APPENDIX 3

DEVELOPMENT OF REASONABLE FURTHER PROGRESS AREA SOURCE EMISSIONS INVENTORIES FOR THE DALLAS-FORT WORTH NONATTAINMENT AREA

AREA SOURCE EMISSIONS PROJECTIONS

The emissions inventory (EI) for area sources in the Dallas-Fort Worth reasonable further progress state implementation plan (SIP) was developed from the 2008 EI reported to the United States Environmental Protection Agency (EPA) for the 2008 National Emissions Inventory. Area source emissions were grown from 2008 to the SIP milestone years of 2011, 2012, and the contingency year of 2013 using Economic Growth Analysis System (EGAS) growth factors. The 2008 EI was developed using a combination of methodologies and data: the EPA emissions inventories developed by contractor, Texas Commissions on Environmental Quality (TCEQ) contract projects, TCEQ staff projects, and categories grown from the 2005 EI.

1 EPA-DEVELOPED EMISSIONS INVENTORIES

In the EPA's Clearinghouse for Inventories & Emissions Factors Web site,(http://www.epa.gov/ttn/chief/index.html) 2008 National Emissions Inventory Data & Documentation, all the area source categories are listed in the Nonpoint sector. The first list has categories that normally do not have major point source equivalents. The second list has categories that may have major point source equivalents. The EPA developed 2008 EIs for most of these categories in both lists or otherwise provided methodologies for developing area source specific EIs.

The TCEQ incorporated most of these EIs into its 2008 area source EI. Some adjustments were made to the original EIs. Many of the categories made use of the U.S. Census Bureau's *County Business Patterns* for numbers of employees for associated categories. During the EI development, the current employee numbers were for year 2006. Shortly after this time the 2007 employee numbers became available. The TCEQ adjusted the EPA EIs using the new 2007 employee numbers. Other adjustments to the EPA EIs included deducting major point sources when necessary and applying rule effectiveness where applicable.

2 TCEQ CONTRACT PROJECTS

The TCEQ contractors developed EIs or improved EIs for several categories using Texas-specific activity data. Projects for selected area source categories included auto refinishing, gasoline stations, and oil and gas production. Methodologies for these projects included the use of surveys of actual facilities and other activities such as gasoline throughput and oil and gas production data. The development of the oil and gas production category is discussed below.

3 TCEQ STAFF-DEVELOPED PROJECTS

The EIs for some area source categories, such as leaking underground storage tanks, structural fires, dry cleaners, and automobile fires, are developed and updated by TCEQ staff. The 2008 EI for these categories was developed by acquiring current activity data and applying the appropriate emission factors. These categories were all updated for the 2008 EI.

4 CATEGORIES GROWN FROM THE 2005 EMISSIONS INVENTORY

The remaining area source categories were grown from the 2005 EI. A complete set of updated EGAS growth factors using Regional Economic Models Inc. and other economic data for area source categories was developed. These growth factors were used to grow the categories not included in the other methods of development.

5 OIL AND GAS PRODUCTION

Characterization of Oil and Gas Production Equipment and Development of a Methodology to Estimate Statewide Oil and Gas Production Emissions (Work Order No. 582-7-84003-FY10-26)

The purpose of this study was to develop an effective method for estimating emissions from upstream oil and gas production sites based on known production rates. Oil and gas source types that are included in this area source category are: compressor engines, artificial lift (pumpjack) engines, dehydrators, dehydrator's reboilers, crude oil and condensate storage tanks, oil and gas loading, well completions, well blowdowns, pneumatic devices, heaters, and fugitive sources. A statewide oil and gas EI was completed for calendar year 2008 that included emissions of volatile organic compounds, nitrogen oxides, carbon monoxide, particulate matters with aerodynamic diameter less than or equal to 10 microns, particulate matters with aerodynamic diameter less than or equal to 2.5 microns, and sulfur dioxide. Also included were certain Hazardous Air Pollutants emissions such as benzene, toluene, ethylbenzene, and xylene from dehydrators, storage tanks, and loading.

This project used publicly available studies, survey data, vendor data, published emission factors and activity data, and databases such as those from the Texas Railroad Commission production data to estimate emissions from oil and gas production activities. The emissions were calculated at the county level with specific emission factors for each source type.

The results of the project included an emission estimation tool that calculates emissions for all the oil and gas production source categories statewide on a county basis. This tool allows for modifications to reflect the status of conditions in specific regions and counties. The tool uses available activity data such as oil and gas production, well counts, and well completions as required inputs. The emission estimation tool was modified to incorporate the results of recent surveys of oil and gas production activities. Compressor emissions were determined by engine size and type (rich or lean burn) and by regional emission factors and engine populations. The emission estimation tool also accounts for area specific rule requirements.