Appendix C

Air Quality Modeling

Winters Gas Training Facility (construction)

Yolo County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	100.00	1000sqft	30.00	100,000.00	0
Other Asphalt Surfaces	5.00	Acre	5.00	217,800.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	6.8	**Precipitation Freq (Days)**	54
Climate Zone	4			**Operational Year**	2015
Utility Company					
CO2 Intensity (lb/MWhr)	0	**CH4 Intensity (lb/MWhr)**	0	**N2O Intensity (lb/MWhr)**	0

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - PD

Construction Phase - PD

Off-road Equipment - PD

Off-road Equipment - PD

Off-road Equipment - PD

Off-road Equipment - PD

Off-road Equipment - PD

Off-road Equipment - PD

Off-road Equipment - PD

Off-road Equipment - PD

Off-road Equipment - PD

Off-road Equipment - PD

Off-road Equipment - PD

Off-road Equipment - PD

Off-road Equipment - PD

Trips and VMT - on-road heavy-duty trucks completed off-model with EMFAC2011 (only worker trips and vendor trips estimated using CalEEMod)

Demolition -

Grading - PD

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Interior	476700	150000
tblConstructionPhase	NumDays	740.00	20.00
tblConstructionPhase	NumDays	740.00	20.00
tblConstructionPhase	NumDays	740.00	5.00
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tblConstructionPhase	NumDays	740.00	5.00
tblConstructionPhase	NumDays	740.00	20.00

tblConstructionPhase	NumDays	740.00	20.00
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tblConstructionPhase	PhaseStartDate	7/4/2015	7/6/2015
tblConstructionPhase	PhaseStartDate	1/17/2015	1/19/2015
tblConstructionPhase	PhaseStartDate	1/24/2015	1/26/2015
tblConstructionPhase	PhaseStartDate	2/21/2015	2/23/2015
tblConstructionPhase	PhaseStartDate	2/28/2015	3/2/2015
tblConstructionPhase	PhaseStartDate	4/25/2015	4/27/2015
tblConstructionPhase	PhaseStartDate	6/20/2015	6/22/2015
tblConstructionPhase	PhaseStartDate	12/13/2014	1/12/2015
tblConstructionPhase	PhaseStartDate	8/1/2015	12/15/2015
tblConstructionPhase	PhaseStartDate	3/28/2015	3/30/2015
tblGrading	AcresOfGrading	5.00	30.00
tblGrading	AcresOfGrading	0.00	30.00
tblGrading	MaterialImported	0.00	38,000.00
tblLandUse	LotAcreage	2.30	30.00
tblOffRoadEquipment	HorsePower	226.00	208.00
tblOffRoadEquipment	HorsePower	89.00	149.00
tblOffRoadEquipment	HorsePower	130.00	82.00
tblOffRoadEquipment	HorsePower	97.00	75.00
tblOffRoadEquipment	HorsePower	97.00	75.00

tblOffRoadEquipment	HorsePower	97.00	75.00
tblOffRoadEquipment	HorsePower	162.00	157.00
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tblOffRoadEquipment	HorsePower	199.00	37.00
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tblOffRoadEquipment	PhaseName		BC_Interiors
tblOffRoadEquipment	PhaseName		SF_Paving
tblOffRoadEquipment	PhaseName		SG_Building Pads
tblOffRoadEquipment	PhaseName		SG_Balance Site
tblOffRoadEquipment	PhaseName		BC_Slab
tblOffRoadEquipment	PhaseName		SF_Landscape
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tblOffRoadEquipment	PhaseName		SG_Building Pads
tblOffRoadEquipment	PhaseName		SG_Balance Site
tblOffRoadEquipment	PhaseName		SF_Paving-Loader
tblOffRoadEquipment	PhaseName		SG_Clear&Grub
tblOffRoadEquipment	PhaseName		SF_Paving
tblOffRoadEquipment	PhaseName		SG_Building Pads

tblOffRoadEquipment	PhaseName		SG_Balance Site
tblOffRoadEquipment	UsageHours	7.00	6.00
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tblProjectCharacteristics	OperationalYear	2014	2015
tblTripsAndVMT	HaulingTripNumber	3,757.00	0.00
tblTripsAndVMT	VendorTripNumber	52.00	0.00
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tblTripsAndVMT	VendorTripNumber	52.00	0.00
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tblTripsAndVMT	WorkerTripNumber	5.00	0.00
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tblTripsAndVMT	WorkerTripNumber	123.00	0.00
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tblTripsAndVMT	WorkerTripNumber	3.00	0.00
tblTripsAndVMT	WorkerTripNumber	123.00	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2014	5.0300e-003	0.0606	0.0387	5.0000e-005	0.0159	2.9700e-003	0.0189	1.7200e-003	2.7300e-003	4.4500e-003	0.0000	4.6974	4.6974	1.3900e-003	0.0000	4.7265
2015	0.1269	1.1132	0.8885	1.2600e-003	2.6152	0.0550	2.6702	0.2654	0.0509	0.3164	0.0000	114.7142	114.7142	0.0221	0.0000	115.1782
2016	0.0153	0.1782	0.1069	1.4000e-004	0.0159	8.4800e-003	0.0244	1.7200e-003	7.8000e-003	9.5200e-003	0.0000	13.4274	13.4274	4.0500e-003	0.0000	13.5125
Total	**0.1472**	**1.3520**	**1.0342**	**1.4500e-003**	**2.6470**	**0.0665**	**2.7135**	**0.2689**	**0.0614**	**0.3303**	**0.0000**	**132.8390**	**132.8390**	**0.0275**	**0.0000**	**133.4172**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2014	5.0300e-003	0.0606	0.0387	5.0000e-005	0.0159	2.9700e-003	0.0189	1.7200e-003	2.7300e-003	4.4500e-003	0.0000	4.6974	4.6974	1.3900e-003	0.0000	4.7265
2015	0.1269	1.1132	0.8885	1.2600e-003	0.0449	0.0550	0.0999	8.9800e-003	0.0509	0.0599	0.0000	114.7141	114.7141	0.0221	0.0000	115.1781
2016	0.0153	0.1782	0.1069	1.4000e-004	0.0159	8.4800e-003	0.0244	1.7200e-003	7.8000e-003	9.5200e-003	0.0000	13.4274	13.4274	4.0500e-003	0.0000	13.5124
Total	**0.1472**	**1.3520**	**1.0342**	**1.4500e-003**	**0.0767**	**0.0665**	**0.1432**	**0.0124**	**0.0614**	**0.0739**	**0.0000**	**132.8389**	**132.8389**	**0.0275**	**0.0000**	**133.4170**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**97.10**	**0.00**	**94.72**	**95.38**	**0.00**	**77.64**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.3487	1.0000e-005	1.0000e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.8800e-003	1.8800e-003	1.0000e-005	0.0000	1.9900e-003
Energy	9.2900e-003	0.0844	0.0709	5.1000e-004		6.4200e-003	6.4200e-003		6.4200e-003	6.4200e-003	0.0000	91.8925	91.8925	1.7600e-003	1.6800e-003	92.4517
Mobile	0.6853	1.9002	6.9680	0.0114	45.2346	0.0268	45.2614	4.6252	0.0246	4.6498	0.0000	942.6012	942.6012	0.0387	0.0000	943.4145
Waste						0.0000	0.0000		0.0000	0.0000	18.8782	0.0000	18.8782	1.1157	0.0000	42.3072
Water						0.0000	0.0000		0.0000	0.0000	5.6387	0.0000	5.6387	0.5792	0.0137	22.0400
Total	**2.0432**	**1.9847**	**7.0399**	**0.0120**	**45.2346**	**0.0332**	**45.2678**	**4.6252**	**0.0310**	**4.6562**	**24.5168**	**1,034.4956**	**1,059.0124**	**1.7353**	**0.0154**	**1,100.2153**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.3487	1.0000e-005	1.0000e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.8800e-003	1.8800e-003	1.0000e-005	0.0000	1.9900e-003
Energy	9.2900e-003	0.0844	0.0709	5.1000e-004		6.4200e-003	6.4200e-003		6.4200e-003	6.4200e-003	0.0000	91.8925	91.8925	1.7600e-003	1.6800e-003	92.4517
Mobile	0.6853	1.9002	6.9680	0.0114	45.2346	0.0268	45.2614	4.6252	0.0246	4.6498	0.0000	942.6012	942.6012	0.0387	0.0000	943.4145
Waste						0.0000	0.0000		0.0000	0.0000	18.8782	0.0000	18.8782	1.1157	0.0000	42.3072
Water						0.0000	0.0000		0.0000	0.0000	5.6387	0.0000	5.6387	0.5792	0.0137	22.0400
Total	**2.0432**	**1.9847**	**7.0399**	**0.0120**	**45.2346**	**0.0332**	**45.2678**	**4.6252**	**0.0310**	**4.6562**	**24.5168**	**1,034.4956**	**1,059.0124**	**1.7353**	**0.0154**	**1,100.2153**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	SG_Clear&Grub	Site Preparation	12/1/2014	12/12/2014	5	10	
2	SG_Building Pads	Site Preparation	1/12/2015	1/16/2015	5	5	
3	BC_Foundation	Building Construction	1/19/2015	1/23/2015	5	5	
4	BC_Foundation-Exc	Building Construction	1/26/2015	2/20/2015	5	20	
5	BC_Slab	Building Construction	2/23/2015	2/27/2015	5	5	
6	BC_Structure	Building Construction	3/2/2015	3/27/2015	5	20	
7	BC_Interiors	Site Preparation	3/30/2015	4/24/2015	5	20	
8	SF_Site Concrete	Building Construction	4/27/2015	5/22/2015	5	20	
9	SF_Landscape	Building Construction	5/25/2015	6/19/2015	5	20	
10	SF_Paving	Paving	6/22/2015	7/3/2015	5	10	
11	SF_Paving-Loader	Building Construction	7/6/2015	7/31/2015	5	20	
12	SG_Balance Site	Site Preparation	12/15/2015	1/11/2016	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
SG_Clear&Grub	Scrapers	1	4.00	356	0.48
SG_Clear&Grub	Tractors/Loaders/Backhoes	1	8.00	75	0.37
SG_Building Pads	Graders	1	8.00	162	0.41
SG_Building Pads	Rollers	1	8.00	84	0.38
SG_Building Pads	Scrapers	2	4.00	356	0.48
SG_Balance Site	Graders	1	8.00	162	0.41
SG_Balance Site	Rollers	2	8.00	84	0.38
SG_Balance Site	Scrapers	4	4.00	356	0.48
BC_Foundation	Pumps	1	8.00	84	0.50
BC_Foundation-Exc	Excavators	1	8.00	157	0.38
BC_Slab	Other Material Handling Equipment	1	6.00	196	0.59
BC_Slab	Pumps	1	8.00	84	0.50
BC_Structure	Cranes	1	6.00	208	0.29
BC_Structure	Forklifts	1	8.00	149	0.20
BC_Structure	Generator Sets	1	8.00	84	0.50
BC_Interiors	Forklifts	1	8.00	149	0.20
SF_Site Concrete	Tractors/Loaders/Backhoes	1	8.00	75	0.37
SF_Landscape	Paving Equipment	1	8.00	82	0.36
SF_Landscape	Tractors/Loaders/Backhoes	1	8.00	75	0.37
SF_Paving	Graders	2	8.00	162	0.41
SF_Paving	Paving Equipment	1	8.00	82	0.36
SF_Paving	Scrapers	2	4.00	356	0.48
SF_Paving-Loader	Rubber Tired Loaders	1	8.00	37	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
SG_Clear&Grub	2	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
SG_Building Pads	4	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
SG_Balance Site	7	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
BC_Foundation	1	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
BC_Foundation-Exc	1	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
BC_Slab	2	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
BC_Structure	3	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
BC_Interiors	1	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
SF_Site Concrete	1	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
SF_Landscape	2	123.00	52.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
SF_Paving	5	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
SF_Paving-Loader	1	123.00	52.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 SG_Clear&Grub - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0159	0.0000	0.0159	1.7200e-003	0.0000	1.7200e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.0300e-003	0.0606	0.0387	5.0000e-005		2.9700e-003	2.9700e-003		2.7300e-003	2.7300e-003	0.0000	4.6974	4.6974	1.3900e-003	0.0000	4.7265
Total	**5.0300e-003**	**0.0606**	**0.0387**	**5.0000e-005**	**0.0159**	**2.9700e-003**	**0.0189**	**1.7200e-003**	**2.7300e-003**	**4.4500e-003**	**0.0000**	**4.6974**	**4.6974**	**1.3900e-003**	**0.0000**	**4.7265**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.2 SG_Clear&Grub - 2014

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0159	0.0000	0.0159	1.7200e-003	0.0000	1.7200e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.0300e-003	0.0606	0.0387	5.0000e-005		2.9700e-003	2.9700e-003		2.7300e-003	2.7300e-003	0.0000	4.6974	4.6974	1.3900e-003	0.0000	4.7265
Total	**5.0300e-003**	**0.0606**	**0.0387**	**5.0000e-005**	**0.0159**	**2.9700e-003**	**0.0189**	**1.7200e-003**	**2.7300e-003**	**4.4500e-003**	**0.0000**	**4.6974**	**4.6974**	**1.3900e-003**	**0.0000**	**4.7265**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 SG_Building Pads - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.9800e-003	0.0000	3.9800e-003	4.3000e-004	0.0000	4.3000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.9900e-003	0.0800	0.0455	6.0000e-005		3.9300e-003	3.9300e-003		3.6200e-003	3.6200e-003	0.0000	5.5423	5.5423	1.6500e-003	0.0000	5.5771
Total	**6.9900e-003**	**0.0800**	**0.0455**	**6.0000e-005**	**3.9800e-003**	**3.9300e-003**	**7.9100e-003**	**4.3000e-004**	**3.6200e-003**	**4.0500e-003**	**0.0000**	**5.5423**	**5.5423**	**1.6500e-003**	**0.0000**	**5.5771**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 SG_Building Pads - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.9800e-003	0.0000	3.9800e-003	4.3000e-004	0.0000	4.3000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.9900e-003	0.0800	0.0455	6.0000e-005		3.9300e-003	3.9300e-003		3.6200e-003	3.6200e-003	0.0000	5.5423	5.5423	1.6500e-003	0.0000	5.5771
Total	**6.9900e-003**	**0.0800**	**0.0455**	**6.0000e-005**	**3.9800e-003**	**3.9300e-003**	**7.9100e-003**	**4.3000e-004**	**3.6200e-003**	**4.0500e-003**	**0.0000**	**5.5423**	**5.5423**	**1.6500e-003**	**0.0000**	**5.5771**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 BC_Foundation - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.2600e-003	8.9700e-003	6.5800e-003	1.0000e-005		6.7000e-004	6.7000e-004		6.7000e-004	6.7000e-004	0.0000	0.9547	0.9547	1.0000e-004	0.0000	0.9569
Total	**1.2600e-003**	**8.9700e-003**	**6.5800e-003**	**1.0000e-005**		**6.7000e-004**	**6.7000e-004**		**6.7000e-004**	**6.7000e-004**	**0.0000**	**0.9547**	**0.9547**	**1.0000e-004**	**0.0000**	**0.9569**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 BC_Foundation - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.2600e-003	8.9700e-003	6.5800e-003	1.0000e-005		6.7000e-004	6.7000e-004		6.7000e-004	6.7000e-004	0.0000	0.9547	0.9547	1.0000e-004	0.0000	0.9569
Total	**1.2600e-003**	**8.9700e-003**	**6.5800e-003**	**1.0000e-005**		**6.7000e-004**	**6.7000e-004**		**6.7000e-004**	**6.7000e-004**	**0.0000**	**0.9547**	**0.9547**	**1.0000e-004**	**0.0000**	**0.9569**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 BC_Foundation-Exc - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.0400e-003	0.0472	0.0333	5.0000e-005		2.3300e-003	2.3300e-003		2.1400e-003	2.1400e-003	0.0000	4.8844	4.8844	1.4600e-003	0.0000	4.9150
Total	**4.0400e-003**	**0.0472**	**0.0333**	**5.0000e-005**		**2.3300e-003**	**2.3300e-003**		**2.1400e-003**	**2.1400e-003**	**0.0000**	**4.8844**	**4.8844**	**1.4600e-003**	**0.0000**	**4.9150**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 BC_Foundation-Exc - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.0400e-003	0.0472	0.0333	5.0000e-005		2.3300e-003	2.3300e-003		2.1400e-003	2.1400e-003	0.0000	4.8844	4.8844	1.4600e-003	0.0000	4.9150
Total	**4.0400e-003**	**0.0472**	**0.0333**	**5.0000e-005**		**2.3300e-003**	**2.3300e-003**		**2.1400e-003**	**2.1400e-003**	**0.0000**	**4.8844**	**4.8844**	**1.4600e-003**	**0.0000**	**4.9150**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 BC_Slab - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.8800e-003	0.0301	0.0132	3.0000e-005		1.4700e-003	1.4700e-003		1.4000e-003	1.4000e-003	0.0000	2.7267	2.7267	6.3000e-004	0.0000	2.7400
Total	**2.8800e-003**	**0.0301**	**0.0132**	**3.0000e-005**		**1.4700e-003**	**1.4700e-003**		**1.4000e-003**	**1.4000e-003**	**0.0000**	**2.7267**	**2.7267**	**6.3000e-004**	**0.0000**	**2.7400**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 BC_Slab - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.8800e-003	0.0301	0.0132	3.0000e-005		1.4700e-003	1.4700e-003		1.4000e-003	1.4000e-003	0.0000	2.7267	2.7267	6.3000e-004	0.0000	2.7400
Total	**2.8800e-003**	**0.0301**	**0.0132**	**3.0000e-005**		**1.4700e-003**	**1.4700e-003**		**1.4000e-003**	**1.4000e-003**	**0.0000**	**2.7267**	**2.7267**	**6.3000e-004**	**0.0000**	**2.7400**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 BC_Structure - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0129	0.1284	0.0656	1.1000e-004		7.1100e-003	7.1100e-003		6.7400e-003	6.7400e-003	0.0000	9.9669	9.9669	2.2300e-003	0.0000	10.0136
Total	**0.0129**	**0.1284**	**0.0656**	**1.1000e-004**		**7.1100e-003**	**7.1100e-003**		**6.7400e-003**	**6.7400e-003**	**0.0000**	**9.9669**	**9.9669**	**2.2300e-003**	**0.0000**	**10.0136**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 BC_Structure - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0129	0.1284	0.0656	1.1000e-004		7.1100e-003	7.1100e-003		6.7400e-003	6.7400e-003	0.0000	9.9669	9.9669	2.2300e-003	0.0000	10.0136
Total	**0.0129**	**0.1284**	**0.0656**	**1.1000e-004**		**7.1100e-003**	**7.1100e-003**		**6.7400e-003**	**6.7400e-003**	**0.0000**	**9.9669**	**9.9669**	**2.2300e-003**	**0.0000**	**10.0136**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.8 BC_Interiors - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.9700e-003	0.0322	0.0185	3.0000e-005		1.7600e-003	1.7600e-003		1.6200e-003	1.6200e-003	0.0000	2.4386	2.4386	7.3000e-004	0.0000	2.4539
Total	**2.9700e-003**	**0.0322**	**0.0185**	**3.0000e-005**	**0.0000**	**1.7600e-003**	**1.7600e-003**	**0.0000**	**1.6200e-003**	**1.6200e-003**	**0.0000**	**2.4386**	**2.4386**	**7.3000e-004**	**0.0000**	**2.4539**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.8 BC_Interiors - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.9700e-003	0.0322	0.0185	3.0000e-005		1.7600e-003	1.7600e-003		1.6200e-003	1.6200e-003	0.0000	2.4386	2.4386	7.3000e-004	0.0000	2.4539
Total	**2.9700e-003**	**0.0322**	**0.0185**	**3.0000e-005**	**0.0000**	**1.7600e-003**	**1.7600e-003**	**0.0000**	**1.6200e-003**	**1.6200e-003**	**0.0000**	**2.4386**	**2.4386**	**7.3000e-004**	**0.0000**	**2.4539**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.9 SF_Site Concrete - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.7900e-003	0.0265	0.0188	2.0000e-005		2.0800e-003	2.0800e-003		1.9100e-003	1.9100e-003	0.0000	2.2971	2.2971	6.9000e-004	0.0000	2.3115
Total	**2.7900e-003**	**0.0265**	**0.0188**	**2.0000e-005**		**2.0800e-003**	**2.0800e-003**		**1.9100e-003**	**1.9100e-003**	**0.0000**	**2.2971**	**2.2971**	**6.9000e-004**	**0.0000**	**2.3115**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.9 SF_Site Concrete - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.7900e-003	0.0265	0.0188	2.0000e-005		2.0800e-003	2.0800e-003		1.9100e-003	1.9100e-003	0.0000	2.2971	2.2971	6.9000e-004	0.0000	2.3115
Total	**2.7900e-003**	**0.0265**	**0.0188**	**2.0000e-005**		**2.0800e-003**	**2.0800e-003**		**1.9100e-003**	**1.9100e-003**	**0.0000**	**2.2971**	**2.2971**	**6.9000e-004**	**0.0000**	**2.3115**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.10 SF_Landscape - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.2300e-003	0.0585	0.0387	5.0000e-005		4.5300e-003	4.5300e-003		4.1700e-003	4.1700e-003	0.0000	4.7209	4.7209	1.4100e-003	0.0000	4.7505
Total	**6.2300e-003**	**0.0585**	**0.0387**	**5.0000e-005**		**4.5300e-003**	**4.5300e-003**		**4.1700e-003**	**4.1700e-003**	**0.0000**	**4.7209**	**4.7209**	**1.4100e-003**	**0.0000**	**4.7505**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.4600e-003	0.0576	0.0936	1.3000e-004	0.2889	9.9000e-004	0.2899	0.0294	9.1000e-004	0.0304	0.0000	11.4625	11.4625	1.0000e-004	0.0000	11.4646
Worker	4.7900e-003	6.1700e-003	0.0611	1.2000e-004	1.0088	8.0000e-005	1.0089	0.1022	7.0000e-005	0.1023	0.0000	9.0207	9.0207	5.0000e-004	0.0000	9.0311
Total	**0.0133**	**0.0638**	**0.1548**	**2.5000e-004**	**1.2977**	**1.0700e-003**	**1.2987**	**0.1317**	**9.8000e-004**	**0.1326**	**0.0000**	**20.4831**	**20.4831**	**6.0000e-004**	**0.0000**	**20.4956**

3.10 SF_Landscape - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.2300e-003	0.0585	0.0387	5.0000e-005		4.5300e-003	4.5300e-003		4.1700e-003	4.1700e-003	0.0000	4.7209	4.7209	1.4100e-003	0.0000	4.7505
Total	**6.2300e-003**	**0.0585**	**0.0387**	**5.0000e-005**		**4.5300e-003**	**4.5300e-003**		**4.1700e-003**	**4.1700e-003**	**0.0000**	**4.7209**	**4.7209**	**1.4100e-003**	**0.0000**	**4.7505**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.4600e-003	0.0576	0.0936	1.3000e-004	3.2400e-003	9.9000e-004	4.2300e-003	9.4000e-004	9.1000e-004	1.8500e-003	0.0000	11.4625	11.4625	1.0000e-004	0.0000	11.4646
Worker	4.7900e-003	6.1700e-003	0.0611	1.2000e-004	9.2700e-003	8.0000e-005	9.3500e-003	2.4800e-003	7.0000e-005	2.5500e-003	0.0000	9.0207	9.0207	5.0000e-004	0.0000	9.0311
Total	**0.0133**	**0.0638**	**0.1548**	**2.5000e-004**	**0.0125**	**1.0700e-003**	**0.0136**	**3.4200e-003**	**9.8000e-004**	**4.4000e-003**	**0.0000**	**20.4831**	**20.4831**	**6.0000e-004**	**0.0000**	**20.4956**

3.11 SF_Paving - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0187	0.2089	0.1134	1.4000e-004		0.0106	0.0106		9.7700e-003	9.7700e-003	0.0000	13.7601	13.7601	4.1100e-003	0.0000	13.8464
Paving	6.5500e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0253**	**0.2089**	**0.1134**	**1.4000e-004**		**0.0106**	**0.0106**		**9.7700e-003**	**9.7700e-003**	**0.0000**	**13.7601**	**13.7601**	**4.1100e-003**	**0.0000**	**13.8464**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.11 SF_Paving - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0187	0.2089	0.1134	1.4000e-004		0.0106	0.0106		9.7700e-003	9.7700e-003	0.0000	13.7601	13.7601	4.1100e-003	0.0000	13.8464
Paving	6.5500e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0253**	**0.2089**	**0.1134**	**1.4000e-004**		**0.0106**	**0.0106**		**9.7700e-003**	**9.7700e-003**	**0.0000**	**13.7601**	**13.7601**	**4.1100e-003**	**0.0000**	**13.8464**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.12 SF_Paving-Loader - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	5.0900e-003	0.0148	0.0189	1.0000e-005		1.6300e-003	1.6300e-003		1.5000e-003	1.5000e-003	0.0000	1.2434	1.2434	3.7000e-004	0.0000	1.2512
Total	**5.0900e-003**	**0.0148**	**0.0189**	**1.0000e-005**		**1.6300e-003**	**1.6300e-003**		**1.5000e-003**	**1.5000e-003**	**0.0000**	**1.2434**	**1.2434**	**3.7000e-004**	**0.0000**	**1.2512**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.4600e-003	0.0576	0.0936	1.3000e-004	0.2889	9.9000e-004	0.2899	0.0294	9.1000e-004	0.0304	0.0000	11.4625	11.4625	1.0000e-004	0.0000	11.4646
Worker	4.7900e-003	6.1700e-003	0.0611	1.2000e-004	1.0088	8.0000e-005	1.0089	0.1022	7.0000e-005	0.1023	0.0000	9.0207	9.0207	5.0000e-004	0.0000	9.0311
Total	**0.0133**	**0.0638**	**0.1548**	**2.5000e-004**	**1.2977**	**1.0700e-003**	**1.2987**	**0.1317**	**9.8000e-004**	**0.1326**	**0.0000**	**20.4831**	**20.4831**	**6.0000e-004**	**0.0000**	**20.4956**

3.12 SF_Paving-Loader - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	5.0900e-003	0.0148	0.0189	1.0000e-005		1.6300e-003	1.6300e-003		1.5000e-003	1.5000e-003	0.0000	1.2434	1.2434	3.7000e-004	0.0000	1.2512
Total	**5.0900e-003**	**0.0148**	**0.0189**	**1.0000e-005**		**1.6300e-003**	**1.6300e-003**		**1.5000e-003**	**1.5000e-003**	**0.0000**	**1.2434**	**1.2434**	**3.7000e-004**	**0.0000**	**1.2512**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.4600e-003	0.0576	0.0936	1.3000e-004	3.2400e-003	9.9000e-004	4.2300e-003	9.4000e-004	9.1000e-004	1.8500e-003	0.0000	11.4625	11.4625	1.0000e-004	0.0000	11.4646
Worker	4.7900e-003	6.1700e-003	0.0611	1.2000e-004	9.2700e-003	8.0000e-005	9.3500e-003	2.4800e-003	7.0000e-005	2.5500e-003	0.0000	9.0207	9.0207	5.0000e-004	0.0000	9.0311
Total	**0.0133**	**0.0638**	**0.1548**	**2.5000e-004**	**0.0125**	**1.0700e-003**	**0.0136**	**3.4200e-003**	**9.8000e-004**	**4.4000e-003**	**0.0000**	**20.4831**	**20.4831**	**6.0000e-004**	**0.0000**	**20.4956**

3.13 SG_Balance Site - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0159	0.0000	0.0159	1.7200e-003	0.0000	1.7200e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0299	0.3501	0.2064	2.6000e-004		0.0168	0.0168		0.0154	0.0154	0.0000	25.2128	25.2128	7.5300e-003	0.0000	25.3709
Total	**0.0299**	**0.3501**	**0.2064**	**2.6000e-004**	**0.0159**	**0.0168**	**0.0327**	**1.7200e-003**	**0.0154**	**0.0171**	**0.0000**	**25.2128**	**25.2128**	**7.5300e-003**	**0.0000**	**25.3709**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.13 SG_Balance Site - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0159	0.0000	0.0159	1.7200e-003	0.0000	1.7200e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0299	0.3501	0.2064	2.6000e-004		0.0168	0.0168		0.0154	0.0154	0.0000	25.2128	25.2128	7.5300e-003	0.0000	25.3709
Total	**0.0299**	**0.3501**	**0.2064**	**2.6000e-004**	**0.0159**	**0.0168**	**0.0327**	**1.7200e-003**	**0.0154**	**0.0171**	**0.0000**	**25.2128**	**25.2128**	**7.5300e-003**	**0.0000**	**25.3709**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.13 SG_Balance Site - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0159	0.0000	0.0159	1.7200e-003	0.0000	1.7200e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0153	0.1782	0.1069	1.4000e-004		8.4800e-003	8.4800e-003		7.8000e-003	7.8000e-003	0.0000	13.4274	13.4274	4.0500e-003	0.0000	13.5125
Total	**0.0153**	**0.1782**	**0.1069**	**1.4000e-004**	**0.0159**	**8.4800e-003**	**0.0244**	**1.7200e-003**	**7.8000e-003**	**9.5200e-003**	**0.0000**	**13.4274**	**13.4274**	**4.0500e-003**	**0.0000**	**13.5125**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.13 SG_Balance Site - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0159	0.0000	0.0159	1.7200e-003	0.0000	1.7200e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0153	0.1782	0.1069	1.4000e-004		8.4800e-003	8.4800e-003		7.8000e-003	7.8000e-003	0.0000	13.4274	13.4274	4.0500e-003	0.0000	13.5124
Total	**0.0153**	**0.1782**	**0.1069**	**1.4000e-004**	**0.0159**	**8.4800e-003**	**0.0244**	**1.7200e-003**	**7.8000e-003**	**9.5200e-003**	**0.0000**	**13.4274**	**13.4274**	**4.0500e-003**	**0.0000**	**13.5124**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.6853	1.9002	6.9680	0.0114	45.2346	0.0268	45.2614	4.6252	0.0246	4.6498	0.0000	942.6012	942.6012	0.0387	0.0000	943.4145
Unmitigated	0.6853	1.9002	6.9680	0.0114	45.2346	0.0268	45.2614	4.6252	0.0246	4.6498	0.0000	942.6012	942.6012	0.0387	0.0000	943.4145

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Office Building	1,101.00	237.00	98.00	1,993,737	1,993,737
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	1,101.00	237.00	98.00	1,993,737	1,993,737

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Office Building	9.50	7.30	7.30	33.00	48.00	19.00	77	19	4
Other Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.480297	0.068108	0.152696	0.151211	0.060189	0.006855	0.034541	0.032901	0.000938	0.001917	0.007586	0.000677	0.002085

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	9.2900e-003	0.0844	0.0709	5.1000e-004		6.4200e-003	6.4200e-003		6.4200e-003	6.4200e-003	0.0000	91.8925	91.8925	1.7600e-003	1.6800e-003	92.4517
NaturalGas Unmitigated	9.2900e-003	0.0844	0.0709	5.1000e-004		6.4200e-003	6.4200e-003		6.4200e-003	6.4200e-003	0.0000	91.8925	91.8925	1.7600e-003	1.6800e-003	92.4517

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	1.722e+006	9.2900e-003	0.0844	0.0709	5.1000e-004		6.4200e-003	6.4200e-003		6.4200e-003	6.4200e-003	0.0000	91.8925	91.8925	1.7600e-003	1.6800e-003	92.4517
Total		**9.2900e-003**	**0.0844**	**0.0709**	**5.1000e-004**		**6.4200e-003**	**6.4200e-003**		**6.4200e-003**	**6.4200e-003**	**0.0000**	**91.8925**	**91.8925**	**1.7600e-003**	**1.6800e-003**	**92.4517**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	1.722e+006	9.2900e-003	0.0844	0.0709	5.1000e-004		6.4200e-003	6.4200e-003		6.4200e-003	6.4200e-003	0.0000	91.8925	91.8925	1.7600e-003	1.6800e-003	92.4517
Total		**9.2900e-003**	**0.0844**	**0.0709**	**5.1000e-004**		**6.4200e-003**	**6.4200e-003**		**6.4200e-003**	**6.4200e-003**	**0.0000**	**91.8925**	**91.8925**	**1.7600e-003**	**1.6800e-003**	**92.4517**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Office Building	1.971e +006	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Office Building	1.971e +006	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.3487	1.0000e-005	1.0000e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.8800e-003	1.8800e-003	1.0000e-005	0.0000	1.9900e-003
Unmitigated	1.3487	1.0000e-005	1.0000e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.8800e-003	1.8800e-003	1.0000e-005	0.0000	1.9900e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1074					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.2412					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-004	1.0000e-005	1.0000e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.8800e-003	1.8800e-003	1.0000e-005	0.0000	1.9900e-003
Total	**1.3487**	**1.0000e-005**	**1.0000e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.8800e-003**	**1.8800e-003**	**1.0000e-005**	**0.0000**	**1.9900e-003**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1074					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.2412					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-004	1.0000e-005	1.0000e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.8800e-003	1.8800e-003	1.0000e-005	0.0000	1.9900e-003
Total	**1.3487**	**1.0000e-005**	**1.0000e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.8800e-003**	**1.8800e-003**	**1.0000e-005**	**0.0000**	**1.9900e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	5.6387	0.5792	0.0137	22.0400
Unmitigated	5.6387	0.5792	0.0137	22.0400

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Office Building	17.7734 / 10.8934	5.6387	0.5792	0.0137	22.0400
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**5.6387**	**0.5792**	**0.0137**	**22.0400**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Office Building	17.7734 / 10.8934	5.6387	0.5792	0.0137	22.0400
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**5.6387**	**0.5792**	**0.0137**	**22.0400**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	18.8782	1.1157	0.0000	42.3072
Unmitigated	18.8782	1.1157	0.0000	42.3072

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Office Building	93	18.8782	1.1157	0.0000	42.3072
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**18.8782**	**1.1157**	**0.0000**	**42.3072**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Office Building	93	18.8782	1.1157	0.0000	42.3072
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**18.8782**	**1.1157**	**0.0000**	**42.3072**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

Winters Gas Training Facility (Operations)

Yolo County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	100.00	1000sqft	48.00	100,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	6.8	**Precipitation Freq (Days)**	54
Climate Zone	4			**Operational Year**	2015
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - total site is 48 acres

Construction Phase - Construction modeled separately

Vehicle Trips - trip generation from traffic study; assumed that operational activities could occur 7 days a week for conservative analysis

Road Dust - All paved roads

Table Name	Column Name	Default Value	New Value
tblLandUse	LotAcreage	2.30	48.00
tblProjectCharacteristics	OperationalYear	2014	2015
tblRoadDust	RoadPercentPave	94	100
tblVehicleTrips	ST_TR	2.37	11.04
tblVehicleTrips	SU_TR	0.98	11.04
tblVehicleTrips	WD_TR	11.01	11.04

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2015	0.6655	6.7277	4.7476	5.8200e-003	3.6024	0.3642	3.9666	0.5887	0.3381	0.9268	0.0000	540.8917	540.8917	0.1418	0.0000	543.8697
2016	0.4882	3.9399	2.9411	4.3900e-003	4.5849	0.2603	4.8452	0.4652	0.2445	0.7097	0.0000	390.9928	390.9928	0.0803	0.0000	392.6785
2017	0.4416	3.6257	2.8326	4.3700e-003	4.5673	0.2346	4.8019	0.4634	0.2203	0.6837	0.0000	384.0861	384.0861	0.0784	0.0000	385.7314
2018	0.9147	1.9188	1.6484	2.6500e-003	2.4587	0.1156	2.5743	0.2494	0.1084	0.3578	0.0000	231.4080	231.4080	0.0517	0.0000	232.4940
Total	**2.5099**	**16.2121**	**12.1696**	**0.0172**	**15.2133**	**0.9747**	**16.1880**	**1.7667**	**0.9113**	**2.6780**	**0.0000**	**1,547.3787**	**1,547.3787**	**0.3522**	**0.0000**	**1,554.7737**

2.1 Overall Construction

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2015	0.6655	6.7277	4.7476	5.8200e-003	0.6248	0.3642	0.9890	0.2916	0.3381	0.6297	0.0000	540.8912	540.8912	0.1418	0.0000	543.8691
2016	0.4882	3.9399	2.9411	4.3900e-003	0.0445	0.2603	0.3048	0.0122	0.2445	0.2567	0.0000	390.9925	390.9925	0.0803	0.0000	392.6782
2017	0.4416	3.6257	2.8326	4.3700e-003	0.0443	0.2346	0.2789	0.0121	0.2203	0.2324	0.0000	384.0857	384.0857	0.0784	0.0000	385.7310
2018	0.9147	1.9187	1.6484	2.6500e-003	0.0236	0.1156	0.1393	6.4300e-003	0.1084	0.1148	0.0000	231.4078	231.4078	0.0517	0.0000	232.4938
Total	**2.5099**	**16.2121**	**12.1696**	**0.0172**	**0.7373**	**0.9747**	**1.7120**	**0.3223**	**0.9113**	**1.2336**	**0.0000**	**1,547.3771**	**1,547.3771**	**0.3522**	**0.0000**	**1,554.7721**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**95.15**	**0.00**	**89.42**	**81.76**	**0.00**	**53.94**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.4602	1.0000e-005	9.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7900e-003	1.7900e-003	1.0000e-005	0.0000	1.9000e-003
Energy	9.2900e-003	0.0844	0.0709	5.1000e-004		6.4200e-003	6.4200e-003		6.4200e-003	6.4200e-003	0.0000	665.2790	665.2790	0.0277	7.0500e-003	668.0456
Mobile	0.9068	2.5146	9.2206	0.0151	0.9926	0.0355	1.0280	0.2669	0.0326	0.2994	0.0000	1,247.3326	1,247.3326	0.0512	0.0000	1,248.4087
Waste						0.0000	0.0000		0.0000	0.0000	18.8782	0.0000	18.8782	1.1157	0.0000	42.3072
Water						0.0000	0.0000		0.0000	0.0000	5.6387	39.0690	44.7076	0.5809	0.0140	61.2593
Total	**1.3763**	**2.5990**	**9.2925**	**0.0157**	**0.9926**	**0.0419**	**1.0344**	**0.2669**	**0.0390**	**0.3058**	**24.5168**	**1,951.6823**	**1,976.1992**	**1.7755**	**0.0211**	**2,020.0227**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.4602	1.0000e-005	9.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7900e-003	1.7900e-003	1.0000e-005	0.0000	1.9000e-003
Energy	9.2900e-003	0.0844	0.0709	5.1000e-004		6.4200e-003	6.4200e-003		6.4200e-003	6.4200e-003	0.0000	665.2790	665.2790	0.0277	7.0500e-003	668.0456
Mobile	0.9068	2.5146	9.2206	0.0151	0.9926	0.0355	1.0280	0.2669	0.0326	0.2994	0.0000	1,247.3326	1,247.3326	0.0512	0.0000	1,248.4087
Waste						0.0000	0.0000		0.0000	0.0000	18.8782	0.0000	18.8782	1.1157	0.0000	42.3072
Water						0.0000	0.0000		0.0000	0.0000	5.6387	39.0690	44.7076	0.5808	0.0140	61.2503
Total	**1.3763**	**2.5990**	**9.2925**	**0.0157**	**0.9926**	**0.0419**	**1.0344**	**0.2669**	**0.0390**	**0.3058**	**24.5168**	**1,951.6823**	**1,976.1992**	**1.7754**	**0.0211**	**2,020.0137**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**	**0.09**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2015	3/11/2015	5	50	
2	Site Preparation	Site Preparation	3/12/2015	4/22/2015	5	30	
3	Grading	Grading	4/23/2015	8/5/2015	5	75	
4	Building Construction	Building Construction	8/6/2015	6/6/2018	5	740	
5	Paving	Paving	6/7/2018	8/22/2018	5	55	
6	Architectural Coating	Architectural Coating	8/23/2018	11/7/2018	5	55	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 187.5

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 150,000; Non-Residential Outdoor: 50,000 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Demolition	Excavators	3	8.00	162	0.38
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Excavators	2	8.00	162	0.38
Building Construction	Cranes	1	7.00	226	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Paving	Pavers	2	8.00	125	0.42
Paving	Rollers	2	8.00	80	0.38
Demolition	Rubber Tired Dozers	2	8.00	255	0.40
Grading	Rubber Tired Dozers	1	8.00	255	0.40
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Graders	1	8.00	174	0.41
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Paving Equipment	2	8.00	130	0.36
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	3	8.00	255	0.40
Grading	Scrapers	2	8.00	361	0.48
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	32.00	16.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	6.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1127	1.2091	0.9018	1.0000e-003		0.0613	0.0613		0.0571	0.0571	0.0000	93.6032	93.6032	0.0254	0.0000	94.1360
Total	**0.1127**	**1.2091**	**0.9018**	**1.0000e-003**		**0.0613**	**0.0613**		**0.0571**	**0.0571**	**0.0000**	**93.6032**	**93.6032**	**0.0254**	**0.0000**	**94.1360**

3.2 Demolition - 2015

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4600e-003	1.8800e-003	0.0186	4.0000e-005	0.3076	2.0000e-005	0.3076	0.0312	2.0000e-005	0.0312	0.0000	2.7502	2.7502	1.5000e-004	0.0000	2.7534
Total	**1.4600e-003**	**1.8800e-003**	**0.0186**	**4.0000e-005**	**0.3076**	**2.0000e-005**	**0.3076**	**0.0312**	**2.0000e-005**	**0.0312**	**0.0000**	**2.7502**	**2.7502**	**1.5000e-004**	**0.0000**	**2.7534**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1127	1.2091	0.9018	1.0000e-003		0.0613	0.0613		0.0571	0.0571	0.0000	93.6031	93.6031	0.0254	0.0000	94.1359
Total	**0.1127**	**1.2091**	**0.9018**	**1.0000e-003**		**0.0613**	**0.0613**		**0.0571**	**0.0571**	**0.0000**	**93.6031**	**93.6031**	**0.0254**	**0.0000**	**94.1359**

3.2 Demolition - 2015

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4600e-003	1.8800e-003	0.0186	4.0000e-005	2.8300e-003	2.0000e-005	2.8500e-003	7.5000e-004	2.0000e-005	7.8000e-004	0.0000	2.7502	2.7502	1.5000e-004	0.0000	2.7534
Total	**1.4600e-003**	**1.8800e-003**	**0.0186**	**4.0000e-005**	**2.8300e-003**	**2.0000e-005**	**2.8500e-003**	**7.5000e-004**	**2.0000e-005**	**7.8000e-004**	**0.0000**	**2.7502**	**2.7502**	**1.5000e-004**	**0.0000**	**2.7534**

3.3 Site Preparation - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2710	0.0000	0.2710	0.1490	0.0000	0.1490	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0789	0.8533	0.6395	5.9000e-004		0.0463	0.0463		0.0426	0.0426	0.0000	55.9517	55.9517	0.0167	0.0000	56.3025
Total	**0.0789**	**0.8533**	**0.6395**	**5.9000e-004**	**0.2710**	**0.0463**	**0.3173**	**0.1490**	**0.0426**	**0.1916**	**0.0000**	**55.9517**	**55.9517**	**0.0167**	**0.0000**	**56.3025**

3.3 Site Preparation - 2015

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0500e-003	1.3500e-003	0.0134	3.0000e-005	0.2214	2.0000e-005	0.2215	0.0224	2.0000e-005	0.0225	0.0000	1.9802	1.9802	1.1000e-004	0.0000	1.9824
Total	**1.0500e-003**	**1.3500e-003**	**0.0134**	**3.0000e-005**	**0.2214**	**2.0000e-005**	**0.2215**	**0.0224**	**2.0000e-005**	**0.0225**	**0.0000**	**1.9802**	**1.9802**	**1.1000e-004**	**0.0000**	**1.9824**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2710	0.0000	0.2710	0.1490	0.0000	0.1490	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0789	0.8533	0.6395	5.9000e-004		0.0463	0.0463		0.0426	0.0426	0.0000	55.9516	55.9516	0.0167	0.0000	56.3024
Total	**0.0789**	**0.8533**	**0.6395**	**5.9000e-004**	**0.2710**	**0.0463**	**0.3173**	**0.1490**	**0.0426**	**0.1916**	**0.0000**	**55.9516**	**55.9516**	**0.0167**	**0.0000**	**56.3024**

3.3 Site Preparation - 2015

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0500e-003	1.3500e-003	0.0134	3.0000e-005	2.0400e-003	2.0000e-005	2.0500e-003	5.4000e-004	2.0000e-005	5.6000e-004	0.0000	1.9802	1.9802	1.1000e-004	0.0000	1.9824
Total	**1.0500e-003**	**1.3500e-003**	**0.0134**	**3.0000e-005**	**2.0400e-003**	**2.0000e-005**	**2.0500e-003**	**5.4000e-004**	**2.0000e-005**	**5.6000e-004**	**0.0000**	**1.9802**	**1.9802**	**1.1000e-004**	**0.0000**	**1.9824**

3.4 Grading - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.3253	0.0000	0.3253	0.1349	0.0000	0.1349	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2541	2.9643	1.9065	2.3200e-003		0.1426	0.1426		0.1312	0.1312	0.0000	220.6583	220.6583	0.0659	0.0000	222.0417
Total	**0.2541**	**2.9643**	**1.9065**	**2.3200e-003**	**0.3253**	**0.1426**	**0.4678**	**0.1349**	**0.1312**	**0.2661**	**0.0000**	**220.6583**	**220.6583**	**0.0659**	**0.0000**	**222.0417**

3.4 Grading - 2015

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.9200e-003	3.7600e-003	0.0373	7.0000e-005	0.6151	5.0000e-005	0.6152	0.0623	4.0000e-005	0.0624	0.0000	5.5004	5.5004	3.0000e-004	0.0000	5.5068
Total	**2.9200e-003**	**3.7600e-003**	**0.0373**	**7.0000e-005**	**0.6151**	**5.0000e-005**	**0.6152**	**0.0623**	**4.0000e-005**	**0.0624**	**0.0000**	**5.5004**	**5.5004**	**3.0000e-004**	**0.0000**	**5.5068**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.3253	0.0000	0.3253	0.1349	0.0000	0.1349	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2541	2.9643	1.9065	2.3200e-003		0.1426	0.1426		0.1312	0.1312	0.0000	220.6580	220.6580	0.0659	0.0000	222.0414
Total	**0.2541**	**2.9643**	**1.9065**	**2.3200e-003**	**0.3253**	**0.1426**	**0.4678**	**0.1349**	**0.1312**	**0.2660**	**0.0000**	**220.6580**	**220.6580**	**0.0659**	**0.0000**	**222.0414**

3.4 Grading - 2015

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.9200e-003	3.7600e-003	0.0373	7.0000e-005	5.6500e-003	5.0000e-005	5.7000e-003	1.5100e-003	4.0000e-005	1.5500e-003	0.0000	5.5004	5.5004	3.0000e-004	0.0000	5.5068
Total	**2.9200e-003**	**3.7600e-003**	**0.0373**	**7.0000e-005**	**5.6500e-003**	**5.0000e-005**	**5.7000e-003**	**1.5100e-003**	**4.0000e-005**	**1.5500e-003**	**0.0000**	**5.5004**	**5.5004**	**3.0000e-004**	**0.0000**	**5.5068**

3.5 Building Construction - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1939	1.5916	0.9935	1.4200e-003		0.1122	0.1122		0.1055	0.1055	0.0000	129.3170	129.3170	0.0325	0.0000	129.9984
Total	**0.1939**	**1.5916**	**0.9935**	**1.4200e-003**		**0.1122**	**0.1122**		**0.1055**	**0.1055**	**0.0000**	**129.3170**	**129.3170**	**0.0325**	**0.0000**	**129.9984**

3.5 Building Construction - 2015

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0138	0.0940	0.1527	2.0000e-004	0.4711	1.6100e-003	0.4727	0.0480	1.4800e-003	0.0495	0.0000	18.6926	18.6926	1.7000e-004	0.0000	18.6961
Worker	6.6100e-003	8.5000e-003	0.0843	1.6000e-004	1.3910	1.1000e-004	1.3911	0.1409	1.0000e-004	0.1410	0.0000	12.4383	12.4383	6.8000e-004	0.0000	12.4526
Total	**0.0204**	**0.1025**	**0.2370**	**3.6000e-004**	**1.8621**	**1.7200e-003**	**1.8638**	**0.1889**	**1.5800e-003**	**0.1905**	**0.0000**	**31.1309**	**31.1309**	**8.5000e-004**	**0.0000**	**31.1487**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1939	1.5916	0.9935	1.4200e-003		0.1122	0.1122		0.1055	0.1055	0.0000	129.3168	129.3168	0.0325	0.0000	129.9982
Total	**0.1939**	**1.5916**	**0.9935**	**1.4200e-003**		**0.1122**	**0.1122**		**0.1055**	**0.1055**	**0.0000**	**129.3168**	**129.3168**	**0.0325**	**0.0000**	**129.9982**

3.5 Building Construction - 2015

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0138	0.0940	0.1527	2.0000e-004	5.2900e-003	1.6100e-003	6.9000e-003	1.5300e-003	1.4800e-003	3.0100e-003	0.0000	18.6926	18.6926	1.7000e-004	0.0000	18.6961
Worker	6.6100e-003	8.5000e-003	0.0843	1.6000e-004	0.0128	1.1000e-004	0.0129	3.4100e-003	1.0000e-004	3.5100e-003	0.0000	12.4383	12.4383	6.8000e-004	0.0000	12.4526
Total	**0.0204**	**0.1025**	**0.2370**	**3.6000e-004**	**0.0181**	**1.7200e-003**	**0.0198**	**4.9400e-003**	**1.5800e-003**	**6.5200e-003**	**0.0000**	**31.1309**	**31.1309**	**8.5000e-004**	**0.0000**	**31.1487**

3.5 Building Construction - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.4445	3.7201	2.4151	3.5000e-003		0.2567	0.2567		0.2412	0.2412	0.0000	316.0104	316.0104	0.0784	0.0000	317.6563
Total	**0.4445**	**3.7201**	**2.4151**	**3.5000e-003**		**0.2567**	**0.2567**		**0.2412**	**0.2412**	**0.0000**	**316.0104**	**316.0104**	**0.0784**	**0.0000**	**317.6563**

3.5 Building Construction - 2016

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0292	0.2012	0.3420	5.0000e-004	1.1599	3.3400e-003	1.1632	0.1182	3.0700e-003	0.1213	0.0000	45.4535	45.4535	3.7000e-004	0.0000	45.4612
Worker	0.0145	0.0186	0.1840	3.9000e-004	3.4250	2.5000e-004	3.4252	0.3470	2.3000e-004	0.3472	0.0000	29.5289	29.5289	1.5300e-003	0.0000	29.5610
Total	**0.0436**	**0.2198**	**0.5260**	**8.9000e-004**	**4.5849**	**3.5900e-003**	**4.5885**	**0.4652**	**3.3000e-003**	**0.4685**	**0.0000**	**74.9824**	**74.9824**	**1.9000e-003**	**0.0000**	**75.0222**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.4445	3.7201	2.4151	3.5000e-003		0.2567	0.2567		0.2412	0.2412	0.0000	316.0101	316.0101	0.0784	0.0000	317.6560
Total	**0.4445**	**3.7201**	**2.4151**	**3.5000e-003**		**0.2567**	**0.2567**		**0.2412**	**0.2412**	**0.0000**	**316.0101**	**316.0101**	**0.0784**	**0.0000**	**317.6560**

3.5 Building Construction - 2016

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0292	0.2012	0.3420	5.0000e-004	0.0130	3.3400e-003	0.0164	3.7700e-003	3.0700e-003	6.8300e-003	0.0000	45.4535	45.4535	3.7000e-004	0.0000	45.4612
Worker	0.0145	0.0186	0.1840	3.9000e-004	0.0315	2.5000e-004	0.0317	8.4100e-003	2.3000e-004	8.6300e-003	0.0000	29.5289	29.5289	1.5300e-003	0.0000	29.5610
Total	**0.0436**	**0.2198**	**0.5260**	**8.9000e-004**	**0.0445**	**3.5900e-003**	**0.0481**	**0.0122**	**3.3000e-003**	**0.0155**	**0.0000**	**74.9824**	**74.9824**	**1.9000e-003**	**0.0000**	**75.0222**

3.5 Building Construction - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.4033	3.4327	2.3568	3.4900e-003		0.2316	0.2316		0.2175	0.2175	0.0000	311.3228	311.3228	0.0766	0.0000	312.9319
Total	**0.4033**	**3.4327**	**2.3568**	**3.4900e-003**		**0.2316**	**0.2316**		**0.2175**	**0.2175**	**0.0000**	**311.3228**	**311.3228**	**0.0766**	**0.0000**	**312.9319**

3.5 Building Construction - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0256	0.1765	0.3143	5.0000e-004	1.1555	2.8000e-003	1.1583	0.1178	2.5700e-003	0.1203	0.0000	44.4985	44.4985	3.4000e-004	0.0000	44.5056
Worker	0.0127	0.0165	0.1615	3.9000e-004	3.4119	2.3000e-004	3.4121	0.3457	2.2000e-004	0.3459	0.0000	28.2648	28.2648	1.3800e-003	0.0000	28.2939
Total	**0.0383**	**0.1930**	**0.4758**	**8.9000e-004**	**4.5673**	**3.0300e-003**	**4.5704**	**0.4634**	**2.7900e-003**	**0.4662**	**0.0000**	**72.7632**	**72.7632**	**1.7200e-003**	**0.0000**	**72.7995**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.4033	3.4327	2.3568	3.4900e-003		0.2316	0.2316		0.2175	0.2175	0.0000	311.3225	311.3225	0.0766	0.0000	312.9315
Total	**0.4033**	**3.4327**	**2.3568**	**3.4900e-003**		**0.2316**	**0.2316**		**0.2175**	**0.2175**	**0.0000**	**311.3225**	**311.3225**	**0.0766**	**0.0000**	**312.9315**

3.5 Building Construction - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0256	0.1765	0.3143	5.0000e-004	0.0130	2.8000e-003	0.0158	3.7500e-003	2.5700e-003	6.3300e-003	0.0000	44.4985	44.4985	3.4000e-004	0.0000	44.5056
Worker	0.0127	0.0165	0.1615	3.9000e-004	0.0314	2.3000e-004	0.0316	8.3700e-003	2.2000e-004	8.5900e-003	0.0000	28.2648	28.2648	1.3800e-003	0.0000	28.2939
Total	**0.0383**	**0.1930**	**0.4758**	**8.9000e-004**	**0.0443**	**3.0300e-003**	**0.0474**	**0.0121**	**2.7900e-003**	**0.0149**	**0.0000**	**72.7632**	**72.7632**	**1.7200e-003**	**0.0000**	**72.7995**

3.5 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1508	1.3142	0.9906	1.5100e-003		0.0844	0.0844		0.0794	0.0794	0.0000	133.7749	133.7749	0.0327	0.0000	134.4624
Total	**0.1508**	**1.3142**	**0.9906**	**1.5100e-003**		**0.0844**	**0.0844**		**0.0794**	**0.0794**	**0.0000**	**133.7749**	**133.7749**	**0.0327**	**0.0000**	**134.4624**

3.5 Building Construction - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	9.6000e-003	0.0689	0.1256	2.2000e-004	0.5022	1.1200e-003	0.5033	0.0512	1.0300e-003	0.0522	0.0000	18.9963	18.9963	1.4000e-004	0.0000	18.9993
Worker	4.9400e-003	6.4400e-003	0.0627	1.7000e-004	1.4829	1.0000e-004	1.4830	0.1502	9.0000e-005	0.1503	0.0000	11.8245	11.8245	5.5000e-004	0.0000	11.8361
Total	**0.0145**	**0.0753**	**0.1882**	**3.9000e-004**	**1.9850**	**1.2200e-003**	**1.9863**	**0.2014**	**1.1200e-003**	**0.2025**	**0.0000**	**30.8207**	**30.8207**	**6.9000e-004**	**0.0000**	**30.8354**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1508	1.3142	0.9906	1.5100e-003		0.0844	0.0844		0.0794	0.0794	0.0000	133.7747	133.7747	0.0327	0.0000	134.4622
Total	**0.1508**	**1.3142**	**0.9906**	**1.5100e-003**		**0.0844**	**0.0844**		**0.0794**	**0.0794**	**0.0000**	**133.7747**	**133.7747**	**0.0327**	**0.0000**	**134.4622**

3.5 Building Construction - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	9.6000e-003	0.0689	0.1256	2.2000e-004	5.6400e-003	1.1200e-003	6.7600e-003	1.6300e-003	1.0300e-003	2.6600e-003	0.0000	18.9963	18.9963	1.4000e-004	0.0000	18.9993
Worker	4.9400e-003	6.4400e-003	0.0627	1.7000e-004	0.0136	1.0000e-004	0.0137	3.6400e-003	9.0000e-005	3.7300e-003	0.0000	11.8245	11.8245	5.5000e-004	0.0000	11.8361
Total	**0.0145**	**0.0753**	**0.1882**	**3.9000e-004**	**0.0193**	**1.2200e-003**	**0.0205**	**5.2700e-003**	**1.1200e-003**	**6.3900e-003**	**0.0000**	**30.8207**	**30.8207**	**6.9000e-004**	**0.0000**	**30.8354**

3.6 Paving - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0443	0.4720	0.3986	6.1000e-004		0.0258	0.0258		0.0238	0.0238	0.0000	56.0140	56.0140	0.0174	0.0000	56.3802
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0443**	**0.4720**	**0.3986**	**6.1000e-004**		**0.0258**	**0.0258**		**0.0238**	**0.0238**	**0.0000**	**56.0140**	**56.0140**	**0.0174**	**0.0000**	**56.3802**

3.6 Paving - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1300e-003	1.4700e-003	0.0143	4.0000e-005	0.3383	2.0000e-005	0.3383	0.0343	2.0000e-005	0.0343	0.0000	2.6978	2.6978	1.3000e-004	0.0000	2.7004
Total	**1.1300e-003**	**1.4700e-003**	**0.0143**	**4.0000e-005**	**0.3383**	**2.0000e-005**	**0.3383**	**0.0343**	**2.0000e-005**	**0.0343**	**0.0000**	**2.6978**	**2.6978**	**1.3000e-004**	**0.0000**	**2.7004**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0443	0.4720	0.3986	6.1000e-004		0.0258	0.0258		0.0238	0.0238	0.0000	56.0140	56.0140	0.0174	0.0000	56.3802
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0443**	**0.4720**	**0.3986**	**6.1000e-004**		**0.0258**	**0.0258**		**0.0238**	**0.0238**	**0.0000**	**56.0140**	**56.0140**	**0.0174**	**0.0000**	**56.3802**

3.6 Paving - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1300e-003	1.4700e-003	0.0143	4.0000e-005	3.1100e-003	2.0000e-005	3.1300e-003	8.3000e-004	2.0000e-005	8.5000e-004	0.0000	2.6978	2.6978	1.3000e-004	0.0000	2.7004
Total	**1.1300e-003**	**1.4700e-003**	**0.0143**	**4.0000e-005**	**3.1100e-003**	**2.0000e-005**	**3.1300e-003**	**8.3000e-004**	**2.0000e-005**	**8.5000e-004**	**0.0000**	**2.6978**	**2.6978**	**1.3000e-004**	**0.0000**	**2.7004**

3.7 Architectural Coating - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.6953					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.2100e-003	0.0552	0.0510	8.0000e-005		4.1400e-003	4.1400e-003		4.1400e-003	4.1400e-003	0.0000	7.0215	7.0215	6.7000e-004	0.0000	7.0355
Total	**0.7035**	**0.0552**	**0.0510**	**8.0000e-005**		**4.1400e-003**	**4.1400e-003**		**4.1400e-003**	**4.1400e-003**	**0.0000**	**7.0215**	**7.0215**	**6.7000e-004**	**0.0000**	**7.0355**

3.7 Architectural Coating - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.5000e-004	5.9000e-004	5.7200e-003	2.0000e-005	0.1353	1.0000e-005	0.1353	0.0137	1.0000e-005	0.0137	0.0000	1.0791	1.0791	5.0000e-005	0.0000	1.0802
Total	**4.5000e-004**	**5.9000e-004**	**5.7200e-003**	**2.0000e-005**	**0.1353**	**1.0000e-005**	**0.1353**	**0.0137**	**1.0000e-005**	**0.0137**	**0.0000**	**1.0791**	**1.0791**	**5.0000e-005**	**0.0000**	**1.0802**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.6953					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.2100e-003	0.0552	0.0510	8.0000e-005		4.1400e-003	4.1400e-003		4.1400e-003	4.1400e-003	0.0000	7.0215	7.0215	6.7000e-004	0.0000	7.0355
Total	**0.7035**	**0.0552**	**0.0510**	**8.0000e-005**		**4.1400e-003**	**4.1400e-003**		**4.1400e-003**	**4.1400e-003**	**0.0000**	**7.0215**	**7.0215**	**6.7000e-004**	**0.0000**	**7.0355**

3.7 Architectural Coating - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.5000e-004	5.9000e-004	5.7200e-003	2.0000e-005	1.2400e-003	1.0000e-005	1.2500e-003	3.3000e-004	1.0000e-005	3.4000e-004	0.0000	1.0791	1.0791	5.0000e-005	0.0000	1.0802
Total	**4.5000e-004**	**5.9000e-004**	**5.7200e-003**	**2.0000e-005**	**1.2400e-003**	**1.0000e-005**	**1.2500e-003**	**3.3000e-004**	**1.0000e-005**	**3.4000e-004**	**0.0000**	**1.0791**	**1.0791**	**5.0000e-005**	**0.0000**	**1.0802**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.9068	2.5146	9.2206	0.0151	0.9926	0.0355	1.0280	0.2669	0.0326	0.2994	0.0000	1,247.3326	1,247.3326	0.0512	0.0000	1,248.4087
Unmitigated	0.9068	2.5146	9.2206	0.0151	0.9926	0.0355	1.0280	0.2669	0.0326	0.2994	0.0000	1,247.3326	1,247.3326	0.0512	0.0000	1,248.4087

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Office Building	1,104.00	1,104.00	1104.00	2,638,287	2,638,287
Total	1,104.00	1,104.00	1,104.00	2,638,287	2,638,287

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Office Building	9.50	7.30	7.30	33.00	48.00	19.00	77	19	4

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.480297	0.068108	0.152696	0.151211	0.060189	0.006855	0.034541	0.032901	0.000938	0.001917	0.007586	0.000677	0.002085

4.4 Fleet Mix

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	573.3865	573.3865	0.0259	5.3600e-003	575.5939
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	573.3865	573.3865	0.0259	5.3600e-003	575.5939
NaturalGas Mitigated	9.2900e-003	0.0844	0.0709	5.1000e-004		6.4200e-003	6.4200e-003		6.4200e-003	6.4200e-003	0.0000	91.8925	91.8925	1.7600e-003	1.6800e-003	92.4517
NaturalGas Unmitigated	9.2900e-003	0.0844	0.0709	5.1000e-004		6.4200e-003	6.4200e-003		6.4200e-003	6.4200e-003	0.0000	91.8925	91.8925	1.7600e-003	1.6800e-003	92.4517

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Office Building	1.722e+006	9.2900e-003	0.0844	0.0709	5.1000e-004		6.4200e-003	6.4200e-003		6.4200e-003	6.4200e-003	0.0000	91.8925	91.8925	1.7600e-003	1.6800e-003	92.4517
Total		**9.2900e-003**	**0.0844**	**0.0709**	**5.1000e-004**		**6.4200e-003**	**6.4200e-003**		**6.4200e-003**	**6.4200e-003**	**0.0000**	**91.8925**	**91.8925**	**1.7600e-003**	**1.6800e-003**	**92.4517**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Office Building	1.722e+006	9.2900e-003	0.0844	0.0709	5.1000e-004		6.4200e-003	6.4200e-003		6.4200e-003	6.4200e-003	0.0000	91.8925	91.8925	1.7600e-003	1.6800e-003	92.4517
Total		**9.2900e-003**	**0.0844**	**0.0709**	**5.1000e-004**		**6.4200e-003**	**6.4200e-003**		**6.4200e-003**	**6.4200e-003**	**0.0000**	**91.8925**	**91.8925**	**1.7600e-003**	**1.6800e-003**	**92.4517**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Office Building	1.971e+006	573.3865	0.0259	5.3600e-003	575.5939
Total		**573.3865**	**0.0259**	**5.3600e-003**	**575.5939**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Office Building	1.971e+006	573.3865	0.0259	5.3600e-003	575.5939
Total		**573.3865**	**0.0259**	**5.3600e-003**	**575.5939**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.4602	1.0000e-005	9.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7900e-003	1.7900e-003	1.0000e-005	0.0000	1.9000e-003
Unmitigated	0.4602	1.0000e-005	9.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7900e-003	1.7900e-003	1.0000e-005	0.0000	1.9000e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0695					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.3906					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	9.0000e-005	1.0000e-005	9.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7900e-003	1.7900e-003	1.0000e-005	0.0000	1.9000e-003
Total	**0.4602**	**1.0000e-005**	**9.5000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.7900e-003**	**1.7900e-003**	**1.0000e-005**	**0.0000**	**1.9000e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0695					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.3906					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	9.0000e-005	1.0000e-005	9.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7900e-003	1.7900e-003	1.0000e-005	0.0000	1.9000e-003
Total	**0.4602**	**1.0000e-005**	**9.5000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.7900e-003**	**1.7900e-003**	**1.0000e-005**	**0.0000**	**1.9000e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	44.7076	0.5808	0.0140	61.2503
Unmitigated	44.7076	0.5809	0.0140	61.2593

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Office Building	17.7734 / 10.8934	44.7076	0.5809	0.0140	61.2593
Total		**44.7076**	**0.5809**	**0.0140**	**61.2593**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Office Building	17.7734 / 10.8934	44.7076	0.5808	0.0140	61.2503
Total		**44.7076**	**0.5808**	**0.0140**	**61.2503**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	18.8782	1.1157	0.0000	42.3072
Unmitigated	18.8782	1.1157	0.0000	42.3072

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Office Building	93	18.8782	1.1157	0.0000	42.3072
Total		**18.8782**	**1.1157**	**0.0000**	**42.3072**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Office Building	93	18.8782	1.1157	0.0000	42.3072
Total		**18.8782**	**1.1157**	**0.0000**	**42.3072**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

Winters Gas Training Facility - Operations

Yolo County, Winter

1.0 Project Characteristics

1.1 Land Usage

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	6.8	**Precipitation Freq (Days)**	54
Climate Zone	4			**Operational Year**	2015
Utility Company					
CO2 Intensity (lb/MWhr)	0	**CH4 Intensity (lb/MWhr)**	0	**N2O Intensity (lb/MWhr)**	0

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Modeling training course for one day

Off-road Equipment - PD

Construction Off-road Equipment Mitigation - potential mitigation measure

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstructionPhase	NumDays	0.00	1.00
tblOffRoadEquipment	HorsePower	226.00	208.00
tblOffRoadEquipment	HorsePower	226.00	208.00
tblOffRoadEquipment	HorsePower	226.00	208.00
tblOffRoadEquipment	HorsePower	226.00	208.00
tblOffRoadEquipment	HorsePower	226.00	208.00
tblOffRoadEquipment	HorsePower	226.00	208.00
tblOffRoadEquipment	HorsePower	89.00	149.00

tblOffRoadEquipment	HorsePower	89.00	149.00
tblOffRoadEquipment	HorsePower	97.00	75.00
tblOffRoadEquipment	HorsePower	97.00	75.00
tblOffRoadEquipment	HorsePower	97.00	75.00
tblOffRoadEquipment	HorsePower	97.00	75.00
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tblOffRoadEquipment	HorsePower	205.00	82.00
tblOffRoadEquipment	HorsePower	205.00	82.00
tblOffRoadEquipment	HorsePower	205.00	82.00
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tblOffRoadEquipment	HorsePower	400.00	381.00
tblOffRoadEquipment	HorsePower	400.00	381.00
tblOffRoadEquipment	HorsePower	400.00	381.00
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tblOffRoadEquipment	HorsePower	64.00	37.00
tblOffRoadEquipment	HorsePower	80.00	69.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00

tblOffRoadEquipment	UsageHours	4.00	6.00
tblOffRoadEquipment	UsageHours	4.00	8.00
tblOffRoadEquipment	UsageHours	4.00	6.00
tblOffRoadEquipment	UsageHours	4.00	6.00
tblOffRoadEquipment	UsageHours	4.00	3.00
tblOffRoadEquipment	UsageHours	6.00	5.00
tblOffRoadEquipment	UsageHours	6.00	2.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblProjectCharacteristics	OperationalYear	2014	2015

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	10.5327	118.3314	62.9415	0.1013	0.0000	5.9146	5.9146	0.0000	5.4415	5.4415	0.0000	10,637.4185	10,637.4185	3.1757	0.0000	10,704.1085
Total	**10.5327**	**118.3314**	**62.9415**	**0.1013**	**0.0000**	**5.9146**	**5.9146**	**0.0000**	**5.4415**	**5.4415**	**0.0000**	**10,637.4185**	**10,637.4185**	**3.1757**	**0.0000**	**10,704.1085**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	1.7216	35.3058	63.4447	0.1013	0.0000	0.2500	0.2500	0.0000	0.2500	0.2500	0.0000	10,637.4185	10,637.4185	3.1757	0.0000	10,704.1085
Total	**1.7216**	**35.3058**	**63.4447**	**0.1013**	**0.0000**	**0.2500**	**0.2500**	**0.0000**	**0.2500**	**0.2500**	**0.0000**	**10,637.4185**	**10,637.4185**	**3.1757**	**0.0000**	**10,704.1085**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**83.65**	**70.16**	**-0.80**	**0.00**	**0.00**	**95.77**	**95.77**	**0.00**	**95.41**	**95.41**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.0000**					**0.0000**	**0.0000**		**0.0000**	**0.0000**			**0.0000**			**0.0000**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.0000**					**0.0000**	**0.0000**		**0.0000**	**0.0000**			**0.0000**			**0.0000**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Training	Building Construction	10/1/2015	10/1/2015	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Training	Aerial Lifts	1	6.00	34	0.31
Training	Bore/Drill Rigs	1	8.00	82	0.50
Training	Bore/Drill Rigs	1	5.00	82	0.50
Training	Bore/Drill Rigs	1	8.00	82	0.50
Training	Cranes	1	6.00	208	0.29
Training	Cranes	1	8.00	208	0.29
Training	Cranes	1	6.00	208	0.29
Training	Cranes	1	6.00	208	0.29
Training	Cranes	1	4.00	208	0.29
Training	Cranes	1	3.00	208	0.29
Training	Excavators	1	8.00	157	0.38
Training	Excavators	1	7.00	157	0.38
Training	Forklifts	1	5.00	149	0.20
Training	Forklifts	1	2.00	149	0.20

Training	Graders	1	6.00	162	0.41
Training	Off-Highway Trucks	1	2.00	381	0.38
Training	Off-Highway Trucks	1	6.00	381	0.38
Training	Off-Highway Trucks	1	6.00	381	0.38
Training	Off-Highway Trucks	1	6.00	381	0.38
Training	Other General Industrial Equipment	1	6.00	150	0.34
Training	Rollers	1	6.00	84	0.38
Training	Rubber Tired Dozers	1	4.00	358	0.40
Training	Skid Steer Loaders	1	6.00	37	0.37
Training	Skid Steer Loaders	2	2.00	37	0.37
Training	Tractors/Loaders/Backhoes	1	8.00	75	0.37
Training	Tractors/Loaders/Backhoes	1	4.00	75	0.37
Training	Tractors/Loaders/Backhoes	1	8.00	75	0.37
Training	Tractors/Loaders/Backhoes	1	6.00	75	0.37
Training	Trenchers	1	4.00	69	0.50

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Training	30	0.00		0.00	10.80	7.30				

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Clean Paved Roads

3.2 Training - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	10.5327	118.3314	62.9415	0.1013		5.9146	5.9146		5.4415	5.4415		10,637.4185	10,637.4185	3.1757		10,704.1085
Total	**10.5327**	**118.3314**	**62.9415**	**0.1013**		**5.9146**	**5.9146**		**5.4415**	**5.4415**		**10,637.4185**	**10,637.4185**	**3.1757**		**10,704.1085**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Total					**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**			**0.0000**			**0.0000**

3.2 Training - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7216	35.3058	63.4447	0.1013		0.2500	0.2500		0.2500	0.2500	0.0000	10,637.4185	10,637.4185	3.1757		10,704.1085
Total	**1.7216**	**35.3058**	**63.4447**	**0.1013**		**0.2500**	**0.2500**		**0.2500**	**0.2500**	**0.0000**	**10,637.4185**	**10,637.4185**	**3.1757**		**10,704.1085**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Total					**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**			**0.0000**			**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Total					

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.480297	0.068108	0.152696	0.151211	0.060189	0.006855	0.034541	0.032901	0.000938	0.001917	0.007586	0.000677	0.002085

4.4 Fleet Mix

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Unmitigated	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.0000**					**0.0000**	**0.0000**		**0.0000**	**0.0000**			**0.0000**			**0.0000**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.0000**					**0.0000**	**0.0000**		**0.0000**	**0.0000**			**0.0000**			**0.0000**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

Winters Gas Training Facility
Construction and Operational Emissions Summary

Emissions Category	Pollutants (tons)					MT	Max Daily (lbs/day)
	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$	CO_2e	PM_{10}
CONSTRUCTION							
Grading	0.08	0.91	1.06	0.09	0.04	109	-
Building Construction	0.03	0.34	0.38	0.02	0.02	60	-
Site Work	0.06	0.51	0.75	0.03	0.02	85	-
Total Construction Emissions	**0.17**	**1.76**	**2.19**	**0.14**	**0.08**	**254**	**41.51**
Amortized Construction Emissions						**10**	

Unmitigated Emissions	Pollutants (tons)					MT	Max Daily (lbs/day)
Emissions Category	**ROG**	**NO_X**	**CO**	**PM_{10}**	**$PM_{2.5}$**	**CO_2e**	**PM_{10}**
OPERATIONS							
Facility/Building	***1.38***	***2.60***	***9.29***	***1.03***	***0.31***	***2,020***	
Area	0.46	0.00	0.00	0.00	0.00	0	0.00
Energy	0.01	0.08	0.07	0.01	0.01	668	0.04
Mobile	0.91	2.51	9.22	1.03	0.30	1,248	5.83
Waste						42	
Water						61	
Vehicle/Equipment Training	***0.15***	***1.51***	***2.19***	***0.06***	***0.05***	***444***	
Gas Leak Detection Class						260	
Equipment Training	0.08	0.90	0.50	0.04	0.04	80.73	5.91
Driver Training	0.07	0.60	1.69	0.01	0.01	103	0.08
Total Annual Operational Emissions	**1.53**	**4.10**	**11.48**	**1.09**	**0.36**	**2,464**	11.86
Total Operational with Amortized Construction						**2,474**	

Winters Gas Training Facility
Construction Emissions Summary

Construction Phase	Emissions (total tons)					MT
	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$	CO_2e
SITE GRADING (subtotal)	***0.08***	***0.91***	***1.06***	***0.09***	***0.04***	***108.83***
Grading - Clear&Grub						
Off-Road Equipment	0.01	0.06	0.04	0.02	0.00	4.73
On-Road Vehicles	0.00	0.03	0.09	0.00	0.00	10.50
Grading - Balance Site						
Off-Road Equipment	0.05	0.53	0.31	0.06	0.03	38.88
On-Road Vehicles	0.01	0.12	0.33	0.00	0.00	29.82
Grading - Building Pads						
Off-Road Equipment	0.01	0.08	0.05	0.01	0.00	5.58
On-Road Vehicles	0.01	0.09	0.24	0.00	0.00	19.32
BUILDING CONSTRUCTION (subtotal)	***0.03***	***0.34***	***0.38***	***0.02***	***0.02***	***60.32***
BC - Foundation						
Off-Road Equipment	0.01	0.06	0.04	0.00	0.00	5.87
On-Road Vehicles	0.00	0.03	0.08	0.00	0.00	7.46
BC - Slab						
Off-Road Equipment	0.00	0.03	0.01	0.00	0.00	2.74
On-Road Vehicles	0.00	0.03	0.08	0.00	0.00	7.46
BC - Structure						
Off-Road Equipment	0.01	0.13	0.07	0.01	0.01	10.01
On-Road Vehicles	0.00	0.02	0.04	0.00	0.00	12.17
BC - Interior						
Off-Road Equipment	0.00	0.03	0.02	0.00	0.00	2.45
On-Road Vehicles	0.00	0.02	0.04	0.00	0.00	12.17
SITE WORK (subtotal)	***0.06***	***0.51***	***0.75***	***0.03***	***0.02***	***85.14***
SW - Site Concrete						
Off-Road Equipment	0.00	0.03	0.02	0.00	0.00	2.31
On-Road Vehicles	0.01	0.07	0.19	0.00	0.00	20.99
SW - Landscaping						
Off-Road Equipment	0.01	0.06	0.04	0.00	0.00	4.75
On-Road Vehicles	0.00	0.02	0.04	0.00	0.00	12.17
SW - Paving						
Off-Road Equipment	0.03	0.22	0.13	0.01	0.01	15.10
On-Road Vehicles	0.01	0.12	0.33	0.00	0.00	29.82
Total Construction Emissions (tons)	**0.17**	**1.76**	**2.19**	**0.14**	**0.08**	**254.29**
Average Daily Emisisons (lbs/day)	1.44	14.66	18.23	1.18	0.67	

Winters Gas Training Facility
On-Road Construction Emissions

					Emissions (total tons)					MT
Construction Phase	**Days**	**Quantity**	**Hrs/Day**	**Total VMT**	**ROG**	**NO_X**	**CO**	**PM_{10}**	**$PM_{2.5}$**	**CO_2e**
SITE GRADING										
Grading - Clear&Grub										
Water Truck	10	1	8	3600	0.00	0.03	0.07	0.00	0.00	4.41
Construction Workers	10	25		15000	0.00	0.01	0.02	0.00	0.00	6.08
Balance Site										
Water Truck	20	2	8	14400	0.01	0.10	0.29	0.00	0.00	17.66
Construction Workers	20	25		30000	0.00	0.02	0.04	0.00	0.00	12.17
Building Pads										
Trucks	10	3	8	10800	0.01	0.08	0.22	0.00	0.00	13.24
Construction Workers	10	25		15000	0.00	0.01	0.02	0.00	0.00	6.08
BUILDING CONSTRUCTION										
BC - Foundation										
Concrete Trucks	5	2	8	3600	0.00	0.03	0.07	0.00	0.00	4.41
Construction Workers	5	25		7500	0.00	0.00	0.01	0.00	0.00	3.04
BC - Slab										
Concrete Trucks	5	2	8	3600	0.00	0.03	0.07	0.00	0.00	4.41
Construction Workers	5	25		7500	0.00	0.00	0.01	0.00	0.00	3.04
BC -Structure										
Construction Workers	20	25		30000	0.00	0.02	0.04	0.00	0.00	12.17
BC - Interiors										
Construction Workers	20	25		30000	0.00	0.02	0.04	0.00	0.00	12.17
SITE FINISHES										
SF - Site Concrete										
Concrete Trucks	20	1	8	7200	0.00	0.05	0.15	0.00	0.00	8.83
Construction Workers	20	25		30000	0.00	0.02	0.04	0.00	0.00	12.17
SF - Landscaping										
Construction Workers	20	25		30000	0.00	0.02	0.04	0.00	0.00	12.17
SF - Paving										
Haul Trucks	10	4	8	14400	0.01	0.10	0.29	0.00	0.00	17.66
Construction Workers	20	25		30000	0.00	0.02	0.04	0.00	0.00	12.17
Total					**0.05**	**0.52**	**1.42**	**0.02**	**0.01**	**149.70**

Assumptions

Truck Average Speed	45	mph
Average Import Haul Distance	20	miles/one-way
Average Truck Capacity	20	cubic yards
Average Daily Workers	25	workers
Average One-Way Trip	30	miles/one-way

EMFAC2011 Emission Factors

					Emission Factors (g/mile)					
Vehicle Class					**ROG**	**NO_X**	**CO**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**
Haul Trucks					0.60	6.54	18.30	0.14	0.09	1164.77
Constructions Workers					0.06	0.48	1.22	0.07	0.04	385.25

Winters Gas Training Facility
Operational Emissions

Construction Equipment Training

Emissions Type	Hrs/Day	Horsepower	Annual Hours	Pollutants					
				ROG	NO_X	CO	PM_{10}	$PM_{2.5}$	CO_2e
Daily Emissions (**Unmitigated**) (lbs/day)	See CalEEMod outputs for modeling details			10.53	118.33	62.94	5.91	5.44	10,704
YSAQMD Threshold (tons/yr)				10	10	-	-	-	-

Note: Annual CO_2e emissions are in units of metric tons of carbon dioxide equivalent.

Driver Training

Operational Emissions	Hrs/Day	Avg Speed	Annual Miles	Emissions (tons)					Metric Tons
				ROG	NO_X	CO	PM_{10}	$PM_{2.5}$	CO_2e
CDLA	-	-	24,929	0.02	0.18	0.50	0.00	0.00	31
Driver Awareness Training (Behind Wheel)	4	10	13,880	0.01	0.10	0.28	0.00	0.00	17
Vehicle Driver/ Driver Qual.	5	10	17,350	0.01	0.12	0.35	0.00	0.00	21
Concrete Truck	6	10	20,820	0.01	0.15	0.42	0.00	0.00	26
Skid Truck	2	10	6,940	0.00	0.05	0.14	0.00	0.00	9
Total Driver Training				**0.07**	**0.60**	**1.69**	**0.01**	**0.01**	**103**

Days of Operation Per Year	347	days/year
Trip Generation	1,104	trips/day
Building SF	100	ksf

11.04

EMFAC2011 Emission Factors (Yolo County, Year 2015)

Vehicle Class				Emission Factors (g/mile)					
				ROG	NO_X	CO	PM_{10}	$PM_{2.5}$	CO_2
Haul Trucks				0.60	6.54	18.30	0.14	0.09	1164.77

Building Area	100	ksf

IMPACT ANALYSIS

Thresholds of Significance

The Revised Project would have an adverse impact related to criteria air pollutants and TAC emissions if it would:

- Result in exposure of sensitive receptors to TAC and $PM_{2.5}$ in a manner that would cause excess cancer risk levels of more than 10 in 1 million or a chronic hazard index (HI) greater than 1.0 for TACs ; or
- Result in exposure of sensitive receptors to TAC and $PM_{2.5}$ in a manner that would exceed 0.3 micrograms per cubic meter ($\mu g/m^3$) annual average $PM_{2.5}$.

Methodology

New Training Area Emissions

Mobile source emissions from the Equipment Training Area and the Future Commercial Driver Training Area were estimated for use in this HRA. Emissions from mobile sources include diesel particulate matter (DPM) from diesel-powered trucks, and acrolein, acetaldehyde, benzene, 1,3-butadiene, ethyl benzene, naphthalene and formaldehyde from commercial vehicles/equipment. ARB's on-road emissions inventory model, EMFAC 2011, was used to develop emission factors by pollutant, vehicle type, and fuel type. The total organic gases (TOG) and $PM_{2.5}$ emissions were estimated based on hourly and annual emission factors.

Health Risk Assessment

An HRA was performed to evaluate the potential sensitive receptor exposure to the TACs from the new training areas. The HRA was performed in accordance with YSAQMD's Handbook for Assessing and Mitigating Air Quality Impacts (YSAQMD 2007) as well as methodologies presented in the California Air Pollution Control Officers Association guidance document, Health Risk Assessments for Proposed Land Use Projects (CAPCOA 2009b).

As part of the HRA, excess lifetime cancer risks, chronic and acute noncancer HIs were estimated. The estimated excess lifetime cancer risks, chronic and acute noncancer HIs were compared to the thresholds for significance for TACs, for a maximally exposed individual at the existing residential receptors (MEIR) and a maximally exposed individual at existing occupational worker receptors (MEIW) due to the new TAC source.

Screening Assessment

Based on the screening assessment using the SCREEN3 model, refined dispersion modeling was completed to more accurately determine health risks from the training area emissions on the existing sensitive receptors.

Dispersion Modeling

Atmospheric modeling was performed to analyze localized ambient air quality and health risk associated with the generation of $PM_{2.5}$ and TAC emissions from the new training areas. The air dispersion modeling required consideration and selection of the following parameters:

- Selection of the dispersion model

- Selection of appropriate dispersion coefficients based on land use
- Preparation of meteorological data
- Evaluation of potential terrain considerations
- Selection of receptor locations
- Identification of the source-specific release parameters, operational schedule, and averaging time periods

Model Selection. EPA's Industrial Source Complex (ISCST3) model (Version 02035) was used to model $PM_{2.5}$ and TOGs emissions for the HRA. ISCST3 was applied with the regulatory default options, the rural modeling option (dispersion coefficients), and one year (1956) of hourly meteorological data, obtained from CARB for the Travis AFB meteorological station.

Meteorological Data. ISCST3 requires a sequential hourly record of dispersion meteorology, representative of the region within which the project would be located. The dispersion modeling to assess the exposure of the new receptors to the training area emissions are represented by an area source. ISCST3 was applied with one year (1956) of hourly meteorological data consisting of surface observations from the Travis AFB meteorological station in Travis. A wind rose of the one year of data is shown in Figure 1. The wind rose indicates that the predominant wind direction is from the southwest.

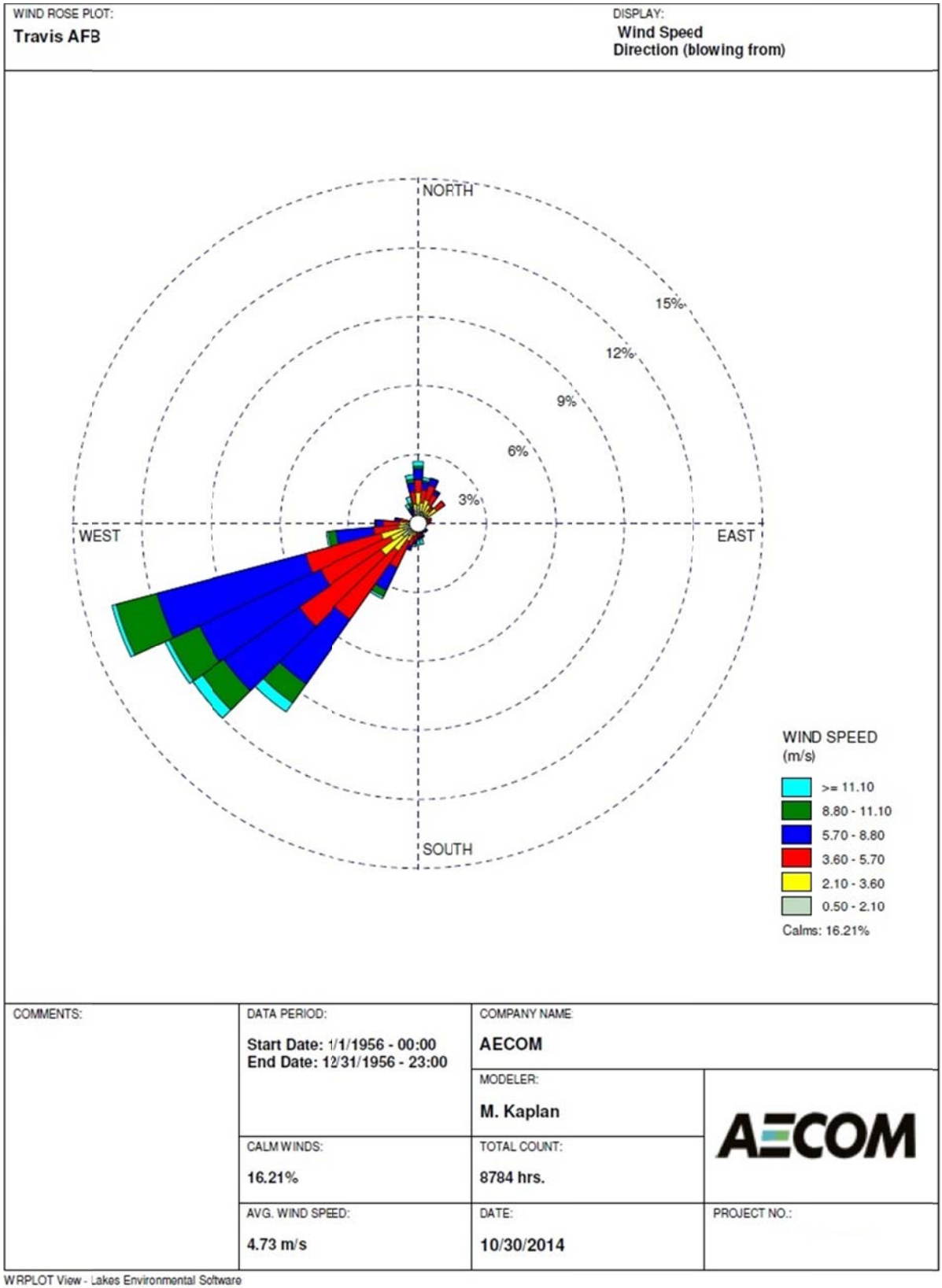
Terrain and Receptor Data Processing. An important consideration in an air dispersion modeling analysis is to determine whether the terrain in the modeling area is simple or complex (i.e., terrain above the effective height of the emission point). Complex terrain can affect the results of a dispersion analysis involving point and volume sources, but it does not affect the predicted results for area sources (EPA 2004).

Terrain elevations were obtained from commercially available digital terrain elevations, developed by the U.S. Geological Survey, using its National Elevation Dataset (NED). The NED data provide terrain elevations with 1-meter vertical resolution and 10-meter (1/3 arc-second) horizontal resolution, based on a Universal Transverse Mercator (UTM) coordinate system. The U.S. Geological Survey specifies coordinates in North American Datum 83, UTM Zone 10. Lakes Environmental software was used to process the NED data and assign elevations to the receptor locations and sources. Electronic files containing these terrain elevations are included in the appendix. The receptors are placed at 1.5 meters above ground level to simulate breathing height.

For the HRA, model concentrations were estimated for each receptor as shown in Figure 2.

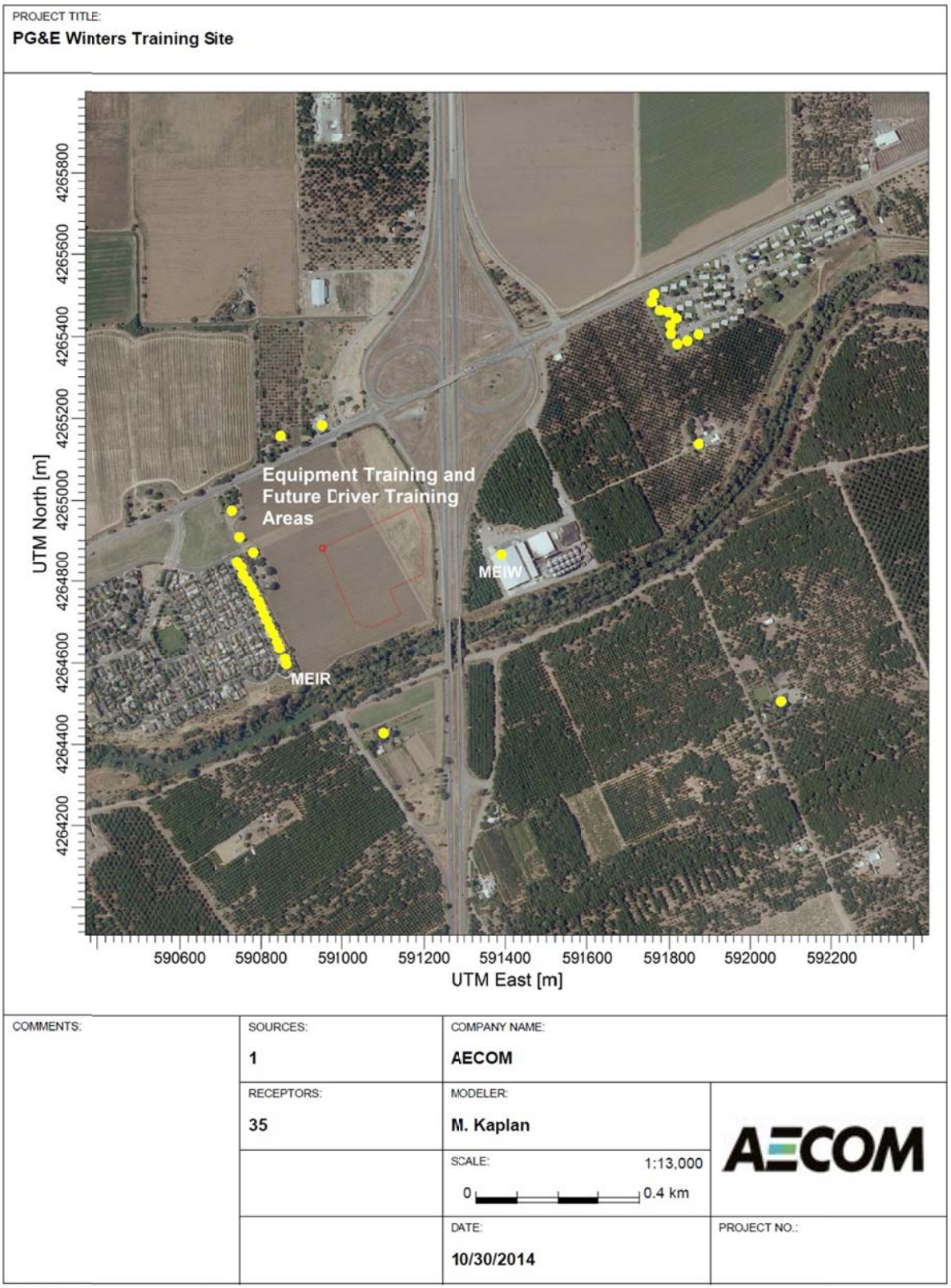
Source Parameters, and Emissions Summary

For the HRA analysis, the area source parameters used in the air dispersion model to evaluate TAC emissions from training area on the existing sensitive receptors are summarized in Table 1.



Source: Data Compiled by AECOM in 2014

Figure 1. Wind Rose



Source: Data Compiled by AECOM in 2014

Figure 2. HRA Receptor Grid

Table 1
Area-Source Release Parameters for the Training Area HRA (as shown in Figure 2)

Area Source Name	Release Height (meters)[1]	Area (m²)	DPM Emission Rate (g/s)	TOG Annual Emission Rate (g/s)	TOG 1-hour Emission Rate (g/s)
TRAIN	3.0	44374.6	1.44E-03	4.32E-03	1.82E-02

Note:
1 Assumes average exhaust of 10 feet.
2 Area of source as calculated by LAKES software.
Source: Data compiled by AECOM in 2014

Analysis
The new training areas would expose existing sensitive receptors; however, this HRA demonstrates that the sensitive receptors would not be exposed to substantial pollutant concentrations with potential health effects.

TAC Effects from the Training Areas on Existing Sensitive Receptors. The project is located near existing residences and places of employment. Localized emissions from mobile sources in the new Training Areas could directly adversely affect proposed sensitive receptors at the project site. Cancer risk attributable to the Training Area emissions was determined to be 1.80 in 1 million for the 9-year maximum child cancer risk, 2.61 in 1 million for the 70-year maximum adult cancer risk, and 1.43 in 1 million for the worker cancer risk; maximum chronic HI was determined to be 0.0003 and the maximum acute HI was determined to be 0.013, as shown in Table 3. The annual average concentration for $PM_{2.5}$ is equal to 0.006 µg/m^3, which is less than the 0.3 µg/m^3 threshold. As presented in Table 3, none of the cancer risk levels for workers or residents near the Training Areas would exceed 10 in 1 million. Chronic and Acute HI levels are below relevant significance thresholds.

Table 3
Summary of Maximum Health Risk on Sensitive Receptors Near the Training Areas

Receptor Type		9-year Maximum Cancer Risk (per million)	70-year Maximum Cancer Risk (per million)	Maximum Chronic HI	Maximum Acute HI	Annual Average $PM_{2.5}$ Conc. (µg/m^3)
MEIR[1]	Adult	--	2.61	0.0003	0.013	0.006
	Child	1.80	--			
MEIW[2]		--	1.43			
Significance Threshold		10	10	1	1	0.3
Exceed Threshold?		NO	NO	NO	NO	NO

Notes: µg/m^3 = micrograms per cubic meter; HI = Hazard Index; $PM_{2.5}$ = fine particulate matter
1 MEIR: Maximally exposed individual at a new residential receptor; 70-year adult exposure scenario and 9-year child exposure scenario for cancer risk.
2 MEIW: Maximally exposed individual at an existing occupational worker receptor; 40-year adult worker exposure scenario.
Source: Data Compiled by AECOM in 2014

Health Risk Assessment Calculations and Results

Cancer Risk for Resident (70 years)

Parameter	Value	Units
Daily Breathing Rate (DBR)	302	[L/kg-day]
Exposure Frequency (EF)	260	[days/year]
Exposure Duration2 (ED)	70	[years]
Conversion Factor (CF)	1.00E-06	[m3/L]
Averaging Time (AT)	25550	[days]
CRAF (Sensitivity Factor)	1.7	[unitless]

	DPM	TOG
Ci = Annual Average Air Concentration for Chemical (µg/m3)	0.006	1.91E-02
Dose = Ci *DBR * EF *ED *CF / AT (mg/kg-day)	1.37E-06	4.12E-06

CPF = Cancer Potency Factor (mg chemical/kg body weight-day)-1	1.1	6.28E-03
Risk(inh) = Dose x CPF x CRAF	2.57E-06	4.40E-08
Total Cancer Risk		2.61E-06
Total Cancer Risk (in-one-million)		2.61
Threshold		10

Cancer Risk for Child Resident (9 years)

Parameter	Value	Units
Daily Breathing Rate (DBR)	581	[L/kg-day]
Exposure Frequency (EF)	260	[days/year]
Exposure Duration2 (ED)	9	[years]
Conversion Factor (CF)	1.00E-06	[m3/L]
Averaging Time (AT)	25550	[days]
CRAF (Sensitivity Factor)	4.750	[unitless]

	DPM	TOG
Ci = Annual Average Air Concentration for Chemical (µg/m3)	0.006	0.01914
Dose = Ci *DBR * EF *ED *CF / AT (mg/kg-day)	3.39E-07	1.02E-06

CPF = Cancer Potency Factor (mg chemical/kg body weight-day)-1	1.1	6.28E-03
Risk(inh) = Dose x CPF x CRAF	1.77E-06	3.04E-08
Total Cancer Risk		1.80E-06
Total Cancer Risk (in-one-million)		1.80
Threshold		10

Cancer Risk for Worker (40 years)

Parameter	Value	Units
Daily Breathing Rate (DBR)	302	[L/kg-day]
Exposure Frequency (EF)	250	[days/year]
Exposure Duration2 (ED)	40	[years]
Conversion Factor (CF)	1.00E-06	[m3/L]
Averaging Time (AT)	25550	[days]
CRAF (Sensitivity Factor)	1.7	[unitless]

	DPM	TOG
Ci = Annual Average Air Concentration for Chemical (µg/m3)	0.006	0.01914
Dose = Ci *DBR * EF *ED *CF / AT (mg/kg-day)	7.54E-07	2.26E-06

CPF = Cancer Potency Factor (mg chemical/kg body weight-day)-1	1.1	6.28E-03
Risk(inh) = Dose x CPF x CRAF	1.41E-06	2.42E-08
Total Cancer Risk		1.43E-06
Total Cancer Risk (in-one-million)		1.43
Threshold		10

Chronic HI	TOG - Run	TOG - Evap	Total
Ci = Annual Average Air Concentration for Chemical (µg/m3)	0.019	0.019	
Toxicity Weighted Chronic Noncancer Reference Dose	282.184	120	
Chronic HI	6.78E-05	1.60E-04	2.27E-04

Acute HI	TOG - Run	TOG - Evap	Total
Ci = 1-hour Maximum Air Concentration for Chemical (µg/m3)	8.082	8.082	
Toxicity Weighted Acute Noncancer Reference Dose	3255.085	762	
Acute HI	0.002	0.011	0.013

Source Inputs

Area Source	Release Height (ft)	Release Height (m)			Area (m^2)
Training Areas	10	3.048			44374.60

Emissions Summary

	1-Hour TOG (g/s)	Annual TOG (tons)	Annual Diesel PM2.5 (tons)	1-Hour TOG ($g/s/m^2$)	Annual TOG ($g/s/m^2$)	Annual Diesel PM2.5 ($g/s/m^2$)
Training Areas	1.8173E-02	0.15	0.05	4.095E-07	9.725E-08	3.242E-08

Note: 1-hour TOG based on 8 hours/day, 260 days per year

ISCST3 Output

1-hour TOG	8.08E+00
Annual TOG	1.91E-02
Annual DPM	6.38E-03

Cancer Risk for Resident (70 years)

Parameter	Value	Units
Daily Breathing Rate (DBR)	302	[L/kg-day]
Exposure Frequency (EF)	260	[days/year]
Exposure Duration2 (ED)	70	[years]
Conversion Factor (CF)	1.00E-06	[m3/L]
Averaging Time (AT)	25550	[days]
CRAF (Sensitivity Factor)	1.7	[unitless]

	DPM	TOG
Ci = Annual Average Air Concentration for Chemical (µg/m3)	0.006	1.91E-02
Dose = Ci *DBR * EF *ED *CF / AT (mg/kg-day)	1.37E-06	4.12E-06

CPF = Cancer Potency Factor (mg chemical/kg body weight-day)-1	1.1	6.28E-03
Risk(inh) = Dose x CPF x CRAF	2.57E-06	4.40E-08
Total Cancer Risk		2.61E-06
Total Cancer Risk (in-one-million)		2.61
Threshold		10

Cancer Risk for Child Resident (9 years)

Parameter	Value	Units
Daily Breathing Rate (DBR)	581	[L/kg-day]
Exposure Frequency (EF)	260	[days/year]
Exposure Duration2 (ED)	9	[years]
Conversion Factor (CF)	1.00E-06	[m3/L]
Averaging Time (AT)	25550	[days]
CRAF (Sensitivity Factor)	4.750	[unitless]

	DPM	TOG
Ci = Annual Average Air Concentration for Chemical (µg/m3)	0.006	0.01914
Dose = Ci *DBR * EF *ED *CF / AT (mg/kg-day)	3.39E-07	1.02E-06

CPF = Cancer Potency Factor (mg chemical/kg body weight-day)-1	1.1	6.28E-03
Risk(inh) = Dose x CPF x CRAF	1.77E-06	3.04E-08
Total Cancer Risk		1.80E-06
Total Cancer Risk (in-one-million)		1.80
Threshold		10

Cancer Risk for Worker (40 years)

Parameter	Value	Units
Daily Breathing Rate (DBR)	302	[L/kg-day]
Exposure Frequency (EF)	83.33333333	[days/year]
Exposure Duration2 (ED)	40	[years]
Conversion Factor (CF)	1.00E-06	[m3/L]
Averaging Time (AT)	25550	[days]
CRAF (Sensitivity Factor)	1.7	[unitless]

	DPM	TOG
Ci = Annual Average Air Concentration for Chemical (µg/m3)	0.006	0.01914
Dose = Ci *DBR * EF *ED *CF / AT (mg/kg-day)	2.51E-07	7.54E-07

CPF = Cancer Potency Factor (mg chemical/kg body weight-day)-1	1.1	6.28E-03
Risk(inh) = Dose x CPF x CRAF	4.70E-07	8.05E-09
Total Cancer Risk		4.78E-07
Total Cancer Risk (in-one-million)		1.43
Threshold		10

Chronic HI	TOG - Run	TOG - Evap	Total
Ci = Annual Average Air Concentration for Chemical (µg/m3)	0.019	0.019	
Toxicity Weighted Chronic Noncancer Reference Dose	282.184	120	
Chronic HI	0.000	0.000	0.000

Acute HI	TOG - Run	TOG - Evap	Total
Ci = 1-hour Maximum Air Concentration for Chemical (µg/m3)	8.082	8.082	
Toxicity Weighted Acute Noncancer Reference Dose	3255.085	762	
Acute HI	0.002	0.011	0.013

Tabe 14. Toxic Speciation of TOF due to Tailpipe Emissions

Toxic Compounds	EMFAC Gasoline TOG Speciation	Unit Factor	(HARP) Residential Cancer Risk Factors	Unit Cancer Risk Weighted Factor	Slope Factor (CPF)	Weighted Slope Factor (CPF)	Chronic Noncancer Reference Dose	Unit Chronic Noncancer Risk Weighted Factor	Acute Noncancer Reference Dose	Unit ACUTE Noncancer Risk Weighted Factor
	(% TOG)		(ug/m3)-1	(ug/m3)-1	(mg/kg-day)	(mg/kg-day)	(ug/m3)	(ug/m3)	(ug/m3)	(ug/m3)
Acetaldehyde	0.28%	0.0028	0.0000027	7.56E-09	1.00E-02	2.80E-05	140	0.392	470	1.316
Acrolein	0.13%	0.0013	0	0	0	0.00E+00	0.35	0.000455	2.5	0.00325
Benzene	2.47%	0.0247	0.000029	7.16E-07	1.00E-01	2.47E-03	3	0.0741	27	0.6669
1,3-Butadiene	0.55%	0.0055	0.000174	9.57E-07	6.00E-01	3.30E-03	2	0.011	660	3.63
Ethylbenzene	1.05%	0.0105	2.52E-06	2.65E-08	8.70E-03	9.14E-05	2000	21	0	0
Formaldehyde	1.58%	0.0158	6.08E-06	9.61E-08	2.10E-02	3.32E-04	9	0.1422	55	0.869
Hexane	1.60%	0.016	0	0	0	0.00E+00	7000	112	0	0
Methanol	0.12%	0.0012	0	0	0	0.00E+00	4000	4.8	28000	33.6
Methyl Ethyl Ketone	0.02%	0.0002	0	0	0	0.00E+00	0	0	13000	2.6
Naphthalene	0.05%	0.0005	0.000035	1.75E-08	1.20E-01	6.00E-05	9	0.0045	0	0
Propylene	3.06%	0.0306	0	0	0	0.00E+00	3000	91.8	0	0
Styrene	0.12%	0.0012	0	0	0	0.00E+00	900	1.08	21000	25.2
Toluene	5.76%	0.0576	0	0	0	0.00E+00	300	17.28	37000	2131.2
Xylenes	4.80%	0.048	0	0	0	0.00E+00	700	33.6	22000	1056
Toxicity Weighted Factor				1.82E-06	8.60E-01	6.28E-03		282.2		3255.1

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Memorandum

To	Nate Lishman (PG&E)	Page 1
CC		
Subject	Modeling of Natural Gas Odor for PG&E Training Center	

From	David Heinold, Mary Kaplan, and George Lu
Date	October 28, 2014

Introduction

Pacific Gas & Electric (PG&E) has requested that AECOM conduct a dispersion modeling analysis to estimate the distance to which odors of natural gas can be readily identifiable during training exercises at the proposed PG&E Winters, CA Gas Training Center. The methods used to conduct the dispersion analysis of these leaks and specifications of the various parameters needed for the assessment are described in this memorandum. The results of the assessment are based on information regarding the odor content of natural gas and leak rates provided by PG&E. AECOM developed a spreadsheet tool (*PGE Odor Model.xlsx*) that can be used to estimate odor distances for user-specified release and environmental parameters.

Methodology

During the training exercises, small amounts of natural gas are released from subterranean pipes, ranging from intermittent puffs from failed pipe threading to a continuous leak from a ½ inch inner diameter pipe. The pipes from which simulated leaks occur are maintained at low pressure of 9 inches of water column (0.325 psi) above atmospheric pressure. As such, the natural gas leak rates are small, ranging from about 0.02 to 3 lb/hr. Given the slow rate of release of natural gas, which is highly buoyant, it mixes with the air in the immediate vicinity to the extent that it loses much of its natural buoyancy by the time it becomes entrained into the ambient air. As such, once it reaches the air, the leaked gas will be sufficiently diluted to disperse more or less passively as it is entrained by atmospheric turbulence and carried downwind toward off-site locations.

Based on information about the nature of the leaks, the following model source configuration was developed. Because the release is subterranean the release would need to make its way to the surface before dispersing into the atmosphere. As it reaches the surface, leaked natural gas will not be emitted to the air from a singular point, but will be mixed into a finite volume, based on the dimensions of the sump or trench in which the training pipe is located. For the purposes of this evaluation it is suitable to represent the release to the atmosphere as that of a small ground-level area source. A one square foot area source was therefore used in this assessment to represent the odor source. A source of larger or smaller area would result in greater or lesser near-field dilution, respectively, but the exact size of the source is not important at distances greater than 10 feet (about 10 times the source dimension).

For a passively dispersive area source, a simple screening-level model such as U.S. EPA's SCREEN3 is suitable. SCREEN3 computes ground-level concentrations from the ground-level area source as a function of downwind distance by specifying only four parameters: leak rate (g/sec), wind speed (m/sec), dispersion environment (rural or urban) and atmospheric stability category (A: unstable, B: moderately unstable, C: slightly unstable, D: neutral, E: moderately stable, and E: very stable). Selection of these parameters is described below:

Leak rate. SCREEN3 is modeled with a unit (1 $g/m^2/sec$) emission rate. For a 1 ft^2 area this corresponds to an emission rate of 0.0929 g/sec. In SCREEN3 the modeled concentrations are directly proportional to the emission rate. Thus, to estimate the concentrations from an actual leak, the modeled concentration is simply multiplied by leak rate (in g/sec) divided by 0.0929 g/sec. The natural gas leak rate is related to pipeline pressure and orifice size. For this analysis a temperature of 20 degrees Celsius and 0.325 psi (9-inch water column as specified by PG&E) were applied. U.S. EPA's RMP Guidance for Offsite Consequence Analysis[1] was used to relate the orifice size to the natural gas leak rate.

Wind speed. SCREEN3 was applied at a wind speed of 1 m/sec. As the modeled concentration from a ground-level area source is inversely proportional to the wind speed, modeled concentrations for any wind speed can be determined by dividing the modeled concentration by the wind speed (specified as m/sec). Concentrations associated with emission sources at lower speeds (calm conditions) are equal to or lower than model estimates at 0.5 m/sec because the large degree of wind direction variability. Thus the upper limit downwind concentrations are associated with 0.5 m/sec (about 1 mph), which is the lowest wind speed at which dispersion models are deemed to be applicable.

Atmospheric stability category. For a ground-level source, ground level concentrations increase with the degree of stability. During daylight hours the atmospheric stability category is A, B, C or D. Stability D (neutral) occurs for any wind speed when the sky is overcast. Figure 2 indicates that overcast skies occur more frequently from December to March, such that during that time of the year stability D conditions are not uncommon. During other months, cloudy conditions are infrequent. Thus, Stability D was conservatively used in SCREEN3 to represent daytime conditions. The greatest degree of stability F, occurs only after sunset and before sunrise, when there are light winds and partly cloudy to clear skies. However, training exercises would not occur during these periods. Thus, for a worst case assessment, the stability is set to D (neutral) during the day and F (very stable) during the night.

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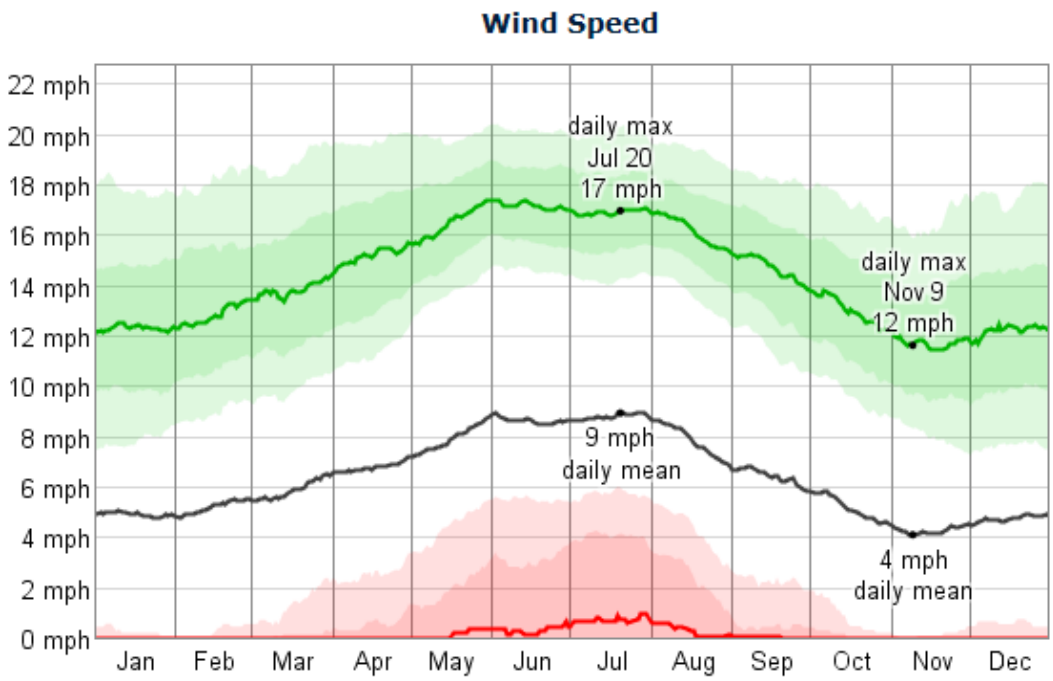
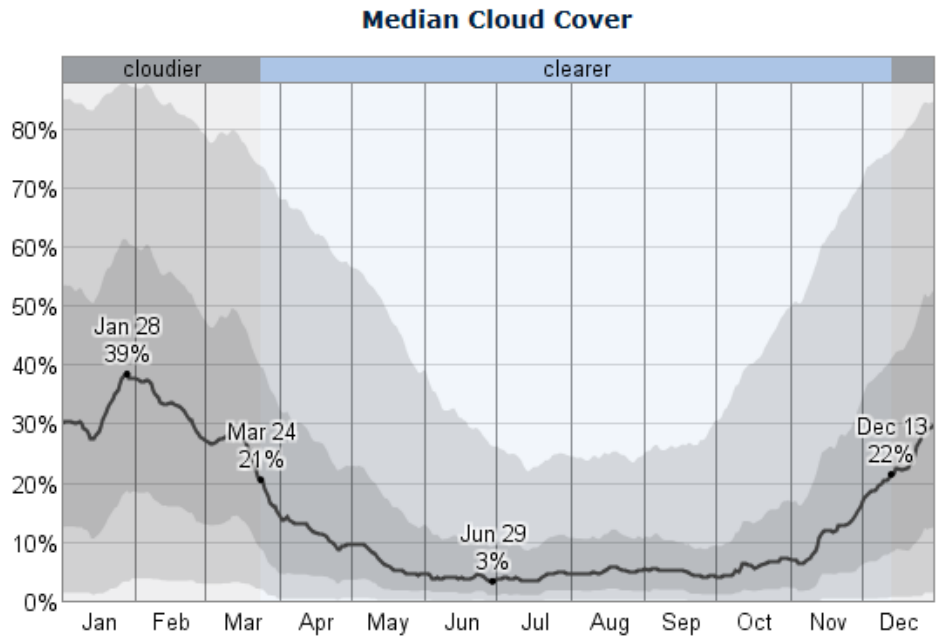
[1] http://www2.epa.gov/rmp/guidance-facilities-risk-management-programs-rmp#OCA



The average daily minimum (red), maximum (green), and average (black) wind speed with percentile bands (inner band from 25th to 75th percentile, outer band from 10th to 90th percentile).

Figure 1. Monthly Variation of Wind Speed Near Project Site



The median daily cloud cover (black line) with percentile bands (inner band from 40th to 60th percentile, outer band from 25th to 75th percentile).

Figure 2. Cloudiness Near Project Site

Dispersion environment. Dispersion environment is defined by U.S. EPA as either "rural" or "urban" depending on surface roughness and land-use classifications. According to EPA criteria, the training center is located in a "rural" area. SCREEN3 was applied using the rural dispersion classification but was also modeling using the urban classification so that the analysis will also be applicable to other, more urban areas.

Averaging time. SCREEN3 shares an attribute common to all dispersion models with the use dispersion coefficients (rate of mixing due to atmospheric turbulence) that are empirically based on measurements that were taken over finite averaging times of up to 10 minutes. Thus the modeled concentrations do not represent instantaneous concentrations or concentrations over very short averaging times as small as 5 seconds that are appropriate for odor detection and perception. This is because one or two "whiffs" of a transient concentration can result in a gas concentration that is detectable even if it is not above the odor threshold for the entire 10 minute period. To account for short-term variations in modeled concentrations a power law is typically applied to adjust modeled concentrations to represent the peak concentrations that may occur over shorter averaging times[2]. For this model application the 1/5th power law recommended by EPA was applied using a 5 sec averaging time for odor detection. Where:

> Concentration (for odor averaging time) = modeled 10-minute average concentration x $(600 \text{ sec} / 5 \text{ sec})^{0.2}$

Natural gas odor recognition level. U.S. DOT regulations require a maximum value of 20% of the LEL, which is 10,000 ppm (1% by volume). The model application applies 1% and 0.6% as suggested by PG&E. For a worst-case the odor assessment the lower value is applied.

Spreadsheet-based Odor Distance Calculator

The attached spreadsheet incorporated the modeling methodology discussed above. To enable rapid calculation, the SCREEN3 downwind concentration calculations were placed into spreadsheet form using parameters with power law curve fits. The spreadsheet *PGE-odorModel.xlsx* contains the following tabs:

- **Guide** provides instructions on how to use the spreadsheet;

The next three tabs can be used to interactively compute odor recognition distances.

- **Odor Distance Calculator** tab can be used to compute the maximum downwind distance of odor recognition by specifying:

    1. rural or urban dispersion environment,
    2. time of release: day or night,
    3. hole diameter (in),
    4. wind speed (m/sec),
    5. odor averaging time (sec), and
    6. natural gas recognition level (ppm).

[2] Workbook of Atmospheric Dispersion Estimates (Revised), U.S. Environmental Protection Agency Office of Air Programs, AP-26, 1970.

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- **Wind Speed Variation Plot tab** can be used to develop a table and graph of variation of the odor recognition distance as a function of wind speed for user-selected parameters;

- **Leak Size Variation Plot** tab can be used to develop a table and graph of variation of the odor recognition distance as a function of leak size (diameter) for user-selected parameters;

The following tabs, which form the basis for the calculations are protected (password: “PG&E”):

- **PG&E Leak Data** provides the PG&E leak data (CFH) and calculated Rate (lb/hr), Rate (g/sec), Leak Area (square inches), Leak Diameter (in) and Leak Diameter (mm);

- SCREEN3 model output tabs for combinations of dispersion environment (rural, urban) and time of day (day: stability D, night: stability F). These tabs are labeled: **SCREEN3 Rural Day**, **SCREEN3 Urban Day**, **SCREEN3 Rural Night** and **SCREEN3 Urban Night;**

- Curve fits relating SCREEN3 modeled concentration to downwind distance. These tabs are labeled: **Rural Day Curve Fit**, **Urban Day Curve Fit**, **Rural Night Curve Fit** and **Urban Night Curve Fit.**

Results

Model results for various combinations of parameters are provided in the following plots. Given the specified range of leak sizes, the modeling results indicate that gas odors are unlikely to be noticed more than about 10 meters from the training site if the level of odorant is such that natural gas odor cannot be recognized when its concentration in air is less than 0.6% and the leak diameter is no greater than 0.5 inches at a 9 inch water column pressure. Therefore, considering the location of the nearest receptors, the leak detection training courses would not expose receptors to significant odor emissions.

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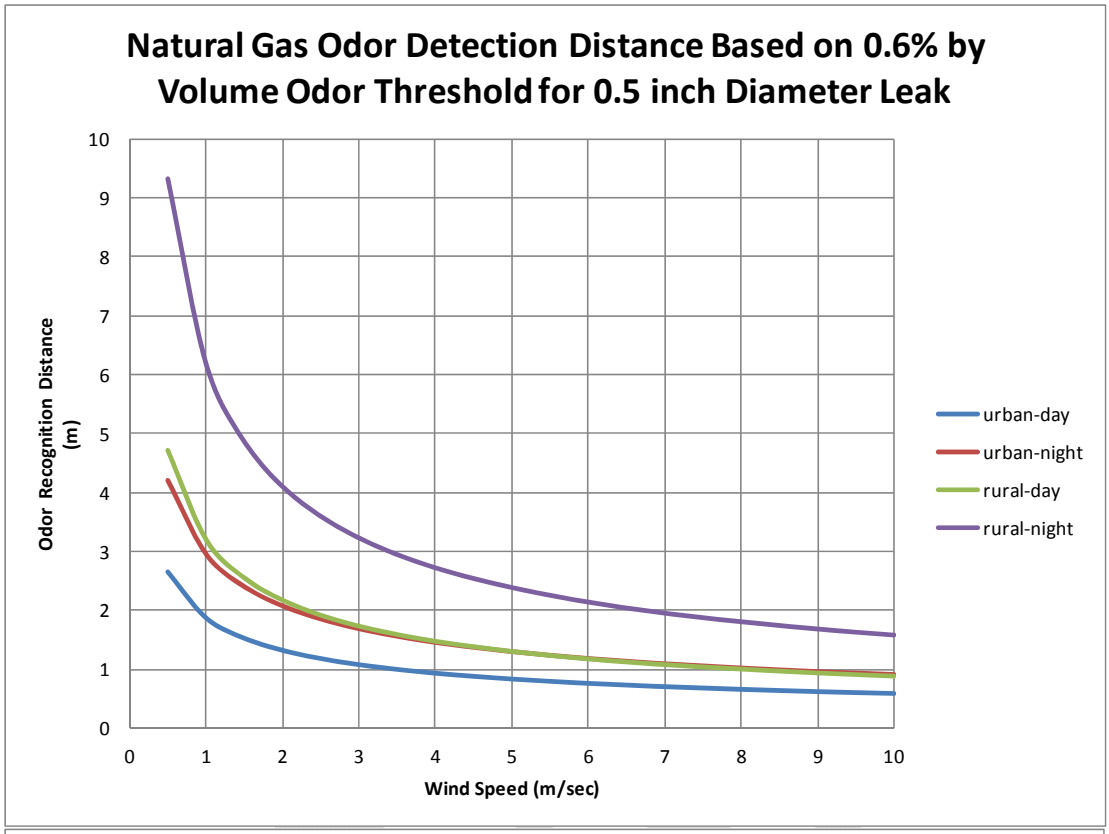
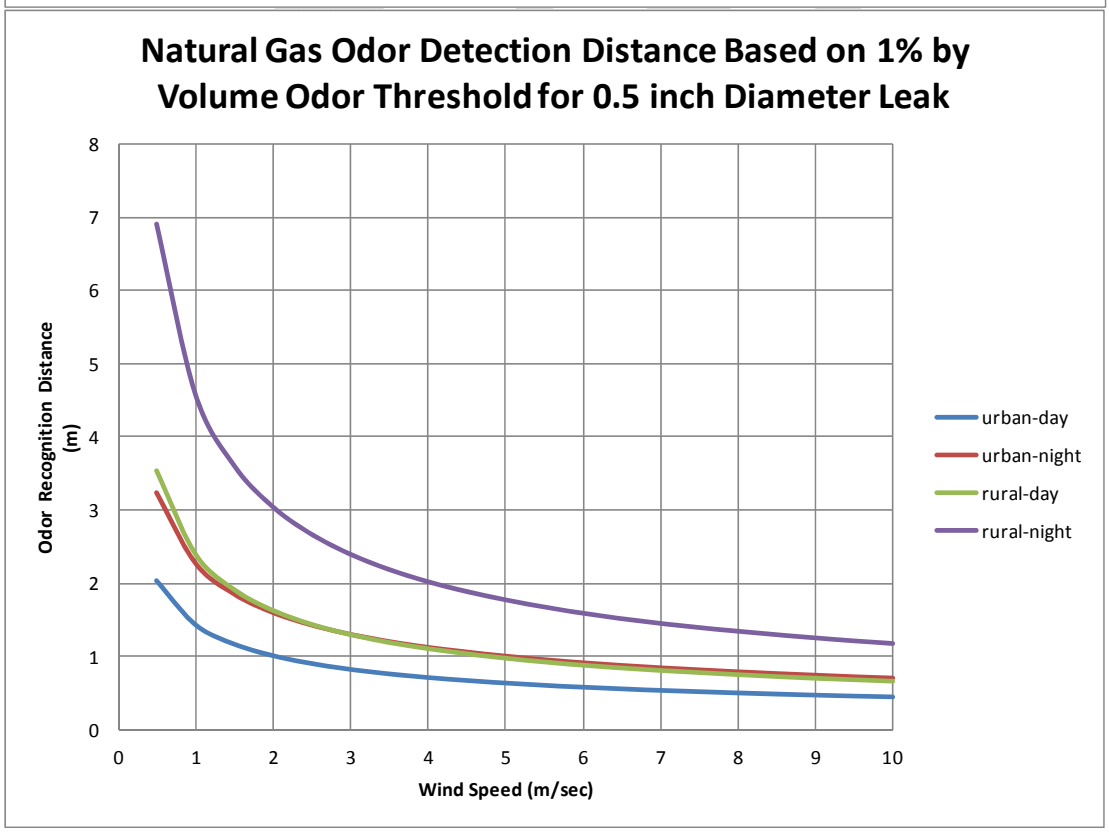
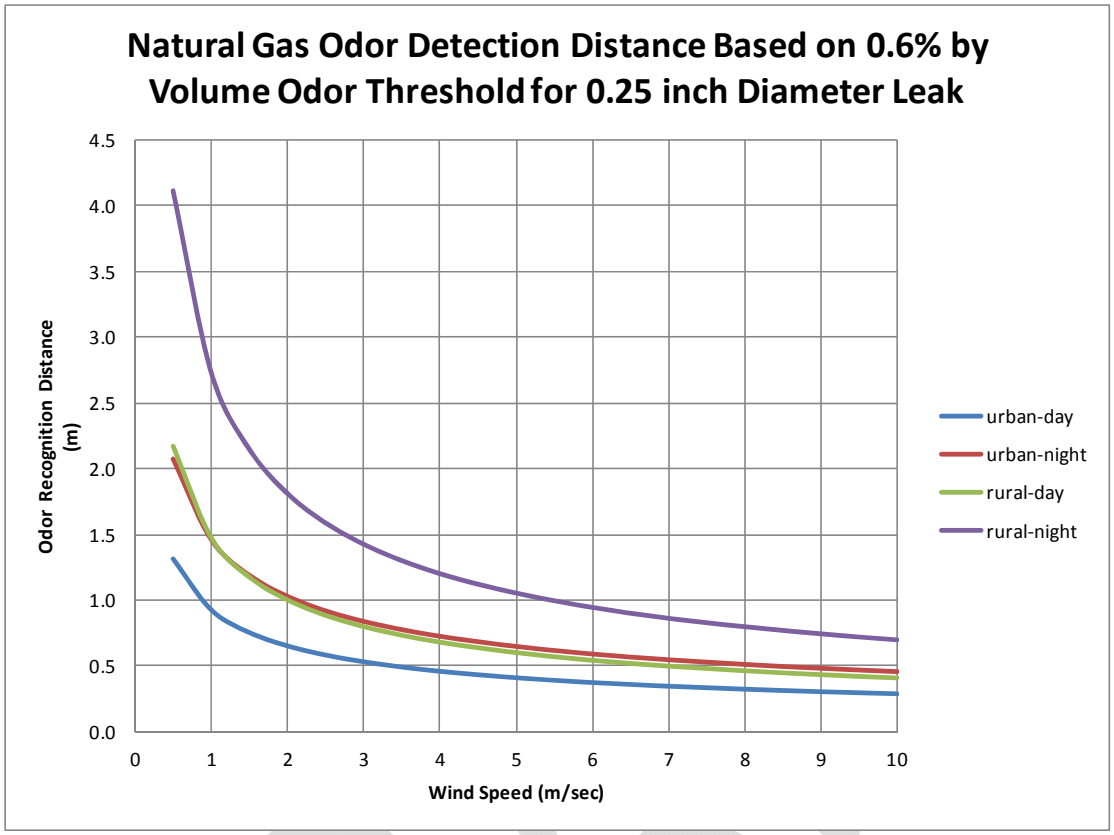

Natural Gas Odor Detection Distance Based on 0.6% by Volume Odor Threshold for 0.5 inch Diameter Leak
Odor Recognition Distance (m)
Wind Speed (m/sec)
0
1
2
3
4
5
6
7
8
9
10
urban-day
urban-night
rural-day
rural-night


Natural Gas Odor Detection Distance Based on 1% by Volume Odor Threshold for 0.5 inch Diameter Leak
Odor Recognition Distance (m)
Wind Speed (m/sec)
0
1
2
3
4
5
6
7
8
9
10
urban-day
urban-night
rural-day
rural-night


Natural Gas Odor Detection Distance Based on 0.6% by Volume Odor Threshold for 0.25 inch Diameter Leak
Odor Recognition Distance (m)
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
0
1
2
3
4
5
6
7
8
9
10
Wind Speed (m/sec)
urban-day
urban-night
rural-day
rural-night

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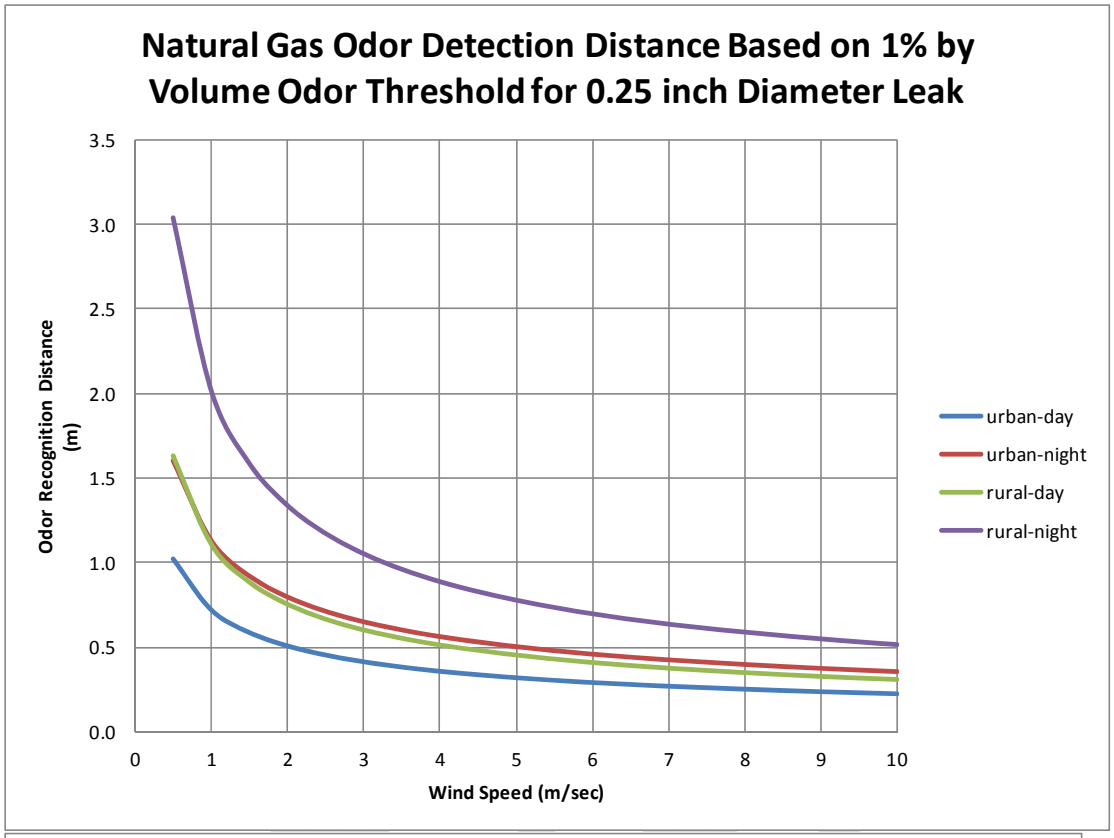
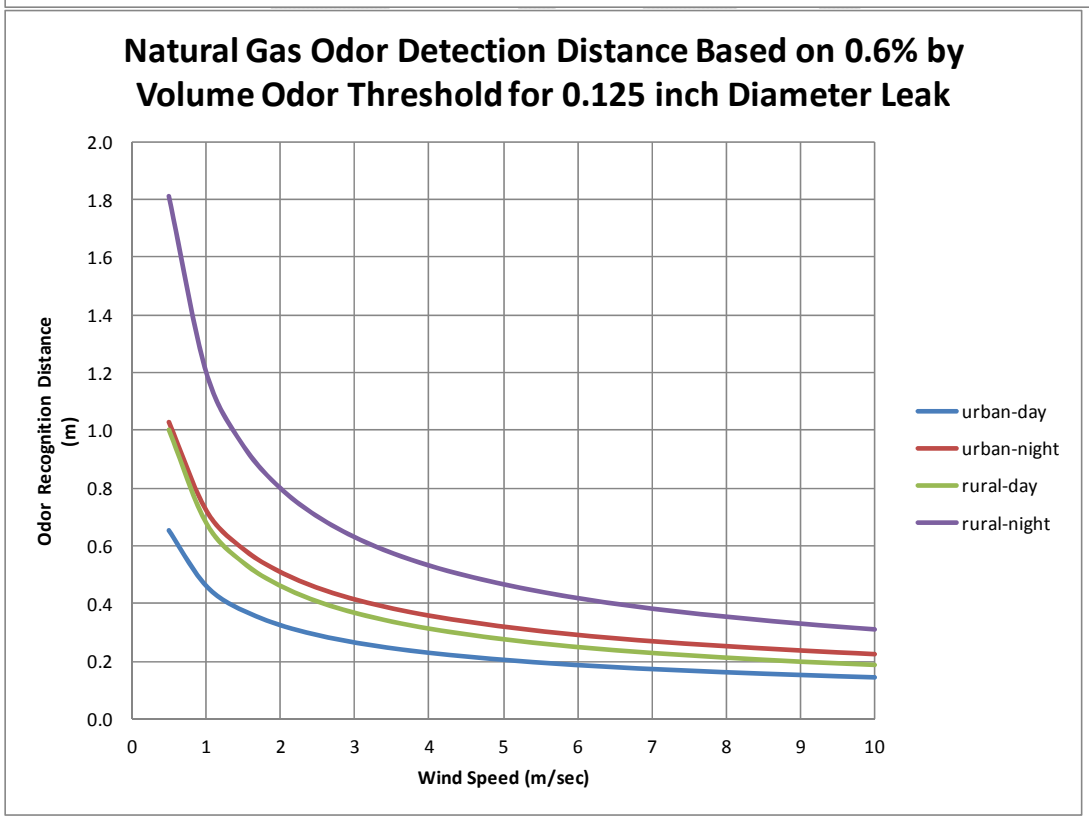
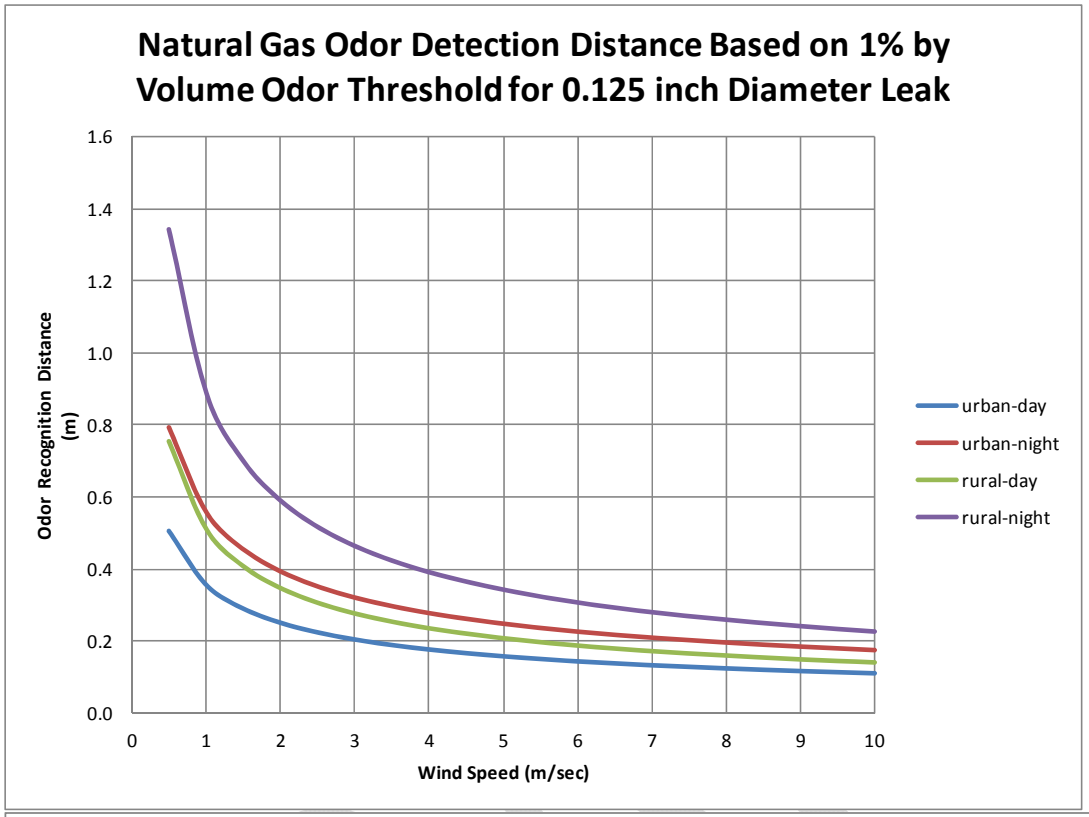
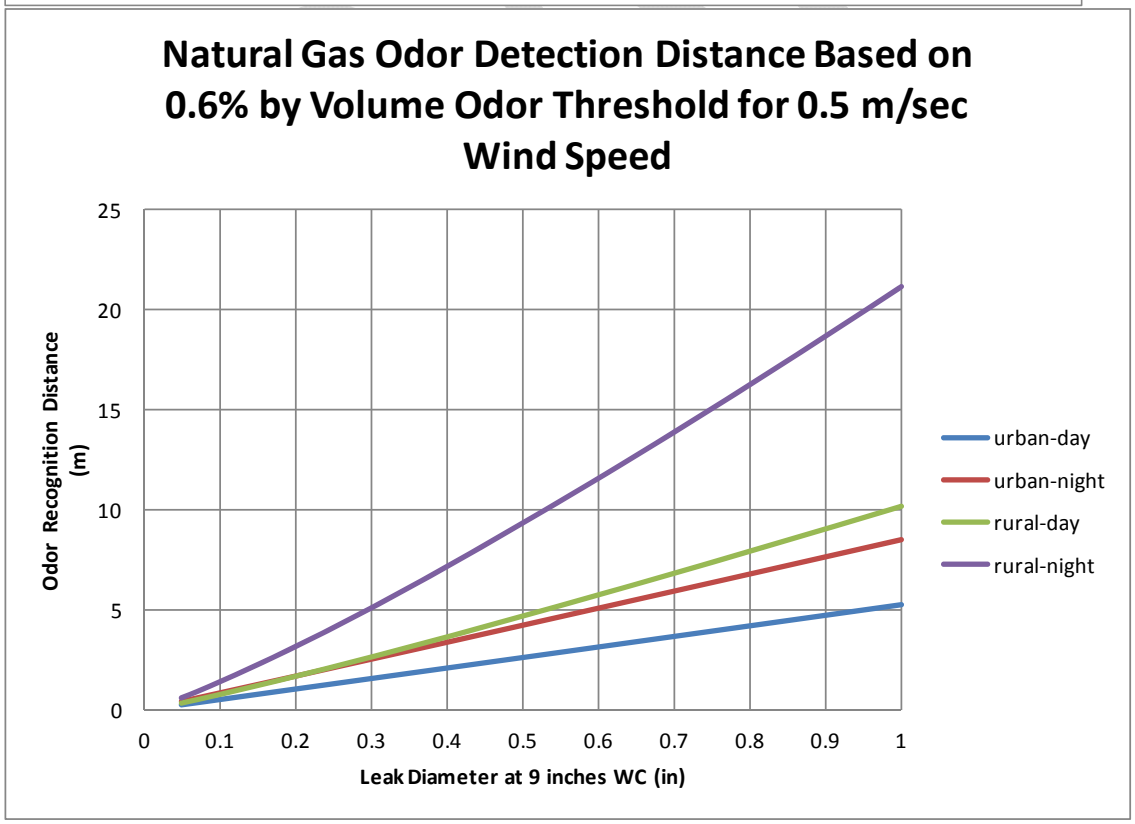
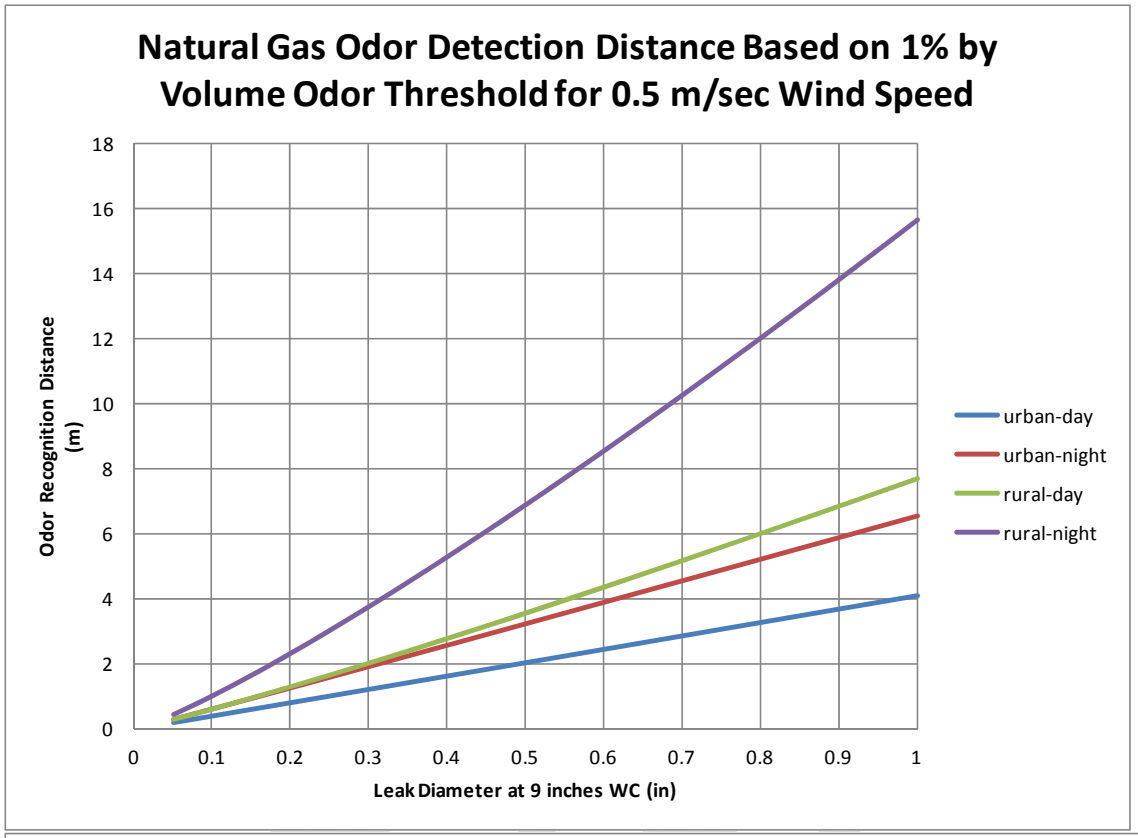
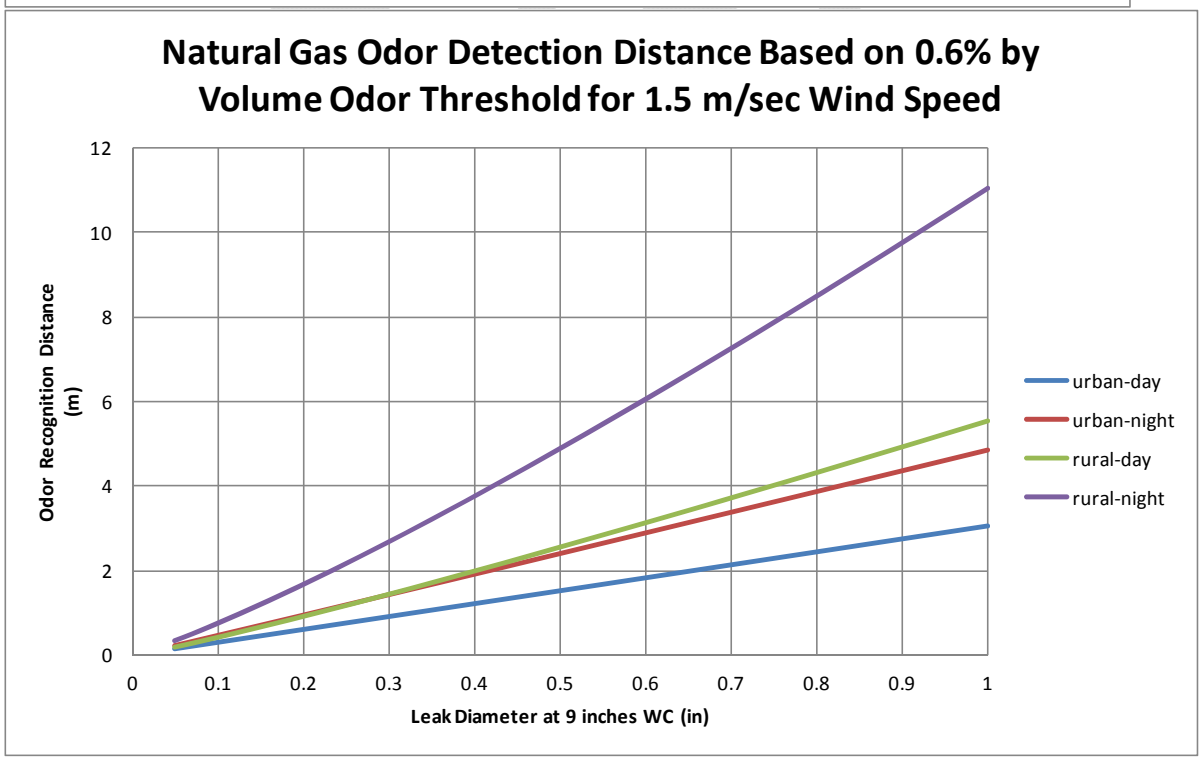

Natural Gas Odor Detection Distance Based on 1% by Volume Odor Threshold for 0.25 inch Diameter Leak
Odor Recognition Distance (m)
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
0
1
2
3
4
5
6
7
8
9
10
Wind Speed (m/sec)
urban-day
urban-night
rural-day
rural-night

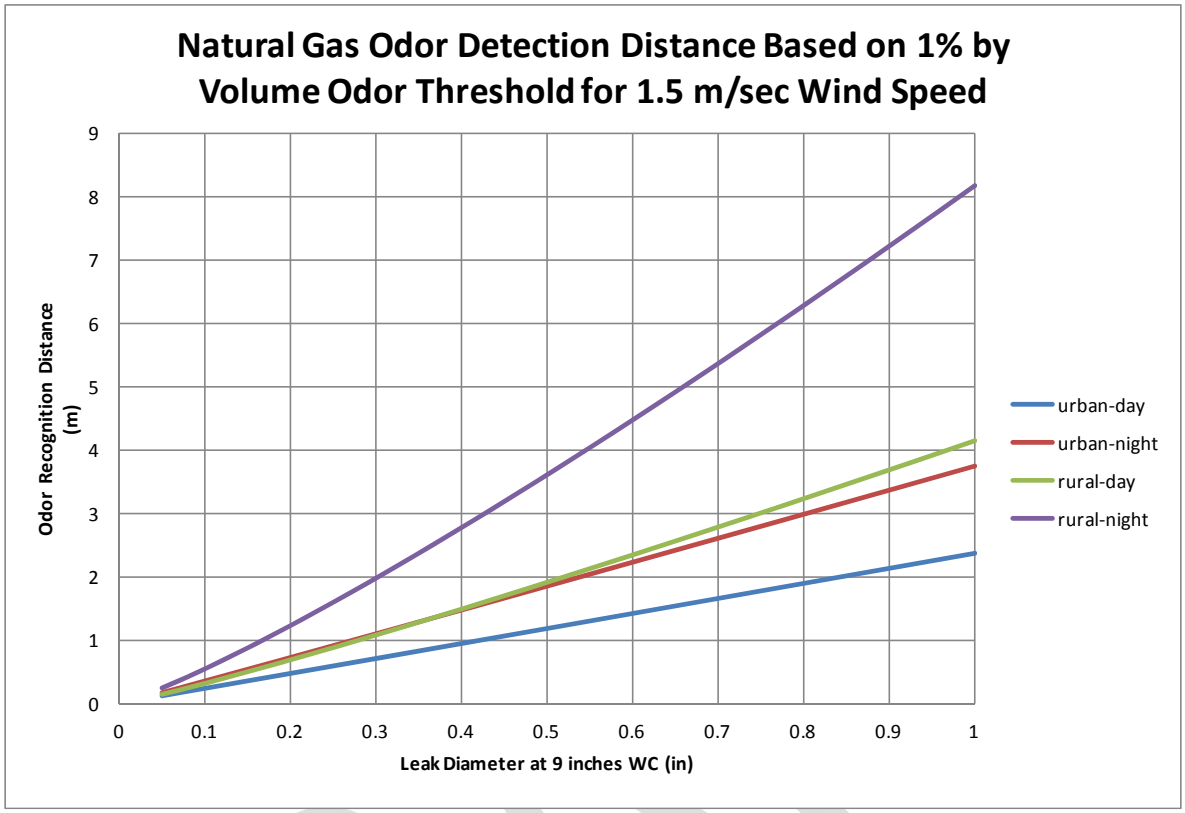

Natural Gas Odor Detection Distance Based on 0.6% by Volume Odor Threshold for 0.125 inch Diameter Leak
Odor Recognition Distance (m)
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
0
1
2
3
4
5
6
7
8
9
10
Wind Speed (m/sec)
urban-day
urban-night
rural-day
rural-night

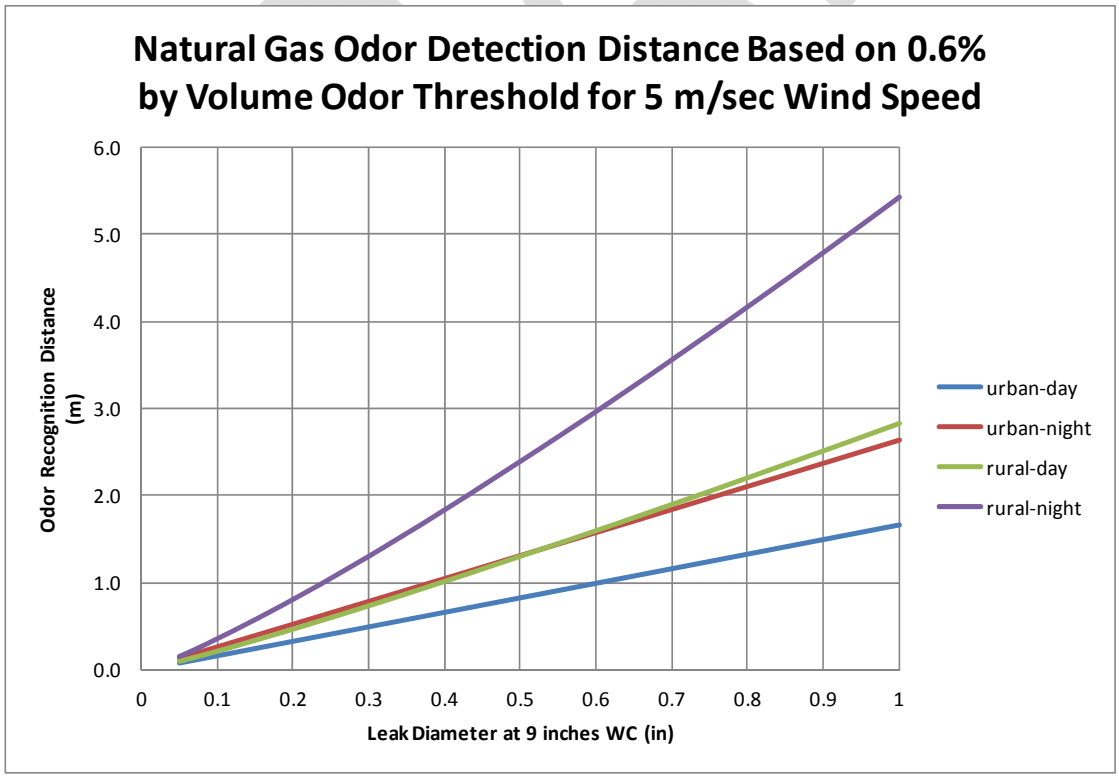

Natural Gas Odor Detection Distance Based on 1% by Volume Odor Threshold for 0.125 inch Diameter Leak
Odor Recognition Distance (m)
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
0
1
2
3
4
5
6
7
8
9
10
Wind Speed (m/sec)
urban-day
urban-night
rural-day
rural-night

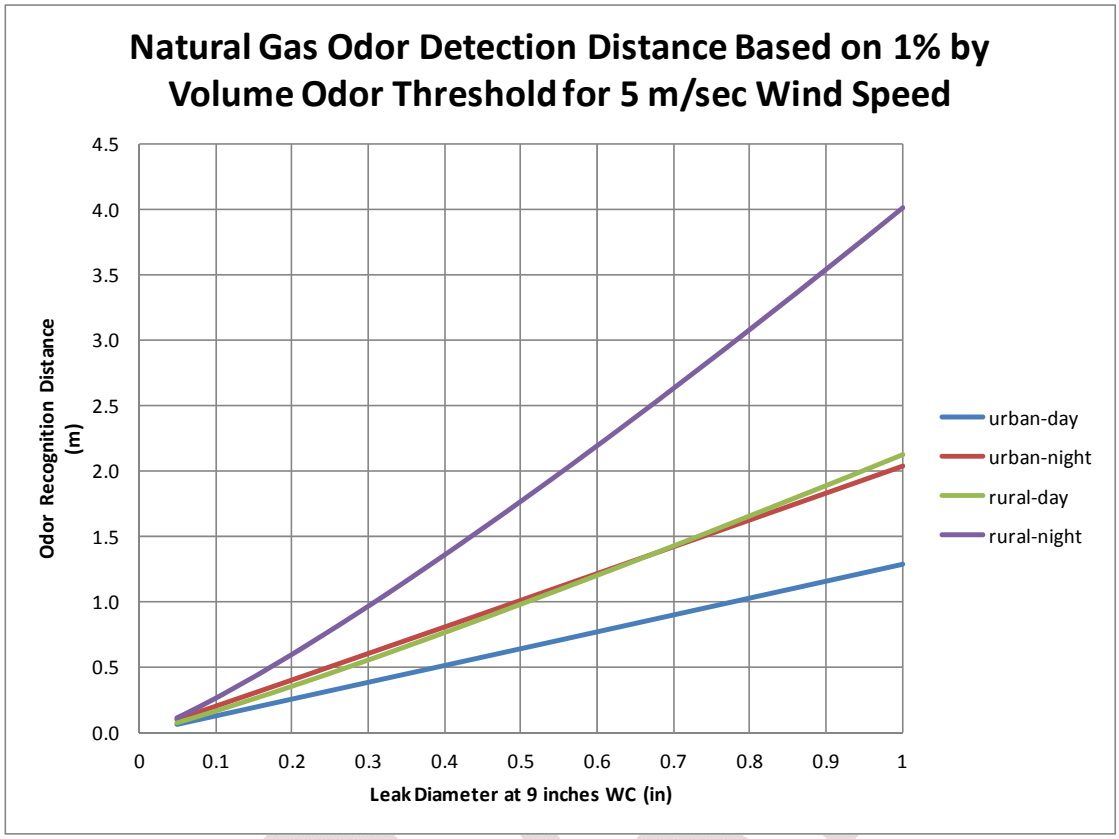

Natural Gas Odor Detection Distance Based on 0.6% by Volume Odor Threshold for 0.5 m/sec Wind Speed
Odor Recognition Distance (m)
25
20
15
10
5
0
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
Leak Diameter at 9 inches WC (in)
urban-day
urban-night
rural-day
rural-night


Natural Gas Odor Detection Distance Based on 1% by Volume Odor Threshold for 0.5 m/sec Wind Speed
Odor Recognition Distance (m)
18
16
14
12
10
8
6
4
2
0
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
Leak Diameter at 9 inches WC (in)
urban-day
urban-night
rural-day
rural-night


Natural Gas Odor Detection Distance Based on 0.6% by Volume Odor Threshold for 1.5 m/sec Wind Speed
Odor Recognition Distance (m)
12
10
8
6
4
2
0
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
Leak Diameter at 9 inches WC (in)
urban-day
urban-night
rural-day
rural-night


Natural Gas Odor Detection Distance Based on 1% by Volume Odor Threshold for 1.5 m/sec Wind Speed
Odor Recognition Distance (m)
0
1
2
3
4
5
6
7
8
9
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
Leak Diameter at 9 inches WC (in)
urban-day
urban-night
rural-day
rural-night


Natural Gas Odor Detection Distance Based on 0.6% by Volume Odor Threshold for 5 m/sec Wind Speed
Odor Recognition Distance (m)
0.0
1.0
2.0
3.0
4.0
5.0
6.0
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
Leak Diameter at 9 inches WC (in)
urban-day
urban-night
rural-day
rural-night


Natural Gas Odor Detection Distance Based on 1% by Volume Odor Threshold for 5 m/sec Wind Speed
Odor Recognition Distance (m)
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
Leak Diameter at 9 inches WC (in)
urban-day
urban-night
rural-day
rural-night

DRAFT

PG&E Odor Distance Spreadsheet Guide

This spreadsheet allows the user to compute the outdoor downwind distance at which a person may detect the distinctive odor of natural gas due to minor below-grade leaks.
Calculations are based on a pressure of 9 inches of water column (0.325 psi) of odorized natural gas.
The methodology used for the computation is provided in the technical memorandum: "Basis for the PG&E Odor Model"
Computations can be made in the tabs colored in bright blue.
The basis for the computations are in the pale blue tabs. The have been write-protected using the code:"PG&E"

In the **Odor Distance Calculator** tab the specify the following parameters:

Parameter	Suggested Value for Worst Case Analysis
Type of area (select "rural" or "urban" from dropdown list)	rural
Time of Day (select "day" or "night" from dropdown list)	night
Diameter of Hole (in)	user specified
Wind Speed (m/sec)	0.5
Averaging time (sec) for odor detection (sec)	5
Natural Gas Concentration at which Odor is Recognized (ppm)	10,000 or less

In the **WS Variation Plot** tab specify the following parameters:

Parameter	Suggested Value for Worst Case Analysis
Diameter of Hole (in)	0.5
Averaging time (sec) for odor detection (sec)	5
Detectable Concentration of Natural Gas (ppm)	6000

In the **Leak Size Variation Plot** tab specify the following parameters:

Parameter	Suggested Value for Worst Case Analysis
Averaging time (sec) for odor detection (sec)	5
Wind Speed (m/sec)	0.5
Detectable Concentration of Natural Gas (ppm)	6000

Calculated Distance of Natural Gas Odor From a Ground-Level Natural Gas Leak

Type of area (select "rural" or "urban" from dropdown list)	rural
Time of Day (select "day" or "night" from dropdown list)	day
Diameter of Hole (in)	0.1
Wind Speed (m/sec)	0.1
Averaging time (sec) for odor detection (sec)	5
Natural Gas Concentration at which Odor is Recognized (ppm)	10,000
Release Rate (CFH)	2.798
Dispersion coefficient "a"	136.5
Dispersion coefficient "b"	-1.791
Downwind Distance of Odor Recognition (m)	10.0

Key

Input Values

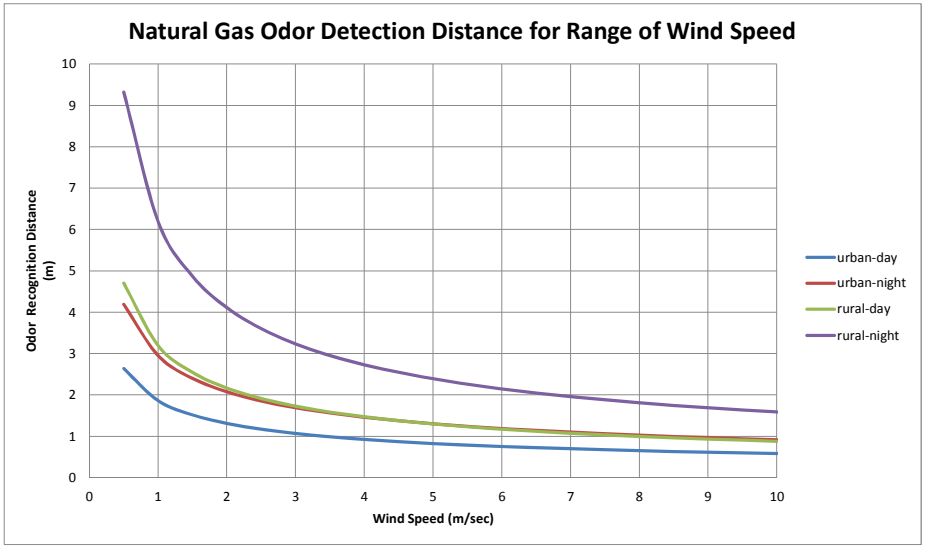
Computations

Parameters to Calculate Distance of Natural Gas Odor From a Ground-Level Leak

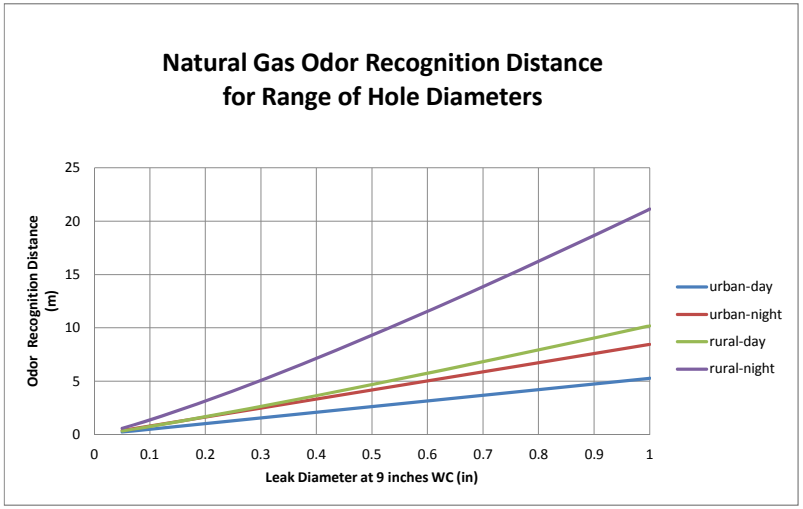
	enter data			
Type of Area	urban	urban	rural	rural
Time of Day	day	night	day	night
dispersion coefficient "a"	14.868	40.813	136.52	734.92
dispersion coefficient "b"	-1.99	-1.974	-1.791	-1.693
Diameter of Hole (in)	0.5	0.5	0.5	0.5
Release Rate (CFH)	70.0	70.0	70.0	70.0
Averaging time (sec) for odor detection (sec)	5	5	5	5
Detectable Concentration of Natural Gas (ppm)	6,000	6,000	6,000	6,000

Downwind Distance (m)

Wind Speed (m/sec)	urban-day	urban-night	rural-day	rural-night
0.5	2.64	4.19	4.70	9.32
1	1.86	2.95	3.20	6.19
1.5	1.52	2.40	2.55	4.87
2	1.31	2.08	2.17	4.11
2.5	1.18	1.86	1.92	3.60
3	1.07	1.69	1.73	3.24
3.5	0.99	1.57	1.59	2.95
4	0.93	1.46	1.47	2.73
4.5	0.87	1.38	1.38	2.55
5	0.83	1.31	1.30	2.39
5.5	0.79	1.24	1.23	2.26
6	0.76	1.19	1.17	2.15
6.5	0.73	1.14	1.12	2.05
7	0.70	1.10	1.08	1.96
7.5	0.68	1.06	1.04	1.88
8	0.66	1.03	1.00	1.81
8.5	0.64	1.00	0.97	1.75
9	0.62	0.97	0.94	1.69
9.5	0.60	0.94	0.91	1.64
10	0.59	0.92	0.88	1.59



Parameters to Calculate Distance of Natural Gas Odor From a Ground-Level Leak

	enter data			
Type of Area	urban	urban	rural	rural
Time of Day	day	night	day	night
dispersion coefficient "a"	14.868	40.813	136.52	734.92
dispersion coefficient "b"	-1.99	-1.974	-1.791	-1.693
Averaging time (sec) for odor detection (sec)	5	5	5	5
Wind Speed (m/sec)	0.5	0.5	0.5	0.5
Detectable Concentration of Natural Gas (ppm)	6000	6,000	6,000	6,000

	Downwind Distance (m)			
Diameter of Hole (in)	urban-day	urban-night	rural-day	rural-night
0.05	0.26	0.41	0.36	0.61
0.070	0.37	0.57	0.52	0.91
0.090	0.47	0.74	0.69	1.23
0.110	0.58	0.90	0.87	1.56
0.130	0.68	1.07	1.05	1.90
0.150	0.79	1.24	1.23	2.25
0.170	0.89	1.41	1.41	2.61
0.190	1.00	1.57	1.60	2.97
0.210	1.10	1.74	1.79	3.35
0.230	1.21	1.91	1.98	3.73
0.250	1.31	2.08	2.17	4.11
0.270	1.42	2.25	2.36	4.50
0.290	1.53	2.42	2.56	4.90
0.310	1.63	2.58	2.76	5.30
0.330	1.74	2.75	2.96	5.71
0.350	1.84	2.92	3.16	6.12
0.370	1.95	3.09	3.36	6.53
0.390	2.06	3.26	3.57	6.95
0.410	2.16	3.43	3.77	7.38
0.430	2.27	3.60	3.98	7.80
0.450	2.37	3.77	4.18	8.23
0.470	2.48	3.94	4.39	8.67
0.490	2.59	4.11	4.60	9.10
0.510	2.69	4.28	4.81	9.55
0.530	2.80	4.45	5.02	9.99
0.550	2.90	4.62	5.23	10.44
0.570	3.01	4.79	5.45	10.89
0.590	3.12	4.96	5.66	11.34
0.610	3.22	5.13	5.87	11.79
0.630	3.33	5.30	6.09	12.25
0.650	3.43	5.47	6.31	12.71
0.670	3.54	5.64	6.52	13.18
0.690	3.65	5.81	6.74	13.64
0.710	3.75	5.98	6.96	14.11
0.730	3.86	6.15	7.18	14.58
0.750	3.97	6.33	7.40	15.05
0.770	4.07	6.50	7.62	15.53
0.790	4.18	6.67	7.84	16.01
0.810	4.29	6.84	8.06	16.49
0.830	4.39	7.01	8.29	16.97
0.850	4.50	7.18	8.51	17.45
0.870	4.60	7.35	8.73	17.94
0.890	4.71	7.52	8.96	18.43
0.910	4.82	7.69	9.18	18.92
0.930	4.92	7.87	9.41	19.41
0.950	5.03	8.04	9.63	19.90
0.970	5.14	8.21	9.86	20.40
0.990	5.24	8.38	10.09	20.90
1.000	5.30	8.47	10.20	21.15