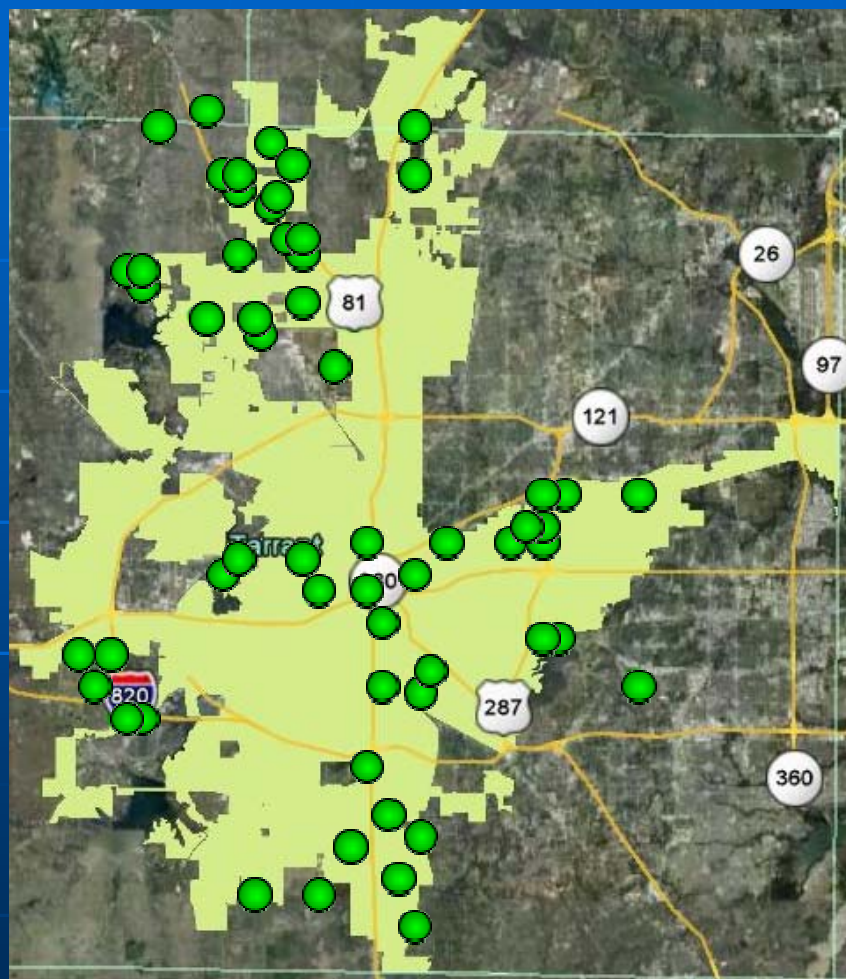




**Texas Commission On Environmental Quality
Office of Compliance and Enforcement**

Fort Worth Review



**John Sadlier, Deputy Director
Office of Compliance and Enforcement**



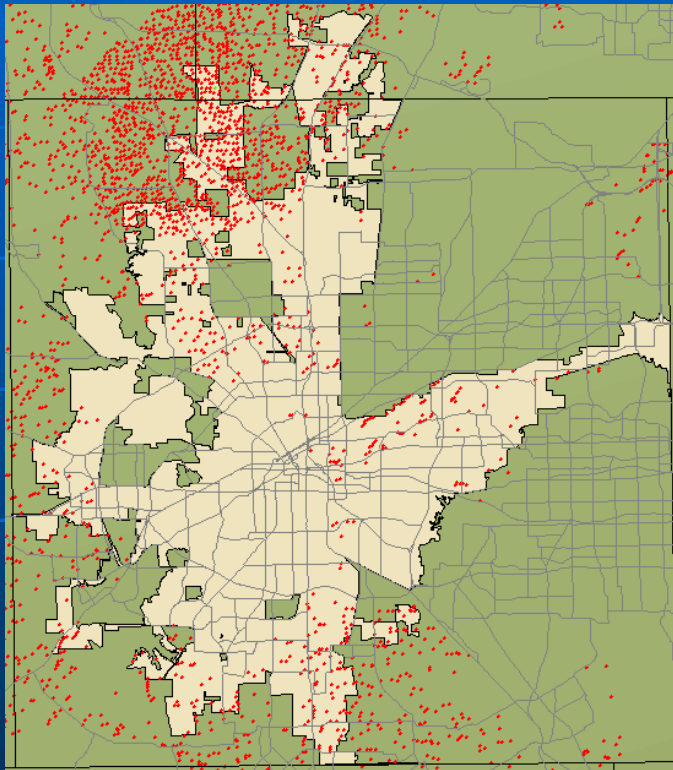
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Barnett Shale Formation Fort Worth emission sources associated with natural gas production and processing include:

- **well installation and rigs**
 - **well-heads**
 - **compressor stations**
- **gathering facilities including tank batteries**
 - **salt-water disposal facilities**
 - **and processing facilities**



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- Approximately 1600 Natural Gas Wells
 - permitted, producing, or applications pending
- Monitoring Trip conducted 12/15-17/2009
- 3 Survey Teams
- 126 Sites Visited
- 8 Canister Samples Collected
- 22 Compounds Analyzed Per Canister

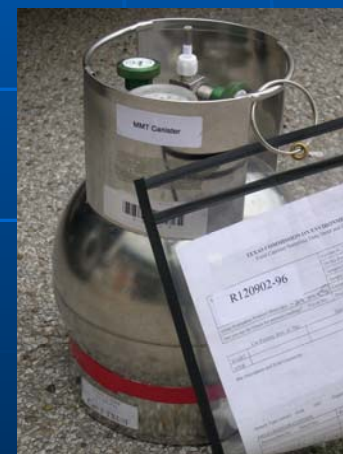


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Monitoring Equipment Utilized



- Toxic Vapor Analyzer
- GasFindIR (Infrared) Camera
- Summa Canister
- Mobile Laboratory





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Condensate Tank Emissions Video



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Compressor Station Emissions Video

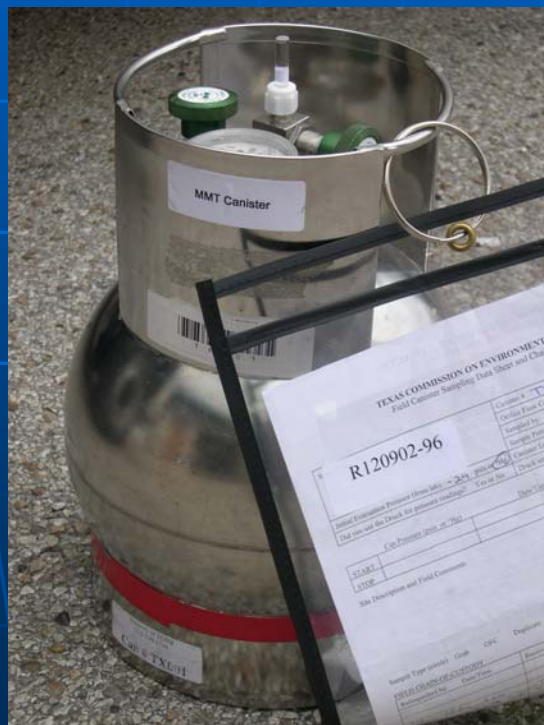


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Canister Results





Barnett Shale Formation Monitoring Project
Phase IV Fort Worth
 December 15 - 17, 2009

Near Real-Time Analytical Results

Canister Sample	BSIV0912-001		
Sample Date	12/17/2009	Sample Time	16:16
Predominately Downwind of			
Site Description	On Golf Course (Glen Garden Country Club) maintenance road, 300 yards west from dead end of Lomita St.		
Compound	Concentration (ppbv)	Exceeds ESL Screening Value	
		Short-term	Long-term
ethane	97	no	no
ethylene	ND	no	no
acetylene	ND	no	no
propane	ND	no	no
propylene	ND	no	no
isobutane	ND	no	no
n-butane	ND	no	no
1-butene	ND	no	NA
1,3-butadiene/t-2-butene	ND	no	no
isopentane/c-2-butene	ND	no	no
n-pentane	ND	no	no
1-pentene	ND	no	NA
isoprene	ND	no	no
n-hexane	ND	no	no
benzene	ND	no	no
toluene	ND	no	no
ethylbenzene	ND	no	no
m&p-xylene	ND	no	no
o-xylene	ND	no	no
styrene	ND	no	no

ppbv = parts per billion by volume

No = Did not exceed TCEQ ESL Screening Value

NA = No ESL Screening Value available

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Barnett Shale Formation Monitoring Project
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Near Real-Time Analytical Results

Canister Sample BSIV0912-005
Sample Date 12/17/2009 Sample Time 17:34
Predominately Downwind of _____
Site Description On Corbett Business Entrance Dr., 0.2 mile south from E. Berry Street.

Compound	Concentration (ppbv)	Exceeds ESL Screening Value	
		Short-term	Long-term
ethane	490	no	no
ethylene	ND	no	no
acetylene	ND	no	no
propane	26	no	no
propylene	ND	no	no
isobutane	ND	no	no
n-butane	ND	no	no
1-butene	ND	no	NA
1,3-butadiene/t-2-butene	ND	no	no
isopentane/c-2-butene	ND	no	no
n-pentane	ND	no	no
1-pentene	ND	no	NA
isoprene	ND	no	no
n-hexane	ND	no	no
benzene	ND	no	no
toluene	ND	no	no
ethylbenzene	ND	no	no
m&p-xylene	ND	no	no
o-xylene	ND	no	no
styrene	ND	no	no

ppbv = parts per billion by volume

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Barnett Shale Formation Monitoring Project
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Near Real-Time Analytical Results

Canister Sample	BSIV0912-014		
Sample Date	12/15/2009	Sample Time	14:26
Predominately Downwind of			
Site Description	South of Blue Mound Treater station, 60 ft south of Blue Mound Road		
Compound	Concentration (ppbv)	Exceeds ESL Screening Value	
		Short-term	Long-term
ethane	93	no	no
ethylene	ND	no	no
acetylene	ND	no	no
propane	ND	no	no
propylene	ND	no	no
isobutane	ND	no	no
n-butane	ND	no	no
1-butene	ND	no	NA
1,3-butadiene/t-2-butene	ND	no	no
isopentane/c-2-butene	ND	no	no
n-pentane	ND	no	no
1-pentene	ND	no	NA
isoprene	ND	no	no
n-hexane	5.3	no	no
benzene	ND	no	no
toluene	ND	no	no
ethylbenzene	ND	no	no
m&p-xylene	ND	no	no
o-xylene	ND	no	no
styrene	ND	no	no

ppbv = parts per billion by volume

No = Did not exceed TCEQ ESL Screening Value

NA = No ESL Screening Value available

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Barnett Shale Formation Monitoring Project
Phase IV Fort Worth
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Near Real-Time Analytical Results

Canister Sample	BSIV0912-015		
Sample Date	12/17/2009	Sample Time	19:17
Predominately Downwind of			
Site Description	Along Shelby Road, approximately 0.3 mile west of Race Street		
Compound	Concentration (ppbv)	Exceeds ESL Screening Value	
		Short-term	Long-term
ethane	ND	no	no
ethylene	ND	no	no
acetylene	ND	no	no
propane	ND	no	no
propylene	ND	no	no
isobutane	ND	no	no
n-butane	ND	no	no
1-butene	ND	no	NA
1,3-butadiene/t-2-butene	ND	no	no
isopentane/c-2-butene	ND	no	no
n-pentane	ND	no	no
1-pentene	ND	no	NA
isoprene	ND	no	no
n-hexane	ND	no	no
benzene	ND	no	no
toluene	ND	no	no
ethylbenzene	ND	no	no
m&p-xylene	ND	no	no
o-xylene	ND	no	no
styrene	ND	no	no

ppbv = parts per billion by volume

No = Did not exceed TCEQ ESL Screening Value

NA = No ESL Screening Value available

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Barnett Shale Formation Monitoring Project
Phase IV Fort Worth
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Near Real-Time Analytical Results

Canister Sample	BSIV0912-016		
Sample Date	12/16/2009	Sample Time	12:35
Predominately Downwind of			
Site Description	On Arkansas Lane, 0.3 mile southwest of East Rosedale		
Compound	Concentration	Exceeds ESL Screening Value	
		Short-term	Long-term
ethane	ND	no	no
ethylene	ND	no	no
acetylene	ND	no	no
propane	ND	no	no
propylene	ND	no	no
isobutane	ND	no	no
n-butane	ND	no	no
1-butene	ND	no	NA
1,3-butadiene/t-2-butene	ND	no	no
isopentane/c-2-butene	ND	no	no
n-pentane	ND	no	no
1-pentene	ND	no	NA
isoprene	ND	no	no
n-hexane	ND	no	no
benzene	ND	no	no
toluene	ND	no	no
ethylbenzene	ND	no	no
m&p-xylene	ND	no	no
o-xylene	ND	no	no
styrene	ND	no	no

ppbv = parts per billion by volume

No = Did not exceed TCEQ ESL Screening Value

NA = No ESL Screening Value available

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Barnett Shale Formation Monitoring Project
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Near Real-Time Analytical Results

Canister Sample <u>BSIV0912-024</u>			
Sample Date <u>12/15/2009</u>		Sample Time <u>12:38</u>	
Predominately Downwind of _____			
Site Description <u>150 feet south of white vent on the southeast of the facility near tanks</u>			
Compound	Concentration (ppbv)	Exceeds ESL Screening Value	
		Short-term	Long-term
ethane	ND	no	no
ethylene	ND	no	no
acetylene	ND	no	no
propane	ND	no	no
propylene	ND	no	no
isobutane	ND	no	no
n-butane	ND	no	no
1-butene	ND	no	NA
1,3-butadiene/t-2-butene	ND	no	no
isopentane/c-2-butene	ND	no	no
n-pentane	ND	no	no
1-pentene	ND	no	NA
isoprene	ND	no	no
n-hexane	28	no	no
benzene	ND	no	no
toluene	ND	no	no
ethylbenzene	ND	no	no
m&p-xylene	ND	no	no
o-xylene	ND	no	no
styrene	ND	no	no

ppbv = parts per billion by volume

No = Did not exceed TCEQ ESL Screening Value

NA = No ESL Screening Value available

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Barnett Shale Formation Monitoring Project
Phase IV Fort Worth
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Near Real-Time Analytical Results

Canister Sample	BSIV0912-025		
Sample Date	12/16/2009	Sample Time	12:25
Predominately Downwind of			
Site Description	On Arkansas Lane, 0.3 mile southwest of East Rosedale		
Compound	Concentration (ppbv)	Exceeds ESL Screening Value	
		Short-term	Long-term
ethane	46	no	no
ethylene	ND	no	no
acetylene	ND	no	no
propane	ND	no	no
propylene	ND	no	no
isobutane	ND	no	no
n-butane	ND	no	no
1-butene	ND	no	NA
1,3-butadiene/t-2-butene	ND	no	no
isopentane/c-2-butene	ND	no	no
n-pentane	ND	no	no
1-pentene	ND	no	NA
isoprene	ND	no	no
n-hexane	ND	no	no
benzene	ND	no	no
toluene	ND	no	no
ethylbenzene	ND	no	no
m&p-xylene	ND	no	no
o-xylene	ND	no	no
styrene	ND	no	no

ppbv = parts per billion by volume

No = Did not exceed TCEQ ESL Screening Value

NA = No ESL Screening Value available

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Barnett Shale Formation Monitoring Project
Phase IV Fort Worth
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Near Real-Time Analytical Results

Canister Sample	BSIV0912-057		
Sample Date	12/17/2009	Sample Time	13:56
Predominately Downwind of			
Site Description	1298 Burgess Drive, Fort Worth, Texas		
Compound	Concentration (ppbv)	Exceeds ESL Screening Value	
		Short-term	Long-term
ethane	ND	no	no
ethylene	ND	no	no
acetylene	ND	no	no
propane	ND	no	no
propylene	ND	no	no
isobutane	ND	no	no
n-butane	ND	no	no
1-butene	ND	no	NA
1,3-butadiene/t-2-butene	ND	no	no
isopentane/c-2-butene	ND	no	no
n-pentane	ND	no	no
1-pentene	ND	no	NA
isoprene	ND	no	no
n-hexane	ND	no	no
benzene	ND	no	no
toluene	ND	no	no
ethylbenzene	ND	no	no
m&p-xylene	ND	no	no
o-xylene	ND	no	no
styrene	ND	no	no

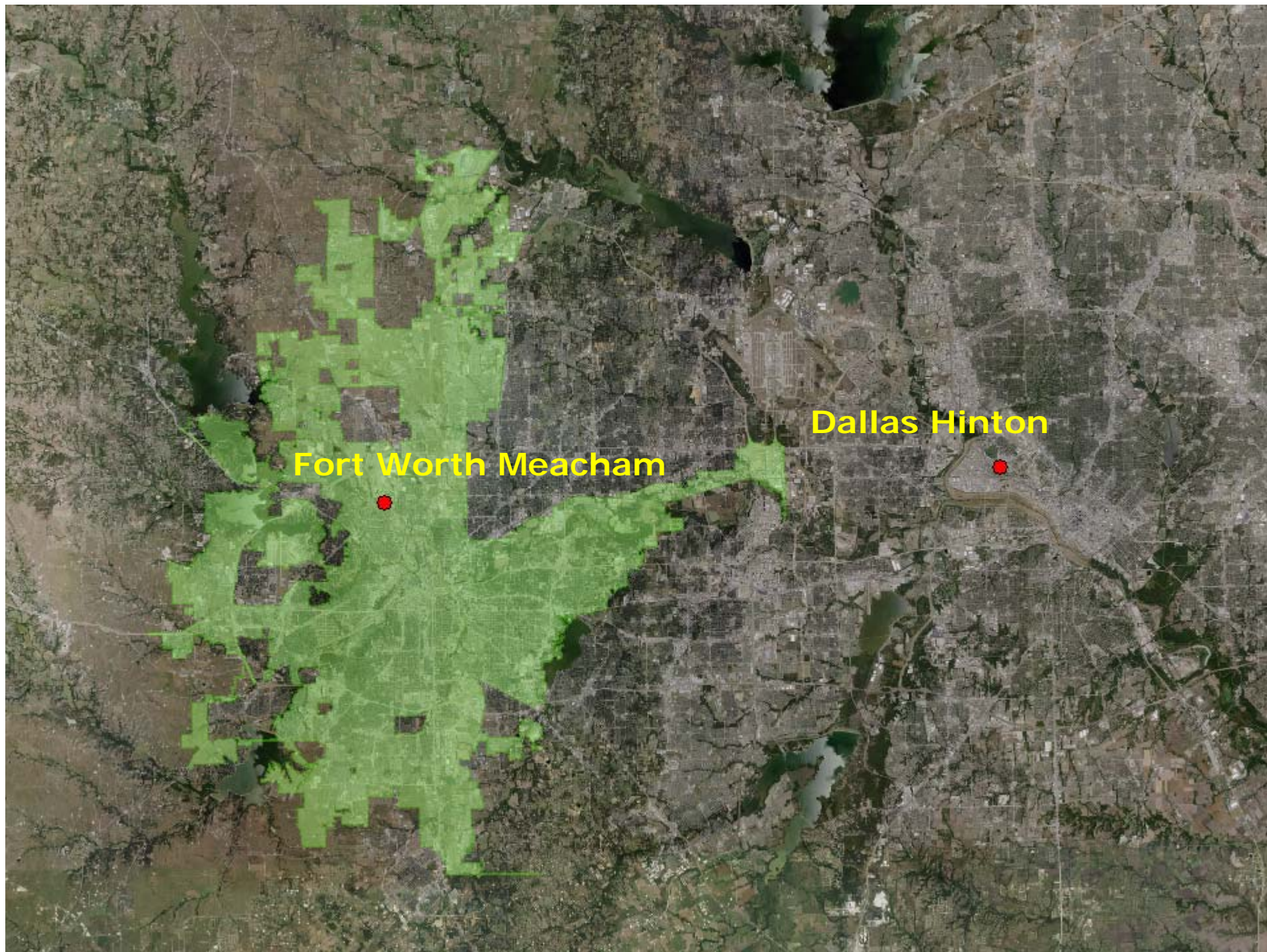
ppbv = parts per billion by volume

No = Did not exceed TCEQ ESL Screening Value

NA = No ESL Screening Value available

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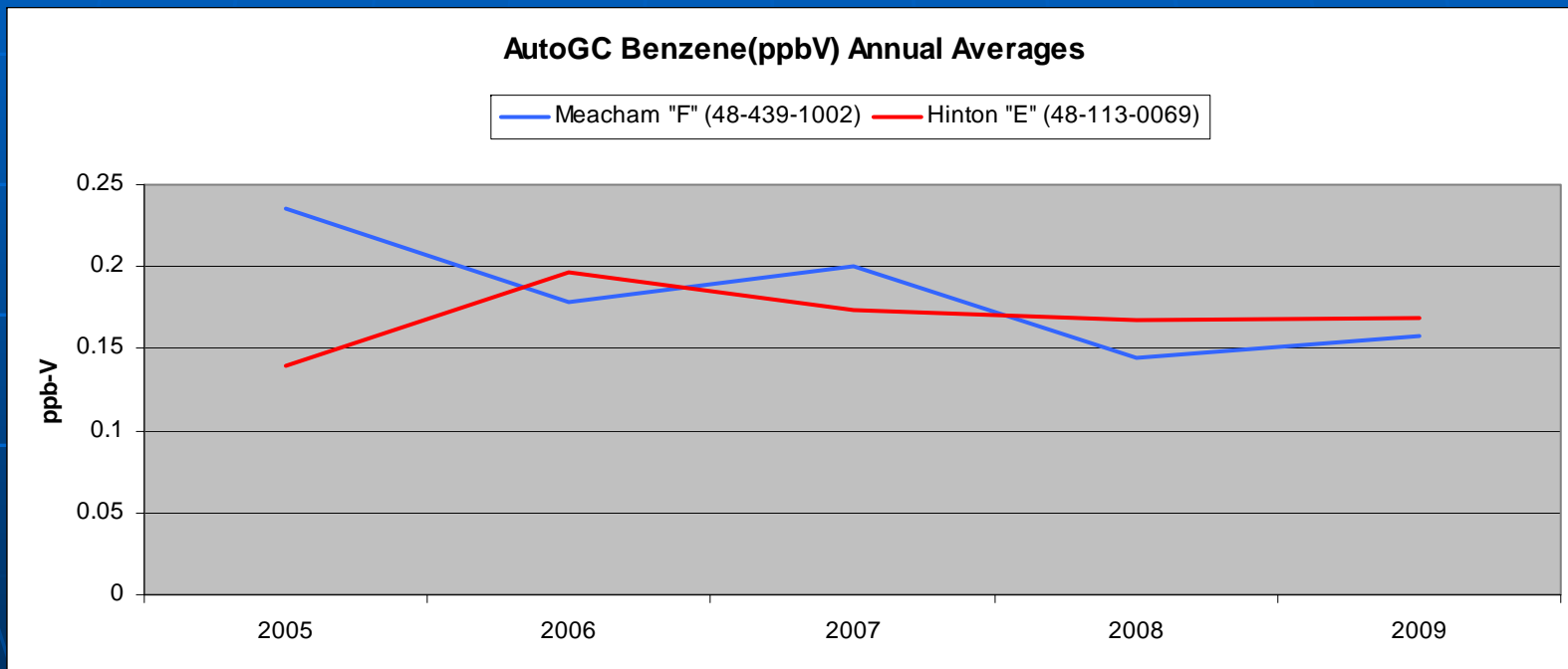
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Fort Worth Meacham

Dallas Hinton

DFW AutoGC Benzene Annual Averages





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Summary

- No volatile organic compounds measured at or above the Effects Screening Level (ESL) (i.e., a concentration at which health issues may occur)
- No carcinogens detected
- While TCEQ did not document any dangerous ambient air pollution during this study, we are continuing additional studies and monitoring in the area of the Barnett Shale
- Additional monitoring in Fort Worth is planned for the late spring or summer of 2010

Barnett Shale Complaint and Investigation Procedures (continued)

■ History of Complaints (12 Barnett Shale Counties in DFW Region)

- FY 2007 - 30
- FY 2008 - 61
- FY 2009 – 58
- FY 2010 – 38*

Total 187

*Total Complaints since 12/17/2009 Memo - 15

Barnett Shale Complaint and Investigation Procedures

- Complaints – we respond with an on-site investigation within 12 hours.
- Investigations – Staff utilize
 - GasFindIR Camera
 - RAE Survey Equipment or Toxic Vapor Analyzer
 - Summa Canisters
 - JEROME Portable Hydrogen Sulfide Monitor

Barnett Shale Complaint and Investigation Procedures (continued)

Staff document the type of facility, number and types of equipment present, and whether or not the facility is in operation.

- Uncharacteristic Operating Conditions
 - Make every effort to contact the owner of the equipment
 - Company is given two days to respond
- Hazardous Conditions
 - Staff will immediately contact company
 - Will request immediate corrective action
 - Staff will remain on-site until emergency is abated

Questions?

For more information about TCEQ addressing emissions from
Barnett Shale-Area Oil and Gas Activities:

<http://www.tceq.state.tx.us/goto/barnettshale>