To:	Helis Oil & Gas, LLC
From:	Kristjan Varnik, Tetra Tech, Inc.
Subject:	August Noise Monitoring Report
Date:	October 28, 2015

Helis Energy has contracted Tetra Tech to provide environmental monitoring during exploration and development activities in Mandeville, Louisiana. This memo provides information on acoustic monitoring during October 2015.

Noise monitoring was conducted at Lakeshore High School (Figure 1). The monitoring stations were set up within the fenced-in air monitoring areas to protect the equipment and increase reliability of data. Ambient noise generated by air handling equipment was prevalent at all the potential monitoring sites evaluated at Lakeshore High School. To reduce the influence of near-by noise, the acoustic monitoring station was positioned so that the equipment shed for the air monitoring station shielded the acoustic sensor from air conditioning noise to the extent possible.

A previous noise monitoring station at the construction site along I-12 has been demobilized. Having two monitoring stations, helps categorize sound levels. Instances where sound levels increased in one location, but not the other, are indicative of minor events occurring near one of the microphones.

Figure 1. Acoustic monitoring at Lakeshore High School

Measurements were taken with a Larson Davis 831 real-time sound level analyzer equipped with a PCB model 377B02 1/2" precision condenser microphone. This instrument has an operating range of 5 dB to 140 dB, and an overall frequency range of 8 to 20,000 Hz. It meets or exceeds all requirements in the American National Standards Institute (ANSI) standards for Type 1 sound level meters for quality and accuracy (precision). The sound meters are Larson Davis 831 Sound level meters connected to a portable PC with internet connectivity. Sound levels and equipment status are remotely monitored over the internet. The microphones and windscreens were tripod-mounted at an approximate height of 1.5 to 1.7 meters (4.9 to 5.6 feet) above grade away from effects of ground level noise and reflective surfaces. The calibration sheets of the equipment are included in Appendix A.

Summary of Sound Levels (September 29th to October 27, 2015)

Sound monitoring stations were deployed on June 26th, 2015. There was an initial testing and configuration period at the beginning of the project.

Sound levels remained below 60 dBA most of the time. Sounds on the school grounds including buses, air handling units for the cyclic increase in sound levels that occurred throughout the month. The weekdays are noticeable from the weekends. Air quality testing appears to have stopped at the end of September. Sounds occurring daily at 7am routinely exceeded the 60 dBA level, but were not unusually loud or obtrusive. Audio recordings of the elevated sound levels were further inspected. On October 13th, what is assumed to be a lawnmower, repeatedly passed the object multiple times. On October 18th, a very loud vehicle drove by the sound monitor around 11P.M. On October 23rd, a motorcycle created the elevated noise in the area when it passed through the area.

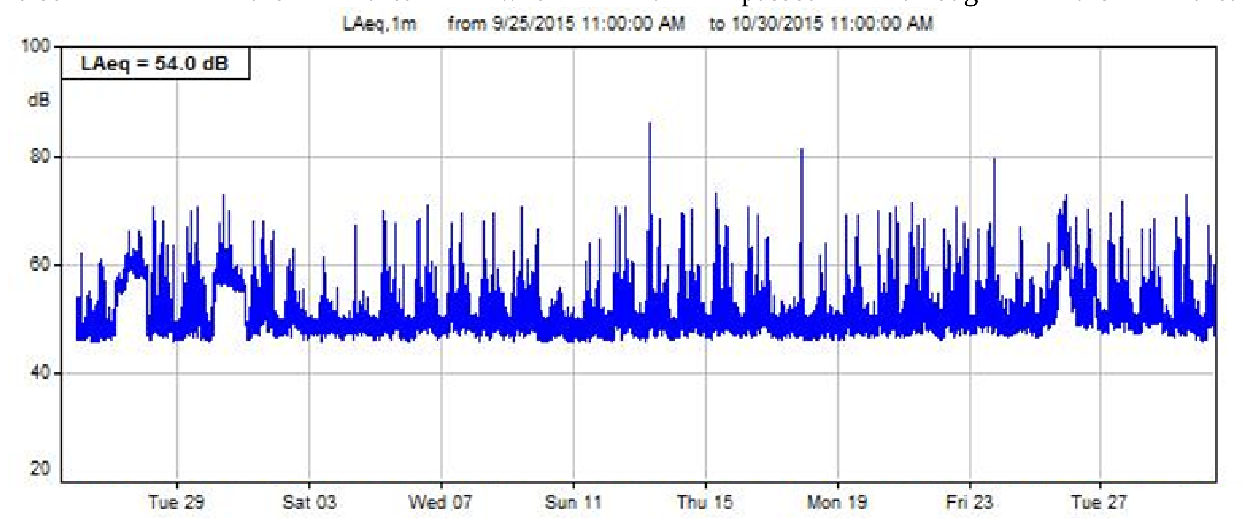

Figure 2. Sound Graph at Site Lake Shore High School (September 29th – October 27th, 2015)

The spectrogram in Figure 3, captures the motorcycle buzzing by the sound meter around 6PM. A spectrogram displays an audio signal in time and frequency. The frequency data is on the vertical axis. Moving sound sources, such as a motorcycle, are characterized by a Doppler shift in the frequency content as well as sound levels increasing and decreasing as the sound source approaches and departs from the area.

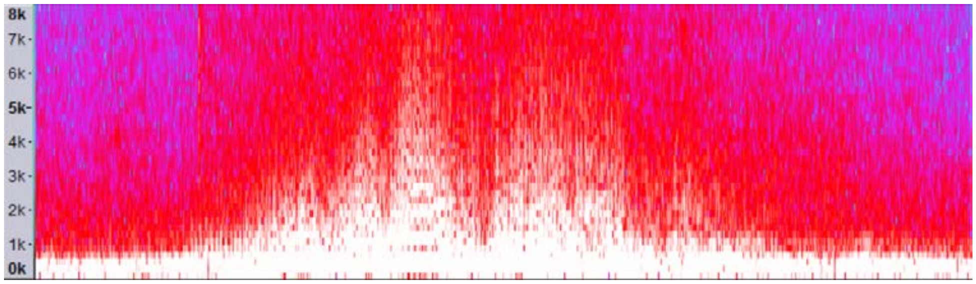

Figure 3. Motorcycle Spectrogram on October 23, 2015 6:02 PM (11 seconds)