



QUALITY ASSURANCE AUDIT REPORT

North Texas Commission Ambient Air and Meteorological Monitoring

Prepared for:

**North Texas Commission
8445 Freeport Parkway
Irving, TX 75063**

Prepared by:

**URS Corporation
9400 Amberglen Boulevard (78729)
P.O. Box 201088
Austin, TX 78720-1088**

Conducted:

December 2014

EXECUTIVE SUMMARY

On December 1 through 9, 2014, the Ambient Air Quality Assurance team of URS Corporation (URS) conducted performance and technical system audits of the North Texas Commission (NTC) ambient air monitoring network, providing an independent assessment of the monitoring program.

The monitoring program at NTC consists of continuous gas chromatographs (GC), volatile organic compound (VOC) canister collection systems, and meteorological sensors including wind speed, wind direction, temperature, and barometric pressure.

The performance audit results indicate acceptable responses for measurement systems and monitoring equipment with the following exceptions:

The wind direction alignment was found to be outside of the audit objective of $\pm 2^\circ$ at 12 sites, but only two of these sites, Wichita Falls and Kennedale, were outside of $\pm 10^\circ$ and required data reanalysis. These sensors were then realigned and found to be within the audit objective. Following realignment, there is no further field action required.

Out of the 48 compounds being analyzed, seven compounds (ethylene, propylene, acetylene, isoprene, styrene, 1,2,3-trimethylbenzene, and n-undecane) were found to be outside of the audit objective of $\pm 30\%$ at several sites, while 2-methylhexane and 1,3,5-trimethylbenzene were outside of audit parameters at only one site. These audit results are comparable historically to other URS auto-GC audits and indicate that there is not a significant issue.

A VOC canister performance evaluation sample is submitted to the GD Air Testing laboratory on a quarterly basis. During the fourth quarter of 2014, there was a deficiency noted in GD Air Testing's laboratory procedures, resulting in somewhat lower-than-expected results. The Ambient Air Quality Assurance team was able to resolve the issue with GD Air Testing, which was documented in a previous email from November 18, 2014. This email can be found in Appendix C.

Technical systems audit results demonstrate satisfactory operational procedures for collecting valid data.

Below are the audit standard results for all network GCs:

Compound Name	Audit Conc (ppbc)	Dish Airfield		Eagle Mountain		Decatur		Godley	
		GC Response ppbc	%Rec	GC Response ppbc	%Rec	GC Response ppbc	%Rec	GC Response ppbc	%Rec
Ethane	8.4	7.0	83.6%	8.1	97.0%	7.7	91.2%	8.1	96.7%
Ethylene	8.4	4.8	56.8%	6.6	79.1%	6.6	78.4%	5.6	66.2%
Propane	12.0	11.1	92.6%	12.5	104.0%	11.7	97.2%	11.7	97.3%
Propylene	12.3	7.7	62.8%	8.8	71.4%	8.7	70.4%	7.7	62.7%
Iso-Butane	16.0	15.4	96.6%	17.9	111.7%	16.4	102.5%	16.2	101.1%
N-Butane	16.0	15.9	99.2%	18.0	112.3%	16.8	104.7%	16.5	103.0%
Acetylene	8.4	5.9	70.1%	6.8	81.3%	6.8	80.7%	6.1	72.7%
Trans-2-Butene	16.0	15.6	97.4%	17.3	108.3%	16.5	102.9%	16.2	101.3%
1-Butene	16.0	15.4	96.5%	17.6	110.0%	16.3	101.7%	15.8	98.5%
Cis-2-Butene	17.2	15.2	88.2%	18.3	106.6%	17.4	101.1%	17.1	99.2%
Cyclopentane	20.5	21.3	103.9%	23.6	115.2%	20.8	101.6%	20.6	100.6%
Iso-Pentane	21.5	20.7	96.4%	23.5	109.3%	22.0	102.1%	21.6	100.7%
N-Pentane	20.5	20.1	98.0%	23.8	116.3%	21.4	104.4%	21.0	102.3%
1,3-Butadiene	16.8	14.4	85.9%	18.0	107.2%	16.7	99.5%	16.1	95.7%
Trans-2-Pentene	21.0	18.3	87.3%	22.1	105.4%	20.7	98.8%	19.4	92.4%
1-Pentene	20.5	15.7	76.8%	20.1	98.0%	20.0	97.6%	17.6	85.9%
Cis-2-Pentene	22.0	17.6	80.2%	21.6	98.4%	20.8	94.7%	18.7	85.2%
2,2-Dimethylbutane	25.2	22.7	90.1%	26.8	106.5%	25.1	99.4%	22.0	87.3%
2-Methylpentane	24.6	21.7	88.1%	27.4	111.4%	25.2	102.3%	22.3	90.5%
Isoprene	21.0	14.6	69.7%	17.1	81.5%	16.1	76.8%	15.7	74.7%
n-Hexane	25.2	23.6	93.6%	23.8	94.5%	24.8	98.6%	24.9	98.8%
Methylcyclopentane	25.2	20.7	82.3%	23.9	94.9%	22.7	90.2%	21.6	85.9%
2,4-Dimethylpentane	29.4	29.5	100.2%	34.9	118.8%	29.5	100.2%	31.4	106.8%
Benzene	25.2	22.2	88.0%	25.4	100.6%	23.1	91.6%	24.0	95.2%
Cyclohexane	25.2	22.5	89.1%	27.0	107.1%	24.0	95.1%	25.2	100.0%
2-Methylhexane	30.1	22.0	73.0%	25.7	85.5%	24.5	81.3%	23.4	77.7%
2,3-Dimethylpentane	30.1	31.0	103.2%	36.2	120.3%	31.0	103.0%	35.4	117.5%
3-Methylhexane	29.4	26.8	91.1%	32.1	109.1%	27.5	93.5%	29.9	101.5%
2,2,4-Trimethylpentane	33.6	29.9	89.0%	34.8	103.6%	29.9	89.1%	32.0	95.1%
n-Heptane	29.4	26.1	88.6%	29.9	101.8%	27.6	94.0%	28.4	96.6%
Methylcyclohexane	29.4	26.2	89.1%	30.4	103.4%	26.7	91.0%	28.5	96.8%
2,3,4-Trimethylpentane	32.8	28.4	86.7%	32.3	98.5%	30.3	92.2%	31.0	94.5%
Toluene	29.4	25.1	85.4%	28.5	96.8%	26.4	89.8%	27.1	92.1%
2-Methylheptane	33.6	28.5	84.7%	32.3	96.1%	31.2	92.8%	31.8	94.8%
3-Methylheptane	33.6	29.3	87.1%	32.9	98.0%	32.0	95.3%	33.2	98.8%
n-Octane	32.8	28.6	87.2%	32.5	99.1%	31.3	95.6%	31.1	94.8%
Ethylbenzene	33.6	26.4	78.5%	29.5	87.9%	28.1	83.7%	28.6	85.2%
M&P-Xylene	65.6	51.7	78.8%	57.4	87.5%	55.7	84.9%	56.2	85.7%
Styrene	32.8	23.3	71.0%	24.8	75.6%	24.8	75.5%	25.0	76.1%
O-Xylene	32.8	27.1	82.5%	30.4	92.8%	27.7	84.5%	29.4	89.8%
N-Nonane	36.0	30.4	84.4%	34.8	96.7%	32.6	90.5%	33.1	91.8%
Isopropylbenzene	36.0	29.1	80.9%	33.1	91.8%	31.0	86.1%	32.0	88.8%
n-Propylbenzene	35.1	27.9	79.5%	31.6	90.0%	30.4	86.5%	30.2	85.9%
1,3,5-Trimethylbenzene	36.0	27.7	76.8%	32.7	90.9%	28.9	80.2%	30.1	83.6%
1,2,4-Trimethylbenzene	36.0	27.4	76.1%	30.0	83.4%	28.5	79.3%	28.5	79.3%
n-Decane	41.0	31.3	76.3%	34.4	84.0%	32.7	79.7%	32.6	79.5%
1,2,3-Trimethylbenzene	35.1	24.7	70.4%	27.2	77.4%	24.7	70.3%	26.3	74.8%
n-Undecane	42.9	30.0	69.9%	32.3	75.4%	29.3	68.3%	27.0	62.9%

Compound Name	Audit Conc (ppbc)	Benbrook		Everman		Elm Fork		Flower Mound	
		GC Response ppbc	%Rec	GC Response ppbc	%Rec	GC Response ppbc	%Rec	GC Response ppbc	%Rec
Ethane	8.4	9.2	109.7%	8.0	95.4%	8.1	96.8%	7.1	84.7%
Ethylene	8.4	5.8	69.5%	5.6	66.9%	7.0	83.8%	4.8	56.8%
Propane	12.0	12.2	101.5%	12.1	100.5%	12.6	104.8%	11.2	93.4%
Propylene	12.3	8.2	66.4%	9.5	77.4%	10.0	81.1%	8.3	67.1%
Iso-Butane	16.0	15.9	99.3%	16.9	105.9%	17.2	107.7%	15.6	97.8%
N-Butane	16.0	16.4	102.7%	17.0	106.4%	17.6	109.8%	15.9	99.7%
Acetylene	8.4	6.0	71.5%	5.9	70.7%	7.6	90.3%	6.3	74.8%
Trans-2-Butene	16.0	15.6	97.6%	16.9	105.9%	17.0	106.4%	15.6	97.5%
1-Butene	16.0	16.0	99.8%	17.3	108.4%	17.1	106.9%	15.6	97.4%
Cis-2-Butene	17.2	16.5	96.0%	18.3	106.2%	17.9	104.0%	16.2	94.4%
Cyclopentane	20.5	19.9	97.3%	20.6	100.2%	21.7	106.0%	20.0	97.5%
Iso-Pentane	21.5	21.3	99.1%	22.5	104.6%	23.0	107.2%	20.8	96.9%
N-Pentane	20.5	20.7	100.8%	22.2	108.4%	22.2	108.4%	20.4	99.5%
1,3-Butadiene	16.8	16.4	97.4%	16.7	99.2%	17.1	102.0%	15.7	93.6%
Trans-2-Pentene	21.0	20.1	95.7%	20.5	97.7%	21.5	102.3%	19.6	93.5%
1-Pentene	20.5	19.4	94.4%	18.5	90.5%	20.4	99.8%	18.0	88.0%
Cis-2-Pentene	22.0	20.7	94.2%	19.8	90.2%	21.9	99.4%	19.7	89.7%
2,2-Dimethylbutane	25.2	24.9	98.9%	25.0	99.3%	25.1	99.5%	23.4	92.8%
2-Methylpentane	24.6	24.2	98.5%	24.2	98.5%	25.3	102.8%	23.6	95.9%
Isoprene	21.0	16.6	79.2%	17.3	82.2%	18.3	87.0%	16.7	79.6%
n-Hexane	25.2	22.2	88.0%	30.3	120.4%	26.8	106.5%	23.8	94.3%
Methylcyclopentane	25.2	21.8	86.5%	23.3	92.3%	25.8	102.3%	22.3	88.6%
2,4-Dimethylpentane	29.4	28.9	98.4%	31.7	107.7%	31.0	105.6%	27.9	95.0%
Benzene	25.2	22.3	88.6%	24.7	97.9%	24.9	98.7%	23.2	92.0%
Cyclohexane	25.2	22.8	90.4%	25.4	100.7%	26.4	104.8%	24.0	95.3%
2-Methylhexane	30.1	23.5	78.0%	24.7	82.1%	29.2	96.9%	25.7	85.3%
2,3-Dimethylpentane	30.1	29.9	99.3%	33.5	111.3%	32.7	108.7%	31.2	103.6%
3-Methylhexane	29.4	26.3	89.4%	28.3	96.1%	30.6	104.1%	28.6	97.3%
2,2,4-Trimethylpentane	33.6	29.5	87.8%	32.7	97.2%	34.9	103.9%	30.5	90.7%
n-Heptane	29.4	25.6	86.9%	29.2	99.2%	29.9	101.8%	27.4	93.0%
Methylcyclohexane	29.4	25.8	87.8%	28.6	97.4%	30.2	102.9%	26.7	90.7%
2,3,4-Trimethylpentane	32.8	27.9	85.1%	31.5	96.0%	33.0	100.5%	29.8	90.9%
Toluene	29.4	24.2	82.3%	27.8	94.6%	28.0	95.1%	26.6	90.6%
2-Methylheptane	33.6	28.1	83.5%	31.5	93.7%	33.7	100.2%	29.9	89.1%
3-Methylheptane	33.6	28.6	85.2%	31.9	95.1%	33.1	98.4%	29.2	86.9%
n-Octane	32.8	28.2	85.9%	31.5	95.9%	33.6	102.5%	30.5	93.1%
Ethylbenzene	33.6	25.7	76.4%	29.5	87.9%	31.9	94.8%	28.3	84.2%
M&P-Xylene	65.6	50.3	76.7%	57.9	88.2%	61.9	94.3%	54.4	82.9%
Styrene	32.8	22.7	69.4%	26.0	79.2%	28.3	86.3%	23.5	71.7%
O-Xylene	32.8	26.7	81.5%	30.4	92.8%	30.8	93.9%	28.2	85.9%
N-Nonane	36.0	30.3	84.3%	33.9	94.1%	35.5	98.6%	31.3	87.1%
Isopropylbenzene	36.0	27.8	77.3%	33.1	91.8%	35.4	98.4%	30.6	85.1%
n-Propylbenzene	35.1	26.9	76.7%	31.6	90.0%	34.0	96.9%	29.3	83.4%
1,3,5-Trimethylbenzene	36.0	25.9	71.8%	31.0	86.1%	32.2	89.4%	30.2	84.0%
1,2,4-Trimethylbenzene	36.0	26.1	72.6%	30.8	85.6%	32.3	89.8%	26.6	73.9%
n-Decane	41.0	29.7	72.4%	34.6	84.3%	36.7	89.4%	31.0	75.5%
1,2,3-Trimethylbenzene	35.1	23.7	67.4%	28.1	80.0%	30.4	86.5%	23.3	66.3%
n-Undecane	42.9	28.3	66.0%	32.6	76.0%	33.7	78.5%	28.7	66.8%

Compound Name	Audit Conc (ppbc)	UTA		Mansfield		Kennedale		Rhome		Rushing	
		GC Response ppbc	%Rec	GC Response ppbc	%Rec	GC Response ppbc	%Rec	GC Response ppbc	%Rec	GC Response ppbc	%Rec
Ethane	8.4	8.2	98.0%	8.2	98.1%	7.1	84.7%	8.1	96.1%	7.9	93.7%
Ethylene	8.4	5.7	68.3%	4.1	48.4%	5.6	66.2%	4.5	53.6%	6.1	72.8%
Propane	12.0	12.1	100.6%	13.4	111.8%	10.7	89.1%	11.7	97.1%	11.5	95.6%
Propylene	12.3	8.7	71.0%	8.1	66.1%	7.7	62.9%	8.1	66.1%	8.5	69.5%
Iso-Butane	16.0	16.9	105.9%	16.4	102.4%	14.9	93.0%	15.6	97.7%	16.4	102.5%
N-Butane	16.0	17.2	107.8%	18.0	112.2%	15.3	95.4%	16.4	102.3%	16.6	104.0%
Acetylene	8.4	6.2	73.5%	6.0	70.8%	5.6	66.7%	5.9	69.7%	4.7	56.0%
Trans-2-Butene	16.0	16.8	105.2%	15.9	99.2%	14.8	92.3%	15.0	93.7%	16.1	100.7%
1-Butene	16.0	17.0	106.1%	15.6	97.5%	14.8	92.2%	14.8	92.5%	16.0	99.9%
Cis-2-Butene	17.2	17.8	103.3%	16.8	97.9%	15.6	90.6%	15.5	90.4%	16.8	97.4%
Cyclopentane	20.5	21.4	104.2%	20.4	99.5%	18.9	92.0%	19.2	93.4%	20.5	100.0%
Iso-Pentane	21.5	22.6	105.0%	21.8	101.3%	20.0	93.0%	20.0	92.8%	21.7	100.9%
N-Pentane	20.5	21.8	106.1%	21.1	102.8%	19.2	93.5%	19.6	95.6%	21.1	102.9%
1,3-Butadiene	16.8	17.1	102.0%	15.6	92.8%	15.2	90.2%	14.1	83.7%	16.4	97.5%
Trans-2-Pentene	21.0	20.8	98.9%	19.0	90.3%	18.5	88.1%	17.5	83.4%	20.0	95.3%
1-Pentene	20.5	19.5	95.4%	17.3	84.3%	18.2	88.7%	14.9	72.5%	19.7	95.9%
Cis-2-Pentene	22.0	21.0	95.5%	19.2	87.1%	19.4	88.0%	16.9	76.9%	20.9	95.1%
2,2-Dimethylbutane	25.2	23.2	92.0%	22.9	91.1%	23.0	91.2%	22.3	88.5%	25.3	100.5%
2-Methylpentane	24.6	24.1	97.9%	23.8	96.9%	22.1	89.7%	21.8	88.5%	24.6	100.0%
Isoprene	21.0	16.9	80.3%	16.9	80.7%	17.0	80.9%	13.4	64.0%	17.5	83.3%
n-Hexane	25.2	24.9	98.7%	22.5	89.3%	21.5	85.2%	26.8	106.4%	24.5	97.3%
Methylcyclopentane	25.2	22.9	90.8%	22.1	87.5%	18.4	73.2%	23.2	92.2%	22.1	87.9%
2,4-Dimethylpentane	29.4	29.6	100.6%	26.0	88.5%	31.2	106.2%	29.3	99.5%	30.1	102.2%
Benzene	25.2	23.8	94.4%	21.0	83.4%	19.8	78.7%	23.4	92.7%	21.9	86.8%
Cyclohexane	25.2	23.7	94.1%	21.8	86.6%	22.4	88.9%	25.1	99.7%	24.5	97.3%
2-Methylhexane	30.1	25.0	83.1%	24.2	80.5%	19.7	65.6%	24.7	82.2%	22.2	73.8%
2,3-Dimethylpentane	30.1	30.3	100.5%	27.7	92.1%	30.5	101.3%	31.9	106.0%	33.4	110.9%
3-Methylhexane	29.4	28.4	96.6%	25.9	88.1%	27.0	91.8%	29.4	99.9%	28.6	97.3%
2,2,4-Trimethylpentane	33.6	31.7	94.4%	29.5	87.8%	28.1	83.5%	31.6	94.0%	31.8	94.6%
n-Heptane	29.4	27.6	94.0%	25.4	86.4%	24.2	82.3%	27.1	92.2%	26.4	89.6%
Methylcyclohexane	29.4	27.7	94.2%	25.8	87.9%	26.3	89.5%	27.7	94.1%	27.6	93.7%
2,3,4-Trimethylpentane	32.8	30.2	92.1%	28.3	86.4%	26.2	79.8%	29.2	89.1%	30.4	92.6%
Toluene	29.4	26.8	91.3%	25.0	85.0%	26.4	89.9%	24.3	82.8%	26.7	90.8%
2-Methylheptane	33.6	30.6	91.1%	28.3	84.1%	28.3	84.1%	29.4	87.4%	30.4	90.5%
3-Methylheptane	33.6	30.9	91.9%	28.9	86.1%	29.2	87.0%	30.1	89.5%	31.2	92.8%
n-Octane	32.8	30.6	93.2%	28.1	85.8%	27.8	84.8%	29.9	91.2%	30.8	94.0%
Ethylbenzene	33.6	28.6	85.2%	26.5	78.9%	25.3	75.4%	26.5	78.7%	28.0	83.4%
M&P-Xylene	65.6	56.4	85.9%	51.5	78.5%	50.3	76.6%	51.9	79.1%	56.0	85.3%
Styrene	32.8	25.6	78.1%	22.5	68.5%	22.3	67.9%	22.7	69.1%	21.1	64.4%
O-Xylene	32.8	28.1	85.7%	25.3	77.1%	27.7	84.6%	27.6	84.2%	31.4	95.6%
N-Nonane	36.0	32.9	91.4%	29.4	81.7%	30.7	85.3%	30.8	85.6%	34.3	95.2%
Isopropylbenzene	36.0	31.9	88.5%	28.8	80.1%	28.6	79.5%	28.5	79.3%	32.3	89.8%
n-Propylbenzene	35.1	31.0	88.3%	27.4	78.2%	27.0	76.8%	27.6	78.8%	31.3	89.0%
1,3,5-Trimethylbenzene	36.0	29.6	82.3%	25.3	70.4%	29.9	83.1%	24.8	68.9%	32.6	90.5%
1,2,4-Trimethylbenzene	36.0	30.2	83.9%	25.2	70.1%	26.8	74.4%	26.6	73.9%	29.8	82.8%
n-Decane	41.0	34.8	84.9%	30.5	74.4%	30.6	74.7%	31.8	77.5%	36.3	88.6%
1,2,3-Trimethylbenzene	35.1	27.6	78.6%	23.0	65.6%	23.1	65.8%	23.9	68.0%	27.2	77.5%
n-Undecane	42.9	32.5	75.7%	25.8	60.2%	27.3	63.5%	29.8	69.6%	31.4	73.2%