APPENDIX A

VOC Emissions Data – Tank Breathing

A1. Daily VOC Emission Rate Calculations

A2. Daily One-Minute Data

A3. Daily Analyzer Calibrations and Data Sheets

A4. Daily Equipment Checks

A1. Daily VOC Emission Rate Calculations

Emission Rate Calculation Sheet
Total Hydrocarbon Emissions

Facility : Global South Portland	**Start Date:** 18-Jul-12
Source/Location: Asphalt Tank #9	**End Date** 18-Jul-12
	Start Time: 18:15
	End Time: 23:59

Average Concentration:		447 ppmvw
Average Flow Rate:		426 scfm
Molecular Weight:	Propane	44.09 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM) =		**819.95** mg/m^3
mg/SCF =	(mg/m^3) (m^3/35.31 SCF)	=	**23.22** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**5.12E-05** lb/SCF
THC lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**1.31** lb/hr
CH4 lb/hr =	(lb/SCF * SCFM * 60 min/hr)		**0.017** lb/hr
NMHC lb/hr =			**1.29** lb/hr
NMHC TPY =			**5.65** tons/year

Emission Rate Calculation Sheet
Total Hydrocarbon Emissions

Facility : Global South Portland	**Start Date:** 19-Jul-12
Source/Location: Asphalt Tank #9	**End Date** 19-Jul-12
	Start Time: 0:00
	End Time: 23:59

Average Concentration:		365 ppmvw
Average Flow Rate:		427 scfm
Molecular Weight:	Propane	44.09 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM) =		**669.82** mg/m^3
mg/SCF =	(mg/m^3) (m^3/35.31 SCF)	=	**18.97** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**4.18E-05** lb/SCF
THC lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**1.07** lb/hr
CH4 lb/hr =	(lb/SCF * SCFM * 60 min/hr)		**0.010** lb/hr
NMHC lb/hr =			**1.06** lb/hr
NMHC TPY =			**4.65** tons/year

Emission Rate Calculation Sheet
Total Hydrocarbon Emissions

Facility :	Global South Portland	**Start Date:**	20-Jul-12
Source/Location:	Asphalt Tank #9	**End Date**	20-Jul-12
		Start Time:	0:00
		End Time:	23:59

Average Concentration:		423 ppmvw
Average Flow Rate:		418 scfm
Molecular Weight:	Propane	44.09 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM) =		**775.16** mg/m^3
mg/SCF =	(mg/m^3) (m^3/35.31 SCF)	=	**21.95** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**4.84E-05** lb/SCF
THC lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**1.21** lb/hr
CH4 lb/hr =	(lb/SCF * SCFM * 60 min/hr)		**0.010** lb/hr
NMHC lb/hr =			**1.20** lb/hr
NMHC TPY =			**5.27** tons/year

Emission Rate Calculation Sheet
Total Hydrocarbon Emissions

Facility : Global South Portland	**Start Date:** 21-Jul-12
Source/Location: Asphalt Tank #9	**End Date** 21-Jul-12
	Start Time: 0:00
	End Time: 23:59

Average Concentration:		395 ppmvw
Average Flow Rate:		423 scfm
Molecular Weight:	Propane	44.09 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM)	=	**723.84** mg/m^3
mg/SCF =	(mg/m^3) (m^3/35.31 SCF)	=	**20.50** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**4.52E-05** lb/SCF
THC lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**1.15** lb/hr
CH4 lb/hr =	(lb/SCF * SCFM * 60 min/hr)		**0.008** lb/hr
NMHC lb/hr =			**1.14** lb/hr
NMHC TPY =			**4.99** tons/year

Emission Rate Calculation Sheet
Total Hydrocarbon Emissions

Facility : Global South Portland	**Start Date:** 22-Jul-12
Source/Location: Asphalt Tank #9	**End Date** 22-Jul-12
	Start Time: 0:00
	End Time: 23:59

Average Concentration:		308 ppmvw
Average Flow Rate:		432 scfm
Molecular Weight:	Propane	44.09 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM) =		**565.38** mg/m^3
mg/SCF =	(mg/m^3) (m^3/35.31 SCF)	=	**16.01** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**3.53E-05** lb/SCF
THC lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**0.91** lb/hr
CH4 lb/hr =	(lb/SCF * SCFM * 60 min/hr)		**0.003** lb/hr
NMHC lb/hr =			**0.91** lb/hr
NMHC TPY =			**3.99** tons/year

Emission Rate Calculation Sheet
Total Hydrocarbon Emissions

Facility : Global South Portland	**Start Date:** 23-Jul-12
Source/Location: Asphalt Tank #9	**End Date** 23-Jul-12
	Start Time: 0:00
	End Time: 23:59

Average Concentration:		351 ppmvw
Average Flow Rate:		430 scfm
Molecular Weight:	Propane	44.09 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM) =		**643.59** mg/m^3
mg/SCF =	(mg/m^3) (m^3/35.31 SCF)	=	**18.23** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**4.02E-05** lb/SCF
THC lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**1.04** lb/hr
CH4 lb/hr =	(lb/SCF * SCFM * 60 min/hr)		**0.005** lb/hr
NMHC lb/hr =			**1.03** lb/hr
NMHC TPY =			**4.52** tons/year

Emission Rate Calculation Sheet
Total Hydrocarbon Emissions

Facility :	Global South Portland	**Start Date:**	24-Jul-12
Source/Location:	Asphalt Tank #9	**End Date**	24-Jul-12
		Start Time:	0:00
		End Time:	23:59

Average Concentration:		340 ppmvw
Average Flow Rate:		427 scfm
Molecular Weight:	Propane	44.09 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM) =		**622.32** mg/m^3
mg/SCF =	(mg/m^3) (m^3/35.31 SCF)	=	**17.62** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**3.89E-05** lb/SCF
THC lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**0.99** lb/hr
CH4 lb/hr =	(lb/SCF * SCFM * 60 min/hr)		**0.006** lb/hr
NMHC lb/hr =			**0.99** lb/hr
NMHC TPY =			**4.33** tons/year

Emission Rate Calculation Sheet
Total Hydrocarbon Emissions

Facility :	Global South Portland	**Start Date:**	25-Jul-12
Source/Location:	Asphalt Tank #9	**End Date**	25-Jul-12
		Start Time:	0:00
		End Time:	23:59

Average Concentration:		260 ppmvw
Average Flow Rate:		436 scfm
Molecular Weight:	Propane	44.09 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM) =		**476.11** mg/m^3
mg/SCF =	(mg/m^3) (m^3/35.31 SCF)	=	**13.48** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**2.97E-05** lb/SCF
THC lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**0.78** lb/hr
CH4 lb/hr =	(lb/SCF * SCFM * 60 min/hr)		**0.003** lb/hr
NMHC lb/hr =			**0.77** lb/hr
NMHC TPY =			**3.39** tons/year

Emission Rate Calculation Sheet
Total Hydrocarbon Emissions

Facility : Global South Portland	**Start Date:** 26-Jul-12
Source/Location: Asphalt Tank #9	**End Date** 26-Jul-12
	Start Time: 0:00
	End Time: 14:50

Average Concentration:		262 ppmvw
Average Flow Rate:		422 scfm
Molecular Weight:	Propane	44.09 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM) =		**479.55** mg/m^3
mg/SCF =	(mg/m^3) (m^3/35.31 SCF)	=	**13.58** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**2.99E-05** lb/SCF
THC lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**0.76** lb/hr
CH4 lb/hr =	(lb/SCF * SCFM * 60 min/hr)		**0.003** lb/hr
NMHC lb/hr =			**0.75** lb/hr
NMHC TPY =			**3.30** tons/year

Emission Rate Calculation Sheet
Total Hydrocarbon Emissions

Facility : Global South Portland	**Start Date:** 27-Jul-12
Source/Location: Asphalt Tank #9	**End Date** 27-Jul-12
	Start Time: 15:00
	End Time: 23:59

Average Concentration:		239 ppmvw
Average Flow Rate:		435 scfm
Molecular Weight:	Propane	44.09 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM) =		**438.52** mg/m^3
mg/SCF =	(mg/m^3) (m^3/35.31 SCF)	=	**12.42** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**2.74E-05** lb/SCF
THC lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**0.71** lb/hr
CH4 lb/hr =	(lb/SCF * SCFM * 60 min/hr)		**0.011** lb/hr
NMHC lb/hr =			**0.70** lb/hr
NMHC TPY =			**3.08** tons/year

Emission Rate Calculation Sheet
Total Hydrocarbon Emissions

Facility : Global South Portland	**Start Date:** 28-Jul-12
Source/Location: Asphalt Tank #9	**End Date** 28-Jul-12
	Start Time: 0:00
	End Time: 20:30

Average Concentration:		297 ppmvw
Average Flow Rate:		425 scfm
Molecular Weight:	Propane	44.09 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM) =		**543.66** mg/m^3
mg/SCF =	(mg/m^3) (m^3/35.31 SCF)	=	**15.40** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**3.39E-05** lb/SCF
THC lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**0.87** lb/hr
CH4 lb/hr =	(lb/SCF * SCFM * 60 min/hr)		**0.011** lb/hr
NMHC lb/hr =			**0.85** lb/hr
NMHC TPY =			**3.74** tons/year

Emission Rate Calculation Sheet
Total Hydrocarbon Emissions

Facility :	Global South Portland	**Start Date:**	29-Jul-12
Source/Location:	Asphalt Tank #9	**End Date**	29-Jul-12
		Start Time:	10:30
		End Time:	23:59

Average Concentration:		608 ppmvw
Average Flow Rate:		422 scfm
Molecular Weight:	Propane	44.09 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM) =		**1113.65** mg/m^3
mg/SCF =	(mg/m^3) (m^3/35.31 SCF)	=	**31.54** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**6.95E-05** lb/SCF
THC lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**1.76** lb/hr
CH4 lb/hr =	(lb/SCF * SCFM * 60 min/hr)		**0.030** lb/hr
NMHC lb/hr =			**1.73** lb/hr
NMHC TPY =			**7.58** tons/year

Emission Rate Calculation Sheet
Total Hydrocarbon Emissions

Facility : Global South Portland	**Start Date:** 30-Jul-12
Source/Location: Asphalt Tank #9	**End Date** 30-Jul-12
	Start Time: 0:00
	End Time: 23:59

Average Concentration:		500 ppmvw
Average Flow Rate:		422 scfm
Molecular Weight:	Propane	44.09 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM) =		**916.41** mg/m^3
mg/SCF =	(mg/m^3) (m^3/35.31 SCF)	=	**25.95** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**5.72E-05** lb/SCF
THC lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**1.45** lb/hr
CH4 lb/hr =	(lb/SCF * SCFM * 60 min/hr)		**0.014** lb/hr
NMHC lb/hr =			**1.43** lb/hr
NMHC TPY =			**6.28** tons/year

Emission Rate Calculation Sheet
Total Hydrocarbon Emissions

Facility : Global South Portland	**Start Date:** 31-Jul-12
Source/Location: Asphalt Tank #9	**End Date** 31-Jul-12
	Start Time: 0:00
	End Time: 23:59

Average Concentration:		696 ppmvw
Average Flow Rate:		425 scfm
Molecular Weight:	Propane	44.09 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM) =		**1276.26** mg/m^3
mg/SCF =	(mg/m^3) (m^3/35.31 SCF)	=	**36.14** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**7.97E-05** lb/SCF
THC lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**2.03** lb/hr
CH4 lb/hr =	(lb/SCF * SCFM * 60 min/hr)		**0.043** lb/hr
NMHC lb/hr =			**1.99** lb/hr
NMHC TPY =			**8.72** tons/year

Emission Rate Calculation Sheet
Total Hydrocarbon Emissions

Facility :	Global South Portland	**Start Date:**	01-Aug-12
Source/Location:	Asphalt Tank #9	**End Date**	01-Aug-12
		Start Time:	0:00
		End Time:	23:59

Average Concentration:		482 ppmvw
Average Flow Rate:		423 scfm
Molecular Weight:	Propane	44.09 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM) =		**883.28** mg/m^3
mg/SCF =	(mg/m^3) (m^3/35.31 SCF)	=	**25.01** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**5.51E-05** lb/SCF
THC lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**1.40** lb/hr
CH4 lb/hr =	(lb/SCF * SCFM * 60 min/hr)		**0.012** lb/hr
NMHC lb/hr =			**1.39** lb/hr
NMHC TPY =			**6.08** tons/year

Emission Rate Calculation Sheet
Total Hydrocarbon Emissions

Facility : Global South Portland	**Start Date:** 02-Aug-12
Source/Location: Asphalt Tank #9	**End Date** 02-Aug-12
	Start Time: 0:00
	End Time: 23:59

Average Concentration:		500 ppmvw
Average Flow Rate:		415 scfm
Molecular Weight:	Propane	44.09 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM) =		**916.59** mg/m^3
mg/SCF =	(mg/m^3) (m^3/35.31 SCF)	=	**25.96** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**5.72E-05** lb/SCF
THC lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**1.43** lb/hr
CH4 lb/hr =	(lb/SCF * SCFM * 60 min/hr)		**0.012** lb/hr
NMHC lb/hr =			**1.41** lb/hr
NMHC TPY =			**6.20** tons/year

Emission Rate Calculation Sheet
Total Hydrocarbon Emissions

Facility :	Global South Portland	**Start Date:**	03-Aug-12
Source/Location:	Asphalt Tank #9	**End Date**	03-Aug-12
		Start Time:	0:00
		End Time:	23:59

Average Concentration:		546 ppmvw
Average Flow Rate:		412 scfm
Molecular Weight:	Propane	44.09 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM) =		**1000.04** mg/m^3
mg/SCF =	(mg/m^3) (m^3/35.31 SCF)	=	**28.32** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**6.24E-05** lb/SCF
THC lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**1.54** lb/hr
CH4 lb/hr =	(lb/SCF * SCFM * 60 min/hr)		**0.014** lb/hr
NMHC lb/hr =			**1.53** lb/hr
NMHC TPY =			**6.70** tons/year

Emission Rate Calculation Sheet
Total Hydrocarbon Emissions

Facility : Global South Portland	**Start Date:** 04-Aug-12
Source/Location: Asphalt Tank #9	**End Date** 04-Aug-12
	Start Time: 0:00
	End Time: 23:59

Average Concentration:		532 ppmvw
Average Flow Rate:		415 scfm
Molecular Weight:	Propane	44.09 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM) =		**974.60** mg/m^3
mg/SCF =	(mg/m^3) (m^3/35.31 SCF)	=	**27.60** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**6.08E-05** lb/SCF
THC lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**1.51** lb/hr
CH4 lb/hr =	(lb/SCF * SCFM * 60 min/hr)		**0.010** lb/hr
NMHC lb/hr =			**1.50** lb/hr
NMHC TPY =			**6.59** tons/year

Emission Rate Calculation Sheet
Total Hydrocarbon Emissions

Facility : Global South Portland	**Start Date:** 05-Aug-12
Source/Location: Asphalt Tank #9	**End Date** 05-Aug-12
	Start Time: 0:00
	End Time: 23:59

Average Concentration:		438 ppmvw
Average Flow Rate:		421 scfm
Molecular Weight:	Propane	44.09 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM) =		**802.06** mg/m^3
mg/SCF =	(mg/m^3) (m^3/35.31 SCF)	=	**22.71** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**5.01E-05** lb/SCF
THC lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**1.27** lb/hr
CH4 lb/hr =	(lb/SCF * SCFM * 60 min/hr)		**0.011** lb/hr
NMHC lb/hr =			**1.26** lb/hr
NMHC TPY =			**5.50** tons/year

Emission Rate Calculation Sheet
Total Hydrocarbon Emissions

Facility : Global South Portland	**Start Date:** 06-Aug-12
Source/Location: Asphalt Tank #9	**End Date** 06-Aug-12
	Start Time: 0:00
	End Time: 23:59

Average Concentration:		465 ppmvw
Average Flow Rate:		420 scfm
Molecular Weight:	Propane	44.09 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM) =		**852.02** mg/m^3
mg/SCF =	(mg/m^3) (m^3/35.31 SCF)	=	**24.13** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**5.32E-05** lb/SCF
THC lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**1.34** lb/hr
CH4 lb/hr =	(lb/SCF * SCFM * 60 min/hr)		**0.011** lb/hr
NMHC lb/hr =			**1.33** lb/hr
NMHC TPY =			**5.83** tons/year

Emission Rate Calculation Sheet
Total Hydrocarbon Emissions

Facility : Global South Portland	**Start Date:** 07-Aug-12
Source/Location: Asphalt Tank #9	**End Date** 07-Aug-12
	Start Time: 0:00
	End Time: 23:59

Average Concentration:		478 ppmvw
Average Flow Rate:		419 scfm
Molecular Weight:	Propane	44.09 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM) =		**875.94** mg/m^3
mg/SCF =	(mg/m^3) (m^3/35.31 SCF)	=	**24.81** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**5.47E-05** lb/SCF
THC lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**1.37** lb/hr
CH4 lb/hr =	(lb/SCF * SCFM * 60 min/hr)		**0.010** lb/hr
NMHC lb/hr =			**1.36** lb/hr
NMHC TPY =			**5.97** tons/year

Emission Rate Calculation Sheet
Total Hydrocarbon Emissions

Facility : Global South Portland	**Start Date:** 08-Aug-12
Source/Location: Asphalt Tank #9	**End Date** 08-Aug-12
	Start Time: 0:00
	End Time: 23:59

Average Concentration:		490 ppmvw
Average Flow Rate:		415 scfm
Molecular Weight:	Propane	44.09 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM) =		**898.35** mg/m^3
mg/SCF =	(mg/m^3) (m^3/35.31 SCF)	=	**25.44** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**5.61E-05** lb/SCF
THC lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**1.40** lb/hr
CH4 lb/hr =	(lb/SCF * SCFM * 60 min/hr)		**0.017** lb/hr
NMHC lb/hr =			**1.38** lb/hr
NMHC TPY =			**6.05** tons/year

Emission Rate Calculation Sheet
Total Hydrocarbon Emissions

Facility : Global South Portland	**Start Date:** 09-Aug-12
Source/Location: Asphalt Tank #9	**End Date** 09-Aug-12
	Start Time: 0:00
	End Time: 23:59

Average Concentration:		481 ppmvw
Average Flow Rate:		417 scfm
Molecular Weight:	Propane	44.09 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM) =		**881.54** mg/m^3
mg/SCF =	(mg/m^3) (m^3/35.31 SCF)	=	**24.97** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**5.50E-05** lb/SCF
THC lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**1.38** lb/hr
CH4 lb/hr =	(lb/SCF * SCFM * 60 min/hr)		**0.007** lb/hr
NMHC lb/hr =			**1.37** lb/hr
NMHC TPY =			**6.01** tons/year

Emission Rate Calculation Sheet
Total Hydrocarbon Emissions

Facility : Global South Portland	**Start Date:** 10-Aug-12
Source/Location: Asphalt Tank #9	**End Date** 10-Aug-12
	Start Time: 0:00
	End Time: 23:59

Average Concentration:		404 ppmvw
Average Flow Rate:		434 scfm
Molecular Weight:	Propane	44.09 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM) =		**740.12** mg/m^3
mg/SCF =	(mg/m^3) (m^3/35.31 SCF)	=	**20.96** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**4.62E-05** lb/SCF
THC lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**1.20** lb/hr
CH4 lb/hr =	(lb/SCF * SCFM * 60 min/hr)		**0.007** lb/hr
NMHC lb/hr =			**1.20** lb/hr
NMHC TPY =			**5.24** tons/year

Emission Rate Calculation Sheet
Total Hydrocarbon Emissions

Facility :	Global South Portland	**Start Date:**	11-Aug-12
Source/Location:	Asphalt Tank #9	**End Date**	11-Aug-12
		Start Time:	0:00
		End Time:	23:59

Average Concentration:		407 ppmvw
Average Flow Rate:		421 scfm
Molecular Weight:	Propane	44.09 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM) =		**745.49** mg/m^3
mg/SCF =	(mg/m^3) (m^3/35.31 SCF)	=	**21.11** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**4.65E-05** lb/SCF
THC lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**1.18** lb/hr
CH4 lb/hr =	(lb/SCF * SCFM * 60 min/hr)		**0.010** lb/hr
NMHC lb/hr =			**1.17** lb/hr
NMHC TPY =			**5.11** tons/year

Emission Rate Calculation Sheet
Total Hydrocarbon Emissions

Facility : Global South Portland	**Start Date:** 12-Aug-12
Source/Location: Asphalt Tank #9	**End Date** 12-Aug-12
	Start Time: 0:00
	End Time: 23:59

Average Concentration:		374 ppmvw
Average Flow Rate:		417 scfm
Molecular Weight:	Propane	44.09 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM) =		**685.16** mg/m^3
mg/SCF =	(mg/m^3) (m^3/35.31 SCF)	=	**19.40** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**4.28E-05** lb/SCF
THC lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**1.07** lb/hr
CH4 lb/hr =	(lb/SCF * SCFM * 60 min/hr)		**0.006** lb/hr
NMHC lb/hr =			**1.06** lb/hr
NMHC TPY =			**4.66** tons/year

Emission Rate Calculation Sheet
Total Hydrocarbon Emissions

Facility : Global South Portland	**Start Date:** 13-Aug-12
Source/Location: Asphalt Tank #9	**End Date** 13-Aug-12
	Start Time: 0:00
	End Time: 23:59

Average Concentration:		387 ppmvw
Average Flow Rate:		415 scfm
Molecular Weight:	Propane	44.09 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM) =		**708.73** mg/m^3
mg/SCF =	(mg/m^3) (m^3/35.31 SCF)	=	**20.07** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**4.42E-05** lb/SCF
THC lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**1.10** lb/hr
CH4 lb/hr =	(lb/SCF * SCFM * 60 min/hr)		**0.005** lb/hr
NMHC lb/hr =			**1.10** lb/hr
NMHC TPY =			**4.80** tons/year

Emission Rate Calculation Sheet
Total Hydrocarbon Emissions

Facility : Global South Portland	**Start Date:** 14-Aug-12
Source/Location: Asphalt Tank #9	**End Date** 14-Aug-12
	Start Time: 0:00
	End Time: 23:59

Average Concentration:		417 ppmvw
Average Flow Rate:		414 scfm
Molecular Weight:	Propane	44.09 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM) =		**764.30** mg/m^3
mg/SCF =	(mg/m^3) (m^3/35.31 SCF)	=	**21.65** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**4.77E-05** lb/SCF
THC lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**1.19** lb/hr
CH4 lb/hr =	(lb/SCF * SCFM * 60 min/hr)		**0.007** lb/hr
NMHC lb/hr =			**1.18** lb/hr
NMHC TPY =			**5.17** tons/year

Emission Rate Calculation Sheet
Total Hydrocarbon Emissions

Facility : Global South Portland	**Start Date:** 15-Aug-12
Source/Location: Asphalt Tank #9	**End Date** 15-Aug-12
	Start Time: 0:00
	End Time: 23:59

Average Concentration:		399 ppmvw
Average Flow Rate:		418 scfm
Molecular Weight:	Propane	44.09 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM)	=	**731.53** mg/m^3
mg/SCF =	(mg/m^3) (m^3/35.31 SCF)	=	**20.72** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**4.57E-05** lb/SCF
THC lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**1.14** lb/hr
CH4 lb/hr =	(lb/SCF * SCFM * 60 min/hr)		**0.005** lb/hr
NMHC lb/hr =			**1.14** lb/hr
NMHC TPY =			**4.99** tons/year

Emission Rate Calculation Sheet
Total Hydrocarbon Emissions

Facility : Global South Portland	**Start Date:** 16-Aug-12
Source/Location: Asphalt Tank #9	**End Date** 16-Aug-12
	Start Time: 0:00
	End Time: 16:52

Average Concentration:		378 ppmvw
Average Flow Rate:		432 scfm
Molecular Weight:	Propane	44.09 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM) =		**693.44** mg/m^3
mg/SCF =	(mg/m^3) (m^3/35.31 SCF)	=	**19.64** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**4.33E-05** lb/SCF
THC lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**1.12** lb/hr
CH4 lb/hr =	(lb/SCF * SCFM * 60 min/hr)		**0.006** lb/hr
NMHC lb/hr =			**1.12** lb/hr
NMHC TPY =			**4.89** tons/year

Emission Rate Calculation Sheet
Methane Emissions

Facility : Global South Portland	**Start Date:** 18-Jul-12
Source/Location: Asphalt Tank #9	**End Date** 18-Jul-12
	Start Time: 18:15
	End Time: 23:59

Average Concentration:		16 ppmvw
Average Flow Rate:		426 scfm
Molecular Weight:	(Methane)	16.04 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM) =		**10.60** mg/m^3
mg/SCF =	(mg/m^3) (m^3/35.31 SCF)	=	**0.30** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**6.61603E-07** lb/SCF
lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**0.017** lb/hr

Emission Rate Calculation Sheet
Methane Emissions

Facility : Global South Portland	**Start Date:** 19-Jul-12
Source/Location: Asphalt Tank #9	**End Date** 19-Jul-12
	Start Time: 0:00
	End Time: 23:59

Average Concentration:	9 ppmvw
Average Flow Rate:	427 scfm
Molecular Weight: (Methane)	16.04 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM) =		**6.16** mg/m^3
mg/SCF =	(mg/m^3) (m^3/35.31 SCF)	=	**0.17** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**3.8438E-07** lb/SCF
lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**0.010** lb/hr

Emission Rate Calculation Sheet
Methane Emissions

Facility : Global South Portland	**Start Date:** 20-Jul-12
Source/Location: Asphalt Tank #9	**End Date** 20-Jul-12
	Start Time: 0:00
	End Time: 23:59

Average Concentration:	10 ppmvw
Average Flow Rate:	418 scfm
Molecular Weight: (Methane)	16.04 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol, PPM) =		**6.39** mg/m^3
mg/SCF =	(mg/m^3) (m^3/35.31 SCF)	=	**0.18** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**3.99141E-07** lb/SCF
lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**0.010** lb/hr

Emission Rate Calculation Sheet
Methane Emissions

Facility : Global South Portland	**Start Date:** 21-Jul-12
Source/Location: Asphalt Tank #9	**End Date** 21-Jul-12
	Start Time: 0:00
	End Time: 23:59

Average Concentration:	8 ppmvw
Average Flow Rate:	423 scfm
Molecular Weight: (Methane)	16.04 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM) =		**5.05** mg/m^3
mg/SCF =	(mg/m^3) (m^3/35.31 SCF)	=	**0.14** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**3.1515E-07** lb/SCF
lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**0.008** lb/hr

Emission Rate Calculation Sheet
Methane Emissions

Facility : Global South Portland	**Start Date:** 22-Jul-12
Source/Location: Asphalt Tank #9	**End Date** 22-Jul-12
	Start Time: 0:00
	End Time: 23:59

Average Concentration:	3 ppmvw
Average Flow Rate:	432 scfm
Molecular Weight: (Methane)	16.04 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM) =		**2.07** mg/m^3
mg/SCF =	(mg/m^3) (m^3/35.31 SCF)	=	**0.06** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**1.29065E-07** lb/SCF
lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**0.003** lb/hr

Emission Rate Calculation Sheet
Methane Emissions

Facility : Global South Portland	**Start Date:** 23-Jul-12
Source/Location: Asphalt Tank #9	**End Date** 23-Jul-12
	Start Time: 0:00
	End Time: 23:59

Average Concentration:		5 ppmvw
Average Flow Rate:		430 scfm
Molecular Weight:	(Methane)	16.04 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM) =		**3.28** mg/m^3
mg/SCF =	(mg/m^3) $(m^3/35.31$ SCF)	=	**0.09** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**2.04833E-07** lb/SCF
lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**0.005** lb/hr

Emission Rate Calculation Sheet
Methane Emissions

Facility : Global South Portland	**Start Date:** 24-Jul-12
Source/Location: Asphalt Tank #9	**End Date** 24-Jul-12
	Start Time: 0:00
	End Time: 23:59

Average Concentration:		6 ppmvw
Average Flow Rate:		427 scfm
Molecular Weight:	(Methane)	16.04 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM) =		**3.80** mg/m^3
mg/SCF =	(mg/m^3) $(m^3/35.31$ SCF)	=	**0.11** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**2.37044E-07** lb/SCF
lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**0.006** lb/hr

Emission Rate Calculation Sheet
Methane Emissions

Facility : Global South Portland	**Start Date:** 25-Jul-12
Source/Location: Asphalt Tank #9	**End Date** 25-Jul-12
	Start Time: 0:00
	End Time: 23:59

Average Concentration:	3 ppmvw
Average Flow Rate:	436 scfm
Molecular Weight: (Methane)	16.04 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM)	=	**2.08** mg/m^3
mg/SCF =	(mg/m^3) (m^3/35.31 SCF)	=	**0.06** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**1.29728E-07** lb/SCF
lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**0.003** lb/hr

Emission Rate Calculation Sheet
Methane Emissions

Facility : Global South Portland	**Start Date:** 26-Jul-12
Source/Location: Asphalt Tank #9	**End Date** 26-Jul-12
	Start Time: 0:00
	End Time: 14:50

Average Concentration:		3 ppmvw
Average Flow Rate:		422 scfm
Molecular Weight:	(Methane)	16.04 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM)	=	**1.94**	mg/m^3
mg/SCF =	(mg/m^3) (m^3/35.31 SCF)	=	**0.05**	mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**1.2121E-07**	lb/SCF
lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**0.003**	lb/hr

Emission Rate Calculation Sheet
Methane Emissions

Facility : Global South Portland	**Start Date:** 27-Jul-12
Source/Location: Asphalt Tank #9	**End Date** 27-Jul-12
	Start Time: 15:00
	End Time: 23:59

Average Concentration:	11 ppmvw
Average Flow Rate:	435 scfm
Molecular Weight: (Methane)	16.04 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM) =		**7.04** mg/m^3
mg/SCF =	(mg/m^3) (m^3/35.31 SCF)	=	**0.20** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**4.39273E-07** lb/SCF
lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**0.011** lb/hr

Emission Rate Calculation Sheet
Methane Emissions

Facility : Global South Portland	**Start Date:** 28-Jul-12
Source/Location: Asphalt Tank #9	**End Date** 28-Jul-12
	Start Time: 0:00
	End Time: 20:30

Average Concentration:		10 ppmvw
Average Flow Rate:		425 scfm
Molecular Weight:	(Methane)	16.04 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM) =		**6.69** mg/m^3
mg/SCF =	(mg/m^3) (m^3/35.31 SCF)	=	**0.19** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**4.17683E-07** lb/SCF
lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**0.011** lb/hr

Emission Rate Calculation Sheet
Methane Emissions

Facility : Global South Portland	**Start Date:** 29-Jul-12
Source/Location: Asphalt Tank #9	**End Date** 29-Jul-12
	Start Time: 10:30
	End Time: 23:59

Average Concentration:	28 ppmvw
Average Flow Rate:	422 scfm
Molecular Weight: (Methane)	16.04 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM) =		**18.86** mg/m^3
mg/SCF =	(mg/m^3) $(m^3/35.31$ SCF)	=	**0.53** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**1.17725E-06** lb/SCF
lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**0.030** lb/hr

Emission Rate Calculation Sheet
Methane Emissions

Facility :	Global South Portland	**Start Date:**	30-Jul-12
Source/Location:	Asphalt Tank #9	**End Date**	30-Jul-12
		Start Time:	0:00
		End Time:	23:59

Average Concentration:		13 ppmvw
Average Flow Rate:		422 scfm
Molecular Weight:	(Methane)	16.04 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM) =		**8.63** mg/m^3
mg/SCF =	(mg/m^3) (m^3/35.31 SCF)	=	**0.24** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**5.39058E-07** lb/SCF
lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**0.014** lb/hr

Emission Rate Calculation Sheet
Methane Emissions

Facility : Global South Portland	**Start Date:** 31-Jul-12
Source/Location: Asphalt Tank #9	**End Date** 31-Jul-12
	Start Time: 0:00
	End Time: 23:59

Average Concentration:		40 ppmvw
Average Flow Rate:		425 scfm
Molecular Weight:	(Methane)	16.04 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM) =		**26.90** mg/m^3
mg/SCF =	(mg/m^3) $(m^3/35.31$ SCF)	=	**0.76** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**1.6797E-06** lb/SCF
lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**0.043** lb/hr

Emission Rate Calculation Sheet
Methane Emissions

Facility : Global South Portland	**Start Date:** 1-Aug-12
Source/Location: Asphalt Tank #9	**End Date** 01-Aug-12
	Start Time: 0:00
	End Time: 23:59

Average Concentration:		11 ppmvw
Average Flow Rate:		423 scfm
Molecular Weight:	(Methane)	16.04 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM) =		**7.62** mg/m^3
mg/SCF =	(mg/m^3) (m^3/35.31 SCF)	=	**0.22** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**4.75608E-07** lb/SCF
lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**0.012** lb/hr

Emission Rate Calculation Sheet
Methane Emissions

Facility : Global South Portland	**Start Date:** 2-Aug-12
Source/Location: Asphalt Tank #9	**End Date** 02-Aug-12
	Start Time: 0:00
	End Time: 23:59

Average Concentration:		11 ppmvw
Average Flow Rate:		415 scfm
Molecular Weight:	(Methane)	16.04 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM) =		**7.58** mg/m^3
mg/SCF =	(mg/m^3) $(m^3/35.31$ SCF)	=	**0.21** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**4.73551E-07** lb/SCF
lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**0.012** lb/hr

Emission Rate Calculation Sheet
Methane Emissions

Facility : Global South Portland	**Start Date:** 3-Aug-12
Source/Location: Asphalt Tank #9	**End Date** 03-Aug-12
	Start Time: 0:00
	End Time: 23:59

Average Concentration:		13 ppmvw
Average Flow Rate:		412 scfm
Molecular Weight:	(Methane)	16.04 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM) =		**8.86** mg/m^3
mg/SCF =	(mg/m^3) $(m^3/35.31$ SCF)	=	**0.25** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**5.53426E-07** lb/SCF
lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**0.014** lb/hr

Emission Rate Calculation Sheet
Methane Emissions

Facility : Global South Portland	**Start Date:** 4-Aug-12
Source/Location: Asphalt Tank #9	**End Date** 04-Aug-12
	Start Time: 0:00
	End Time: 23:59

Average Concentration:	10 ppmvw
Average Flow Rate:	415 scfm
Molecular Weight: (Methane)	16.04 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM) =		**6.67** mg/m^3
mg/SCF =	(mg/m^3) $(m^3/35.31$ SCF)	=	**0.19** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**4.16321E-07** lb/SCF
lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**0.010** lb/hr

Emission Rate Calculation Sheet
Methane Emissions

Facility : Global South Portland	**Start Date:** 5-Aug-12
Source/Location: Asphalt Tank #9	**End Date** 05-Aug-12
	Start Time: 0:00
	End Time: 23:59

Average Concentration:	10 ppmvw
Average Flow Rate:	421 scfm
Molecular Weight: (Methane)	16.04 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM) =		**6.67** mg/m^3
mg/SCF =	(mg/m^3) $(m^3/35.31$ SCF)	=	**0.19** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**4.16321E-07** lb/SCF
lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**0.011** lb/hr

Emission Rate Calculation Sheet
Methane Emissions

Facility : Global South Portland	**Start Date:** 6-Aug-12
Source/Location: Asphalt Tank #9	**End Date** 06-Aug-12
	Start Time: 0:00
	End Time: 23:59

Average Concentration:	10 ppmvw
Average Flow Rate:	420 scfm
Molecular Weight: (Methane)	16.04 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM) =		**6.67** mg/m^3
mg/SCF =	(mg/m^3) $(m^3/35.31$ SCF)	=	**0.19** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**4.16321E-07** lb/SCF
lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**0.011** lb/hr

Emission Rate Calculation Sheet
Methane Emissions

Facility : Global South Portland	**Start Date:** 7-Aug-12
Source/Location: Asphalt Tank #9	**End Date** 07-Aug-12
	Start Time: 0:00
	End Time: 23:59

Average Concentration:	10 ppmvw
Average Flow Rate:	419 scfm
Molecular Weight: (Methane)	16.04 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM) =		**6.67** mg/m^3
mg/SCF =	(mg/m^3) $(m^3/35.31$ SCF)	=	**0.19** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**4.16321E-07** lb/SCF
lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**0.010** lb/hr

Emission Rate Calculation Sheet
Methane Emissions

Facility : Global South Portland	**Start Date:** 8-Aug-12
Source/Location: Asphalt Tank #9	**End Date** 08-Aug-12
	Start Time: 0:00
	End Time: 23:59

Average Concentration:	16 ppmvw
Average Flow Rate:	415 scfm
Molecular Weight: (Methane)	16.04 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM) =		**10.76** mg/m^3
mg/SCF =	(mg/m^3) $(m^3/35.31$ SCF)	=	**0.30** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**6.72068E-07** lb/SCF
lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**0.017** lb/hr

Emission Rate Calculation Sheet
Methane Emissions

Facility : Global South Portland	**Start Date:** 9-Aug-12
Source/Location: Asphalt Tank #9	**End Date** 09-Aug-12
	Start Time: 0:00
	End Time: 23:59

Average Concentration:	6 ppmvw
Average Flow Rate:	417 scfm
Molecular Weight: (Methane)	16.04 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM) =		**4.21** mg/m^3
mg/SCF =	(mg/m^3) $(m^3/35.31$ SCF)	=	**0.12** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**2.63091E-07** lb/SCF
lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**0.007** lb/hr

Emission Rate Calculation Sheet
Methane Emissions

Facility : Global South Portland	**Start Date:** 10-Aug-12
Source/Location: Asphalt Tank #9	**End Date** 10-Aug-12
	Start Time: 0:00
	End Time: 23:59

Average Concentration:		7 ppmvw
Average Flow Rate:		434 scfm
Molecular Weight:	(Methane)	16.04 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM) =		**4.58** mg/m^3
mg/SCF =	(mg/m^3) $(m^3/35.31$ SCF)	=	**0.13** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**2.86149E-07** lb/SCF
lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**0.007** lb/hr

Emission Rate Calculation Sheet
Methane Emissions

Facility : Global South Portland	**Start Date:** 11-Aug-12
Source/Location: Asphalt Tank #9	**End Date** 11-Aug-12
	Start Time: 0:00
	End Time: 23:59

Average Concentration:		9 ppmvw
Average Flow Rate:		421 scfm
Molecular Weight:	(Methane)	16.04 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM) =		**6.06** mg/m^3
mg/SCF =	(mg/m^3) (m^3/35.31 SCF)	=	**0.17** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**3.78592E-07** lb/SCF
lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**0.010** lb/hr

Emission Rate Calculation Sheet
Methane Emissions

Facility : Global South Portland	**Start Date:** 12-Aug-12
Source/Location: Asphalt Tank #9	**End Date** 12-Aug-12
	Start Time: 0:00
	End Time: 23:59

Average Concentration:	6 ppmvw
Average Flow Rate:	417 scfm
Molecular Weight: (Methane)	16.04 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM) =		**4.13** mg/m^3
mg/SCF =	(mg/m^3) (m^3/35.31 SCF)	=	**0.12** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**2.57772E-07** lb/SCF
lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**0.006** lb/hr

Emission Rate Calculation Sheet
Methane Emissions

Facility : Global South Portland	**Start Date:** 13-Aug-12
Source/Location: Asphalt Tank #9	**End Date** 13-Aug-12
	Start Time: 0:00
	End Time: 23:59

Average Concentration:	5 ppmvw
Average Flow Rate:	415 scfm
Molecular Weight: (Methane)	16.04 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM) =		**3.43** mg/m^3
mg/SCF =	(mg/m^3) (m^3/35.31 SCF)	=	**0.10** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**2.14296E-07** lb/SCF
lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**0.005** lb/hr

Emission Rate Calculation Sheet
Methane Emissions

Facility : Global South Portland	**Start Date:** 14-Aug-12
Source/Location: Asphalt Tank #9	**End Date** 14-Aug-12
	Start Time: 0:00
	End Time: 23:59

Average Concentration:	7 ppmvw
Average Flow Rate:	414 scfm
Molecular Weight: (Methane)	16.04 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM) =		**4.39** mg/m^3
mg/SCF =	(mg/m^3) $(m^3/35.31$ SCF)	=	**0.12** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**2.73818E-07** lb/SCF
lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**0.007** lb/hr

Emission Rate Calculation Sheet
Methane Emissions

Facility : Global South Portland	**Start Date:** 15-Aug-12
Source/Location: Asphalt Tank #9	**End Date** 15-Aug-12
	Start Time: 0:00
	End Time: 23:59

Average Concentration:	5 ppmvw
Average Flow Rate:	418 scfm
Molecular Weight: (Methane)	16.04 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM) =		**3.48** mg/m^3
mg/SCF =	(mg/m^3) (m^3/35.31 SCF)	=	**0.10** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**2.17375E-07** lb/SCF
lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**0.005** lb/hr

Emission Rate Calculation Sheet
Methane Emissions

Facility : Global South Portland	**Start Date:** 16-Aug-12
Source/Location: Asphalt Tank #9	**End Date** 16-Aug-12
	Start Time: 0:00
	End Time: 16:52

Average Concentration:		5 ppmvw
Average Flow Rate:		432 scfm
Molecular Weight:	(Methane)	16.04 g/mole

mg/m^3 =	(MW * PPM) / (24.055 l/mol. PPM) =		**3.40** mg/m^3
mg/SCF =	(mg/m^3) (m^3/35.31 SCF)	=	**0.10** mg/SCF
lb/SCF =	(1 lb/ 4.536E+5 mg) * (mg/SCF)	=	**2.12558E-07** lb/SCF
lb/hr =	(lb/SCF * SCFM * 60 min/hr)	=	**0.006** lb/hr

Volumetric Flow Calculations

Facility/Site: Global South Portland	**Start Date:** 18-Jul-12
Source: Asphalt Tank #9	**Stop Date:** 18-Jul-12
	Start Time: 18:15
	Stop Time: 23:59

Trav. Point	Delta P ("H_2O)	SQ Root Delta P	Stack Temp (F)
Average	0.29	0.53	218.0

Average Delta P, ("H_2O)	0.29
Average Stack Temp, (F)	218.0
B_{ws}, (fractional water)	0.010
P_{bar}, ("H_g)	29.9
P_g, ("H_2O)	0.01
CO_2, ($\%_{vd}$)	0.00
O_2, ($\%_{vd}$)	20.90
CO, ($\%_{vd}$)	0
N_2, ($\%_{vd}$)	79.1
Stack Dia (ft)	0.58
L, (ft)	
W, (ft)	
A, (ft^2)	0.267
C_p, (pitot coefficient)	0.84
M_d, (g/mole)	28.84
M_s, (g/mole)	28.73

G	0.89	
V_s	34.10	fps
Q_s	25,292	dscfh
	25,548	scfh
	426	scfm
	422	dscfm
	547	acfm

Equations:

T_s = Temp Stack + 460

$P_s = P_g/13.6 + P_{bar}$

$M_d = .44\ CO_2 + .32\ O_2 + .28\ CO + .28\ N_2$

$M_s = M_d(1-B_{ws}) + 18(B_{ws})$

$G = Sqrt(T_s/P_s/M_s)$

$V_s = 85.9(C_p)(G)(Avg.\ Sqrt\ Delta\ P)$

A = either D^2(PI)/4 or (L)(W)

$Q_s = 3600(1-B_{ws})(V_s)(A)(T_{std}/P_{std})(P_s)/(T_s\ (abs))$

Volumetric Flow Calculations

Facility/Site: Global South Portland	**Start Date:** 19-Jul-12
Source: Asphalt Tank #9	**Stop Date:** 19-Jul-12
	Start Time: 0:00
	Stop Time: 23:59

Trav. Point	Delta P ("H_2O)	SQ Root Delta P	Stack Temp (F)
Average	0.29	0.54	219.7

Average Delta P, ("H_2O)	0.29
Average Stack Temp, (F)	219.7
B_{ws}, (fractional water)	0.010
P_{bar}, ("H_g)	29.9
P_g, ("H_2O)	0.01
CO_2, ($\%_{vd}$)	0.00
O_2, ($\%_{vd}$)	20.90
CO, ($\%_{vd}$)	0
N_2, ($\%_{vd}$)	79.1
Stack Dia (ft)	0.58
L, (ft)	
W, (ft)	
A, (ft^2)	0.267
C_p, (pitot coefficient)	0.84
M_d, (g/mole)	28.84
M_s, (g/mole)	28.73

G	0.89	
V_s	34.27	fps
Q_s	25,355	dscfh
	25,611	scfh
	427	scfm
	423	dscfm
	549	acfm

Equations:

T_s = Temp Stack + 460

$P_s = P_g/13.6 + P_{bar}$

$M_d = .44\ CO_2 + .32\ O_2 + .28\ CO + .28\ N_2$

$M_s = M_d(1-B_{ws})+18(B_{ws})$

$G = Sqrt(T_s/P_s/M_s)$

$V_s = 85.9(C_p)(G)(Avg.\ Sqrt\ Delta\ P)$

A = either D^2(PI)/4 or (L)(W)

$Q_s = 3600(1-B_{ws})(V_s)(A)(T_{std}/P_{std})(P_s)/(T_s\ (abs))$

Volumetric Flow Calculations

Facility/Site: Global South Portland	**Start Date:** 20-Jul-12
Source: Asphalt Tank #9	**Stop Date:** 20-Jul-12
	Start Time: 0:00
	Stop Time: 23:59

Trav. Point	Delta P ("H_2O)	SQ Root Delta P	Stack Temp (F)
Average	0.28	0.53	222.8

Average Delta P, ("H_2O)	0.28
Average Stack Temp, (F)	222.8
B_{ws}, (fractional water)	0.010
P_{bar}, ("H_g)	29.9
P_g, ("H_2O)	0.01
CO_2, ($\%_{vd}$)	0.00
O_2, ($\%_{vd}$)	20.90
CO, ($\%_{vd}$)	0
N_2, ($\%_{vd}$)	79.1
Stack Dia (ft)	0.58
L, (ft)	
W, (ft)	
A, (ft^2)	0.267
C_p, (pitot coefficient)	0.84
M_d, (g/mole)	28.84
M_s, (g/mole)	28.73

G	0.89	
V_s	33.71	fps
Q_s	24,831	dscfh
	25,082	scfh
	418	scfm
	414	dscfm
	541	acfm

Equations:

T_s = Temp Stack + 460

$P_s = P_g/13.6 + P_{bar}$

$M_d = .44\ CO_2 + .32\ O_2 + .28\ CO + .28\ N_2$

$M_s = M_d(1-B_{ws}) + 18(B_{ws})$

$G = Sqrt(T_s/P_s/M_s)$

$V_s = 85.9(C_p)(G)(Avg.\ Sqrt\ Delta\ P)$

A = either D^2(PI)/4 or (L)(W)

$Q_s = 3600(1-B_{ws})(V_s)(A)(T_{std}/P_{std})(P_s)/(T_s(abs))$

Volumetric Flow Calculations

Facility/Site: Global South Portland
Source: Asphalt Tank #9

Start Date: 21-Jul-12
Stop Date: 21-Jul-12
Start Time: 0:00
Stop Time: 23:59

Trav. Point	Delta P ("H_2O)	SQ Root Delta P	Stack Temp (F)
Average	0.28	0.53	223.7

Average Delta P, ("H_2O)	0.28
Average Stack Temp, (F)	223.7
B_{ws}, (fractional water)	0.010
P_{bar}, ("H_g)	29.9
P_g, ("H_2O)	0.01
CO_2, ($\%_{vd}$)	0.00
O_2, ($\%_{vd}$)	20.90
CO, ($\%_{vd}$)	0
N_2, ($\%_{vd}$)	79.1
Stack Dia (ft)	0.58
L, (ft)	
W, (ft)	
A, (ft^2)	0.267
C_p, (pitot coefficient)	0.84
M_d, (g/mole)	28.84
M_s, (g/mole)	28.73

G	0.89	
V_s	34.16	fps
Q_s	25,132	dscfh
	25,386	scfh
	423	scfm
	419	dscfm
	548	acfm

Equations:

T_s = Temp Stack + 460
$P_s = P_g/13.6 + P_{bar}$
$M_d = .44\ CO_2 + .32\ O_2 + .28\ CO + .28\ N_2$
$M_s = M_d(1-B_{ws}) + 18(B_{ws})$
$G = Sqrt(T_s/P_s/M_s)$
$V_s = 85.9(C_p)(G)(Avg.\ Sqrt\ Delta\ P)$
A = either D^2(PI)/4 or (L)(W)
$Q_s = 3600(1-B_{ws})(V_s)(A)(T_{std}/P_{std})(P_s)/(T_s(abs))$

Volumetric Flow Calculations

Facility/Site: Global South Portland	**Start Date:** 22-Jul-12
Source: Asphalt Tank #9	**Stop Date:** 22-Jul-12
	Start Time: 0:00
	Stop Time: 23:59

Trav. Point	Delta P ("H_2O)	SQ Root Delta P	Stack Temp (F)
Average	0.29	0.54	212.8

Average Delta P, ("H_2O)	0.29
Average Stack Temp, (F)	212.8
B_{ws}, (fractional water)	0.010
P_{bar}, ("H_g)	29.9
P_g, ("H_2O)	0.01
CO_2, ($\%_{vd}$)	0.00
O_2, ($\%_{vd}$)	20.90
CO, ($\%_{vd}$)	0
N_2, ($\%_{vd}$)	79.1
Stack Dia (ft)	0.58
L, (ft)	
W, (ft)	
A, (ft^2)	0.267
C_p, (pitot coefficient)	0.84
M_d, (g/mole)	28.84
M_s, (g/mole)	28.73

G	0.88	
V_s	34.30	fps
Q_s	25,639	dscfh
	25,897	scfh
	432	scfm
	427	dscfm
	550	acfm

Equations:

T_s = Temp Stack + 460

$P_s = P_g/13.6 + P_{bar}$

$M_d = .44\ CO_2 + .32\ O_2 + .28\ CO + .28\ N_2$

$M_s = M_d(1-B_{ws}) + 18(B_{ws})$

$G = Sqrt(T_s/P_s/M_s)$

$V_s = 85.9(C_p)(G)(Avg.\ Sqrt\ Delta\ P)$

A = either D^2(PI)/4 or (L)(W)

$Q_s = 3600(1-B_{ws})(V_s)(A)(T_{std}/P_{std})(P_s)/(T_s\ (abs))$

Volumetric Flow Calculations

Facility/Site: Global South Portland
Source: Asphalt Tank #9

Start Date: 23-Jul-12
Stop Date: 23-Jul-12
Start Time: 0:00
Stop Time: 23:59

Trav. Point	Delta P ("H_2O)	SQ Root Delta P	Stack Temp (F)
Average	0.29	0.54	213.5

Average Delta P, ("H_2O)	0.29
Average Stack Temp, (F)	213.5
B_{ws}, (fractional water)	0.010
P_{bar}, ("H_g)	29.9
P_g, ("H_2O)	0.01
CO_2, ($\%_{vd}$)	0.00
O_2, ($\%_{vd}$)	20.90
CO, ($\%_{vd}$)	0
N_2, ($\%_{vd}$)	79.1
Stack Dia (ft)	0.58
L, (ft)	
W, (ft)	
A, (ft^2)	0.267
C_p, (pitot coefficient)	0.84
M_d, (g/mole)	28.84
M_s, (g/mole)	28.73

G	0.89	
V_s	34.19	fps
Q_s	25,531	dscfh
	25,788	scfh
	430	scfm
	426	dscfm
	548	acfm

Equations:

T_s = Temp Stack + 460

$P_s = P_g/13.6 + P_{bar}$

$M_d = .44\ CO_2 + .32\ O_2 + .28\ CO + .28\ N_2$

$M_s = M_d(1-B_{ws}) + 18(B_{ws})$

$G = Sqrt(T_s/P_s/M_s)$

$V_s = 85.9(C_p)(G)(Avg.\ Sqrt\ Delta\ P)$

A = either D^2(PI)/4 or (L)(W)

$Q_s = 3600(1-B_{ws})(V_s)(A)(T_{std}/P_{std})(P_s)/(T_s(abs))$

Volumetric Flow Calculations

Facility/Site: Global South Portland	**Start Date:** 24-Jul-12
Source: Asphalt Tank #9	**Stop Date:** 24-Jul-12
	Start Time: 0:00
	Stop Time: 23:59

Trav. Point	Delta P ("H_2O)	SQ Root Delta P	Stack Temp (F)
Average	0.29	0.53	215.6

Average Delta P, ("H_2O)	0.29
Average Stack Temp, (F)	215.6
B_{ws}, (fractional water)	0.010
P_{bar}, ("H_g)	29.9
P_g, ("H_2O)	0.01
CO_2, ($\%_{vd}$)	0.00
O_2, ($\%_{vd}$)	20.90
CO, ($\%_{vd}$)	0
N_2, ($\%_{vd}$)	79.1
Stack Dia (ft)	0.58
L, (ft)	
W, (ft)	
A, (ft^2)	0.267
C_p, (pitot coefficient)	0.84
M_d, (g/mole)	28.84
M_s, (g/mole)	28.73

G	0.89	
V_s	34.03	fps
Q_s	25,337	dscfh
	25,593	scfh
	427	scfm
	422	dscfm
	546	acfm

Equations:

T_s = Temp Stack + 460

$P_s = P_g/13.6 + P_{bar}$

$M_d = .44\ CO_2 + .32\ O_2 + .28\ CO + .28\ N_2$

$M_s = M_d(1-B_{ws}) + 18(B_{ws})$

$G = Sqrt(T_s/P_s/M_s)$

$V_s = 85.9(C_p)(G)(Avg.\ Sqrt\ Delta\ P)$

A = either D^2(PI)/4 or (L)(W)

$Q_s = 3600(1-B_{ws})(V_s)(A)(T_{std}/P_{std})(P_s)/(T_s(abs))$

Volumetric Flow Calculations

Facility/Site: Global South Portland
Source: Asphalt Tank #9

Start Date: 25-Jul-12
Stop Date: 25-Jul-12
Start Time: 0:00
Stop Time: 23:59

Trav. Point	Delta P ("H_2O)	SQ Root Delta P	Stack Temp (F)
Average	0.30	0.55	212.8

Average Delta P, ("H_2O)	0.30
Average Stack Temp, (F)	212.8
B_{ws}, (fractional water)	0.010
P_{bar}, ("H_g)	29.9
P_g, ("H_2O)	0.01
CO_2, ($\%_{vd}$)	0.00
O_2, ($\%_{vd}$)	20.90
CO, ($\%_{vd}$)	0
N_2, ($\%_{vd}$)	79.1
Stack Dia (ft)	0.58
L, (ft)	
W, (ft)	
A, (ft^2)	0.267
C_p, (pitot coefficient)	0.84
M_d, (g/mole)	28.84
M_s, (g/mole)	28.73

G	0.88	
V_s	34.64	fps
Q_s	25,890	dscfh
	26,151	scfh
	436	scfm
	431	dscfm
	555	acfm

Equations:

T_s = Temp Stack + 460
$P_s = P_g/13.6 + P_{bar}$
$M_d = .44\ CO_2 + .32\ O_2 + .28\ CO + .28\ N_2$
$M_s = M_d(1-B_{ws}) + 18(B_{ws})$
$G = Sqrt(T_s/P_s/M_s)$
$V_s = 85.9(C_p)(G)(Avg.\ Sqrt\ Delta\ P)$
A = either D^2(PI)/4 or (L)(W)
$Q_s = 3600(1-B_{ws})(V_s)(A)(T_{std}/P_{std})(P_s)/(T_s\ (abs))$

Volumetric Flow Calculations

Facility/Site: Global South Portland
Source: Asphalt Tank #9

Start Date: 26-Jul-12
Stop Date: 26-Jul-12
Start Time: 0:00
Stop Time: 14:50

Trav. Point	Delta P ("H_2O)	SQ Root Delta P	Stack Temp (F)
Average	0.28	0.53	227.0

Average Delta P, ("H_2O)	0.28
Average Stack Temp, (F)	227.0
B_{ws}, (fractional water)	0.010
P_{bar}, ("H_g)	29.9
P_g, ("H_2O)	0.01
CO_2, ($\%_{vd}$)	0.00
O_2, ($\%_{vd}$)	20.90
CO, ($\%_{vd}$)	0
N_2, ($\%_{vd}$)	79.1
Stack Dia (ft)	0.58
L, (ft)	
W, (ft)	
A, (ft^2)	0.267
C_p, (pitot coefficient)	0.84
M_d, (g/mole)	28.84
M_s, (g/mole)	28.73

G	0.89	
V_s	34.21	fps
Q_s	25,044	dscfh
	25,297	scfh
	422	scfm
	417	dscfm
	549	acfm

Equations:

T_s = Temp Stack + 460

$P_s = P_g/13.6 + P_{bar}$

$M_d = .44\ CO_2 + .32\ O_2 + .28\ CO + .28\ N_2$

$M_s = M_d(1-B_{ws}) + 18(B_{ws})$

$G = Sqrt(T_s/P_s/M_s)$

$V_s = 85.9(C_p)(G)(Avg.\ Sqrt\ Delta\ P)$

A = either D^2(PI)/4 or (L)(W)

$Q_s = 3600(1-B_{ws})(V_s)(A)(T_{std}/P_{std})(P_s)/(T_s(abs))$

Volumetric Flow Calculations

Facility/Site: Global South Portland
Source: Asphalt Tank #9

Start Date: 27-Jul-12
Stop Date: 27-Jul-12
Start Time: 15:00
Stop Time: 23:59

Trav. Point	Delta P ("H_2O)	SQ Root Delta P	Stack Temp (F)
Average	0.29	0.54	196.2

Average Delta P, ("H_2O)	0.29
Average Stack Temp, (F)	196.2
B_{ws}, (fractional water)	0.010
P_{bar}, ("H_g)	29.9
P_g, ("H_2O)	0.01
CO_2, ($\%_{vd}$)	0.00
O_2, ($\%_{vd}$)	20.90
CO, ($\%_{vd}$)	0
N_2, ($\%_{vd}$)	79.1
Stack Dia (ft)	0.58
L, (ft)	
W_s (ft)	
A, (ft^2)	0.267
C_p, (pitot coefficient)	0.84
M_d, (g/mole)	28.84
M_s, (g/mole)	28.73

G	0.87	
V_s	33.69	fps
Q_s	25,824	dscfh
	26,085	scfh
	435	scfm
	430	dscfm
	540	acfm

Equations:

T_s = Temp Stack + 460

$P_s = P_g/13.6 + P_{bar}$

M_d = .44 CO_2 +.32 O_2 + .28 CO +.28 N_2

$M_s = M_d(1-B_{ws})+18(B_{ws})$

G = Sqrt($T_s/P_s/M_s$)

V_s = 85.9(C_p)(G)(Avg. Sqrt Delta P)

A = either D^2(PI)/4 or (L)(W)

Q_s = 3600(1-B_{ws})(V_s)(A)(T_{std}/P_{std})(P_s)/(T_s(abs))

Volumetric Flow Calculations

Facility/Site: Global South Portland	**Start Date:** 28-Jul-12
Source: Asphalt Tank #9	**Stop Date:** 28-Jul-12
	Start Time: 0:00
	Stop Time: 20:30

Trav. Point	Delta P ("H_2O)	SQ Root Delta P	Stack Temp (F)
Average	0.28	0.53	219.2

Average Delta P, ("H_2O)	0.28
Average Stack Temp, (F)	219.2
B_{ws}, (fractional water)	0.010
P_{bar}, ("H_g)	29.9
P_g, ("H_2O)	0.01
CO_2, ($\%_{vd}$)	0.00
O_2, ($\%_{vd}$)	20.90
CO, ($\%_{vd}$)	0
N_2, ($\%_{vd}$)	79.1
Stack Dia (ft)	0.58
L, (ft)	
W, (ft)	
A, (ft^2)	0.267
C_p, (pitot coefficient)	0.84
M_d, (g/mole)	28.84
M_s, (g/mole)	28.73

G	0.89	
V_s	34.08	fps
Q_s	25,233	dscfh
	25,488	scfh
	425	scfm
	421	dscfm
	546	acfm

Equations:

T_s = Temp Stack + 460

$P_s = P_g/13.6 + P_{bar}$

$M_d = .44\ CO_2 + .32\ O_2 + .28\ CO + .28\ N_2$

$M_s = M_d(1-B_{ws})+18(B_{ws})$

$G = Sqrt(T_s/P_s/M_s)$

$V_s = 85.9(C_p)(G)(Avg.\ Sqrt\ Delta\ P)$

A = either D^2(PI)/4 or (L)(W)

$Q_s = 3600(1-B_{ws})(V_s)(A)(T_{std}/P_{std})(P_s)/(T_s\ (abs))$

Volumetric Flow Calculations

Facility/Site: Global South Portland	**Start Date:** 29-Jul-12
Source: Asphalt Tank #9	**Stop Date:** 29-Jul-12
	Start Time: 10:30
	Stop Time: 23:59

Trav. Point	Delta P ("H_2O)	SQ Root Delta P	Stack Temp (F)
Average	0.28	0.53	225.1

Average Delta P, ("H_2O)	0.28
Average Stack Temp, (F)	225.1
B_{ws}, (fractional water)	0.010
P_{bar}, ("H_g)	29.9
P_g, ("H_2O)	0.01
CO_2, ($\%_{vd}$)	0.00
O_2, ($\%_{vd}$)	20.90
CO, ($\%_{vd}$)	0
N_2, ($\%_{vd}$)	79.1
Stack Dia (ft)	0.58
L, (ft)	
W, (ft)	
A, (ft^2)	0.267
C_p, (pitot coefficient)	0.84
M_d, (g/mole)	28.84
M_s, (g/mole)	28.73

G	0.89	
V_s	34.14	fps
Q_s	25,060	dscfh
	25,313	scfh
	422	scfm
	418	dscfm
	547	acfm

Equations:

T_s = Temp Stack + 460

$P_s = P_g/13.6 + P_{bar}$

$M_d = .44\ CO_2 + .32\ O_2 + .28\ CO + .28\ N_2$

$M_s = M_d(1-B_{ws}) + 18(B_{ws})$

$G = Sqrt(T_s/P_s/M_s)$

$V_s = 85.9(C_p)(G)(Avg.\ Sqrt\ Delta\ P)$

A = either D^2(PI)/4 or (L)(W)

$Q_s = 3600(1-B_{ws})(V_s)(A)(T_{std}/P_{std})(P_s)/(T_s(abs))$

Volumetric Flow Calculations

Facility/Site: Global South Portland	**Start Date:** 30-Jul-12
Source: Asphalt Tank #9	**Stop Date:** 30-Jul-12
	Start Time: 0:00
	Stop Time: 23:59

Trav. Point	Delta P ("H_2O)	SQ Root Delta P	Stack Temp (F)
Average	0.28	0.53	224.0

Average Delta P, ("H_2O)	0.28
Average Stack Temp, (F)	224.0
B_{ws}, (fractional water)	0.010
P_{bar}, ("H_g)	29.9
P_g, ("H_2O)	0.01
CO_2, ($\%_{vd}$)	0.00
O_2, ($\%_{vd}$)	20.90
CO, ($\%_{vd}$)	0
N_2, ($\%_{vd}$)	79.1
Stack Dia (ft)	0.58
L, (ft)	
W, (ft)	
A, (ft^2)	0.267
C_{p_i} (pitot coefficient)	0.84
M_d, (g/mole)	28.84
M_s, (g/mole)	28.73

G	0.89	
V_s	34.07	fps
Q_s	25,048	dscfh
	25,301	scfh
	422	scfm
	417	dscfm
	546	acfm

Equations:

T_s = Temp Stack + 460

$P_s = P_g/13.6 + P_{bar}$

$M_d = .44\ CO_2 + .32\ O_2 + .28\ CO + .28\ N_2$

$M_s = M_d(1-B_{ws}) + 18(B_{ws})$

$G = Sqrt(T_s/P_s/M_s)$

$V_s = 85.9(C_p)(G)(Avg.\ Sqrt\ Delta\ P)$

A = either D^2(PI)/4 or (L)(W)

$Q_s = 3600(1-B_{ws})(V_s)(A)(T_{std}/P_{std})(P_s)/(T_s(abs))$

Volumetric Flow Calculations

Facility/Site: Global South Portland
Source: Asphalt Tank #9

Start Date: 31-Jul-12
Stop Date: 31-Jul-12
Start Time: 0:00
Stop Time: 23:59

Trav. Point	Delta P ("H_2O)	SQ Root Delta P	Stack Temp (F)
Average	0.29	0.54	222.0

Average Delta P, ("H_2O)	0.29
Average Stack Temp, (F)	222.0
B_{ws}, (fractional water)	0.010
P_{bar}, ("H_g)	29.9
P_g, ("H_2O)	0.01
CO_2, ($\%_{vd}$)	0.00
O_2, ($\%_{vd}$)	20.90
CO, ($\%_{vd}$)	0
N_2, ($\%_{vd}$)	79.1
Stack Dia (ft)	0.58
L, (ft)	
W, (ft)	
A, (ft^2)	0.267
C_p, (pitot coefficient)	0.84
M_d, (g/mole)	28.84
M_s, (g/mole)	28.73

G	0.89	
V_s	34.25	fps
Q_s	25,253	dscfh
	25,509	scfh
	425	scfm
	421	dscfm
	549	acfm

Equations:

T_s = Temp Stack + 460
$P_s = P_g/13.6 + P_{bar}$
$M_d = .44\ CO_2 + .32\ O_2 + .28\ CO + .28\ N_2$
$M_s = M_d(1-B_{ws}) + 18(B_{ws})$
$G = Sqrt(T_s/P_s/M_s)$
$V_s = 85.9(C_p)(G)(Avg.\ Sqrt\ Delta\ P)$
A = either D^2(PI)/4 or (L)(W)
$Q_s = 3600(1-B_{ws})(V_s)(A)(T_{std}/P_{std})(P_s)/(T_s(abs))$

Volumetric Flow Calculations

Facility/Site: Global South Portland
Source: Asphalt Tank #9

Start Date: 1-Aug-12
Stop Date: 1-Aug-12
Start Time: 0:00
Stop Time: 23:59

Trav. Point	Delta P ("H_2O)	SQ Root Delta P	Stack Temp (F)
Average	0.28	0.53	219.6

Average Delta P, ("H_2O)	0.28
Average Stack Temp, (F)	219.6
B_{ws}, (fractional water)	0.010
P_{bar}, ("H_g)	29.9
P_g, ("H_2O)	0.01
CO_2, ($\%_{vd}$)	0.00
O_2, ($\%_{vd}$)	20.90
CO, ($\%_{vd}$)	0
N_2, ($\%_{vd}$)	79.1
Stack Dia (ft)	0.58
L, (ft)	
W, (ft)	
A, (ft^2)	0.267
C_p, (pitot coefficient)	0.84
M_d, (g/mole)	28.84
M_s, (g/mole)	28.73

G	0.89	
V_s	33.99	fps
Q_s	25,154	dscfh
	25,408	scfh
	423	scfm
	419	dscfm
	545	acfm

Equations:

T_s = Temp Stack + 460

$P_s = P_g/13.6 + P_{bar}$

$M_d = .44\ CO_2 + .32\ O_2 + .28\ CO + .28\ N_2$

$M_s = M_d(1-B_{ws}) + 18(B_{ws})$

$G = Sqrt(T_s/P_s/M_s)$

$V_s = 85.9(C_p)(G)(Avg.\ Sqrt\ Delta\ P)$

A = either D^2(PI)/4 or (L)(W)

$Q_s = 3600(1-B_{ws})(V_s)(A)(T_{std}/P_{std})(P_s)/(T_s(abs))$

Volumetric Flow Calculations

Facility/Site: Global South Portland	**Start Date:** 2-Aug-12
Source: Asphalt Tank #9	**Stop Date:** 2-Aug-12
	Start Time: 0:00
	Stop Time: 23:59

Trav. Point	Delta P ("H_2O)	SQ Root Delta P	Stack Temp (F)
Average	0.28	0.53	229.1

Average Delta P, ("H_2O)	0.28
Average Stack Temp, (F)	229.1
B_{ws}, (fractional water)	0.010
P_{bar}, ("H_g)	29.9
P_g, ("H_2O)	0.01
CO_2, ($\%_{vd}$)	0.00
O_2, ($\%_{vd}$)	20.90
CO, ($\%_{vd}$)	0
N_2, ($\%_{vd}$)	79.1
Stack Dia (ft)	0.58
L, (ft)	
W, (ft)	
A, (ft^2)	0.267
C_p, (pitot coefficient)	0.84
M_d, (g/mole)	28.84
M_s, (g/mole)	28.73

G	0.90	
V_s	33.81	fps
Q_s	24,674	dscfh
	24,923	scfh
	415	scfm
	411	dscfm
	542	acfm

Equations:

T_s = Temp Stack + 460

$P_s = P_g/13.6 + P_{bar}$

$M_d = .44\ CO_2 + .32\ O_2 + .28\ CO + .28\ N_2$

$M_s = M_d(1-B_{ws}) + 18(B_{ws})$

$G = Sqrt(T_s/P_s/M_s)$

$V_s = 85.9(C_p)(G)(Avg.\ Sqrt\ Delta\ P)$

A = either D^2(PI)/4 or (L)(W)

$Q_s = 3600(1-B_{ws})(V_s)(A)(T_{std}/P_{std})(P_s)/(T_s(abs))$

Volumetric Flow Calculations

Facility/Site: Global South Portland
Source: Asphalt Tank #9

Start Date: 3-Aug-12
Stop Date: 3-Aug-12
Start Time: 0:00
Stop Time: 23:59

Trav. Point	Delta P ("H_2O)	SQ Root Delta P	Stack Temp (F)
Average	0.27	0.52	232.9

Average Delta P, ("H_2O)	0.27
Average Stack Temp, (F)	232.9
B_{ws}, (fractional water)	0.010
P_{bar}, ("H_g)	29.9
P_g, ("H_2O)	0.01
CO_2, ($\%_{vd}$)	0.00
O_2, ($\%_{vd}$)	20.90
CO, ($\%_{vd}$)	0
N_2, ($\%_{vd}$)	79.1
Stack Dia (ft)	0.58
L, (ft)	
W, (ft)	
A, (ft^2)	0.267
C_p, (pitot coefficient)	0.84
M_d, (g/mole)	28.84
M_s, (g/mole)	28.73

G	0.90	
V_s	33.74	fps
Q_s	24,489	dscfh
	24,737	scfh
	412	scfm
	408	dscfm
	541	acfm

Equations:

T_s = Temp Stack + 460

$P_s = P_g/13.6 + P_{bar}$

M_d = .44 CO_2 +.32 O_2 + .28 CO +.28 N_2

$M_s = M_d(1-B_{ws})+18(B_{ws})$

$G = Sqrt(T_s/P_s/M_s)$

$V_s = 85.9(C_p)(G)$(Avg. Sqrt Delta P)

A = either D^2(PI)/4 or (L)(W)

$Q_s = 3600(1-B_{ws})(V_s)(A)(T_{std}/P_{std})(P_s)/(T_s(abs))$

Volumetric Flow Calculations

Facility/Site: Global South Portland
Source: Asphalt Tank #9

Start Date: 4-Aug-12
Stop Date: 4-Aug-12
Start Time: 0:00
Stop Time: 23:59

Trav. Point	Delta P ("H_2O)	SQ Root Delta P	Stack Temp (F)
Average	0.28	0.53	232.5

Average Delta P, ("H_2O)	0.28
Average Stack Temp, (F)	232.5
B_{ws}, (fractional water)	0.010
P_{bar}, ("H_g)	29.9
P_g, ("H_2O)	0.01
CO_2, ($\%_{vd}$)	0.00
O_2, ($\%_{vd}$)	20.90
CO_i ($\%_{vd}$)	0
N_2, ($\%_{vd}$)	79.1
Stack Dia (ft)	0.58
L, (ft)	
W, (ft)	
A, (ft^2)	0.267
C_p, (pitot coefficient)	0.84
M_d, (g/mole)	28.84
M_s, (g/mole)	28.73

G	0.90	
V_s	33.94	fps
Q_s	24,649	dscfh
	24,898	scfh
	415	scfm
	411	dscfm
	544	acfm

Equations:

T_s = Temp Stack + 460

$P_s = P_g/13.6 + P_{bar}$

$M_d = .44\ CO_2 + .32\ O_2 + .28\ CO + .28\ N_2$

$M_s = M_d(1-B_{ws}) + 18(B_{ws})$

$G = Sqrt(T_s/P_s/M_s)$

$V_s = 85.9(C_p)(G)(Avg.\ Sqrt\ Delta\ P)$

A = either D^2(PI)/4 or (L)(W)

$Q_s = 3600(1-B_{ws})(V_s)(A)(T_{std}/P_{std})(P_s)/(T_s(abs))$

Volumetric Flow Calculations

Facility/Site: Global South Portland	**Start Date:** 5-Aug-12
Source: Asphalt Tank #9	**Stop Date:** 5-Aug-12
	Start Time: 0:00
	Stop Time: 23:59

Trav. Point	Delta P ("H_2O)	SQ Root Delta P	Stack Temp (F)
Average	0.28	0.53	222.0

Average Delta P, ("H_2O)	0.28
Average Stack Temp, (F)	222.0
B_{ws}, (fractional water)	0.010
P_{bar}, ("H_g)	29.9
P_g, ("H_2O)	0.01
CO_2, ($\%_{vd}$)	0.00
O_2, ($\%_{vd}$)	20.90
CO, ($\%_{vd}$)	0
N_2, ($\%_{vd}$)	79.1
Stack Dia (ft)	0.58
L, (ft)	
W, (ft)	
A, (ft^2)	0.267
C_p, (pitot coefficient)	0.84
M_d, (g/mole)	28.84
M_s, (g/mole)	28.73

G	0.89	
V_s	33.94	fps
Q_s	25,026	dscfh
	25,278	scfh
	421	scfm
	417	dscfm
	544	acfm

Equations:

T_s = Temp Stack + 460

$P_s = P_g/13.6 + P_{bar}$

$M_d = .44\ CO_2 + .32\ O_2 + .28\ CO + .28\ N_2$

$M_s = M_d(1-B_{ws}) + 18(B_{ws})$

$G = Sqrt(T_s/P_s/M_s)$

$V_s = 85.9(C_p)(G)(Avg.\ Sqrt\ Delta\ P)$

A = either D^2(PI)/4 or (L)(W)

$Q_s = 3600(1-B_{ws})(V_s)(A)(T_{std}/P_{std})(P_s)/(T_s\ (abs))$

Volumetric Flow Calculations

Facility/Site: Global South Portland	**Start Date:** 6-Aug-12
Source: Asphalt Tank #9	**Stop Date:** 6-Aug-12
	Start Time: 0:00
	Stop Time: 23:59

Trav. Point	Delta P ("H_2O)	SQ Root Delta P	Stack Temp (F)
Average	0.28	0.53	224.3

Average Delta P, ("H_2O)	0.28
Average Stack Temp, (F)	224.3
B_{ws}, (fractional water)	0.010
P_{bar}, ("H_g)	29.9
P_g, ("H_2O)	0.01
CO_2, ($\%_{vd}$)	0.00
O_2, ($\%_{vd}$)	20.90
CO, ($\%_{vd}$)	0
N_2, ($\%_{vd}$)	79.1
Stack Dia (ft)	0.58
L, (ft)	
W, (ft)	
A, (ft^2)	0.267
C_p, (pitot coefficient)	0.84
M_d, (g/mole)	28.84
M_s, (g/mole)	28.73

G	0.89	
V_s	33.98	fps
Q_s	24,975	dscfh
	25,227	scfh
	420	scfm
	416	dscfm
	545	acfm

Equations:

T_s = Temp Stack + 460

$P_s = P_g/13.6 + P_{bar}$

$M_d = .44\ CO_2 + .32\ O_2 + .28\ CO + .28\ N_2$

$M_s = M_d(1-B_{ws})+18(B_{ws})$

$G = Sqrt(T_s/P_s/M_s)$

$V_s = 85.9(C_p)(G)(Avg.\ Sqrt\ Delta\ P)$

A = either D^2(PI)/4 or (L)(W)

$Q_s = 3600(1-B_{ws})(V_s)(A)(T_{std}/P_{std})(P_s)/(T_s(abs))$

Volumetric Flow Calculations

Facility/Site: Global South Portland
Source: Asphalt Tank #9

Start Date: 7-Aug-12
Stop Date: 7-Aug-12
Start Time: 0:00
Stop Time: 23:59

Trav. Point	Delta P ("H_2O)	SQ Root Delta P	Stack Temp (F)
Average	0.28	0.53	225.3

Average Delta P, ("H_2O)	0.28
Average Stack Temp, (F)	225.3
B_{ws}, (fractional water)	0.010
P_{bar}, ("H_g)	29.9
P_g, ("H_2O)	0.01
CO_2, ($\%_{vd}$)	0.00
O_2, ($\%_{vd}$)	20.90
CO, ($\%_{vd}$)	0
N_2, ($\%_{vd}$)	79.1
Stack Dia (ft)	0.58
L, (ft)	
W, (ft)	
A, (ft^2)	0.267
C_p, (pitot coefficient)	0.84
M_d, (g/mole)	28.84
M_s, (g/mole)	28.73

G	0.89	
V_s	33.88	fps
Q_s	24,861	dscfh
	25,112	scfh
	419	scfm
	414	dscfm
	543	acfm

Equations:

T_s = Temp Stack + 460

$P_s = P_g/13.6 + P_{bar}$

$M_d = .44\ CO_2 + .32\ O_2 + .28\ CO + .28\ N_2$

$M_s = M_d(1-B_{ws}) + 18(B_{ws})$

$G = Sqrt(T_s/P_s/M_s)$

$V_s = 85.9(C_p)(G)(Avg.\ Sqrt\ Delta\ P)$

A = either D^2(PI)/4 or (L)(W)

$Q_s = 3600(1-B_{ws})(V_s)(A)(T_{std}/P_{std})(P_s)/(T_s(abs))$

Volumetric Flow Calculations

Facility/Site: Global South Portland	**Start Date:** 8-Aug-12
Source: Asphalt Tank #9	**Stop Date:** 8-Aug-12
	Start Time: 0:00
	Stop Time: 23:59

Trav. Point	Delta P ("H_2O)	SQ Root Delta P	Stack Temp (F)
Average	0.28	0.53	228.2

Average Delta P, ("H_2O)	0.28
Average Stack Temp, (F)	228.2
B_{ws}, (fractional water)	0.010
P_{bar}, ("H_g)	29.9
P_g, ("H_2O)	0.01
CO_2, ($\%_{vd}$)	0.00
O_2, ($\%_{vd}$)	20.90
CO, ($\%_{vd}$)	0
N_2, ($\%_{vd}$)	79.1
Stack Dia (ft)	0.58
L, (ft)	
W, (ft)	
A, (ft^2)	0.267
C_p, (pitot coefficient)	0.84
M_d, (g/mole)	28.84
M_s, (g/mole)	28.73

G	0.89	
V_s	33.76	fps
Q_s	24,670	dscfh
	24,919	scfh
	415	scfm
	411	dscfm
	541	acfm

Equations:

T_s = Temp Stack + 460

$P_s = P_g/13.6 + P_{bar}$

M_d = .44 CO_2 +.32 O_2 + .28 CO +.28 N_2

$M_s = M_d(1-B_{ws})+18(B_{ws})$

G = Sqrt($T_s/P_s/M_s$)

V_s = 85.9(C_p)(G)(Avg. Sqrt Delta P)

A = either D^2(PI)/4 or (L)(W)

Q_s = 3600(1-B_{ws})(V_s)(A)(T_{std}/P_{std})(P_s)/(T_s(abs))

Volumetric Flow Calculations

Facility/Site: Global South Portland	**Start Date:** 9-Aug-12
Source: Asphalt Tank #9	**Stop Date:** 9-Aug-12
	Start Time: 0:00
	Stop Time: 23:59

Trav. Point	Delta P ("H_2O)	SQ Root Delta P	Stack Temp (F)
Average	0.28	0.53	228.9

Average Delta P, ("H_2O)	0.28
Average Stack Temp, (F)	228.9
B_{ws}, (fractional water)	0.010
P_{bar}, ("H_g)	29.9
P_g, ("H_2O)	0.01
CO_2, ($\%_{vd}$)	0.00
O_2, ($\%_{vd}$)	20.90
CO, ($\%_{vd}$)	0
N_2, ($\%_{vd}$)	79.1
Stack Dia (ft)	0.58
L, (ft)	
W, (ft)	
A, (ft^2)	0.267
C_p, (pitot coefficient)	0.84
M_d, (g/mole)	28.84
M_s, (g/mole)	28.73

G	0.90	
V_s	33.94	fps
Q_s	24,782	dscfh
	25,032	scfh
	417	scfm
	413	dscfm
	544	acfm

Equations:

T_s = Temp Stack + 460

$P_s = P_g/13.6 + P_{bar}$

$M_d = .44\ CO_2 + .32\ O_2 + .28\ CO + .28\ N_2$

$M_s = M_d(1-B_{ws}) + 18(B_{ws})$

$G = Sqrt(T_s/P_s/M_s)$

$V_s = 85.9(C_p)(G)(Avg.\ Sqrt\ Delta\ P)$

A = either D^2(PI)/4 or (L)(W)

$Q_s = 3600(1-B_{ws})(V_s)(A)(T_{std}/P_{std})(P_s)/(T_s(abs))$

Volumetric Flow Calculations

Facility/Site: Global South Portland
Source: Asphalt Tank #9

Start Date: 10-Aug-12
Stop Date: 10-Aug-12
Start Time: 0:00
Stop Time: 23:59

Trav. Point	Delta P ("H_2O)	SQ Root Delta P	Stack Temp (F)
Average	0.29	0.54	211.1

Average Delta P, ("H_2O)	0.29
Average Stack Temp, (F)	211.1
B_{ws}, (fractional water)	0.010
P_{bar}, ("H_g)	29.9
P_g, ("H_2O)	0.01
CO_2, ($\%_{vd}$)	0.00
O_2, ($\%_{vd}$)	20.90
CO, ($\%_{vd}$)	0
N_2, ($\%_{vd}$)	79.1
Stack Dia (ft)	0.58
L, (ft)	
W, (ft)	
A, (ft^2)	0.267
C_p, (pitot coefficient)	0.84
M_d, (g/mole)	28.84
M_s, (g/mole)	28.73

G	0.88	
V_s	34.39	fps
Q_s	25,772	dscfh
	26,032	scfh
	434	scfm
	430	dscfm
	551	acfm

Equations:

T_s = Temp Stack + 460

$P_s = P_g/13.6 + P_{bar}$

$M_d = .44\ CO_2 + .32\ O_2 + .28\ CO + .28\ N_2$

$M_s = M_d(1-B_{ws}) + 18(B_{ws})$

$G = Sqrt(T_s/P_s/M_s)$

$V_s = 85.9(C_p)(G)(Avg.\ Sqrt\ Delta\ P)$

A = either D^2(PI)/4 or (L)(W)

$Q_s = 3600(1-B_{ws})(V_s)(A)(T_{std}/P_{std})(P_s)/(T_s(abs))$

Volumetric Flow Calculations

Facility/Site: Global South Portland
Source: Asphalt Tank #9

Start Date: 11-Aug-12
Stop Date: 11-Aug-12
Start Time: 0:00
Stop Time: 23:59

Trav. Point	Delta P ("H_2O)	SQ Root Delta P	Stack Temp (F)
Average	0.28	0.53	224.3

Average Delta P, ("H_2O)	0.28
Average Stack Temp, (F)	224.3
B_{ws}, (fractional water)	0.010
P_{bar}, ("H_g)	29.9
P_g, ("H_2O)	0.01
CO_2, ($\%_{vd}$)	0.00
O_2, ($\%_{vd}$)	20.90
CO, ($\%_{vd}$)	0
N_2, ($\%_{vd}$)	79.1
Stack Dia (ft)	0.58
L, (ft)	
W, (ft)	
A, (ft^2)	0.267
C_p, (pitot coefficient)	0.84
M_d, (g/mole)	28.84
M_s, (g/mole)	28.73

G	0.89	
V_s	34.04	fps
Q_s	25,019	dscfh
	25,272	scfh
	421	scfm
	417	dscfm
	546	acfm

Equations:

T_s = Temp Stack + 460
$P_s = P_g/13.6 + P_{bar}$
$M_d = .44\ CO_2 + .32\ O_2 + .28\ CO + .28\ N_2$
$M_s = M_d(1-B_{ws}) + 18(B_{ws})$
$G = Sqrt(T_s/P_s/M_s)$
$V_s = 85.9(C_p)(G)(Avg.\ Sqrt\ Delta\ P)$
A = either D^2(PI)/4 or (L)(W)
$Q_s = 3600(1-B_{ws})(V_s)(A)(T_{std}/P_{std})(P_s)/(T_s(abs))$

Volumetric Flow Calculations

Facility/Site: Global South Portland	**Start Date:** 12-Aug-12
Source: Asphalt Tank #9	**Stop Date:** 12-Aug-12
	Start Time: 0:00
	Stop Time: 23:59

Trav. Point	Delta P ("H_2O)	SQ Root Delta P	Stack Temp (F)
Average	0.28	0.53	225.6

Average Delta P, ("H_2O)	0.28
Average Stack Temp, (F)	225.6
B_{ws}, (fractional water)	0.010
P_{bar}, ("H_g)	29.9
P_g, ("H_2O)	0.01
CO_2, ($\%_{vd}$)	0.00
O_2, ($\%_{vd}$)	20.90
CO, ($\%_{vd}$)	0
N_2, ($\%_{vd}$)	79.1
Stack Dia (ft)	0.58
L, (ft)	
W, (ft)	
A, (ft^2)	0.267
C_p, (pitot coefficient)	0.84
M_d, (g/mole)	28.84
M_s, (g/mole)	28.73

G	0.89	
V_s	33.80	fps
Q_s	24,792	dscfh
	25,042	scfh
	417	scfm
	413	dscfm
	542	acfm

Equations:

T_s = Temp Stack + 460

$P_s = P_g/13.6 + P_{bar}$

M_d = .44 CO_2 +.32 O_2 + .28 CO +.28 N_2

$M_s = M_d(1-B_{ws})+18(B_{ws})$

$G = Sqrt(T_s/P_s/M_s)$

$V_s = 85.9(C_p)(G)$(Avg. Sqrt Delta P)

A = either D^2(PI)/4 or (L)(W)

$Q_s = 3600(1-B_{ws})(V_s)(A)(T_{std}/P_{std})(P_s)/(T_s(abs))$

Volumetric Flow Calculations

Facility/Site: Global South Portland
Source: Asphalt Tank #9

Start Date: 13-Aug-12
Stop Date: 13-Aug-12
Start Time: 0:00
Stop Time: 23:59

Trav. Point	Delta P ("H_2O)	SQ Root Delta P	Stack Temp (F)
Average	0.28	0.52	228.4

Average Delta P, ("H_2O)	0.28
Average Stack Temp, (F)	228.4
B_{ws}, (fractional water)	0.010
P_{bar}, ("H_g)	29.9
P_g, ("H_2O)	0.01
CO_2, ($\%_{vd}$)	0.00
O_2, ($\%_{vd}$)	20.90
CO, ($\%_{vd}$)	0
N_2, ($\%_{vd}$)	79.1
Stack Dia (ft)	0.58
L, (ft)	
W, (ft)	
A, (ft^2)	0.267
C_p, (pitot coefficient)	0.84
M_d, (g/mole)	28.84
M_s, (g/mole)	28.73

G	0.89	
V_s	33.70	fps
Q_s	24,622	dscfh
	24,870	scfh
	415	scfm
	410	dscfm
	540	acfm

Equations:

T_s = Temp Stack + 460

$P_s = P_g/13.6 + P_{bar}$

$M_d = .44\ CO_2 + .32\ O_2 + .28\ CO + .28\ N_2$

$M_s = M_d(1-B_{ws}) + 18(B_{ws})$

$G = Sqrt(T_s/P_s/M_s)$

$V_s = 85.9(C_p)(G)(Avg.\ Sqrt\ Delta\ P)$

A = either D^2(PI)/4 or (L)(W)

$Q_s = 3600(1-B_{ws})(V_s)(A)(T_{std}/P_{std})(P_s)/(T_s(abs))$

Volumetric Flow Calculations

Facility/Site: Global South Portland
Source: Asphalt Tank #9

Start Date: 14-Aug-12
Stop Date: 14-Aug-12
Start Time: 0:00
Stop Time: 23:59

Trav. Point	Delta P ("H_2O)	SQ Root Delta P	Stack Temp (F)
Average	0.27	0.52	227.6

Average Delta P, ("H_2O)	0.27
Average Stack Temp, (F)	227.6
B_{ws}, (fractional water)	0.010
P_{bar}, ("H_g)	29.9
P_g, ("H_2O)	0.01
CO_2, ($\%_{vd}$)	0.00
O_2, ($\%_{vd}$)	20.90
CO, ($\%_{vd}$)	0
N_2, ($\%_{vd}$)	79.1
Stack Dia (ft)	0.58
L, (ft)	
W, (ft)	
A, (ft^2)	0.267
C_p, (pitot coefficient)	0.84
M_d, (g/mole)	28.84
M_s, (g/mole)	28.73

G	0.89	
V_s	33.65	fps
Q_s	24,614	dscfh
	24,862	scfh
	414	scfm
	410	dscfm
	540	acfm

Equations:

T_s = Temp Stack + 460

$P_s = P_g/13.6 + P_{bar}$

$M_d = .44\ CO_2 + .32\ O_2 + .28\ CO + .28\ N_2$

$M_s = M_d(1-B_{ws}) + 18(B_{ws})$

$G = \mathrm{Sqrt}(T_s/P_s/M_s)$

$V_s = 85.9(C_p)(G)(\text{Avg. Sqrt Delta P})$

A = either D^2(PI)/4 or (L)(W)

$Q_s = 3600(1-B_{ws})(V_s)(A)(T_{std}/P_{std})(P_s)/(T_s\,(abs))$

Volumetric Flow Calculations

Facility/Site: Global South Portland
Source: Asphalt Tank #9

Start Date: 15-Aug-12
Stop Date: 15-Aug-12
Start Time: 0:00
Stop Time: 23:59

Trav. Point	Delta P ("H_2O)	SQ Root Delta P	Stack Temp (F)
Average	0.28	0.53	225.3

Average Delta P, ("H_2O)	0.28
Average Stack Temp, (F)	225.3
B_{ws}, (fractional water)	0.010
P_{bar}, ("H_g)	29.9
P_g, ("H_2O)	0.01
CO_2, ($\%_{vd}$)	0.00
O_2, ($\%_{vd}$)	20.90
CO, ($\%_{vd}$)	0
N_2, ($\%_{vd}$)	79.1
Stack Dia (ft)	0.58
L, (ft)	
W, (ft)	
A, (ft^2)	0.267
C_p, (pitot coefficient)	0.84
M_d, (g/mole)	28.84
M_s, (g/mole)	28.73

G	0.89	
V_s	33.80	fps
Q_s	24,807	dscfh
	25,057	scfh
	418	scfm
	413	dscfm
	542	acfm

Equations:

T_s = Temp Stack + 460

$P_s = P_g/13.6 + P_{bar}$

$M_d = .44\ CO_2 + .32\ O_2 + .28\ CO + .28\ N_2$

$M_s = M_d(1-B_{ws}) + 18(B_{ws})$

$G = Sqrt(T_s/P_s/M_s)$

$V_s = 85.9(C_p)(G)(Avg.\ Sqrt\ Delta\ P)$

A = either D^2(PI)/4 or (L)(W)

$Q_s = 3600(1-B_{ws})(V_s)(A)(T_{std}/P_{std})(P_s)/(T_s(abs))$

Volumetric Flow Calculations

Facility/Site: Global South Portland	**Start Date:** 16-Aug-12
Source: Asphalt Tank #9	**Stop Date:** 16-Aug-12
	Start Time: 0:00
	Stop Time: 16:52

Trav. Point	Delta P ("H_2O)	SQ Root Delta P	Stack Temp (F)
Average	0.29	0.54	209.8

Average Delta P_s ("H_2O)	0.29
Average Stack Temp, (F)	209.8
B_{ws}, (fractional water)	0.010
P_{bar}, ("H_g)	29.9
P_g, ("H_2O)	0.01
CO_2, (%$_{vd}$)	0.00
O_2, (%$_{vd}$)	20.90
CO, (%$_{vd}$)	0
N_2, (%$_{vd}$)	79.1
Stack Dia (ft)	0.58
L_s (ft)	
W_s (ft)	
A, (ft^2)	0.267
C_p, (pitot coefficient)	0.84
M_d, (g/mole)	28.84
M_s, (g/mole)	28.73

G	0.88	
V_s	34.14	fps
Q_s	25,640	dscfh
	25,899	scfh
	432	scfm
	427	dscfm
	548	acfm

Equations:

T_s = Temp Stack + 460

$P_s = P_g/13.6 + P_{bar}$

M_d = .44 CO_2 + .32 O_2 + .28 CO + .28 N_2

$M_s = M_d(1-B_{ws})+18(B_{ws})$

$G = Sqrt(T_s/P_s/M_s)$

$V_s = 85.9(C_p)(G)$(Avg. Sqrt Delta P)

A = either D^2(PI)/4 or (L)(W)

$Q_s = 3600(1-B_{ws})(V_s)(A)(T_{std}/P_{std})(P_s)/(T_s\text{(abs)})$