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April 7, 2010

**VIA HAND DELIVERY, ELECTRONIC MAIL
AND REGULAR U.S. MAIL**

Mr. Thomas S. Burack, Chairman
New Hampshire Site Evaluation Committee
c/o New Hampshire Department of Environmental Services
29 Hazen Drive
Concord, New Hampshire 00302-0095

**In Re: Tennessee Gas Pipeline Company - Concord Lateral Expansion Project
Docket: 2008-02; Supplemental Sound Survey Pursuant to Order
dated February 10, 2010**

Dear Chairman Burack:

We are enclosing a Supplemental Sound Survey filed by Tennessee Gas Pipeline Company ("Tennessee") in accordance with the Site Evaluation Committee's ("Committee") Order on Complaint of Carol M. Desrosiers Regarding Noise Level Testing.

HFP Acoustical Consultants, Inc. conducted sound level measurements on behalf of Tennessee at locations within recommended distances to the Desrosiers and Hebert residences while Station 270B1 operated at full-load. The measurement results demonstrate that the Station contributes less than 55 dB(A) L_{dn} at these two residences, with measured Station contributions equivalent to 49.6 and 45.9 dB(A) L_{dn} in the back yards of the Desrosiers and Hebert residences, respectively. These sound level measurement results confirm that the Station is in full-compliance with the FERC sound level requirements that station sound contribution not exceed 55 dB(A) L_{dn} at surrounding noise sensitive areas. Additional measurements were also taken at the NSA 2 and 3 testing locations from the Post-Construction Sound Survey which strongly correlated with simultaneous measurements taken in the Desrosiers and Hebert backyards, thereby validating the procedure used and conclusions reached in the Post-Construction Sound Survey.

Respectfully submitted,

For: Donald J. Pfundstein

cc: Ms. Carol M. Desrosiers
Service List

GALLAGHER, CALLAHAN & GARTRELL, P.C.

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April 7, 2010

Mr. Dewey McLain
Tennessee Gas Pipeline
1001 Louisiana Street
Houston, TX 77002

Dewey.McLainJr@elpaso.com

Re: Technical Memorandum 6514-1C:
Sound Level Testing at the Desrosiers and Hebert Residences
Station 270B1, Pelham, New Hampshire
HFP File No. 6514-1

Dear Mr. McLain:

As per your request, HFP Acoustical Consultants Inc. ("HFP") has performed sound level testing at two residences close to Tennessee Gas Pipeline ("TGP") Company Compressor Station 270B1 ("Station") in Pelham, New Hampshire.

1 Summary

Sound level measurements were taken at positions close to the Desrosiers and Hebert Residences while Station 270B1 was operated at full-load. The measurement results demonstrated that the Station contributes less than 55 dB(A) L_{dn} at these two residences, with measured Station contributions equivalent to 49.6 and 45.9 dB(A) L_{dn} in the back yards of the Desrosiers and Hebert residences, respectively. Additional measurements were also taken at the NSA 2 and 3 testing locations from the December 2009 Post-Construction Sound Survey ("Post-Construction Sound Survey"). These sound level measurement results confirm that the Station is in full-compliance with the FERC sound level requirements.

2 Background

A post-construction noise survey was completed and filed with the Federal Energy Regulatory Commission ("FERC") in December 2009. In response to comments by Ms. Desrosiers, TGP offered to obtain supplemental sound level measurements at her residence and at the Hebert residence. The New Hampshire Site Evaluation Committee ("Committee") issued an order dated February 10, 2010 which incorporated TGP's supplemental testing proposal, called for additional measurements at one of the NSA's that was previously tested in order to provide a benchmark measurement, and required a supplemental sound survey be filed with the Committee within 60 days of the date of the Order.

3 Regulations

The sound level contributions from this compressor station are limited by the FERC noise regulation governing interstate gas transmission compressor stations. Also, pursuant to the Conditions Pertaining to Operation Noise in the Certificate of Site and Facility, TGP is required

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to operate the Station in full compliance with the FERC sound level regulations. The FERC regulation is receptor based, and limits compressor station noise contributions to no more than 55 dB(A) Day-Night Equivalent Sound Level (L_{dn}) at the surrounding noise sensitive areas (NSAs).

The FERC sound regulation is based on the Day-Night Equivalent Sound Level (“ L_{dn} ”). This metric is a 24-hour logarithmic average in which 10 decibels are added to any sound measured between the hours of 10:00 p.m. and 7:00 a.m. The A-weighted Equivalent Sound Level (“ L_{eq} ”) is the logarithmic sound level average for any designated period of time (e.g. one minute, one hour, 24 hours, etc.), and it has no nighttime adjustment. A 24-hour period with a continuous sound level of 48.6 decibels will result in an L_{eq} of 48.6 and an L_{dn} of 55.0 after the addition of 10 decibels to the nighttime sound levels. In other words, for a continuous sound, averaged over 24-hours with 10 decibels added to the sound during the night-time periods, the L_{dn} value will be 6.4 decibels *higher* than the equivalent sound level, L_{eq} .

4 Measurements

Sound levels were measured at the Desrosiers and Hebert residences and at the prior NSA 2 and NSA 3 measurement locations on the morning of March 17, 2010 by David M. Jones, P.E. of HFP. The measurements were performed in compliance with American National Standards Institute Standard S12.9-1993/Part 3 (R2008) “Quantities and Procedures for Description and Measurement of Environmental Sound. Part 3: Short-Term Measurements with an Observer Present.” The Station is a steady-state producer of sound. While in operation, the equipment at the Station does not change speed or operating conditions quickly, and the sound produced by the operating Station will not change significantly during operational periods.

4.1 Measurement Equipment

Equipment used during the site survey:

- Larson Davis Model 824 Sound Level Meters, SNs A0638, A0975, and A0424
- Bruel and Kjaer Type 4231 Calibrator, SN 2022565

Equipment was field calibrated before and after the measurements. All instrumentation has current laboratory certification.

4.2 Weather Conditions

Weather conditions were appropriate for an environmental sound level survey as shown in **Table 4-1**.

Table 4-1: Weather Conditions During Sound Level Survey	
	March 17, 2010
Temperature	38 – 44 ° F
Relative Humidity	45%
Wind Direction	-
Wind Speed	Calm
Sky Condition	Clear / Scattered Clouds
Ground Condition	Wet

4.3 Station Operating Conditions

Due to pipeline conditions, it was difficult to achieve extended full-load operation of the compressor unit. The unit was in full-load operation for about ten minutes, from about 9:42 until 9:53 a.m. The two sound level measurements at the two residential locations, as used to determine Station compliance with the FERC limits, were taken during full-load operation of the Station. During the comparison testing of the sound level test, described in Section 4.8, the unit was in partial load operation.

4.4 Measurement Locations

Sound level measurement equipment was placed in the back yards of both the Desrosiers and Hebert residences. **Pictures 1 through 4**, attached, show photographs of the sound level meter locations, and **Map 1**, attached, shows the locations on an aerial photograph of the area.

The Desrosiers measurement location was approximately 130 feet west-southwest of the back of the residence, at one of the closest points on the property to the Station. The location is about 100 feet closer to the Station than the residence. The Station equipment was not visible through the trees separating the residence from the Station, but there would be a direct line-of-sight from the measurement location to the Station without the trees.

The Hebert measurement location was about 25 feet northwest of the residence and about 25 feet southwest of the garage, located in the flat backyard of the property. The Station equipment was not visible from the measurement location due to the hill to the west-northwest of the residence.

4.5 Compressor Building Location

The as-built location of the compressor building, for the purpose of calculating distances to the measurement locations in this report, was determined using a hand held GPS unit. Previous work, including computer modeling and the post-construction noise survey, had been performed using the estimated compressor building location based on early design drawings. Because the

actual, as-built, location of the compressor building is now known, the distances from the compressor building to the residences have been updated in this report.

4.6 Ambient Sound Environment

The land area surrounding the site is composed primarily of residential lots, with some industrial land uses to the west and south of the property. Audible non-Station related sound sources in the area include the sound of water flow in the river, birds, dogs, distant construction, residential HVAC noises, along with local and distant vehicular traffic. There was a rooster present north of the Desrosier residence, and occasional rooster crowing was audible.

4.7 Measured Sound Level Data

Figure 1, attached, shows a graph of the measured sound levels, as one-second L_{eq} values, at the Desrosiers and Hebert measurement locations during full-load operation of the Station. This figure shows the highly variable nature of the sound levels at the two measurement locations. At the Hebert residence, the Station was faintly audible during quiet moments. The sound level peaks seen in **Figure 1** were caused by local traffic, aircraft over-flights, and bird sounds. At the Desrosiers measurement location, the Station was audible, with short-term peaks in the sound level due to local traffic, aircraft over-flights, bird sounds, and a nearby rooster crowing.

The Station was in full-load, steady-state operation during the entire time period shown in **Figure 1**. During standard operation, the Station produces a steady-state sound level. There are no impact-type, impulsive, or other short-term noises associated with standard Station operation.

As shown with the two gray rectangles on **Figure 1**, there was a one-minute time period from approximately 9:44:33 until 9:45:33 a.m. at the Hebert residence, and from 9:44:27 until 9:45:27 a.m. at the Desrosiers residence, during which there were no local traffic pass-bys or other extraneous noises, and while the Station was at full-load operation. The average sound level during this one-minute period was used as the Station contribution. **Table 4-2** shows the average L_{eq} sound level during this least-contaminated one-minute period at each measurement location, along with the corresponding 24-hour L_{dn} value associated with the L_{eq} value. Also shown is the measured background sound level without the station, as reported in the original FERC filings for the Station.

Table 4-2: Measurement Summary and Comparison to Baseline Sound Level Measurement Results					
Residence	Distance ¹ feet	Direction from Station	Measured Level, L _{eq} dB(A) ²	Equivalent L _{dn} dB(A) ³	Background L _{dn} ⁴ (Without Station)
Desrosiers	670	ENE	43.2	49.6	45
Hebert	590	SE	39.5	45.9	44

¹ These distances have been updated using the as-built location of the compressor building, as determined using a handheld GPS unit with a +/- 15 foot accuracy.

² The L_{eq} values are 60-second measurements taken during a period of minimal extraneous environmental noise while the Station was in operation at full load.

³ The equivalent 24-hour L_{dn} is calculated by adding 6.4 dB to the measured L_{eq} to account for the 10 dB factor added to nighttime noise.

⁴ The Pre-station sound levels are taken from Table 1 of Tetra Tech report “Concord Expansion Project - Baseline Sound Survey and Noise Impact Assessment” of December 20, 2007 as reported for NSAs 3 and 4, representing the Desrosiers and Hebert residences, respectively.

4.8 Comparison to Results at Previous NSA 2 and 3 Measurement Locations

For the Post-Construction Sound Survey, the sound levels were measured on public right-of-way as close as possible to the local NSAs. The actual measurement locations in closest proximity to the Desrosiers and Hebert residences were designated as MP2 and MP3 in that report.

The New Hampshire Site Evaluation Committee subsequently requested a comparison of measurements at one of the prior MP2 and MP3 locations to the supplemental measurement locations taken at the Desrosiers and Hebert residences in March 2010. TGP undertook comparison measurements at both MP2 and MP3 during the March 2010 survey.

The Station was running at approximately 60% load during the comparison testing. However, these readings were made for the purpose of simultaneous comparison of the MP2 and MP3 measurement locations with the measurement locations on the Desrosiers and Hebert properties identified on **Map 1**, attached. The readings were taken simultaneously when the Station was running at 60% load and therefore do not include or require any horsepower adjustments, since they are being compared to each other. Extraneous (non-station) sound level contributions were excluded from these measurements to the extent possible.

There was good correlation between the MP2 and MP3 public area measurements and the simultaneous measurements on the Desrosiers and Hebert properties. This comparison confirms the validity of the previous results and demonstrates that the public area measurements are appropriate alternate measurement locations.

The Desrosiers residence was grouped into NSA 3 in the 2009 FERC post-construction report, and as such was compared to the background reading taken at MP3. However, the Desrosiers

residence is actually slightly closer to the measurement location MP2 so for discussion purposes herein, the levels at MP2 are used to characterize the sound levels at the Desrosiers residence. In any case, during both the December 2009 and March 2010 sound level surveys the measured levels at MP2 and MP3 were very similar.

During the March 2010 survey, simultaneous sound levels of 42.7 and 40.8 dB(A) L_{eq} were measured at the Desrosiers measurement location and at MP2, respectively, a difference of only 1.9 dB.

The MP3 measurement location was the closest one to the Hebert residence, which was part of NSA 4. During this March 2010 survey, sound levels were simultaneously measured in the Hebert yard and at the MP3 location from the Post-Construction Sound Survey. Those readings were 38.6 dB(A) and 39.5 dB(A) L_{eq} , respectively, a difference of only -0.9 dB.

The small differences of 1.9 and -0.9 dB in the sound levels measured in the MP2 and MP3 public areas compared to the levels measured in the Desrosiers and Hebert backyards show that the public area measurements are appropriate alternate measurement locations. This clearly validates the procedure used and conclusions reached during the December 2009 study.

5 Conclusions

The sound level measurements at the Desrosiers and Hebert residences clearly indicate that TGP Station 270B1 contributes less than 55 dB(A) L_{dn} at both residences, with measured contributions equivalent to 49.6 and 45.9 dB(A) L_{dn} in compliance with applicable FERC and Certificate requirements.

This concludes the current study. Please call if you have any questions or comments.

Sincerely,
HFP ACOUSTICAL CONSULTANTS INC.



David M. Jones, P.E.
Senior Project Engineer

Attachments: Pictures 1, 2, 3, and 4; Map 1; Figure 1



Picture 1: Desrosiers, facing east, showing the Desrosiers residence



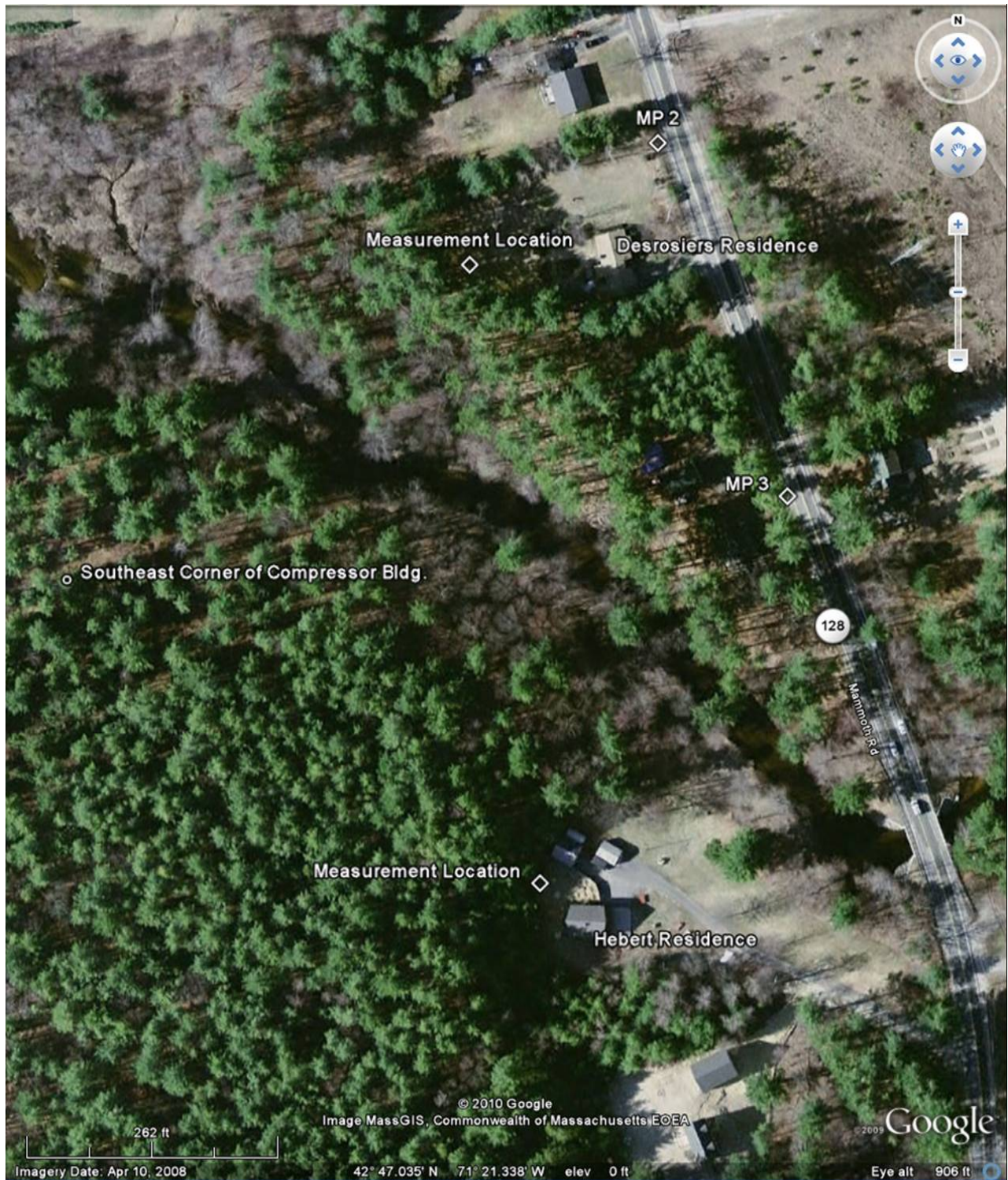
Picture 2: Desrosiers, facing west



Picture 3: Hebert Residence, facing southeast



Picture 4: Hebert Residence, facing northwest



Map 1: Measurement Locations and Residences

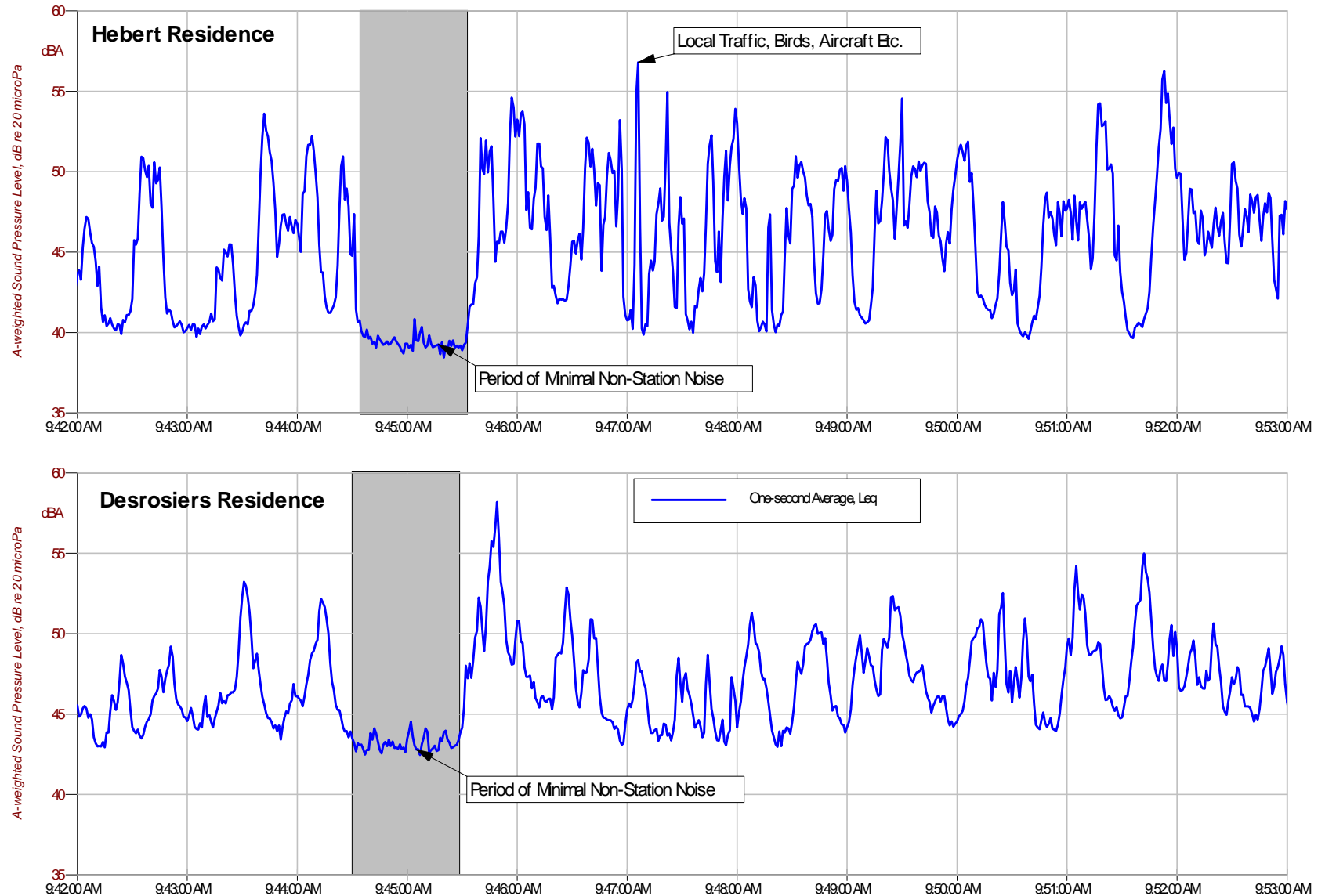


Figure 1: Sound Level Measurement Results at Desrosiers and Hebert Residences