



- M E M O R A N D U M -

Date: February 11, 2011
To: Michael Gange, City of Fort Worth
From: Mike Pring, Eastern Research Group, Inc. (ERG)
Re: Natural Gas Air Quality Study Interim Report Executive Summary

At the request of the City of Fort Worth, ERG has prepared an Interim Report presenting the findings to date of the Natural Gas Air Quality Study (NGAQS). Two field activities were undertaken in the fall of 2010 to characterize air emissions from natural gas exploration and production – ambient air monitoring and point source testing. Ambient air monitoring was conducted to measure outdoor pollution levels in the air that people breathe. Point source testing was conducted to collect data necessary to estimate emissions from natural gas wells, compressor stations, and pre-production activities such as drilling and hydraulic fracturing.

The ambient air monitoring program concluded on October 31, 2010 and the initial phase of point source testing (Phase I) ended on October 22, 2010. This Executive Summary on the NGAQS provides a high level overview of both the Interim Ambient Air Monitoring Report and the Interim Point Source Testing Report.

Attachments to this Executive Summary include the following:

- The Interim Ambient Air Quality Monitoring Report;
- The Interim Point Source Testing Report; and
- An Excel file containing 3 tables presenting preliminary results from Phase I of the Point Source Testing.

The Interim Ambient Air Quality Monitoring Report provides details on implementation of the ambient air monitoring network, sample collection, sample analysis, and network findings. The primary findings of the Ambient Air Monitoring network include:

- The Ambient Air Monitoring network was successfully implemented in the field to achieve the data completeness and data quality objectives outlined in the Ambient Air Monitoring Plan;
- 169 ambient air samples were collected between September 4, 2010 and October 31, 2010. These samples were analyzed for up to 138 pollutants. Overall, more than 15,000 ambient air concentrations were measured;
- No pollutant concentrations were observed that exceeded any published *short-term* (or acute) health benchmark published by the Texas Commission on Environmental Quality (TCEQ), EPA, or the Agency for Toxic Substances and Disease Registry (ATSDR); and
- Measured air pollution levels varied across sites and pollutants. For many pollutants, average concentrations were highest at Site #4. This location was classified as a “High-

Level Activity” site in the Ambient Air Monitoring Plan due to its proximity to well pads and compressor stations.

- Additional conclusions for the NGAQS will be generated as ERG completes its data characterization and health screening analyses following completion of the air dispersion modeling task.

The Interim Point Source Testing Report describes the tables contained in the Excel file mentioned above, discusses the limitations of the preliminary data, describes how the point source air samples were obtained and how emissions were estimated, and presents conclusions based on the emissions calculated to date. The interim report presents findings to date for 201 sites, which include well pads, compressor stations, and other operations. These 201 sites currently fall into the following categories:

- At 66 sites, preliminary quantitative emission estimates have been generated. Estimated annual emission rates were calculated from the short-term test data, assuming the measured emissions on the day of testing are representative of the emissions that occur over the year. Preliminary results for these 66 sites follow for different pollutant categories:
 - For VOCs, preliminary emission rates at these sites range from less than one pound per year to more than 100 tons per year. Two well pads have preliminary VOC emissions estimates greater than TCEQ’s Permit-by-Rule Threshold of 25 tons per year of VOC. These well pads will be re-visited under the Phase II point source testing effort.
 - For all hazardous air pollutants (HAPs) combined, preliminary emission rates at these sites range from less than one pound per year to slightly more than 10 tons per year.
 - For any individual HAP, preliminary emission rates at these sites range from less than one pound per year to nearly 5 tons per year. The highest emission rate for any individual HAP was observed for mixed xylene isomers.
- At 104 sites, the field crew has detected emissions but data on the emission rates are currently being quantified.
- At 31 sites, no emissions were detected with the IR Camera or with the TVA.