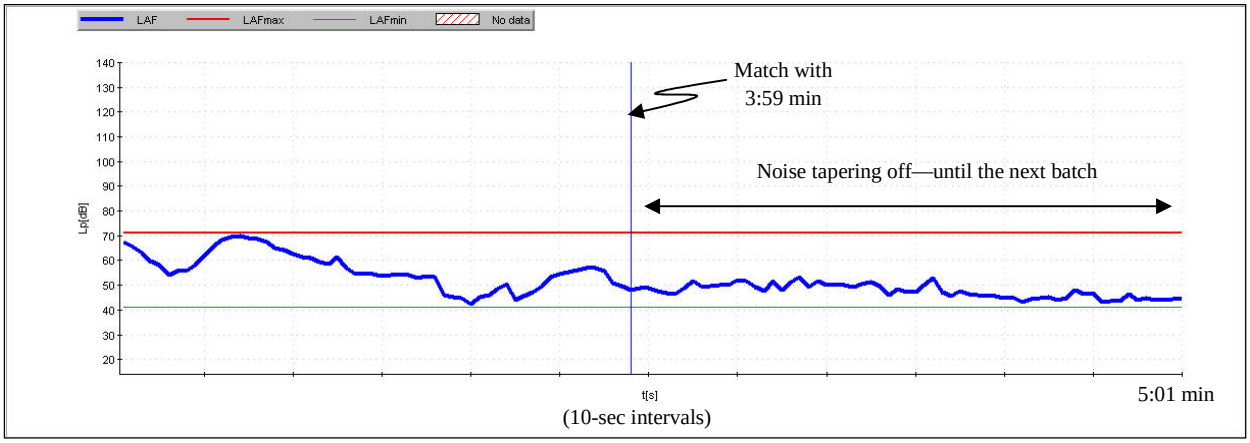


Point #10, 2nd Monitoring Segment (5:01 min) on 8/10/10.

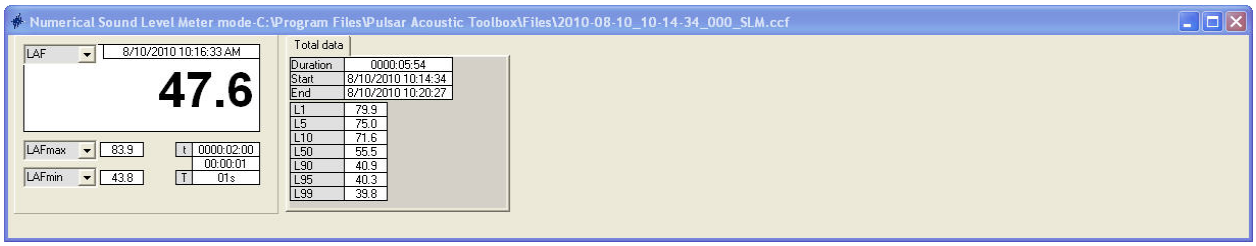


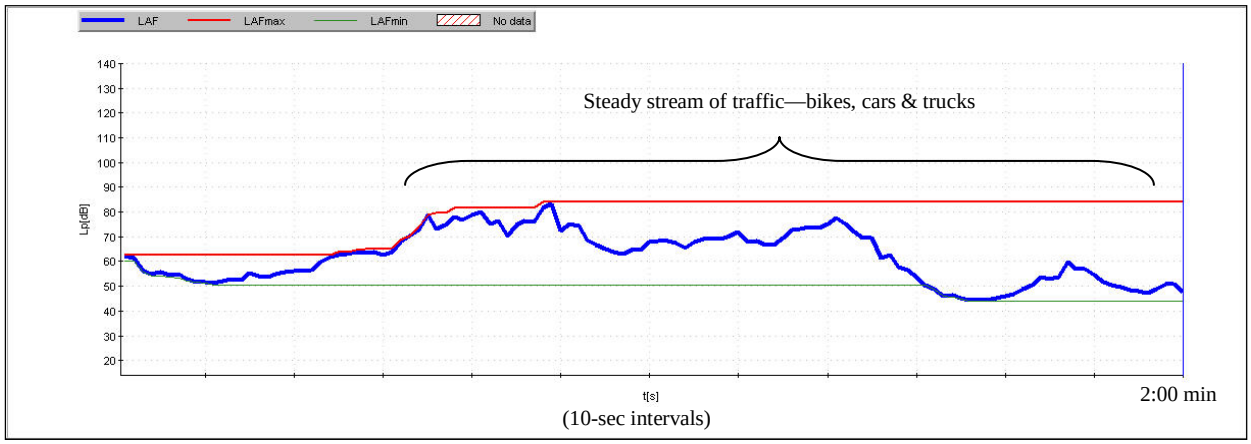

LAF
LAFmax
LAFmin
No data
Lp[dB]
Pretty constant noise from cars, trucks and motorcycles during monitoring
t[s]
2:00 min
(10-sec intervals)

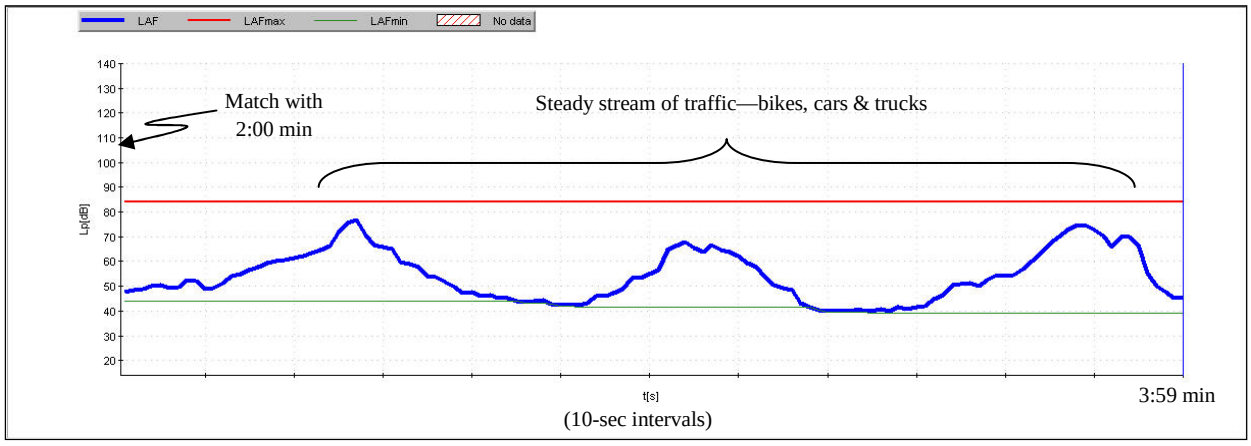

LAF
LAFmax
LAFmin
No data
Lp[dB]
Match with 2:00 min
Pretty constant noise from cars, trucks and motorcycles during monitoring
t[s]
3:59 min
(10-sec intervals)

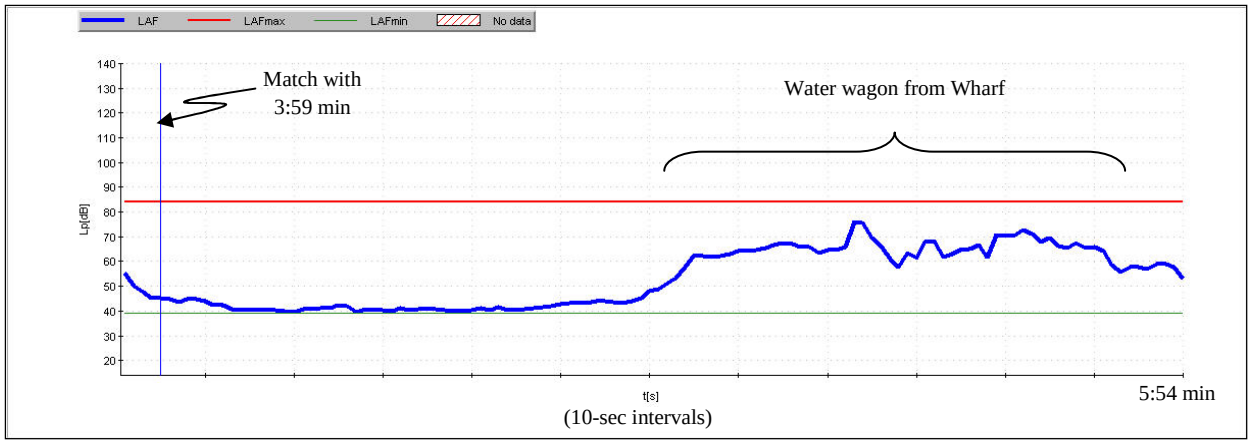

LAF
LAFmax
LAFmin
No data
Lp[dB]
Match with 3:59 min
Noise tapering off—until the next batch
t[s]
5:01 min
(10-sec intervals)

Point #11, 1st Monitoring Segment (5:54 min) on 8/10/10.

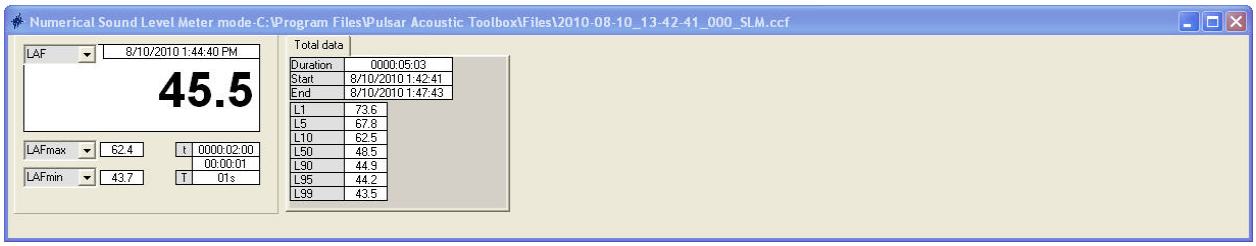


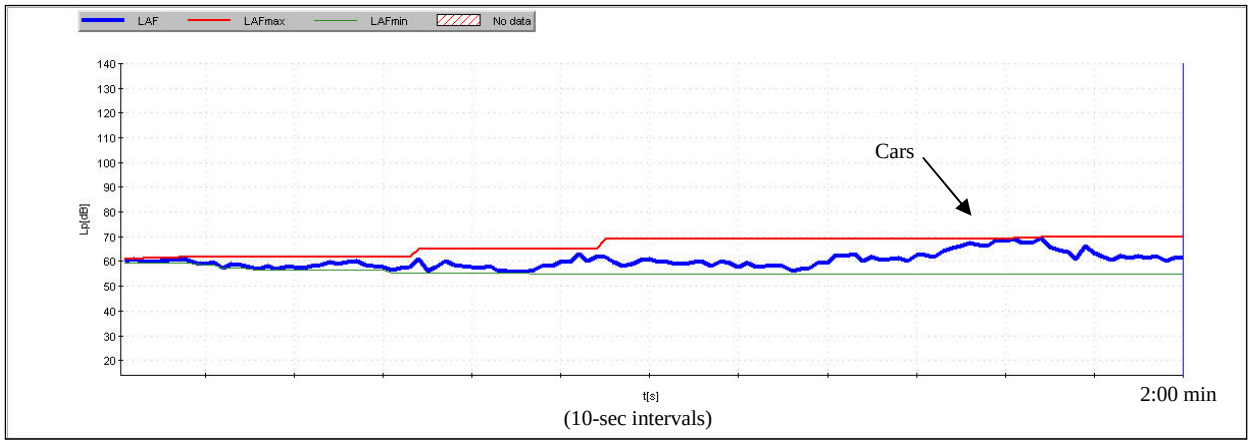


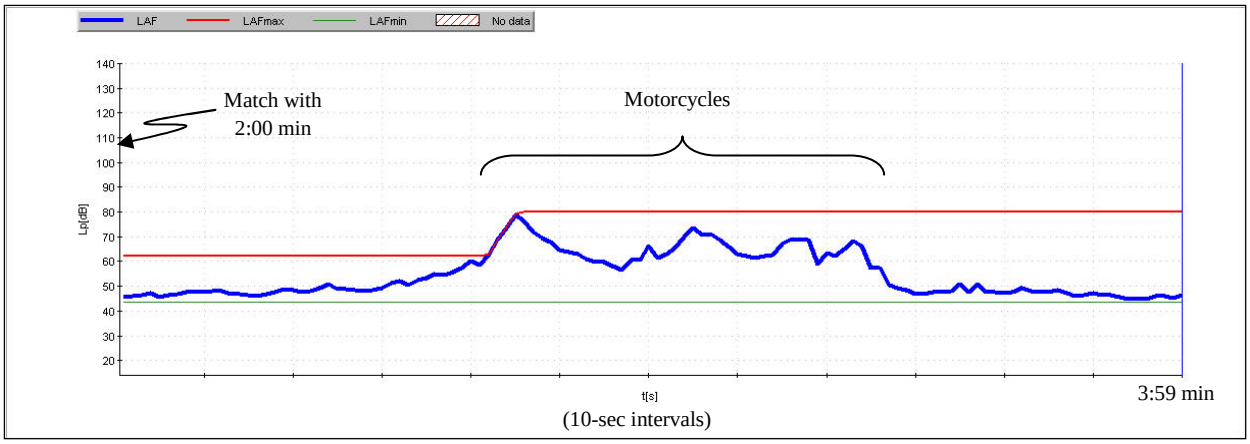


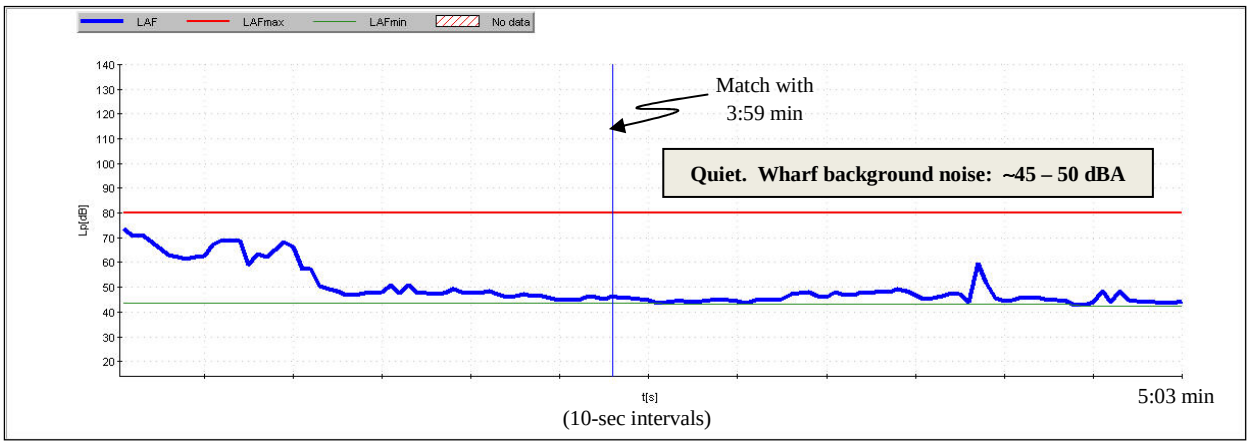


<u>Point #11, 2nd Monitoring Segment (5:03 min) on 8/10/10</u>.






LAF
LAFmax
LAFmin
No data
Match with
2:00 min
Motorcycles
Lp[dB]
t[s]
3:59 min
(10-sec intervals)


LAF
LAFmax
LAFmin
No data
Match with
3:59 min
Quiet. Wharf background noise: ~45 – 50 dBA
Lp[dB]
t[s]
5:03 min
(10-sec intervals)