



EARTHWORKS

Methane and Volatile Organic Chemicals in Air in Flower Mound

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Methane plumes were identified and plotted by Picarro in Flower Mound. In conjunction with the Methane Mapping performed by Picarro in Flower Mound, on March 2, 2010, at 7:48 PM, an air sample was collected on Scenic Road in the Methane Plume identified by Picarro. On March 3, 2010, at 10:30 PM an air sample was collected near the Williams Tank Farm in the methane plume identified by Picarro.

A certified evacuated stainless steel Summa canister was used by Alisa Rich of Wolf Eagle Environmental, Flower Mound, TX., to collect the grab samples of air from the Methane Plumes.

The canister was analyzed by GD Air Testing, Inc., Richardson, TX., for Volatile Organic Compounds (TO-14), Tentatively Identified Compounds (GC/MS Scan) and Light Hydrocarbons including Methane (ASTM 1945).

Results of Analysis of Air Samples

Air Sample Collected 3-2-10, 7:48 PM, Scenic Road, Flower Mound

Chemical	Concentration ppbv	TCEQ Short-Term Effects Screening Levels ppbv	TCEQ Long-Term Effects Screening Levels ppbv
Volatile Organic Compounds			
Chloromethane	0.57	-	-
Dichlorodifluoro- methane	0.46	10,000	1,000
Tentatively Identified Compounds			
C4 Hydrocarbon	3.06	-	-
Carbon Disulfide	1.29*	10	1
Trichloromono- fluoromethane	1.49	-	-
Light Hydrocarbons			
Methane	17.9 ppmv		

*Exceeded long-term health effects screening level

Air Sample Collected 3-3-10, 10:30 PM,
Williams Tank Farm, Flower Mound

Chemical	Concentration ppbv	TCEQ Short-Term Effects Screening Levels ppbv	TCEQ Long-Term Effects Screening Levels ppbv
Volatile Organic Compounds			
Benzene	0.29	54	1.4
Chloromethane	0.59	-	-
Dichlorodifluoro- methane	0.51	10,000	1,000
Toluene	0.39	4,000	1,100
Tentatively Identified Compounds			
Isobutane	3.76	2,040	204
C3 Hydrocarbon	1.97	-	-
C5 Hydrocarbon	5.17	-	-
Light Hydrocarbons			
Methane	46.4 ppmv		

Chemicals Detected in the Air Sampling in Flower Mound

Scenic Road Sample Location

The elevated methane concentration in the canister, 17.9 ppmv at 7:48 PM (19:48) on March 2, 2010, at Scenic Road was approximately half of the highest methane concentration, >38 ppm (exceeded limit of instrument), detected in the plume by Picarro on March 2, 2010 between 19:00 and 21:30. Five volatile organic chemicals (Chloromethane, Dichlorodifluoromethane, Trichloromonofluoromethane, Carbon Disulfide, and C4 Hydrocarbons) were also detected in the canister air sample from the Scenic Road site. Carbon Disulfide exceeded TCEQ Long-Term Effects Screening Levels.

Near the Williams Tank Farm

The elevated methane concentration in the canister, 46.4 ppmv at 10:30 PM (22:30) on March 3, 2010, near the Williams Tank Farm was greater than the highest methane concentration, >38 ppm (exceeded limit of instrument), detected in the plume by Picarro on March 3, 2010, between 21:45 and 22:45. Seven volatile organic chemicals were also detected in the canister air sample. The number and concentrations of volatile organic chemicals were higher in the Williams Tank Farm sample in Flower Mound than in the Scenic Road sample. Benzene, Toluene, Isobutane, C3 and C5 hydrocarbons were present in the Williams Tank Farm sample which also had the highest methane concentration (46.4 ppmv). Chloromethane and Dichlorofluoromethane were detected in higher concentrations in the Williams Tank Farm sample than in the Scenic Road sample collected in Flower Mound.

The Scenic Road and Williams Tank Farm canister samples in Flower Mound were collected downwind of the source/sources of the elevated methane emissions. On March 2, 2010, between 19:00 and 21:30 the wind was from the West-North Northwest at 2 to 5 miles per hour (Scenic Road sample collected) and the methane concentration at 7:48 PM (19:48) was 17.9 ppmv. On March 3, 2010, between 21:45 and 22:45 the wind was from the NorthEast to East Southeast at 0 to 1 mile per hour (Williams Tank Farm sample) and the methane concentration was 46.4 ppmv at 10:30 PM (22:30). On the morning of March 3, 2010 between 10:45 and 11:45 AM the winds around the Williams Tank Farm were variable with unstable atmospheric conditions and ranged from 0 to 3 miles per hour. The highest methane concentration was 3.2 ppm.

As a result of the investigation in the Flower Mound area, elevated levels of methane with corresponding levels of volatile organic chemicals were being released in the evenings of March 2 and 3, 2010 while the releases were not occurring on the morning of March 3, 2010.