STOEL RIVES LLP
ATTORNEYS AT LAW

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500 Capitol Mall, Suite 1600
Sacramento, California 95814
main 916.447.0700
fax 916.447.4781
www.stoel.com

MELISSA A. FOSTER
Direct (916) 319-4673
mafoster@stoel.com

December 15, 2009

Mr. Dale Rundquist
Compliance Project Manager
California Energy Commission
1516 Ninth Street, MS-15
Sacramento, CA 95814

Re: Panoche Energy Center Project (06-AFC-5C)
Petition to Amend

Dear Mr. Rundquist:

As a follow-up to my November 25, 2009 correspondence, on behalf of Panoche Energy Center, LLC ("PECL"), as owner of the Panoche Energy Center ("PEC"), I have set forth additional information regarding the November 18, 2009 submission to the California Regional Water Quality Control Board, Central Valley Region ("Regional Board").

After receiving and reviewing a Report of Waste Discharge ("ROWD") from PEC, the Regional Board requested PECL to provide additional information. During the compilation of such additional information, PECL determined that the westernmost unlined surface impoundment should be two feet deeper than originally designed to ensure adequate freeboard at all times. In addition, PECL has determined that the best way to meet freeboard requirements is to modify the originally proposed internal earthen center barrier between the two impoundments to sheet piling, concrete, or another durable material.

Specifically, UWSI-1 is designed to have a bottom surface area of 2.94 acres and UWSI-2 is designed to have a bottom surface area of 3.19 acres. The westernmost UWSI will be built to an eight-foot depth and the easternmost UWSI will be built to a six-foot depth. Both UWSI will have the same bottom elevation, and will allow for at least two feet of freeboard throughout the year. To meet the freeboard requirements, the center barrier between the two UWSI will be constructed of sheet piling, concrete or another durable material that will be approximately 6 feet high by 2 feet wide. As previously designed, the UWSI also will have a 20-foot wide surrounding berm. The berm width will allow for maintenance vehicle access. Berm heights will measure six feet from the top of the berm to existing ground elevation. The southern edge of the south berm (the bottom edge of the outer slope) is along the edge of the property boundary. In addition, a temporary warehouse foundation, which is presently within UWSI-1's

Alaska California Idaho
Minnesota Oregon Utah Washington

proposed footprint, will be removed and replaced with a permanent foundation of the same size and dimensions. Grading activities will require twelve laborers for seven weeks. Previously, grading activities were expected to involve seven laborers for five weeks. Complete construction is expected to last approximately twelve weeks in the Spring of 2010. Previously, construction was expected to last approximately ten weeks in Spring 2010.

Generally, the pond construction refinements will involve:

- Replacement of the temporary warehouse foundation will create approximately 146.2 cubic yards of concrete waste.

- Upon construction completion, approximately 20,000 cubic yards of excess soil will need to be disposed of or utilized offsite. Additional soil exportation will cause only a small amount, up to nine, new truck trips per day with the duration of trips increased from 5 weeks to 9 weeks.

- Grading activities will require twelve laborers for seven weeks. Complete construction is expected to last twelve weeks in the Spring of 2010.

- Excavation activities up to eight feet in depth for UWSI construction.

- Minor increases in anticipated project costs (3.9 mill instead of 3.5 million, and upward adjustments of property taxes, sales tax (local expenditures), construction worker salaries, number of workers (24 instead of 19).

- Excavated material cut will increase to 32,150 cubic yards, excavated material fill will decrease to 12,200 cubic yards, and potential export balance (shown on Table 5.11-2) will increase to 19,950 cubic yards.

- Sixteen (16) truck trips of concrete for the installation of the permanent warehouse foundation and thirty (30) truck trips of concrete will be needed for construction of the proposed UWSI divider, should the divider be constructed using concrete. Trips will be spread over time during the construction period.

The pond construction refinements do no present any new environmental issues and there are no significant additional effects or impacts on the environmental issues analyzed in the PTA associated with these refinements, as set forth in more detail below.

Air Quality

Revised Tables 5.2-3 to 5.2-6 present the estimated worst-case equipment exhaust and fugitive dust emission rates during construction for onsite and offsite activities associated with Wastewater Disposal Changes construction. The maximum emission rates in Tables 5.2-3 to 5.2-6 for construction of the Wastewater Disposal Changes are well below the corresponding maximum emission rates for pollutants that were approved for the substantially larger PEC construction effort. Thus, it is justifiable to assume that the worst-case construction scenario (the phase that creates the most pollutant emissions) remains the site grading activities associated with the approved PEC. Additional dispersion modeling to evaluate the Wastewater Disposal Changes impacts would result in significantly lower predicted impacts than those already found to be acceptable in the previously approved PEC AFC.

Noise

The refinements could require a pile driver if sheet piling is used to construct the center barrier between the two USWI. If sheet piling is used in lieu of concrete, noise levels associated with potential vibratory pile driving of sheet piles are an anticipated to be 65 dbA at the nearest sensitive receptor located 3,300 feet from PEC. Construction traffic activity will consist of soil distribution, material/equipment delivery, and construction worker vehicle trips (which will increase from 38 to 50 trips/day). Material and equipment staging will utilize existing facilities and no new construction staging area will be required. As discussed in the Traffic and Transportation section, *infra*, project-related traffic noise will not be significant.

The refinements do not change the conclusion in the PTA that the Wastewater Disposal Changes will not have an effect on the overall sound levels of the approved PEC and thus no modifications to the PEC conditions of certification are necessary.

Paleontological Resources

UWSI construction will require excavation activities up to eight feet in depth. Previously, excavation was not expected to exceed six feet in depth. As concluded in the PTA, construction of the UWSI will have a very low potential to cause adverse impacts to significant paleontological resources as construction will involve ground disturbance only to the "Patterson alluvium."

Socioeconomics

Minor increases in anticipated project costs (from $3.5 million to $3.9 million) and therefore upward adjustments of property taxes (from $38,500 to $42,900), local expenditures (from $250,000 to $477,300), sales tax revenue (from $22,738 to $42,800), construction worker salary (from $96,000 to $176,000), and the number of workers (from 19 to 24).

The resulting indirect and induced effects of the UWSI construction occurring within Fresno County would be an additional three indirect (previously one) and three induced (previously one) jobs generated by the local construction expenditures and construction payroll; and approximately $133,000 (previously $62,691) and $100,000 (previously $43,308) in indirect and induced income impacts, respectively (based on the total annual local construction expenditure for payroll, materials and supplies). The output for dollars generated for other industries supplying the power generation industry was estimated at $329,029 (previously $155,163) and $300,570 (previously $141,693) for indirect and induced impacts to output, respectively. The dollar estimates are provided in 2009 dollars. The refinements do no present any socioeconomic issues and there are no significant additional effects or impacts on socioeconomics associated with these refinements.

Traffic and Transportation

Excavation will produce approximately 20,000 cubic yards of excess soil to be disposed of or utilized offsite. Previously, the total excess soil was 3,000 cubic yards. Construction of the UWSI divider will require the delivery of concrete or sheet piling to the site. The additional soil exportation will require 665 truck trips and concrete removal will require 15 truck trips. Sixteen (16) truck trips of concrete for the installation of the permanent warehouse foundation and thirty (30) truck trips of concrete will be needed for construction the proposed UWSI divider, should the divider be constructed using concrete. Truck trips will be spread over time during the construction period. Tables 5.11-1 and 5.11-2 depict the increase in daily construction worker and export truck trips associated with the refinements. The refinements do no present any traffic issues and there are no significant additional effects or impacts on traffic and transportation associated with these refinements.

Waste Management

Replacement of the warehouse foundation will create approximately 146.2 cubic yards of concrete waste. Previously, the warehouse foundation was not planned to be replaced. Further, Construction will produce approximately 20,000 cubic yards of excess soil to be disposed of or

utilized offsite. Previously, the total excess soil was 3,000 cubic yards. Additional soil exportation will cause only a small amount, up to nine, new truck trips per day with the duration of trips increased from 5 weeks to 9 weeks.

CONCLUSION

In light of the foregoing, the following figures and tables have been updated to reflect the refinements, copies of which are attached hereto for your convenience: Figure 1.3-1; Figure 3.4-1; Figure 3.4-3; Figure 5.13-2; Table 5.2-1; Table 5.2-2; Table 5.2-3; Table 5.2-4; Table 5.2-5; Table 5.2-6; Table 5.11-1; and Table 5.11-2. In addition, all of the spreadsheets contained in Appendix A – Air Quality contain revisions. Thus, a revised Appendix A is also attached hereto.

The minor refinements set forth herein do not substantially change the character of the changes proposed by the PTA. The proposed Wastewater Disposal Changes remain in compliance with all applicable laws, ordinances, regulations, and standards ("LORS"). The Wastewater Disposal Changes will also continue to not adversely affect PEC's ability to comply with all applicable LORS and no new mitigation measures or conditions of certification not already included in the PTA are needed. Applicant has determined that no material changes to the PTA will be made by the refinements.

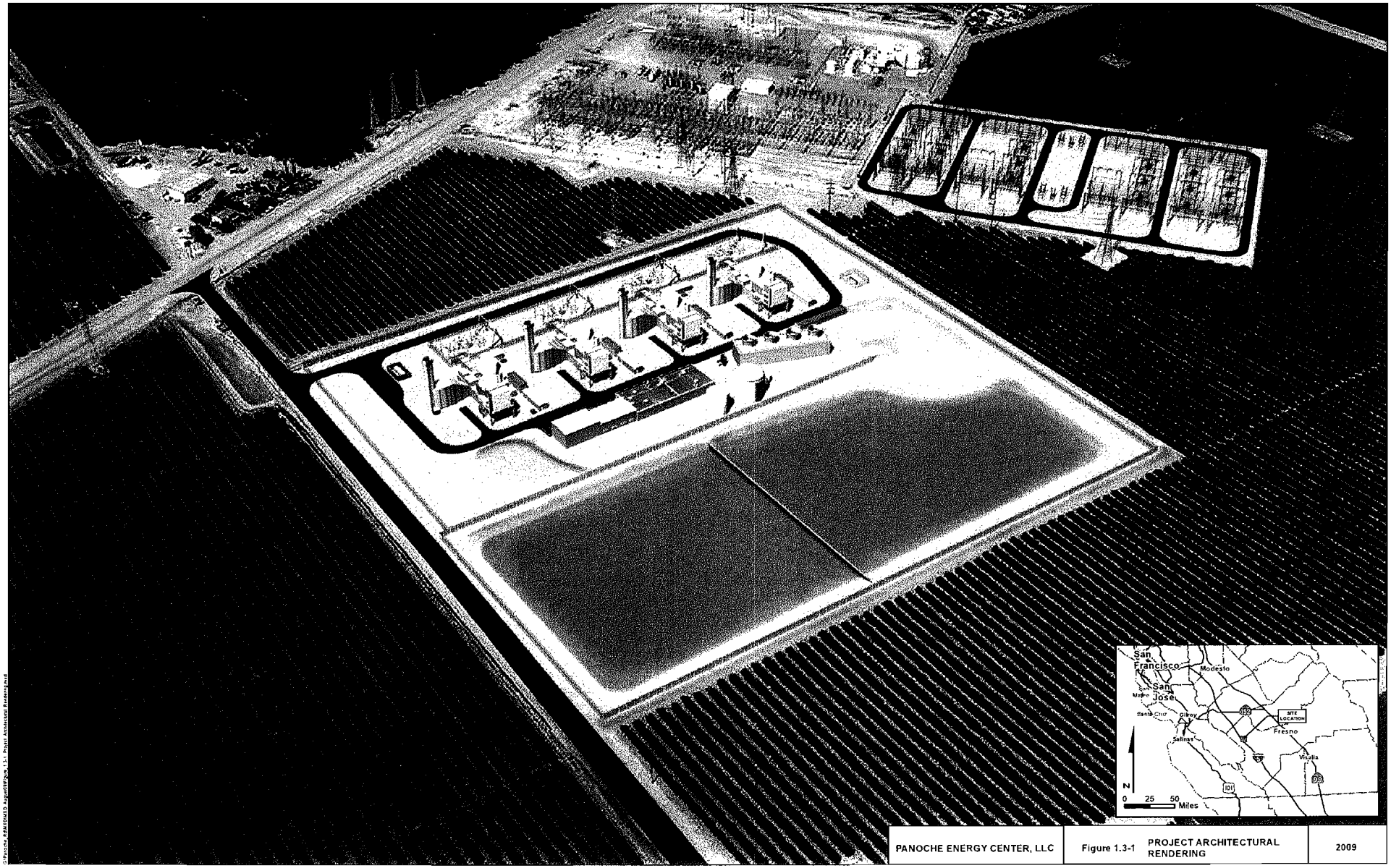
We look forward to Staff's review of and recommendation on the PTA. In the meantime, if you have any questions, please do not hesitate to contact me directly at (916) 447-0700.

Very truly yours,

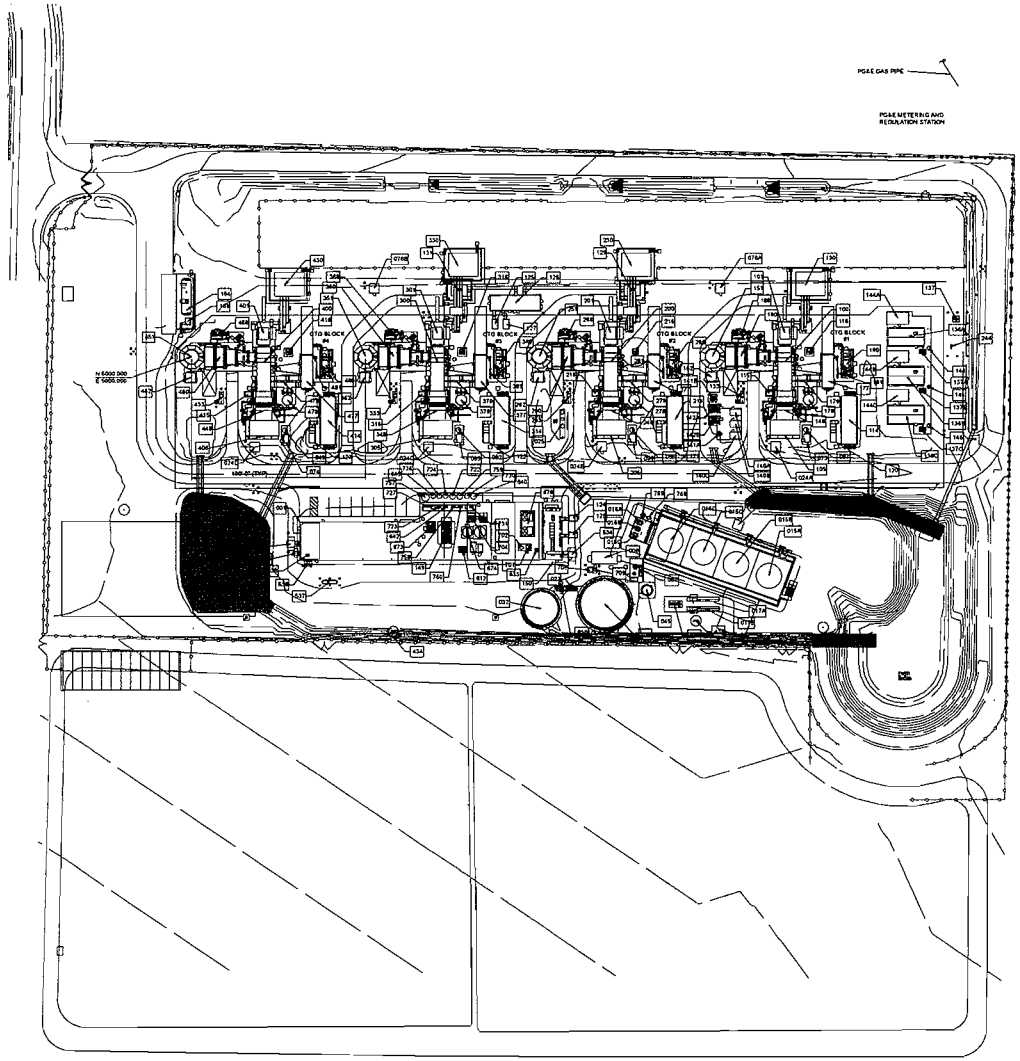
Melissa A. Foster
MAF:jmw

Attachments

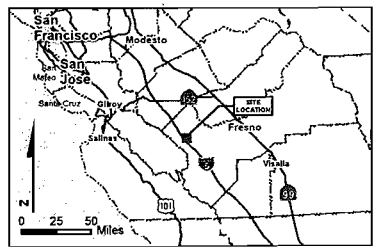
REVISED FIGURES



PANOCHE ENERGY CENTER, LLC	Figure 1.3-1	PROJECT ARCHITECTURAL RENDERING	2009

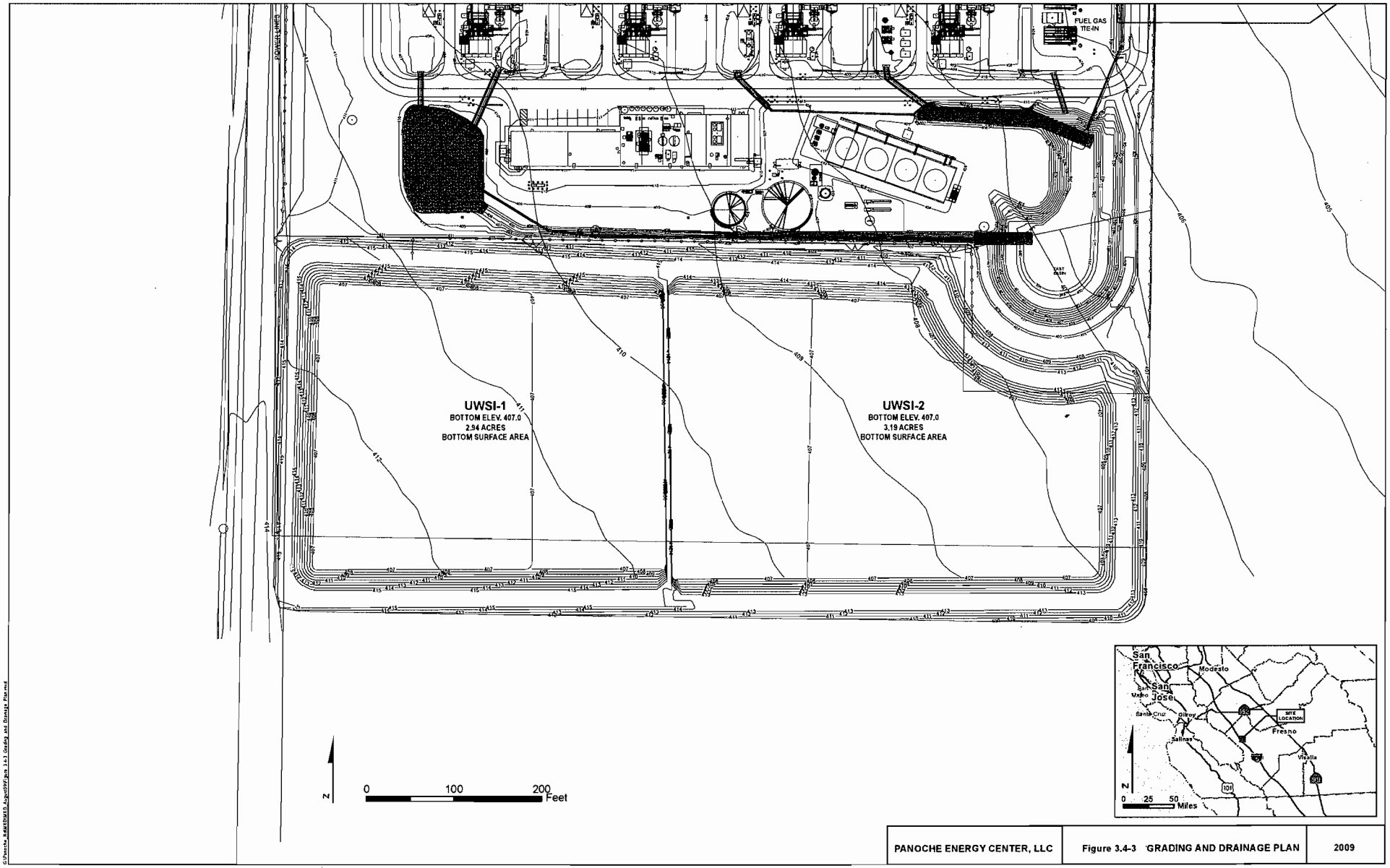


NO	EQUIPMENT TITLE	NO	EQUIPMENT TITLE	NO	EQUIPMENT TITLE
001	ADMIN / WAREHOUSE / WATER TREATMENT BUILDING	142B	AIR DRYER SKID	406	FILTERHOUSE
		144	SUCTION ACCUMULATOR A	414	POWER CONTROL MODULE FOR CTG UNIT 401
006	FIRE WATER PUMP ENCLOSURE	144A	RECYCLE GAS COOLER A		
007	WASTEWATER TANK TREATMENT AREA	144B	RECYCLE GAS COOLER B	418	CARBON DIOXIDE BOTTLE RACK
015A	COOLING TOWER CELL A	144C	RECYCLE GAS COOLER C	419	FUEL GAS FILTER/SEPARATOR #4
015B	COOLING TOWER CELL B	145	SUCTION ACCUMULATOR B	430	CTG STEPUP TRANSFORMER UNIT 4
015C	COOLING TOWER CELL C	146	SUCTION ACCUMULATOR C	433	COMBUSTION TURBINE DRAINS TANK
015D	COOLING TOWER CELL D	148	CT AUXILIARY SKID #1	434	INJECTION WELL 2
016A	CIRCULATING WATER PUMP A	149	RO FIRST AND SECOND PASS SUPER SKID	435	INJECTION WELL 1
016B	CIRCULATING WATER PUMP B	150	EYE WASH STATION AT BLDG SOUTHEAST	436	INJECTION WELL 3
016C	CIRCULATING WATER PUMP C	151	EXHAUST STACK	437	INJECTION WELL 4
017A	WATER INJECTION PUMP	160	SELECTIVE CATALYTIC REDUCTION UNIT	448	CT AUXILIARY SKID #4
017B	WATER INJECTION PUMP	163	CONTINUOUS EMISSIONS MONITORING SYSTEMS EQUIPMENT BUILDING (CEMS)	451	EXHAUST STACK
021	SERVICE WATER PUMP SKID			460	SELECTIVE CATALYTIC REDUCTION UNIT
024A	AUX SKID FIREWATER VALVE ENCLOSURE #1	164	AMMONIA STORAGE TANK	462	CONTINUOUS EMISSIONS MONITORING SYSTEMS EQUIPMENT BUILDING (CEMS)
024B	AUX SKID FIREWATER VALVE ENCLOSURE #2	166	AMMONIA VAPORIZING PUMP SKID		
024C	AUX SKID FIREWATER VALVE ENCLOSURE #3	169	AQUEOUS AMMONIA DELIVERY SKID #1	468	AQUEOUS AMMONIA DELIVERY SKID #4
024D	AUX SKID FIREWATER VALVE ENCLOSURE #4	177	INTERCOOLER #1	477	INTERCOOLER #4
025	OILWATER SEPARATOR	178	VBV STACK	478	VBV STACK
030	DEMINERALIZED WATER PUMP SKID	179	INTERCOOLER #1 INTERCONNECTING PIPING SKID	479	INTERCOOLER #4 INTERCONNECTING PIPING SKID
032	DEMINERALIZED WATER STORAGE TANK				
054	SERVICE/FIRE WATER STORAGE TANK	180	COOLING WATER PUMP SKID 1	480	COOLING WATER PUMP SKID #4
064	WASTE WATER COLLECTION TANK	181	CONDENSATION TANK	481	CONDENSATION TANK
068	WASTEWATER INJECTION CHARGE PUMP SKID	200	LM5100 MAIN UNIT #2	533	CONTROL ROOM/ADMIN HVAC UNIT
069	CONDENSATE RECOVERY TANK	201	GENERATOR	534	ELECTRICAL ROOM HVAC UNIT
073	CONDENSATE RECOVERY PUMP SKID	205	FILTERHOUSE	536	CONTROL ROOM/ADMIN HVAC UNIT
074	CONDENSATE RECOVERY PUMP SKID	214	POWER CONTROL MODULE FOR CTG UNIT 201	538	CONTROL ROOM/ADMIN HVAC UNIT
076A	EAST TRANSFORMER DELUGE ENCLOSURE	215	CARBON DIOXIDE BOTTLE RACK	537	PROPANE TANK
076B	WEST TRANSFORMER DELUGE ENCLOSURE	216	FUEL GAS FILTER/SEPARATOR #2	638	ADMIN/CONTROL ROOM DCS PANEL
076C	COOLING TOWER DELUGE ENCLOSURE	230	CTG STEPUP TRANSFORMER UNIT 2	812	RO FEED PUMP SKID
080	CONDENSATE RECOVERY TANK	253	COMBUSTION TURBINE DRAINS TANK	833	WATER HEATER TANK
083	CONDENSATE RECOVERY PUMP SKID	264	FUEL GAS CHROMATOGRAPH	840	CIRCULATING WATER SULFURIC ACID (96%-98%) FEED TOTE
085	CONDENSATE RECOVERY TANK	348	CT AUXILIARY SKID #3		
086	CONDENSATE RECOVERY PUMP SKID	251	EXHAUST STACK	842	CIRCULATING WATER SULFURIC ACID PUMP SKID
087	CONDENSATE RECOVERY TANK	260	SELECTIVE CATALYTIC REDUCTION UNIT		
100	LM5100 MAIN UNIT #1	262	CONTINUOUS EMISSIONS MONITORING SYSTEMS EQUIPMENT BUILDING (CEMS)	845	WATER TREATMENT RO CAUSTIC TOTE
101	GENERATOR			873	RO CLEANING SYSTEM
105	FILTERHOUSE	268	AQUEOUS AMMONIA DELIVERY SKID #2	874	RO PRODUCT WATER STORAGE TANK
114	POWER CONTROL MODULE FOR CTG UNIT 101	277	INTERCOOLER #2	878	MIXED BED POLISHERS
115	CARBON DIOXIDE BOTTLE RACK	278	VBV STACK	701	POTABLE WATER FEED SKID
116	FUEL GAS FILTER/SEPARATOR #1	279	INTERCOOLER #2 INTERCONNECTING PIPING SKID	702	POTABLE WATER FEED TANK
120	PAD MOUNT TRANSFORMER 101			704	RO PRODUCT WATER FORWARDING PUMP SKID
121	PAD MOUNT TRANSFORMER 201	290	COOLING WATER PUMP SKID #2	706	WATER TREATMENT SODIUM HYPOCHLORITE TOTE
122	PAD MOUNT TRANSFORMER 301	291	CONDENSATION TANK		
123	PAD MOUNT TRANSFORMER 401	300	LM5100 MAIN UNIT #3	708	WATER TREATMENT SODIUM HYPOCHLORITE PUMP SKID
124	PAD MOUNT TRANSFORMER 001A	301	GENERATOR		
125	PAD MOUNT TRANSFORMER 001B	305	FILTERHOUSE	722	CIRCULATING WATER SODIUM HYPOCHLORITE (12.5%-15%) TOTE
126	SKV ELECTRICAL ENCLOSURE	314	POWER CONTROL MODULE FOR CTG UNIT 301		
127	STATION SERVICE TRANSFORMER 001A	315	CARBON DIOXIDE BOTTLE RACK	723	CIRCULATING WATER SODIUM HYPOCHLORITE PUMP SKID
128	UNIT AUXILIARY SUPPLY TRANSFORMER 001A	316	FUEL GAS FILTER/SEPARATOR #3		
		330	CTG STEPUP TRANSFORMER UNIT 3	724	WATER TREATMENT RO ANTI-SCALANT TOTE
130	CTG STEPUP TRANSFORMER UNIT 1	331	COMBUSTION TURBINE DRAINS TANK	726	WATER TREATMENT SODIUM BISULFITE TOTE
131	UNIT AUXILIARY SUPPLY TRANSFORMER UNIT 001B	348	CT AUXILIARY SKID #3	727	WATER TREATMENT CHEMICAL PUMP SKID
		361	EXHAUST STACK	730	CIRCULATING WATER BIO-DISPERSANT FEED TOTE
133	COMBUSTION TURBINE DRAINS TANK	360	SELECTIVE CATALYTIC REDUCTION UNIT		
136A	FUEL GAS COMPRESSOR SKID A	363	CONTINUOUS EMISSIONS MONITORING SYSTEMS EQUIPMENT BUILDING (CEMS)	731	CIRCULATING WATER BIO-DISPERSANT PUMP SKID
136B	FUEL GAS COMPRESSOR SKID B				
136C	FUEL GAS COMPRESSOR SKID C	368	AQUEOUS AMMONIA DELIVERY SKID #3	757	CIRCULATING WATER CORROSION INHIBITOR TOTE
137	FUEL GAS KNOCKOUT DRUM	377	INTERCOOLER #3		
137A	GAS COMPRESSOR DRAINS TANK A	378	VBV STACK	758	CIRCULATING WATER CORROSION INHIBITOR PUMP SKID
137B	GAS COMPRESSOR DRAINS TANK B	379	INTERCOOLER #3 INTERCONNECTING PIPING SKID		
137C	GAS COMPRESSOR DRAINS TANK C			756	CIRCULATING WATER MINERAL DISPERSANT TOTE
140A	AIR COMPRESSOR A	380	COOLING WATER PUMP SKID #3		
140B	AIR COMPRESSOR B	381	CONDENSATION TANK	760	CIRCULATING WATER MINERAL DISPERSANT PUMP SKID
140C	AIR COMPRESSOR C	400	LM5100 MAIN UNIT #4		
141A	WET AIR RECEIVER	401	GENERATOR	798	CT YELLOW METAL CORR. INHIBITOR PUMP SKID
141B	DRY AIR RECEIVER			799	COOLING TOWER YELLOW METAL CORR. INHIBITOR
142A	AIR DRYER SKID				

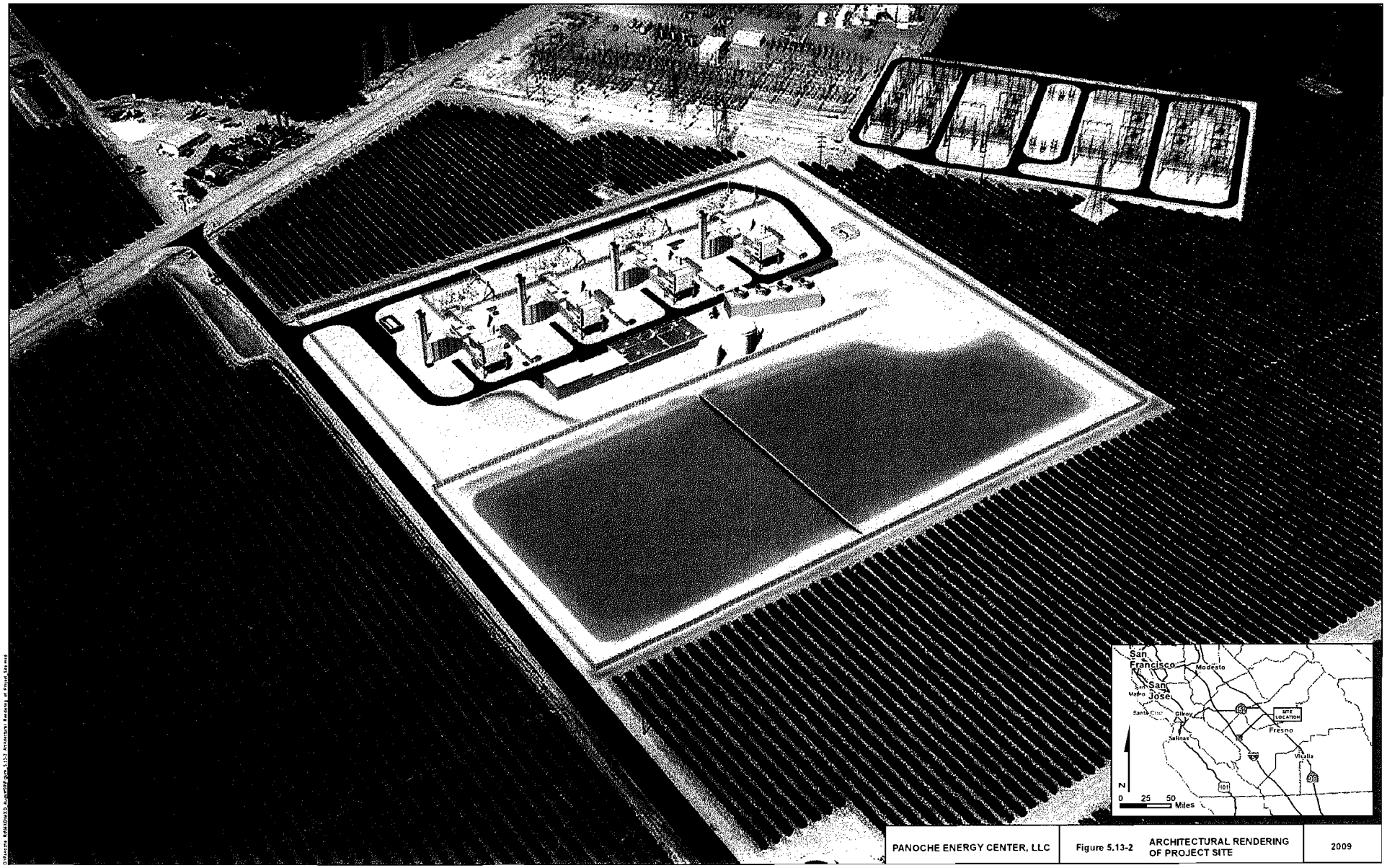


PANOCHE ENERGY CENTER, LLC	Figure 3.4-1 PROJECT SITE PLAN	2009

G:\Projects\ RAMSDENJD August\Figure 3.4-1 Project Site Plan.mxd



PANOCHE ENERGY CENTER, LLC	Figure 3.4-3 GRADING AND DRAINAGE PLAN	2009



PANOCHE ENERGY CENTER, LLC	Figure 5.13-2	ARCHITECTURAL RENDERING OF PROJECT SITE	2009

TABLES
CLEAN VERSION

SECTION 5.2, AIR QUALITY, REVISED TABLES

Table 5.2.1 Approximate Construction Schedule

Week Nos.	Phase	Activity
1-2	Civil	Warehouse foundation removal
3-7	Civil	Digging the impoundments, constructing perimeter berms, and center concrete divider
6-11	Mechanical	Installation of an underground pipe and tie-in to the existing plant
8-11	Electrical	Installation of an underground conduit and monitoring devices
8-11	Monitoring Wells	Installation, development, water sampling and analysis
12	Start-up & Testing	Per operating and compliance procedures

Table 5.2-2 Equipment Required For Construction

Equipment	Use
Excavator	Concrete foundation removal
Compactors	Compacting soil
Loader	Excavate impoundments
Scrapers	Excavate impoundments
Water truck	Dust and fire control
Dump trucks	Haul cut soils and excavated foundation concrete
Concrete trucks	Import concrete for center divider and new warehouse foundation
Pickup trucks	Transport laborers
Welders	Welding
Fusion machine	Pipe fusing
Well rig	Monitoring well installation

Table 5.2-3 Maximum Equipment Onsite Daily Emission Rates Due to Construction

		Daily Emissions Onsite (lb/day)									
Activity	**Emission Type**	**PM_{10}**	**$PM_{2.5}$**	**CO**	**VOC**	**NOx**	**SOx**	**CO_2**	**N_20**	**CH_4**	**CO_2e**
Wastewater Disposal Changes Construction	Combustion exhaust	5.32	4.89	54.31	13.82	107.41	0.10	10,114	0.004	1.22	10,141
	Fugitive dust	65.59	6.82								
	Total Onsite	**70.92**	**11.71**	**54.31**	**13.82**	**107.41**	**0.10**	**10,114**	**0.004**	**1.22**	**10,141**

Table 5.2-4 Maximum Equipment Onsite Annual Emission Rates Due to Construction

		Annual Emissions Onsite (tons/year)									
Activity	**Emission Type**	**PM_{10}**	**$PM_{2.5}$**	**CO**	**VOC**	**NOx**	**SOx**	**CO_2**	**N_20**	**CH_4**	**CO_2e**
Wastewater Disposal Changes Construction	Combustion exhaust	0.07	0.06	0.78	0.18	1.45	0.00	138.85	0.0001	0.02	139.25
	Fugitive dust	0.97	0.10								
	Total Onsite	**1.04**	**0.17**	**0.78**	**0.18**	**1.45**	**0.00**	**138.85**	**0.0001**	**0.02**	**139.25**

Table 5.2-5 Maximum Equipment Offsite Daily Emission Rates Due to Construction

		Daily Emissions Offsite (lb/day)									
Activity	**Emission Type**	**PM_{10}**	**$PM_{2.5}$**	**CO**	**VOC**	**NOx**	**SOx**	**CO_2**	**N_20**	**CH_4**	**CO_2e**
Wastewater Disposal Changes Construction	Combustion exhaust	15.37	13.80	136.57	59.83	219.88	0.27	28,255	0.28	0.18	28,346
	Fugitive dust	182.59	25.89								
	Total Offsite	**197.96**	**39.68**	**136.57**	**59.83**	**219.88**	**0.27**	**28,255**	**0.28**	**0.18**	**28,346**

Table 5.2-6 Maximum Equipment Offsite Annual Emission Rates Due to Construction

		Annual Emissions Offsite (tons/year)									
Activity	**Emission Type**	**PM_{10}**	**$PM_{2.5}$**	**CO**	**VOC**	**NOx**	**SOx**	**CO_2**	**N_20**	**CH_4**	**CO_2e**
Wastewater Disposal Changes Construction	Combustion exhaust	0.18	0.17	1.83	0.73	2.66	0.003	362.52	0.01	0.003	364.15
	Fugitive dust	2.87	0.41								
	Total Offsite	**3.06**	**0.57**	**1.83**	**0.73**	**2.66**	**0.003**	**362.52**	**0.01**	**0.003**	**364.15**

SECTION 5.11, TRAFFIC AND TRANSPORTATION, REVISED TABLES

Table 5.11-1 Wastewater Disposal Changes Construction Worker Trips

Construction Components	Daily Trips	AM Peak Hour Trips		PM Peak Hour Trips	
		In	Out	In	Out
Civil[1]	26	13	0	0	13
Mechanical	10	5	0	0	5
Electrical	10	5	0	0	5
Supervisory	4	2	0	0	2
Total	50	25	0	0	25

1 – Civil component will increase by 6 workers from 7 to 13 workers which include workers for the structural/civil component and divider construction.

Table 5.11-2 Excavated Material Export Truck Movement Trips

Activity	Export Volume (cubic yards)	Equivalent Truck Loads	Duration	Trucks/ Day	Passenger Car Equivalent[2]
Wastewater Disposal Changes (Excavated Material Export)	19,950	665[1]	9 weeks (54 days)	12	36

[1] – Haul truck capacity of 30 cubic yards. (Assumed 1 cubic yard excavated material = 1 ton equivalent weight)
[2] – Used a PCE factor of 3.

TABLES

TRACK CHANGES

SECTION 5.2, AIR QUALITY, REVISED TABLES

Table 5.2.1 Approximate Construction Schedule

Week Nos.	Phase	Activity
1-2	Civil	Warehouse foundation removal
~~1-5~~ 3-7	Civil	Digging the impoundments, ~~and~~ constructing perimeter berms, and center concrete divider
~~4-9~~ 6-11	Mechanical	Installation of an underground pipe and tie-in to the existing plant
~~6-9~~ 8-11	Electrical	Installation of an underground conduit and monitoring devices
~~6-9~~ 8-11	Monitoring Wells	Installation, development, water sampling and analysis
~~10~~ 12	Start-up & Testing	Per operating and compliance procedures

Table 5.2-2 Equipment Required For Construction

Equipment	Use
Excavator	Concrete foundation removal
Compactors	Compacting soil
Loader	Excavate impoundments
Scrapers	Excavate impoundments
Water truck	Dust and fire control
Dump trucks	Haul cut soils and excavated foundation concrete
Concrete trucks	Import concrete for center divider and new warehouse foundation
Pickup trucks	Transport laborers
Welders	Welding
Fusion machine	Pipe fusing
Well rig	Monitoring well installation

Table 5.2-3 Maximum Equipment Onsite Daily Emission Rates Due to Construction

		Daily Emissions Onsite (lb/day)									
Activity	**Emission Type**	**PM_{10}**	**$PM_{2.5}$**	**CO**	**VOC**	**NOx**	**SOx**	**CO_2**	**N_20**	**CH_4**	**CO_2e**
Wastewater Disposal Changes Construction	Combustion exhaust	~~3.59~~ 5.32	~~3.30~~ 4.89	~~44.79~~ 54.31	~~10.08~~ 13.82	~~84.03~~ 107.41	~~0.08~~ 0.10	~~7,797~~ 10,114	~~0.002~~ 0.004	~~1.07~~ 1.22	~~7,820~~ 10,141
	Fugitive dust	~~25.81~~ 65.59	~~3.74~~ 6.82								
	Total Onsite	~~**33.66**~~ **70.92**	~~**7.47**~~ **11.71**	~~**44.79**~~ **54.31**	~~**10.08**~~ **13.82**	~~**84.03**~~ **107.41**	~~**0.08**~~ **0.10**	~~**7,797**~~ **10,114**	~~**0.002**~~ **0.004**	~~**1.07**~~ **1.22**	~~**7,820**~~ **10,141**

Table 5.2-4 Maximum Equipment Onsite Annual Emission Rates Due to Construction

		Annual Emissions Onsite (tons/year)									
Activity	**Emission Type**	**PM_{10}**	**$PM_{2.5}$**	**CO**	**VOC**	**NOx**	**SOx**	**CO_2**	**N_20**	**CH_4**	**CO_2e**
Wastewater Disposal Changes Construction	Combustion exhaust	~~0.05~~ 0.07	~~0.04~~ 0.06	~~0.61~~ 0.78	~~0.13~~ 0.18	~~1.15~~ 1.45	~~0.001~~ 0.00	~~106.81~~ 138.85	~~4.0E-05~~ 0.0001	~~0.01~~ 0.02	~~107.13~~ 139.25
	Fugitive dust	~~0.50~~ 0.97	~~0.07~~ 0.10								
	Total Onsite	~~**0.54**~~ **1.04**	~~**0.11**~~ **0.17**	~~**0.61**~~ **0.78**	~~**0.13**~~ **0.18**	~~**1.15**~~ **1.45**	~~**0.001**~~ **0.00**	~~**106.81**~~ **138.85**	~~**4.0E-05**~~ **0.0001**	~~**0.01**~~ **0.02**	~~**107.13**~~ **139.25**

Table 5.2-5 Maximum Equipment Offsite Daily Emission Rates Due to Construction

		Daily Emissions Offsite (lb/day)									
Activity	**Emission Type**	**PM_{10}**	**$PM_{2.5}$**	**CO**	**VOC**	**NOx**	**SOx**	**CO_2**	**N_20**	**CH_4**	**CO_2e**
Wastewater Disposal Changes Construction	Combustion exhaust	~~0.86~~ 15.37	~~0.74~~ 13.80	~~26.35~~ 136.57	~~4.29~~ 59.83	~~11.07~~ 219.88	~~0.03~~ 0.27	~~3,733~~ 28,255	~~0.11~~ 0.28	~~0.19~~ 0.18	~~3,769~~ 28,346
	Fugitive dust	~~9.49~~ 182.59	~~1.42~~ 25.89								
	Total Offsite	~~**10.35**~~ **197.96**	~~**2.17**~~ **39.68**	~~**26.35**~~ **136.57**	~~**4.29**~~ **59.83**	~~**11.07**~~ **219.88**	~~**0.03**~~ **0.27**	~~**3,733**~~ **28,255**	~~**0.11**~~ **0.28**	~~**0.19**~~ **0.18**	~~**3,769**~~ **28,346**

Table 5.2-6 Maximum Equipment Offsite Annual Emission Rates Due to Construction

		Annual Emissions Offsite (tons/year)									
Activity	**Emission Type**	**PM_{10}**	**$PM_{2.5}$**	**CO**	**VOC**	**NOx**	**SOx**	**CO_2**	**N_20**	**CH_4**	**CO_2e**
Wastewater Disposal Changes Construction	Combustion exhaust	~~0.01~~ 0.18	~~0.01~~ 0.17	~~0.66~~ 1.83	~~0.08~~ 0.73	~~0.17~~ 2.66	~~0.001~~ 0.003	~~87.28~~ 362.52	~~2.9E-03~~ 0.01	~~0.01~~ 0.003	~~88.29~~ 364.15
	Fugitive dust	~~0.15~~ 2.87	~~0.02~~ 0.41								
	Total Offsite	**~~0.16~~** **3.06**	**~~0.03~~** **0.57**	**~~0.66~~** **1.83**	**~~0.08~~** **0.73**	**~~0.17~~** **2.66**	**~~0.001~~** **0.003**	**~~87.28~~** **362.52**	**~~2.9E-03~~** **0.01**	**~~0.01~~** **0.003**	**~~88.29~~** **364.15**

SECTION 5.11, TRAFFIC AND TRANSPORTATION, REVISED TABLES

Table 5.11-1 Wastewater Disposal Changes Construction Worker Trips

Construction Components	Daily Trips	AM Peak Hour Trips		PM Peak Hour Trips	
		In	Out	In	Out
Civil[1]	~~14~~ 26	~~7~~ 13	0	0	~~7~~ 13
Mechanical	10	5	0	0	5
Electrical	10	5	0	0	5
Supervisory	4	2	0	0	2
Total	~~38~~ 50	~~19~~ 25	0	0	~~19~~ 25

1 – Civil component will increase by 6 workers from 7 to 13 workers which include workers for the structural/civil component and divider construction.

Table 5.11-2 Excavated Material Export Truck Movement Trips

Activity	Export Volume (cubic yards)	Equivalent Truck Loads	Duration	Trucks/ Day	Passenger Car Equivalent[2]
Wastewater Disposal Changes (Excavated Material Export)	~~2,796~~ 19,950	~~93~~ 665[1]	~~5~~ 9 weeks (~~30~~ 54 days)	~~3~~ 12	~~9~~ 36

[1] – Haul truck capacity of 30 cubic yards. (Assumed 1 cubic yard excavated material = 1 ton equivalent weight)
[2] – Used a PCE factor of 3.

REVISED APPENDIX A

Appendix A
Air Quality
Panoche Energy Center
Wastewater Surface Impoundments
Construction Emissions

(Revision, December 09, 2009)

Panoche Energy Center
Wastewater Surface Impoundments--Construction Emissions

Summary Table - Construction Maximum Daily Emissions

	Max. Daily Emissions (lb/day)									
Emission Type	**PM_{10}**	**$PM_{2.5}$**	**CO**	**VOC**	**NO_x**	**SO_x**	**CO_2**	**CH_4**	**N_20**	**Total GHG - CO_2e**
[redacted]										
Combustion exhaust	5.32	4.89	54.31	13.82	107.41	0.10	10,114	1.22	0.004	10,141
Fugitive dust	65.59	6.82								
Total Onsite	**70.92**	**11.71**	**54.31**	**13.82**	**107.41**	**0.10**	**10,114**	**1.22**	**0.004**	**10,141**
[redacted]										
Combustion exhaust	15.37	13.80	136.57	59.83	219.88	0.27	28,255	0.18	0.28	28,346
Fugitive dust	182.59	25.89								
Total Offsite	**197.96**	**39.68**	**136.57**	**59.83**	**219.88**	**0.27**	**28,255**	**0.18**	**0.28**	**28,346**
Total Emissions	**268.88**	**51.39**	**190.88**	**73.66**	**327.29**	**0.37**	**38,368**	**1.40E+00**	**0.29**	**38,487**

Summary Table - Construction Maximum Annual Emissions

	Max. Annual Emissions (tons/year)									
Emission Type	**PM_{10}**	**$PM_{2.5}$**	**CO**	**VOC**	**NO_x**	**SO_x**	**CO_2**	**CH_4**	**N_20**	**Total GHG - CO_2e**
[redacted]										
Combustion exhaust	0.07	0.06	0.78	0.18	1.45	0.00	138.85	0.02	0.0001	139.25
Fugitive dust	0.97	0.10								
Total Onsite	**1.04**	**0.17**	**0.78**	**0.18**	**1.45**	**0.00**	**138.85**	**0.02**	**0.0001**	**139.25**
[redacted]										
Combustion exhaust	0.18	0.17	1.83	0.73	2.66	0.003	362.52	0.003	0.01	364.15
Fugitive dust	2.87	0.41								
Total Offsite	**3.06**	**0.57**	**1.83**	**0.73**	**2.66**	**0.003**	**362.52**	**0.003**	**0.01**	**364.15**
Total Emissions	**4.09**	**0.74**	**2.61**	**0.91**	**4.11**	**0.00**	**501.37**	**2.11E-02**	**0.01**	**503.40**

Panoche Energy Center - Construction of Wastewater Surface Impoundments
Construction Personnel Projection

	Week After Construction Start (number of personnel per day)												
Discipline	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**Highest Per Day Requirement During Project**
Civil Workers	12	12	12	18	18	18	18						18
Mechanical Workers						5	5	5	5	5	5		5
Electrical Workers								5	5	5	5		5
Supervisors	2	2	2	2	2	2	2	2	2	2	2	2	2
Operation staff												4	4
Totals	**14**	**14**	**14**	**20**	**20**	**25**	**25**	**12**	**12**	**12**	**12**	**6**	

Note:

186 total personnel for 12 weeks
16 avg weekly personnel
25 max weekly personnel
Personnel data were provided by the applicant.

Panoche Energy Center - Construction of Wastewater Surface Impoundments
Construction Equipment Projection Table

Construction Equipment Description	HP	D	G	Week After Construction Start (number of equipment per day)											
				1	2	3	4	5	6	7	8	9	10	11	12
Wheeled Loader	500	X		0	0	1	1	1	1	1	0	0	0	0	0
Scrapers	500	X		0	0	3	3	3	3	3	0	0	0	0	0
Forklift	120	X		1	1	1	1	1	1	1	1	1	1	1	0
Welding Machine	50	X		0	0	0	0	0	1	1	1	1	1	1	0
HDPE fusion machine	50	X		0	0	0	0	0	1	1	1	1	1	1	0
Excavator	500	X		1	1	0	1	1	1	1	0	0	0	0	0
Compactor	120	X		0	0	0	4	4	4	4	0	0	0	0	0
Misc. small power tools	15	X		0	0	0	2	2	4	4	4	4	4	4	0
Temporary Field construction trailer	175	X		1	1	1	1	1	1	1	1	1	1	1	0
Vehicles with Onroad Engines for Emissions Estimates															
Water Truck	-	X		0	0	1	1	1	1	1	0	0	0	0	0
Dump Truck	-	X		6	6	6	6	6	6	6	0	0	0	0	0
Concrete Truck	-	X		0	0	0	0	0	10	10	0	0	0	0	0
Pick-up trucks	-	X		2	2	2	2	2	3	3	4	4	4	4	3
Worker Vehicles	-	/	/	11	11	11	16	16	20	20	10	10	10	10	5
Total				22	22	26	38	38	57	57	22	22	22	22	8

Note:

1. abbreviation:
   G=gasoline
   D=diesel
   "/" means a portion
2. It is assumed the numbers of worker passenger vehicles are the numbers of workers divided by 1.25.
3. Data were provide by the applicant.

Wastewater Surface Impoundments Exhaust Emissions (on-site)

Emission Factors For Combustion Exhaust Emissions

Equipment	Horse-power	Vehicle Weight (lbs)	Fuel	Emission Factors (unit: lb/hr for off-road equipment and g/mile for on-road vehicle)								
				PM_{10}	$PM_{2.5}$	CO	VOC	NO_x	SO_x	CO_2	CH_4	N_20
Off-road Equipment												
Wheeled Loader	500		Diesel	0.09	0.08	0.82	0.23	2.30	0.00	236.80	0.02	-
Scrapers	500		Diesel	0.15	0.13	1.65	0.38	3.61	0.00	321.14	0.03	-
Forklift	120		Diesel	0.00	0.00	1.41	0.01	0.22	-	31.23	0.05	-
Welding Machine	50		Diesel	0.03	0.03	0.30	0.13	0.27	0.00	25.93	0.01	-
HDPE fusion machine	50		Diesel	0.03	0.03	0.30	0.13	0.27	0.00	25.93	0.01	-
Excavator	500		Diesel	0.08	0.07	0.66	0.21	2.06	0.00	233.53	0.02	-
Compactor	120		Diesel	0.07	0.06	0.42	0.13	0.78	0.00	58.94	0.01	-
Misc. small power tools	15		Diesel	0.00	0.00	0.06	0.01	0.07	0.00	10.10	0.00	-
Temporary Field construction trailer	175		Diesel	0.06	0.05	0.59	0.13	1.06	0.00	106.42	0.01	-
On-road Vehicle or Vehicles with Onroad Engines for Emissions Estimates												
Water Truck	-	40,000	Diesel	1.95	1.75	13.83	7.41	27.77	0.03	3,165.45	0.01	0.00
Dump Truck	-	40,000	Diesel	1.95	1.75	13.83	7.41	27.77	0.03	3,165.45	0.01	0.00
Concrete Truck	-	15,000	Diesel	1.95	1.75	13.83	7.41	27.77	0.03	3,165.45	0.01	0.00
Pick-up trucks	-	9,000	Diesel	0.11	0.09	2.09	0.38	5.54	0.01	520.59	0.00	0.00
Worker Vehicles	-	4,000	Gasoline	0.06	0.04	7.11	0.55	0.42	0.01	866.82	0.03	0.06

Notes:

1. Equipment list, quantity from the applicant.
2. Horsepower and vehicle weight are estimated; hours of operation are estimated from construction schedule.
3. Off-road equipment emission factors from CARB Off-road Mobile Source Emission Factors (2009 data used).
4. On-road vehicle emission factors from Emfac2007
5. $PM_{2.5}$ emission factors from updated CEIDARS List with $PM_{2.5}$ fractions.
6. Assume the construction schedule = 8 hours per day and 5 days per week.
7. Assume construction begins in 2009 (more conservative than 2010).
8. Assumed some workers will carpool, therefore estimated 1.25 workers per vehicle.
9. Load Factors for each off-road construction equipment are from SCAQMD CEQA Handbook Table A9-8-D.
10. Assume the average on-site and off-site speed are 10 and 50 mph, respectively.
11. Max daily distance per vehicle is from assumptions.
12. Assume the water truck, dump truck, concrete truck, pick-up truck and worker vehicles travel 4, 8, 4, 4, and 1 miles on site per day, respectively.

Week 1 - Daily Emissions For Combustion Exhaust Emissions

Equipment	No. Of Units	Max Daily Distance per Vehicle (mile/day)	Max Daily VMT (all units)	Daily Emissions (lb/day)								
				PM_{10}	$PM_{2.5}$	CO	VOC	NO_x	SO_x	CO_2	CH_4	N_20
Off-road Equipment												
Wheeled Loader	0			-	-	-	-	-	-	-	-	-
Scrapers	0			-	-	-	-	-	-	-	-	-
Forklift	1			0.01	0.01	3.38	0.01	0.53	-	74.96	0.11	-
Welding Machine	0			-	-	-	-	-	-	-	-	-
HDPE fusion machine	0			-	-	-	-	-	-	-	-	-
Excavator	1			0.35	0.32	3.06	0.96	9.57	0.01	1,083.56	0.09	-
Compactor	0			-	-	-	-	-	-	-	-	-
Misc. small power tools	0			-	-	-	-	-	-	-	-	-
Temporary Field construction trailer	1			0.34	0.32	3.55	0.75	6.38	0.01	638.52	0.07	-
On-road Vehicle or Vehicles with Onboard Engines for Emissions Estimates												
Water Truck	0	4.0	-	-	-	-	-	-	-	-	-	-
Dump Truck	6	8.0	48.0	0.21	0.19	1.46	0.78	2.94	0.00	334.67	0.00	0.00
Concrete Truck	0	4.0	-	-	-	-	-	-	-	-	-	-
Pick-up trucks	2	4.0	8.0	0.00	0.00	0.04	0.01	0.10	0.00	9.17	0.00	0.00
Worker Vehicles	11	1.0	11.0	0.00	0.00	0.17	0.01	0.01	0.00	21.00	0.00	0.00
Daily Emissions Total (lb/day)				0.91	0.83	11.66	2.53	19.53	0.02	2,161.89	0.27	0.00

Week 2 - Daily Emissions For Combustion Exhaust Emissions

Equipment	No. Of Units	Max Daily Distance per Vehicle (mile/day)	Max Daily VMT (all units)	Daily Emissions (lb/day)								
				PM_{10}	$PM_{2.5}$	CO	VOC	NO_x	SO_x	CO_2	CH_4	N_20
Off-road Equipment												
Wheeled Loader	0			-	-	-	-	-	-	-	-	-
Scrapers	0			-	-	-	-	-	-	-	-	-
Forklift	1			0.01	0.01	3.38	0.01	0.53	-	74.96	0.11	-
Welding Machine	0			-	-	-	-	-	-	-	-	-
HDPE fusion machine	0			-	-	-	-	-	-	-	-	-
Excavator	1			0.35	0.32	3.06	0.96	9.57	0.01	1,083.56	0.09	-
Compactor	0			-	-	-	-	-	-	-	-	-
Misc. small power tools	0			-	-	-	-	-	-	-	-	-
Temporary Field construction trailer	1			0.34	0.32	3.55	0.75	6.38	0.01	638.52	0.07	-
On-road Vehicle or Vehicles with Onboard Engines for Emissions Estimates												
Water Truck	0	4.0	-	-	-	-	-	-	-	-	-	-
Dump Truck	6	8.0	48	0.21	0.19	1.46	0.78	2.94	0.00	334.67	0.00	0.00
Concrete Truck	0	4.0	-	-	-	-	-	-	-	-	-	-
Pick-up trucks	2	4.0	8	0.00	0.00	0.04	0.01	0.10	0.00	9.17	0.00	0.00
Worker Vehicles	11	1.0	11	0.00	0.00	0.17	0.01	0.01	0.00	21.00	0.00	0.00
Daily Emissions Total (lb/day)				0.91	0.83	11.66	2.53	19.53	0.02	2,161.89	0.27	0.00

Week 3 - Daily Emissions For Combustion Exhaust Emissions

Equipment	No. Of Units	Max Daily Distance per Vehicle (mile/day)	Max Daily VMT (all units)	Daily Emissions (lb/day)								
				PM_{10}	$PM_{2.5}$	CO	VOC	NO_x	SO_x	CO_2	CH_4	N_20
Off-road Equipment												
Wheeled Loader	1			0.37	0.34	3.55	0.98	9.94	0.01	1,022.96	0.09	-
Scrapers	3			2.31	2.13	26.17	6.03	57.14	0.05	5,086.86	0.54	-
Forklift	1			0.01	0.01	3.38	0.01	0.53	-	74.96	0.11	-
Welding Machine	0			-	-	-	-	-	-	-	-	-
HDPE fusion machine	0			-	-	-	-	-	-	-	-	-
Excavator	0			-	-	-	-	-	-	-	-	-
Compactor	0			-	-	-	-	-	-	-	-	-
Misc. small power tools	0			-	-	-	-	-	-	-	-	-
Temporary Field construction trailer	1			0.34	0.32	3.55	0.75	6.38	0.01	638.52	0.07	-
On-road Vehicle or Vehicles with Onroad Engines for Emissions Estimates												
Water Truck	1	4.0	4	0.02	0.02	0.12	0.07	0.24	0.00	27.89	0.00	0.00
Dump Truck	6	8.0	48	0.21	0.19	1.46	0.78	2.94	0.00	334.67	0.00	0.00
Concrete Truck	0	4.0	-	-	-	-	-	-	-	-	-	-
Pick-up trucks	2	4.0	8	0.00	0.00	0.04	0.01	0.10	0.00	9.17	0.00	0.00
Worker Vehicles	11	1.0	11	0.00	0.00	0.17	0.01	0.01	0.00	21.00	0.00	0.00
Daily Emissions Total (lb/day)				3.27	3.00	38.44	8.65	77.28	0.07	7,216.04	0.82	0.00

Week 4 - Daily Emissions For Combustion Exhaust Emissions

Equipment	No. Of Units	Max Daily Distance per Vehicle (mile/day)	Max Daily VMT (all units)	Daily Emissions (lb/day)								
				PM_{10}	$PM_{2.5}$	CO	VOC	NO_x	SO_x	CO_2	CH_4	N_20
Off-road Equipment												
Wheeled Loader	1			0.37	0.34	3.55	0.98	9.94	0.01	1,022.96	0.09	-
Scrapers	3			2.31	2.13	26.17	6.03	57.14	0.05	5,086.86	0.54	-
Forklift	1			0.01	0.01	3.38	0.01	0.53	-	74.96	0.11	-
Welding Machine	0			-	-	-	-	-	-	-	-	-
HDPE fusion machine	0			-	-	-	-	-	-	-	-	-
Excavator	1			0.35	0.32	3.06	0.96	9.57	0.01	1,083.56	0.09	-
Compactor	4			1.23	1.14	7.76	2.35	14.31	0.01	1,084.42	0.21	-
Misc. small power tools	2			0.04	0.04	0.74	0.14	0.89	0.00	121.18	0.01	-
Temporary Field construction trailer	1			0.34	0.32	3.55	0.75	6.38	0.01	638.52	0.07	-
On-road Vehicle or Vehicles with Onroad Engines for Emissions Estimates												
Water Truck	1	4.0	4	0.02	0.02	0.12	0.07	0.24	0.00	27.89	0.00	0.00
Dump Truck	6	8.0	48	0.21	0.19	1.46	0.78	2.94	0.00	334.67	0.00	0.00
Concrete Truck	0	4.0	-	-	-	-	-	-	-	-	-	-
Pick-up trucks	2	4.0	8	0.00	0.00	0.04	0.01	0.10	0.00	9.17	0.00	0.00
Worker Vehicles	16	1.0	16	0.00	0.00	0.25	0.02	0.01	0.00	30.55	0.00	0.00
Daily Emissions Total (lb/day)				4.89	4.50	50.08	12.11	102.05	0.10	9,514.74	1.13	0.00

Week 5 - Daily Emissions For Combustion Exhaust Emissions

Equipment	No. Of Units	Max Daily Distance per Vehicle (mile/day)	Max Daily VMT (all units)	Daily Emissions (lb/day)								
				PM_{10}	$PM_{2.5}$	CO	VOC	NO_x	SO_x	CO_2	CH_4	N_20
Off-road Equipment												
Wheeled Loader	1			0.37	0.34	3.55	0.98	9.94	0.01	1,022.96	0.09	-
Scrapers	3			2.31	2.13	26.17	6.03	57.14	0.05	5,086.86	0.54	-
Forklift	1			0.01	0.01	3.38	0.01	0.53	-	74.96	0.11	-
Welding Machine	0			-	-	-	-	-	-	-	-	-
HDPE fusion machine	0			-	-	-	-	-	-	-	-	-
Excavator	1			0.35	0.32	3.06	0.96	9.57	0.01	1,083.56	0.09	-
Compactor	4			1.23	1.14	7.76	2.35	14.31	0.01	1,084.42	0.21	-
Misc. small power tools	2			0.04	0.04	0.74	0.14	0.89	0.00	121.18	0.01	-
Temporary Field construction trailer	1			0.34	0.32	3.55	0.75	6.38	0.01	638.52	0.07	-
On-road Vehicle or Vehicles with Onboard Engines for Emissions Estimates												
Water Truck	1	4.0	4	0.02	0.02	0.12	0.07	0.24	0.00	27.89	0.00	0.00
Dump Truck	6	8.0	48	0.21	0.19	1.46	0.78	2.94	0.00	334.67	0.00	0.00
Concrete Truck	0	4.0	-	-	-	-	-	-	-	-	-	-
Pick-up trucks	2	4.0	8	0.00	0.00	0.04	0.01	0.10	0.00	9.17	0.00	0.00
Worker Vehicles	16	1.0	16	0.00	0.00	0.25	0.02	0.01	0.00	30.55	0.00	0.00
Daily Emissions Total (lb/day)				4.89	4.50	50.08	12.11	102.05	0.10	9,514.74	1.13	0.00

Week 6 - Daily Emissions For Combustion Exhaust Emissions

Equipment	No. Of Units	Max Daily Distance per Vehicle (mile/day)	Max Daily VMT (all units)	Daily Emissions (lb/day)								
				PM_{10}	$PM_{2.5}$	CO	VOC	NO_x	SO_x	CO_2	CH_4	N_20
Off-road Equipment												
Wheeled Loader	1			0.37	0.34	3.55	0.98	9.94	0.01	1,022.96	0.09	-
Scrapers	3			2.31	2.13	26.17	6.03	57.14	0.05	5,086.86	0.54	-
Forklift	1			0.01	0.01	3.38	0.01	0.53	-	74.96	0.11	-
Welding Machine	1			0.11	0.10	1.10	0.45	0.99	0.00	93.37	0.04	-
HDPE fusion machine	1			0.11	0.10	1.10	0.45	0.99	0.00	93.37	0.04	-
Excavator	1			0.35	0.32	3.06	0.96	9.57	0.01	1,083.56	0.09	-
Compactor	4			1.23	1.14	7.76	2.35	14.31	0.01	1,084.42	0.21	-
Misc. small power tools	4			0.09	0.08	1.48	0.28	1.77	0.00	242.36	0.03	-
Temporary Field construction trailer	1			0.34	0.32	3.55	0.75	6.38	0.01	638.52	0.07	-
On-road Vehicle or Vehicles with Onboard Engines for Emissions Estimates												
Water Truck	1	4.0	4	0.02	0.02	0.12	0.07	0.24	0.00	27.89	0.00	0.00
Dump Truck	6	8.0	48	0.21	0.19	1.46	0.78	2.94	0.00	334.67	0.00	0.00
Concrete Truck	10	4.0	40	0.17	0.15	1.22	0.65	2.45	0.00	278.89	0.00	0.00
Pick-up trucks	3	4.0	12	0.00	0.00	0.06	0.01	0.15	0.00	13.76	0.00	0.00
Worker Vehicles	20	1.0	20	0.00	0.00	0.31	0.02	0.02	0.00	38.19	0.00	0.00
Daily Emissions Total (lb/day)				5.32	4.89	54.31	13.82	107.41	0.10	10,113.77	1.22	0.00

Week 7 - Daily Emissions For Combustion Exhaust Emissions

Equipment	No. Of Units	Max Daily Distance per Vehicle (mile/day)	Max Daily VMT (all units)	Daily Emissions (lb/day)								
				PM_{10}	$PM_{2.5}$	CO	VOC	NO_x	SO_x	CO_2	CH_4	N_20
Off-road Equipment												
Wheeled Loader	1			0.37	0.34	3.55	0.98	9.94	0.01	1,022.96	0.09	-
Scrapers	3			2.31	2.13	26.17	6.03	57.14	0.05	5,086.86	0.54	-
Forklift	1			0.01	0.01	3.38	0.01	0.53	-	74.96	0.11	-
Welding Machine	1			0.11	0.10	1.10	0.45	0.99	0.00	93.37	0.04	-
HDPE fusion machine	1			0.11	0.10	1.10	0.45	0.99	0.00	93.37	0.04	-
Excavator	1			0.35	0.32	3.06	0.96	9.57	0.01	1,083.56	0.09	-
Compactor	4			1.23	1.14	7.76	2.35	14.31	0.01	1,084.42	0.21	-
Misc. small power tools	4			0.09	0.08	1.48	0.28	1.77	0.00	242.36	0.03	-
Temporary Field construction trailer	1			0.34	0.32	3.55	0.75	6.38	0.01	638.52	0.07	-
On-road Vehicles or Vehicles with On-road Engines for Emissions Estimates												
Water Truck	1	4.0	4	0.02	0.02	0.12	0.07	0.24	0.00	27.89	0.00	0.00
Dump Truck	6	8.0	48	0.21	0.19	1.46	0.78	2.94	0.00	334.67	0.00	0.00
Concrete Truck	10	4.0	40	0.17	0.15	1.22	0.65	2.45	0.00	278.89	0.00	0.00
Pick-up trucks	3	4.0	12	0.00	0.00	0.06	0.01	0.15	0.00	13.76	0.00	0.00
Worker Vehicles	20	1.0	20	0.00	0.00	0.31	0.02	0.02	0.00	38.19	0.00	0.00
Daily Emissions Total (lb/day)				5.32	4.89	54.31	13.82	107.41	0.10	10,113.77	1.22	0.00

Week 8 - Daily Emissions For Combustion Exhaust Emissions

Equipment	No. Of Units	Max Daily Distance per Vehicle (mile/day)	Max Daily VMT (all units)	Daily Emissions (lb/day)								
				PM_{10}	$PM_{2.5}$	CO	VOC	NO_x	SO_x	CO_2	CH_4	N_20
Off-road Equipment												
Wheeled Loader	0			-	-	-	-	-	-	-	-	-
Scrapers	0			-	-	-	-	-	-	-	-	-
Forklift	1			0.01	0.01	3.38	0.01	0.53	-	74.96	0.11	-
Welding Machine	1			0.11	0.10	1.10	0.45	0.99	0.00	93.37	0.04	-
HDPE fusion machine	1			0.11	0.10	1.10	0.45	0.99	0.00	93.37	0.04	-
Excavator	0			-	-	-	-	-	-	-	-	-
Compactor	0			-	-	-	-	-	-	-	-	-
Misc. small power tools	4			0.09	0.08	1.48	0.28	1.77	0.00	242.36	0.03	-
Temporary Field construction trailer	1			0.34	0.32	3.55	0.75	6.38	0.01	638.52	0.07	-
On-road Vehicles or Vehicles with On-road Engines for Emissions Estimates												
Water Truck	0	4.0	-	-	-	-	-	-	-	-	-	-
Dump Truck	0	8.0	-	-	-	-	-	-	-	-	-	-
Concrete Truck	0	4.0	-	-	-	-	-	-	-	-	-	-
Pick-up trucks	4	4.0	16	0.00	0.00	0.07	0.01	0.20	0.00	18.35	0.00	0.00
Worker Vehicles	10	1.0	10	0.00	0.00	0.16	0.01	0.01	0.00	19.09	0.00	0.00
Daily Emissions Total (lb/day)				0.66	0.60	10.83	1.98	10.87	0.01	1,180.01	0.29	0.00

Week 9 - Daily Emissions For Combustion Exhaust Emissions

Equipment	No. Of Units	Max Daily Distance per Vehicle (mile/day)	Max Daily VMT (all units)	Daily Emissions (lb/day)								
				PM_{10}	$PM_{2.5}$	CO	VOC	NO_x	SO_x	CO_2	CH_4	N_20
Offroad Equipment												
Wheeled Loader	0			-	-	-	-	-	-	-	-	-
Scrapers	0			-	-	-	-	-	-	-	-	-
Forklift	1			0.01	0.01	3.38	0.01	0.53	-	74.96	0.11	-
Welding Machine	1			0.11	0.10	1.10	0.45	0.99	0.00	93.37	0.04	-
HDPE fusion machine	1			0.11	0.10	1.10	0.45	0.99	0.00	93.37	0.04	-
Excavator	0			-	-	-	-	-	-	-	-	-
Compactor	0			-	-	-	-	-	-	-	-	-
Misc. small power tools	4			0.09	0.08	1.48	0.28	1.77	0.00	242.36	0.03	-
Temporary Field construction trailer	1			0.34	0.32	3.55	0.75	6.38	0.01	638.52	0.07	-
Onroad Vehicles or Vehicles with Onroad Engines for Emissions Estimates												
Water Truck	0	4.0	-	-	-	-	-	-	-	-	-	-
Dump Truck	0	8.0	-	-	-	-	-	-	-	-	-	-
Concrete Truck	0	4.0	-	-	-	-	-	-	-	-	-	-
Pick-up trucks	4	4.0	16	0.00	0.00	0.07	0.01	0.20	0.00	18.35	0.00	0.00
Worker Vehicles	10	1.0	10	0.00	0.00	0.16	0.01	0.01	0.00	19.09	0.00	0.00
Daily Emissions Total (lb/day)				0.66	0.60	10.83	1.98	10.87	0.01	1,180.01	0.29	0.00

Week 10 - Daily Emissions For Combustion Exhaust Emissions

Equipment	No. Of Units	Max Daily Distance per Vehicle (mile/day)	Max Daily VMT (all units)	Daily Emissions (lb/day)								
				PM_{10}	$PM_{2.5}$	CO	VOC	NO_x	SO_x	CO_2	CH_4	N_20
Offroad Equipment												
Wheeled Loader	0			-	-	-	-	-	-	-	-	-
Scrapers	0			-	-	-	-	-	-	-	-	-
Forklift	1			0.01	0.01	3.38	0.01	0.53	-	74.96	0.11	-
Welding Machine	1			0.11	0.10	1.10	0.45	0.99	0.00	93.37	0.04	-
HDPE fusion machine	1			0.11	0.10	1.10	0.45	0.99	0.00	93.37	0.04	-
Excavator	0			-	-	-	-	-	-	-	-	-
Compactor	0			-	-	-	-	-	-	-	-	-
Misc. small power tools	4			0.09	0.08	1.48	0.28	1.77	0.00	242.36	0.03	-
Temporary Field construction trailer	1			0.34	0.32	3.55	0.75	6.38	0.01	638.52	0.07	-
Onroad Vehicles or Vehicles with Onroad Engines for Emissions Estimates												
Water Truck	0	4.0	-	-	-	-	-	-	-	-	-	-
Dump Truck	0	8.0	-	-	-	-	-	-	-	-	-	-
Concrete Truck	0	4.0	-	-	-	-	-	-	-	-	-	-
Pick-up trucks	4	4.0	16	0.00	0.00	0.07	0.01	0.20	0.00	18.35	0.00	0.00
Worker Vehicles	10	1.0	10	0.00	0.00	0.16	0.01	0.01	0.00	19.09	0.00	0.00
Daily Emissions Total (lb/day)				0.66	0.60	10.83	1.98	10.87	0.01	1,180.01	0.29	0.00

Week 11 - Daily Emissions For Combustion Exhaust Emissions

Equipment	No. Of Units	Max Daily Distance per Vehicle (mile/day)	Max Daily VMT (all units)	Daily Emissions (lb/day)								
				PM_{10}	$PM_{2.5}$	CO	VOC	NO_x	SO_x	CO_2	CH_4	N_20
Offroad Equipment												
Wheeled Loader	0			-	-	-	-	-	-	-	-	-
Scrapers	0			-	-	-	-	-	-	-	-	-
Forklift	1			0.01	0.01	3.38	0.01	0.53	-	74.96	0.11	-
Welding Machine	1			0.11	0.10	1.10	0.45	0.99	0.00	93.37	0.04	-
HDPE fusion machine	1			0.11	0.10	1.10	0.45	0.99	0.00	93.37	0.04	-
Excavator	0			-	-	-	-	-	-	-	-	-
Compactor	0			-	-	-	-	-	-	-	-	-
Misc. small power tools	4			0.09	0.08	1.48	0.28	1.77	0.00	242.36	0.03	-
Temporary Field construction trailer	1			0.34	0.32	3.55	0.75	6.38	0.01	638.52	0.07	-
Offroad Vehicle or Vehicles with Offroad Engines for Emissions Estimates												
Water Truck	0	4.0	-	-	-	-	-	-	-	-	-	-
Dump Truck	0	8.0	-	-	-	-	-	-	-	-	-	-
Concrete Truck	0	4.0	-	-	-	-	-	-	-	-	-	-
Pick-up trucks	4	4.0	16	0.00	0.00	0.07	0.01	0.20	0.00	18.35	0.00	0.00
Worker Vehicles	10	1.0	10	0.00	0.00	0.16	0.01	0.01	0.00	19.09	0.00	0.00
Daily Emissions Total (lb/day)				0.66	0.60	10.83	1.98	10.87	0.01	1,180.01	0.29	0.00

Week 12 - Daily Emissions For Combustion Exhaust Emissions

Equipment	No. Of Units	Max Daily Distance per Vehicle (mile/day)	Max Daily VMT (all units)	Daily Emissions (lb/day)								
				PM_{10}	$PM_{2.5}$	CO	VOC	NO_x	SO_x	CO_2	CH_4	N_20
Offroad Equipment												
Wheeled Loader	0			-	-	-	-	-	-	-	-	-
Scrapers	0			-	-	-	-	-	-	-	-	-
Forklift	0			-	-	-	-	-	-	-	-	-
Welding Machine	0			-	-	-	-	-	-	-	-	-
HDPE fusion machine	0			-	-	-	-	-	-	-	-	-
Excavator	0			-	-	-	-	-	-	-	-	-
Compactor	0			-	-	-	-	-	-	-	-	-
Misc. small power tools	0			-	-	-	-	-	-	-	-	-
Temporary Field construction trailer	0			-	-	-	-	-	-	-	-	-
Offroad Vehicle or Vehicles with Offroad Engines for Emissions Estimates												
Water Truck	0	4.0	-	-	-	-	-	-	-	-	-	-
Dump Truck	0	8.0	-	-	-	-	-	-	-	-	-	-
Concrete Truck	0	4.0	-	-	-	-	-	-	-	-	-	-
Pick-up trucks	3	4.0	12	0.00	0.00	0.06	0.01	0.15	0.00	13.76	0.00	0.00
Worker Vehicles	5	1.0	5	0.00	0.00	0.08	0.01	0.00	0.00	9.55	0.00	0.00
Daily Emissions Total (lb/day)				0.00	0.00	0.13	0.02	0.15	0.00	23.31	0.00	0.00

Summary Table for Weekly Emissions (both "on-site and off-site" exhausted combined)

Weekly Emission Comparison	Weekly Emissions (lb/week)								
	PM_{10}	$PM_{2.5}$	CO	VOC	NO_x	SO_x	CO_2	CH_4	N_20
Week 1 Emissions	46.51	41.82	432.05	176.00	699.12	0.84	88,112.34	1.84	0.79
Week 2 Emissions	46.51	41.82	432.05	176.00	699.12	0.84	88,112.34	1.84	0.79
Week 3 Emissions	58.30	52.66	565.98	206.62	987.88	1.08	113,383.07	4.57	0.79
Week 4 Emissions	66.73	60.35	659.44	226.65	1,113.84	1.25	129,172.50	6.30	1.10
Week 5 Emissions	66.73	60.35	659.44	226.65	1,113.84	1.25	129,172.50	6.30	1.10
Week 6 Emissions	**103.49**	**93.43**	**954.41**	**368.28**	**1,636.45**	**1.85**	**191,841.82**	**7.01**	**1.44**
Week 7 Emissions	**103.49**	**93.43**	**954.41**	**368.28**	**1,636.45**	**1.85**	**191,841.82**	**7.01**	**1.44**
Week 8 Emissions	4.24	3.74	131.99	16.75	78.05	0.17	16,326.56	1.80	0.63
Week 9 Emissions	4.24	3.74	131.99	16.75	78.05	0.17	16,326.56	1.80	0.63
Week 10 Emissions	4.24	3.74	131.99	16.75	78.05	0.17	16,326.56	1.80	0.63
Week 11 Emissions	4.24	3.74	131.99	16.75	78.05	0.17	16,326.56	1.80	0.63
Week 12 Emissions	0.60	0.46	41.44	3.83	17.50	0.05	5,788.44	0.18	0.32

From the summary table above, week 6 (or 7) has the highest daily on-site and off-site combined emissions for all the pollutants. Therefore, max. daily and hourly emissions are based on week 6

Max. Hourly Emissions For On-site Combustion Exhaust Emissions (Maximum daily construction on-site exhausted emissions occurs in months 6 (or 7).)

Equipment	Max. Operating Hours / Day	Load Factor	Load Factor * Max. Operating Hours / Day	Hourly Emissions (lb/hour)								
				PM_{10}	$PM_{2.5}$	CO	VOC	NO_x	SO_x	CO_2	CH_4	N_20
Off-road Equipment												
Wheeled Loader	8	54%	4.3	0.09	0.08	0.82	0.23	2.30	0.00	236.80	0.02	-
Scrapers	8	66%	5.3	0.44	0.40	4.96	1.14	10.82	0.01	963.42	0.10	-
Forklift	8	30%	2.4	0.00	0.00	1.41	0.01	0.22	-	31.23	0.05	-
Welding Machine	8	45%	3.6	0.03	0.03	0.30	0.13	0.27	0.00	25.93	0.01	-
HDPE fusion machine	8	45%	3.6	0.03	0.03	0.30	0.13	0.27	0.00	25.93	0.01	-
Excavator	8	58%	4.6	0.08	0.07	0.66	0.21	2.06	0.00	233.53	0.02	-
Compactor	8	58%	4.6	0.27	0.25	1.69	0.51	3.11	0.00	235.74	0.05	-
Misc. small power tools	8	75%	6.0	0.01	0.01	0.25	0.05	0.30	0.00	40.39	0.00	-
Temporary Field construction trailer	8	75%	6.0	0.06	0.05	0.59	0.13	1.06	0.00	106.42	0.01	-
On-road Vehicles or Vehicles with On-road Engines for Emissions Estimates												
Water Truck	8	100%	8.0	0.00	0.00	0.02	0.01	0.03	0.00	3.49	0.00	0.00
Dump Truck	8	100%	8.0	0.03	0.02	0.18	0.10	0.37	0.00	41.83	0.00	0.00
Concrete Truck	8	100%	8.0	0.02	0.02	0.15	0.08	0.31	0.00	34.86	0.00	0.00
Pick-up trucks	8	100%	8.0	0.00	0.00	0.01	0.00	0.02	0.00	1.72	0.00	0.00
Worker Vehicles	8	100%	8.0	0.00	0.00	0.04	0.00	0.00	0.00	4.77	0.00	0.00
Hourly Emissions Total (lb/hour)				**1.05**	**0.97**	**11.38**	**2.71**	**21.15**	**0.02**	**1,986.08**	**0.27**	**0.00**

Yearly Emissions For On-site Combustion Exhaust Emissions

Equipment		Annual Emissions (ton/year)								
		PM_{10}	$PM_{2.5}$	CO	VOC	NO_x	SO_x	CO_2	CH_4	N_20
Off-road Equipment										
Wheeled Loader		0.00468	0.00431	0.04443	0.01229	0.12431	0.00013	12.78696	0.00111	-
Scrapers		0.02893	0.02662	0.32714	0.07543	0.71420	0.00062	63.58573	0.00681	-
Forklift		0.00018	0.00017	0.09289	0.00037	0.01458	-	2.06150	0.00313	-
Welding Machine		0.00158	0.00146	0.01644	0.00682	0.01482	0.00002	1.40048	0.00062	-
HDPE fusion machine		0.00158	0.00146	0.01644	0.00682	0.01482	0.00002	1.40048	0.00062	-
Excavator		0.00525	0.00483	0.04593	0.01441	0.14361	0.00016	16.25337	0.00130	-
Compactor		0.01234	0.01136	0.07760	0.02350	0.14306	0.00013	10.84419	0.00212	-
Misc. small power tools		0.00156	0.00144	0.02590	0.00485	0.03103	0.00007	4.24127	0.00045	-
Temporary Field construction trailer		0.00943	0.00868	0.09750	0.02069	0.17549	0.00020	17.55933	0.00187	-
On-road Vehicles or Vehicles with On-road Engines for Emissions Estimates										
Water Truck		0.00021	0.00019	0.00152	0.00082	0.00306	0.00000	0.34862	0.00000	0.00000
Dump Truck		0.00360	0.00324	0.02560	0.01371	0.05137	0.00006	5.85677	0.00001	0.00001
Concrete Truck		0.00086	0.00077	0.00609	0.00326	0.01223	0.00001	1.39447	0.00000	0.00000
Pick-up trucks		0.00009	0.00007	0.00161	0.00029	0.00427	0.00000	0.40133	0.00000	0.00000
Worker Vehicles		0.00005	0.00003	0.00588	0.00046	0.00035	0.00001	0.71599	0.00003	0.00005
Annual Emissions Total (ton/year)		**0.07036**	**0.06462**	**0.78496**	**0.18382**	**1.44720**	**0.00142**	**138.85048**	**0.01805**	**0.00006**

Wastewater Surface Impoundments Construction -Fugitive Dust Emissions
ONSITE (week 6 (or 7) is selected here for the peak week)

Travel on unpaved surfaces

$E = k * (s/12)^a * (W/3)^b * [(365 - P)/365]$ EPA AP-42 Section 13.2.2 Unpaved Roads Equations 1a and 2
E = size-specific emission factor (lb/VMT)
k, a, b = empirical constants
8.5 s = surface material silt content (%) Construction sites - Scraper routes
W = mean vehicle weight (tons)

constants

	$PM_{2.5}$	PM_{10}	Industrial Roads
k	0.15	1.5	
a	0.9	0.9	
b	0.45	0.45	

98 P = Mean number of days per with at least 0.01 inches of precipitation (from Panoche Junction COOP weather station Western Regional Climate Center))

Vehicle Type	Number of Vehicles per day (week 6)	Max Daily Distance per Vehicle (mile/day)	Assumed distance percentage to drive on unpaved roads	Max Daily Distance per Vehicle to drive on unpaved roads (mile/day)	Max Daily VMT (all vehicles)	Mean Vehicle Weight (tons)	Max. Operating Hours / Day	Number of Vehicles per year (week 1-12)	Max Annual VMT (all vehicles)	$PM_{2.5}$ EF (lbs/VMT)	PM_{10} EF (lbs/VMT)
Offroad Equipment											
Wheeled Loader	1	0.0	100%	0.0	0.0	10.0	4.3	5	0	0.138	1.383
Scrapers	3	0.0	100%	0.0	0.0	15.0	5.3	15	0	0.166	1.660
Forklift	1	2.0	100%	2.0	2.0	5.0	2.4	11	110	0.101	1.012
Welding Machine	1	1.0	100%	1.0	1.0	1.0	3.6	6	30	0.049	0.491
HDPE fusion machine	1	1.0	100%	1.0	1.0	1.0	3.6	6	30	0.049	0.491
Excavator	1	0.0	100%	0.0	0.0	10.0	4.6	6	0	0.138	1.383
Compactor	4	0.0	100%	0.0	0.0	10.0	4.6	16	0	0.138	1.383
Misc. small power tools	4	1.0	100%	1.0	4.0	1.0	6.0	28	140	0.049	0.491
Temporary Field construction trailer	1	1.0	100%	1.0	1.0	5.0	6.0	11	55	0.101	1.012
Onroad Vehicle or Vehicles with Onroad Engines for Emissions Estimates											
Water Truck	1	4.0	100%	4.0	4.0	20.0	8.0	5	100	0.189	1.889
Dump Truck	6	8.0	100%	8.0	48.0	20.0	8.0	42	1680	0.189	1.889
Concrete Truck	10	4.0	100%	4.0	40.0	7.5	8.0	20	400	0.122	1.215
Pick-up trucks	3	4.0	100%	4.0	12.0	4.5	8.0	35	700	0.097	0.966
Worker Vehicles	20	1.0	100%	1.0	20.0	2.0	8.0	150	750	0.067	0.670

Vehicle Type	Watering Control Efficiency		PM_{10} Emissions (lb/hr)		PM_{10} Emissions (lb/day)		% of daily emissions	PM_{10} Emissions (tons/year)		$PM_{2.5}$ Emissions (lb/hr)		$PM_{2.5}$ Emissions (lb/day)		$PM_{2.5}$ Emissions (tons/year)	
	Unmitigated	Mitigated	Unmitigated	Mitigated	Unmitigated	Mitigated		Unmitigated	Mitigated	Unmitigated	Mitigated	Unmitigated	Mitigated	Unmitigated	Mitigated
Offroad Equipment															
Wheeled Loader	0%	68%	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
Scrapers	0%	68%	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
Forklift	0%	68%	0.84	0.27	2.02	0.65	1.14%	0.06	0.02	0.08	0.03	0.20	0.06	0.01	0.00
Welding Machine	0%	68%	0.14	0.04	0.49	0.16	0.28%	0.01	0.00	0.01	0.00	0.05	0.02	0.00	0.00
HDPE fusion machine	0%	68%	0.14	0.04	0.49	0.16	0.28%	0.01	0.00	0.01	0.00	0.05	0.02	0.00	0.00
Excavator	0%	68%	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
Compactor	0%	68%	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
Misc. small power tools	0%	68%	0.33	0.10	1.96	0.63	1.10%	0.03	0.01	0.03	0.01	0.20	0.06	0.00	0.00
Temporary Field construction trailer	0%	68%	0.17	0.05	1.01	0.32	0.57%	0.03	0.01	0.02	0.01	0.10	0.03	0.00	0.00
Onroad Vehicle or Vehicles with Onroad Engines for Emissions Estimates															
Water Truck	0%	68%	0.94	0.30	7.56	2.42	4.25%	0.09	0.03	0.09	0.03	0.76	0.24	0.01	0.00
Dump Truck	0%	68%	11.34	3.63	90.68	29.02	51.00%	1.59	0.51	1.13	0.36	9.07	2.90	0.16	0.05
Concrete Truck	0%	68%	6.08	1.94	48.60	15.55	27.33%	0.24	0.08	0.61	0.19	4.86	1.56	0.02	0.01
Pick-up trucks	0%	68%	1.45	0.46	11.59	3.71	6.52%	0.34	0.11	0.14	0.05	1.16	0.37	0.03	0.01
Worker Vehicles	0%	68%	1.68	0.54	13.41	4.29	7.54%	0.25	0.08	0.17	0.05	1.34	0.43	0.03	0.01
TOTAL Fugitive emissions for vehicles traveled on unpaved surfaces			**23.09**	**7.39**	**177.82**	**56.90**		**2.65**	**0.85**	**2.31**	**0.74**	**17.78**	**5.69**	**0.26**	**0.08**

Notes:
1. The distances traveled on-site were estimated from plot plan.
2. Water efficiency from CEQA Table 11-4 maximum value for watering active sites 2 times daily

Grading

EPA AP-42 Section 11.9

$E = p * 0.051 * S^{2.0}$

PM10 Emissions from grading (lb/VMT) Table 11.9-1 EMISSION FACTOR EQUATIONS FOR UNCONTROLLED OPEN DUST SOURCES AT WESTERN SURFACE COAL MINES (Overburden)

0.6 p = particle size multiplier for PM10
7.1 S = mean vehicle speed (mph) (from Table 11.9-3 for grader)
1.54 lb/VMT of PM10

$E = p * 0.040 * S^{2.5}$

PM2.5 Emissions from grading (lb/VMT) Table 11.9-1 EMISSION FACTOR EQUATIONS FOR UNCONTROLLED OPEN DUST SOURCES AT WESTERN SURFACE COAL MINES (Overburden)

0.031 p = particle size multiplier for PM2.5
7.1 S = mean vehicle speed (mph) (from Table 11.9-3 for grader)
0.17 lb/VMT of PM2.5

Equipment	Quantity/ day (week 6)	Hours/ Day	VMT/day/ vehicle	Watering Control Efficiency	PM10 Emissions (lb/day)	PM2.5 Emissions (lb/day)	Number of Vehicles per year (week 1-12)	VMT/year/ vehicle	PM10 Emissions (ton/yr)	PM2.5 Emissions (ton/yr)
Scrapers	3	5	2	68%	2.96	0.32	15	150	0.037	0.004
Compactor	4	5	2	68%	3.95	0.43	16	160	0.039	0.004
				Grading Total	6.91	0.75			0.08	0.01

Notes: Water efficiency from CEQA Table 11-4 maximum value for watering active sites 2 times daily

Dirt Piling or Material Handling

$E = k * 0.0032 * (U/5)^{1.3} / (M/2)^{1.4}$

PM10 Emissions from Material Handling (lb/ton) from EPA AP-42 Chapter 13.2.4 Eq. 1

E = Emission factor (lb/ton material handled)
6 U = Mean Wind speed (mph) from Fresno metr station
12 M = Moisture content of surface material (%) (from Table 13.2.4-1 for cover at landfill, closest surface material available)

	$PM_{2.5}$	PM_{10}
k	0.053	0.35

0.00003 lb/ton of PM2.5
0.00017 lb/ton of PM10

Equipment	Quantity/ day (week 6)	Hours/ Day	Material Handled per Day (ton/day)	Watering Control Efficiency	PM10 Emissions (lb/day)	PM2.5 Emissions (lb/day)	Number of Vehicles per year (week 1-12)	Material Handled per year (ton)	PM10 Emissions (ton/yr)	PM2.5 Emissions (ton/yr)
Wheeled Loader	1	4	927	68%	0.0491	0.0074	5	25,501	0.0007	0.0001
Excavator	1	5	927	68%	0.0491	0.0074	6	25,501	0.0007	0.0001
Dump Truck	6	8	660	68%	0.0349	0.0053	42	23,111	0.0006	0.0001
				Total	0.13	0.02			0.0020	0.0003

Notes:
1. Water efficiency from CEQA Table 11-4 maximum value for watering active sites 2 times daily
2. Assume 50% soil movement from loaders and 50% from excavator
3. The calculation for the amount of material handled and the dump truck are listed as follows:

Assume each dump truck carries = 25 yd3, = 28.75 tons

32,150 cubic yards cut
12,200 cubic yards filled from cut
44,350 cubic yds of soil will be cut and filled
146.2 cubic yards of temporary warehouse foundation removal
20,096.2 cubic yards taken offsite, therefore it is about 804 total offsite dump truck loads 4 round trips/day for dump trucks
2300 density of soil (lb/yd3) (USDA NRCS Physical Soil Properties from Fresno County Western Part for Panoche Clay Loam soil)
35 day construction schedule for entire civil work

Material handled aoumt for loader & excavator = 44,350 yd3/project = 51,003 tons/project
1267 yd3/day (average) = 1457 ton/day (average)
1613 yd3/day (in peak week) = 1855 ton/day (in peak week)

Material handled aoumt for dump truck = 20,096 yd3/project = 23,111 tons/project
574 yd3/day (in peak week) = 660 ton/day (in peak week)

Cover Storage Pile

$E = 1.7 * G/1.5 * (365-H)/235 * I/15 * J$

SCAQMD Table A9-9-E

PM10 Emission factor from wind erosion of storage piles per day per acre

15 G = Silt content (%) (from CEQA Table A9-9-E-1 for blended dirt)
98 H = Number of days with >= 0.01 inches of precipitation per year (from Panoche Junction COOP weather station WRCC)
8 I = Percentage of time that the unobstructed wind speed exceeds 12 mph at mean pile height
0.5 J = Fraction of TSP that is PM10 = 0.5
5.151 lb/acre/day

wind speed percentage based on 1984-92 (9 yrs) of wind speed data (actual hours > 10 knots) as recorded at Fresno Air Terminal data from EPA SCRAM website

Source	Quantity	Size of Pile (acre)	Hours/Day	Days/Year per Pile	Watering Control Efficiency	PM10 Emissions (lb/day)	PM2.6 Emissions (lb/day)	PM10 Emissions (tons/yr)	PM2.6 Emissions (tons/yr)
Cover Storage Pile	1	1	24	49	68%	1.65	0.37	0.04	0.01

Notes:
1. Water efficiency from CEQA Table 11-4 maximum value for watering active sites 2 times daily
2. pile size assumed
3. piles present only for 7 months (civil work).

Wastewater Surface Impoundments Exhaust Emissions (off-site)

Emission Factors For Combustion Exhaust Emissions

Equipment	Horse-power	Vehicle Weight (lbs)	Fuel	Emission Factors (unit: lb/hr for off-road equipment and g/mile for on-road vehicle)									
				PM_{10}	$PM_{2.5}$	CO	VOC	NO_x	SO_x	CO_2	CH_4	N_20	Total GHG - CO_2e
Off-road Equipment													
Wheeled Loader	500		Diesel										
Scrapers	500		Diesel										
Forklift	120		Diesel										
Welding Machine	50		Diesel										
HDPE fusion machine	50		Diesel										
Excavator	500		Diesel										
Compactor	120		Diesel										
Misc. small power tools	15		Diesel										
Temporary Field construction trailer	175		Diesel										
On-road Vehicle or Vehicles with On-road Engines for Emissions Estimates													
Water Truck	-	40,000	Diesel										
Dump Truck	-	40,000	Diesel	1.95	1.75	13.83	7.41	27.77	0.03	3,165.45	0.01	0.00	3,167.04
Concrete Truck	-	15,000	Diesel	1.95	1.75	13.83	7.41	27.77	0.03	3,165.45	0.01	0.00	3,167.04
Pick-up trucks	-	9,000	Diesel	0.11	0.09	2.09	0.38	5.54	0.01	520.59	0.00	0.00	521.07
Worker Vehicles	-	4,000	Gasoline	0.06	0.04	7.11	0.55	0.42	0.01	866.82	0.03	0.06	886.80

Notes:

1. Equipment list, quantity from the applicant.
2. Horsepower and vehicle weight are estimated; hours of operation are estimated from construction schedule.
3. Off-road equipment emission factors from CARB Off-road Mobile Source Emission Factors (2009 data used).
4. On-road vehicle emission factors from Emfac2007
5. $PM_{2.5}$ emission factors from updated CEIDARS List with $PM_{2.5}$ fractions.
6. Assume the construction schedule = 8 hours per day and 5 days per week.
7. Assume construction begins in 2009 (more conservative than 2010).
8. Assumed some workers will carpool, therefore estimated 1.25 workers per vehicle.
9. Load Factors for each off-road construction equipment are from SCAQMD CEQA Handbook Table A9-8-D.
10. Assume the average on-site and off-site speed are 10 and 50 mph, respectively.
11. Assume worker vehicles come from Fresno (45 miles one trip) and travel a round trip per day
12. Assume the dump truck, concrete truck, and pick-up truck all travel 40 miles for one way trip.
13. Assume the pick-up truck travel one round trip per day and concrete truck travel two round trip per day. The numbers of trips for dump trucks were calculated.
14. Assume the water truck will get the water on site therefore it will not travel off-site.

Week 1 - Daily Emissions For Combustion Exhaust Emissions

Equipment	No. Of Units	Max Daily Distance per Vehicle (mile/day)	Max Daily VMT (all units)	Daily Emissions (lb/day)									
				PM_{10}	$PM_{2.5}$	CO	VOC	NO_x	SO_x	CO_2	CH_4	N_20	Total GHG - CO_2e
Off-road Equipment													
Wheeled Loader	0												
Scrapers	0												
Forklift	1												
Welding Machine	0												
HDPE fusion machine	0												
Excavator	1												
Compactor	0												
Misc. small power tools	0												
Temporary Field construction trailer	1												
On-road Vehicles or Vehicles with Offroad Engines for Emissions Estimates													
Water Truck	0												
Dump Truck	6	320.0	1,920.0	8.23	7.41	58.51	31.33	117.42	0.13	13,386.91	0.02	0.02	13,393.65
Concrete Truck	0	160.0	-	-	-	-	-	-	-	-	-	-	-
Pick-up trucks	2	80.0	160.0	0.04	0.03	0.74	0.13	1.95	0.00	183.47	0.00	0.00	183.64
Worker Vehicles	11	90.0	990.0	0.12	0.09	15.51	1.21	0.92	0.02	1,890.20	0.08	0.14	1,933.77
Daily Emissions Total (lb/day)				8.39	7.53	74.75	32.67	120.30	0.15	15,460.58	0.10	0.16	15,511.06

Week 2 - Daily Emissions For Combustion Exhaust Emissions

Equipment	No. Of Units	Max Daily Distance per Vehicle (mile/day)	Max Daily VMT (all units)	Daily Emissions (lb/day)									
				PM_{10}	$PM_{2.5}$	CO	VOC	NO_x	SO_x	CO_2	CH_4	N_20	Total GHG - CO_2e
Off-road Equipment													
Wheeled Loader	0												
Scrapers	0												
Forklift	1												
Welding Machine	0												
HDPE fusion machine	0												
Excavator	1												
Compactor	0												
Misc. small power tools	0												
Temporary Field construction trailer	1												
On-road Vehicles or Vehicles with Offroad Engines for Emissions Estimates													
Water Truck	0												
Dump Truck	6	320.0	1,920	8.23	7.41	58.51	31.33	117.42	0.13	13,386.91	0.02	0.02	13,393.65
Concrete Truck	0	160.0	-	-	-	-	-	-	-	-	-	-	-
Pick-up trucks	2	80.0	160	0.04	0.03	0.74	0.13	1.95	0.00	183.47	0.00	0.00	183.64
Worker Vehicles	11	90.0	990	0.12	0.09	15.51	1.21	0.92	0.02	1,890.20	0.08	0.14	1,933.77
Daily Emissions Total (lb/day)				8.39	7.53	74.75	32.67	120.30	0.15	15,460.58	0.10	0.16	15,511.06

Week 3 - Daily Emissions For Combustion Exhaust Emissions

Equipment	No. Of Units	Max Daily Distance per Vehicle (mile/day)	Max Daily VMT (all units)	Daily Emissions (lb/day)									
				PM_{10}	$PM_{2.5}$	CO	VOC	NO_x	SO_x	CO_2	CH_4	N_20	Total GHG - CO_2e
Offroad Equipment													
Wheeled Loader	1												
Scrapers	3												
Forklift	1												
Welding Machine	0												
HDPE fusion machine	0												
Excavator	0												
Compactor	0												
Misc. small power tools	0												
Temporary Field construction trailer	1												
Onroad Vehicle or Vehicles with Onroad Engines for Emissions Estimates													
Water Truck	1												
Dump Truck	6	320.0	1,920	8.23	7.41	58.51	31.33	117.42	0.13	13,386.91	0.02	0.02	13,393.65
Concrete Truck	0	160.0	-	-	-	-	-	-	-	-	-	-	-
Pick-up trucks	2	80.0	160	0.04	0.03	0.74	0.13	1.95	0.00	183.47	0.00	0.00	183.64
Worker Vehicles	11	90.0	990	0.12	0.09	15.51	1.21	0.92	0.02	1,890.20	0.08	0.14	1,933.77
Daily Emissions Total (lb/day)				8.39	7.53	74.75	32.67	120.30	0.15	15,460.58	0.10	0.16	15,511.06

Week 4 - Daily Emissions For Combustion Exhaust Emissions

Equipment	No. Of Units	Max Daily Distance per Vehicle (mile/day)	Max Daily VMT (all units)	Daily Emissions (lb/day)									
				PM_{10}	$PM_{2.5}$	CO	VOC	NO_x	SO_x	CO_2	CH_4	N_20	Total GHG - CO_2e
Offroad Equipment													
Wheeled Loader	1												
Scrapers	3												
Forklift	1												
Welding Machine	0												
HDPE fusion machine	0												
Excavator	1												
Compactor	4												
Misc. small power tools	2												
Temporary Field construction trailer	1												
Onroad Vehicle or Vehicles with Onroad Engines for Emissions Estimates													
Water Truck	1												
Dump Truck	6	320.0	1,920	8.23	7.41	58.51	31.33	117.42	0.13	13,386.91	0.02	0.02	13,393.65
Concrete Truck	0	160.0	-	-	-	-	-	-	-	-	-	-	-
Pick-up trucks	2	80.0	160	0.04	0.03	0.74	0.13	1.95	0.00	183.47	0.00	0.00	183.64
Worker Vehicles	16	90.0	1,440	0.18	0.13	22.56	1.76	1.34	0.03	2,749.39	0.11	0.20	2,812.75
Daily Emissions Total (lb/day)				8.45	7.57	81.80	33.22	120.72	0.15	16,319.76	0.13	0.22	16,390.04

Week 5 - Daily Emissions For Combustion Exhaust Emissions

Equipment	No. Of Units	Max Daily Distance per Vehicle (mile/day)	Max Daily VMT (all units)	Daily Emissions (lb/day)									
				PM_{10}	$PM_{2.5}$	CO	VOC	NO_x	SO_x	CO_2	CH_4	N_20	Total GHG - CO_2e
Off-road Equipment													
Wheeled Loader	1												
Scrapers	3												
Forklift	1												
Welding Machine	0												
HDPE fusion machine	0												
Excavator	1												
Compactor	4												
Misc. small power tools	2												
Temporary Field construction trailer	1												
On-road Vehicles or Vehicles with Onroad Engines for Emissions Estimates													
Water Truck	1												
Dump Truck	6	320.0	1,920	8.23	7.41	58.51	31.33	117.42	0.13	13,386.91	0.02	0.02	13,393.65
Concrete Truck	0	160.0	-	-	-	-	-	-	-	-	-	-	-
Pick-up trucks	2	80.0	160	0.04	0.03	0.74	0.13	1.95	0.00	183.47	0.00	0.00	183.64
Worker Vehicles	16	90.0	1,440	0.18	0.13	22.56	1.76	1.34	0.03	2,749.39	0.11	0.20	2,812.75
Daily Emissions Total (lb/day)				8.45	7.57	81.80	33.22	120.72	0.15	16,319.76	0.13	0.22	16,390.04

Week 6 - Daily Emissions For Combustion Exhaust Emissions

Equipment	No. Of Units	Max Daily Distance per Vehicle (mile/day)	Max Daily VMT (all units)	Daily Emissions (lb/day)									
				PM_{10}	$PM_{2.5}$	CO	VOC	NO_x	SO_x	CO_2	CH_4	N_20	Total GHG - CO_2e
Off-road Equipment													
Wheeled Loader	1												
Scrapers	3												
Forklift	1												
Welding Machine	1												
HDPE fusion machine	1												
Excavator	1												
Compactor	4												
Misc. small power tools	4												
Temporary Field construction trailer	1												
On-road Vehicles or Vehicles with Onroad Engines for Emissions Estimates													
Water Truck	1												
Dump Truck	6	320.0	1,920	8.23	7.41	58.51	31.33	117.42	0.13	13,386.91	0.02	0.02	13,393.65
Concrete Truck	10	160.0	1,600	6.86	6.18	48.75	26.11	97.85	0.11	11,155.76	0.02	0.02	11,161.38
Pick-up trucks	3	80.0	240	0.06	0.05	1.10	0.20	2.93	0.00	275.20	0.00	0.00	275.46
Worker Vehicles	20	90.0	1,800	0.23	0.16	28.21	2.20	1.68	0.03	3,436.73	0.14	0.25	3,515.94
Daily Emissions Total (lb/day)				15.37	13.80	136.57	59.83	219.88	0.27	28,254.60	0.18	0.28	28,346.43

Week 7 - Daily Emissions For Combustion Exhaust Emissions

Equipment	No. Of Units	Max Daily Distance per Vehicle (mile/day)	Max Daily VMT (all units)	Daily Emissions (lb/day)									
				PM_{10}	$PM_{2.5}$	CO	VOC	NO_x	SO_x	CO_2	CH_4	N_20	Total GHG - CO_2e
Offroad Equipment													
Wheeled Loader	1												
Scrapers	3												
Forklift	1												
Welding Machine	1												
HDPE fusion machine	1												
Excavator	1												
Compactor	4												
Misc. small power tools	4												
Temporary Field construction trailer	1												
Onroad Vehicles Vehicles with Onroad Engines for Emissions Estimates													
Water Truck	1												
Dump Truck	6	320.0	1,920	8.23	7.41	58.51	31.33	117.42	0.13	13,386.91	0.02	0.02	13,393.65
Concrete Truck	10	160.0	1,600	6.86	6.18	48.75	26.11	97.85	0.11	11,155.76	0.02	0.02	11,161.38
Pick-up trucks	3	80.0	240	0.06	0.05	1.10	0.20	2.93	0.00	275.20	0.00	0.00	275.46
Worker Vehicles	20	90.0	1,800	0.23	0.16	28.21	2.20	1.68	0.03	3,436.73	0.14	0.25	3,515.94
Daily Emissions Total (lb/day)				15.37	13.80	136.57	59.83	219.88	0.27	28,254.60	0.18	0.28	28,346.43

Week 8 - Daily Emissions For Combustion Exhaust Emissions

Equipment	No. Of Units	Max Daily Distance per Vehicle (mile/day)	Max Daily VMT (all units)	Daily Emissions (lb/day)									
				PM_{10}	$PM_{2.5}$	CO	VOC	NO_x	SO_x	CO_2	CH_4	N_20	Total GHG - CO_2e
Offroad Equipment													
Wheeled Loader	0												
Scrapers	0												
Forklift	1												
Welding Machine	1												
HDPE fusion machine	1												
Excavator	0												
Compactor	0												
Misc. small power tools	4												
Temporary Field construction trailer	1												
Onroad Vehicles Vehicles with Onroad Engines for Emissions Estimates													
Water Truck	0												
Dump Truck	0	320.0	-	-	-	-	-	-	-	-	-	-	-
Concrete Truck	0	160.0	-	-	-	-	-	-	-	-	-	-	-
Pick-up trucks	4	80.0	320	0.08	0.06	1.47	0.27	3.91	0.00	366.93	0.00	0.00	367.28
Worker Vehicles	10	90.0	900	0.11	0.08	14.10	1.10	0.84	0.02	1,718.37	0.07	0.12	1,757.97
Daily Emissions Total (lb/day)				0.19	0.14	15.57	1.37	4.74	0.02	2,085.30	0.07	0.12	2,125.24

Week 9 - Daily Emissions For Combustion Exhaust Emissions

Equipment	No. Of Units	Max Daily Distance per Vehicle (mile/day)	Max Daily VMT (all units)	Daily Emissions (lb/day)									
				PM_{10}	$PM_{2.5}$	CO	VOC	NO_x	SO_x	CO_2	CH_4	N_20	Total GHG - CO_2e
Offroad Equipment													
Wheeled Loader	0												
Scrapers	0												
Forklift	1												
Welding Machine	1												
HDPE fusion machine	1												
Excavator	0												
Compactor	0												
Misc. small power tools	4												
Temporary Field construction trailer	1												
Onroad Vehicle or Vehicle with Onroad Engines for Emissions Estimates													
Water Truck	0												
Dump Truck	0	320.0	-	-	-	-	-	-	-	-	-	-	-
Concrete Truck	0	160.0	-	-	-	-	-	-	-	-	-	-	-
Pick-up trucks	4	80.0	320	0.08	0.06	1.47	0.27	3.91	0.00	366.93	0.00	0.00	367.28
Worker Vehicles	10	90.0	900	0.11	0.08	14.10	1.10	0.84	0.02	1,718.37	0.07	0.12	1,757.97
Daily Emissions Total (lb/day)				0.19	0.14	15.57	1.37	4.74	0.02	2,085.30	0.07	0.12	2,125.24

Week 10 - Daily Emissions For Combustion Exhaust Emissions

Equipment	No. Of Units	Max Daily Distance per Vehicle (mile/day)	Max Daily VMT (all units)	Daily Emissions (lb/day)									
				PM_{10}	$PM_{2.5}$	CO	VOC	NO_x	SO_x	CO_2	CH_4	N_20	Total GHG - CO_2e
Offroad Equipment													
Wheeled Loader	0												
Scrapers	0												
Forklift	1												
Welding Machine	1												
HDPE fusion machine	1												
Excavator	0												
Compactor	0												
Misc. small power tools	4												
Temporary Field construction trailer	1												
Onroad Vehicle or Vehicle with Onroad Engines for Emissions Estimates													
Water Truck	0												
Dump Truck	0	320.0	-	-	-	-	-	-	-	-	-	-	-
Concrete Truck	0	160.0	-	-	-	-	-	-	-	-	-	-	-
Pick-up trucks	4	80.0	320	0.08	0.06	1.47	0.27	3.91	0.00	366.93	0.00	0.00	367.28
Worker Vehicles	10	90.0	900	0.11	0.08	14.10	1.10	0.84	0.02	1,718.37	0.07	0.12	1,757.97
Daily Emissions Total (lb/day)				0.19	0.14	15.57	1.37	4.74	0.02	2,085.30	0.07	0.12	2,125.24

Week 11 - Daily Emissions For Combustion Exhaust Emissions

Equipment	No. Of Units	Max Daily Distance per Vehicle (mile/day)	Max Daily VMT (all units)	Daily Emissions (lb/day)									
				PM_{10}	$PM_{2.5}$	CO	VOC	NO_x	SO_x	CO_2	CH_4	N_20	Total GHG - CO_2e
Off-road Equipment													
Wheeled Loader	0												
Scrapers	0												
Forklift	1												
Welding Machine	1												
HDPE fusion machine	1												
Excavator	0												
Compactor	0												
Misc. small power tools	4												
Temporary Field construction trailer	1												
On-road Vehicle or Vehicles with On-road Engines for Emissions Estimates													
Water Truck	0												
Dump Truck	0	320.0	-	-	-	-	-	-	-	-	-	-	-
Concrete Truck	0	160.0	-	-	-	-	-	-	-	-	-	-	-
Pick-up trucks	4	80.0	320	0.08	0.06	1.47	0.27	3.91	0.00	366.93	0.00	0.00	367.28
Worker Vehicles	10	90.0	900	0.11	0.08	14.10	1.10	0.84	0.02	1,718.37	0.07	0.12	1,757.97
Daily Emissions Total (lb/day)				0.19	0.14	15.57	1.37	4.74	0.02	2,085.30	0.07	0.12	2,125.24

Week 12 - Daily Emissions For Combustion Exhaust Emissions

Equipment	No. Of Units	Max Daily Distance per Vehicle (mile/day)	Max Daily VMT (all units)	Daily Emissions (lb/day)									
				PM_{10}	$PM_{2.5}$	CO	VOC	NO_x	SO_x	CO_2	CH_4	N_20	Total GHG - CO_2e
Off-road Equipment													
Wheeled Loader	0												
Scrapers	0												
Forklift	0												
Welding Machine	0												
HDPE fusion machine	0												
Excavator	0												
Compactor	0												
Misc. small power tools	0												
Temporary Field construction trailer	0												
On-road Vehicle or Vehicles with On-road Engines for Emissions Estimates													
Water Truck	0												
Dump Truck	0	320.0	-	-	-	-	-	-	-	-	-	-	-
Concrete Truck	0	160.0	-	-	-	-	-	-	-	-	-	-	-
Pick-up trucks	3	80.0	240	0.06	0.05	1.10	0.20	2.93	0.00	275.20	0.00	0.00	275.46
Worker Vehicles	5	90.0	450	0.06	0.04	7.05	0.55	0.42	0.01	859.18	0.03	0.06	878.98
Daily Emissions Total (lb/day)				0.12	0.09	8.15	0.75	3.35	0.01	1,134.38	0.03	0.06	1,154.44

Summary Table for Weekly Emissions (off-site exhausted only)

Weekly Emission Comparison	Weekly Emissions (lb/week)									
	PM_{10}	$PM_{2.5}$	CO	VOC	NO_x	SO_x	CO_2	CH_4	N_20	Total GHG - CO_2e
Week 1 Emissions	41.97	37.66	373.77	163.35	601.48	0.73	77,302.88	0.49	0.78	77,555.29
Week 2 Emissions	41.97	37.66	373.77	163.35	601.48	0.73	77,302.88	0.49	0.78	77,555.29
Week 3 Emissions	41.97	37.66	373.77	163.35	601.48	0.73	77,302.88	0.49	0.78	77,555.29
Week 4 Emissions	42.25	37.86	409.02	166.10	603.58	0.77	81,598.80	0.66	1.09	81,950.21
Week 5 Emissions	42.25	37.86	409.02	166.10	603.58	0.77	81,598.80	0.66	1.09	81,950.21
Week 6 Emissions	76.87	68.99	682.84	299.17	1,099.39	1.33	141,272.98	0.89	1.42	141,732.13
Week 7 Emissions	76.87	68.99	682.84	299.17	1,099.39	1.33	141,272.98	0.89	1.42	141,732.13
Week 8 Emissions	0.97	0.72	77.87	6.83	23.72	0.10	10,426.49	0.35	0.62	10,626.22
Week 9 Emissions	0.97	0.72	77.87	6.83	23.72	0.10	10,426.49	0.35	0.62	10,626.22
Week 10 Emissions	0.97	0.72	77.87	6.83	23.72	0.10	10,426.49	0.35	0.62	10,626.22
Week 11 Emissions	0.97	0.72	77.87	6.83	23.72	0.10	10,426.49	0.35	0.62	10,626.22
Week 12 Emissions	0.58	0.44	40.77	3.75	16.74	0.05	5,671.91	0.17	0.31	5,772.20

Max. Hourly Emissions For Off-site Combustion Exhaust Emissions (Maximum daily construction off-site exhausted emissions occurs in months 6 (or 7).)

Equipment	Max. Operating Hours / Day	Load Factor	Load Factor * Max. Operating Hours / Day	Hourly Emissions (lb/hour)									
				PM_{10}	$PM_{2.5}$	CO	VOC	NO_x	SO_x	CO_2	CH_4	N_20	Total GHG - CO_2e
Off-road Equipment													
Wheeled Loader													
Scrapers													
Forklift													
Welding Machine													
HDPE fusion machine													
Excavator													
Compactor													
Misc. small power tools													
Temporary Field construction trailer													
On-road Vehicles or Vehicles with On-road Engines for Emissions Estimates													
Water Truck													
Dump Truck	6.40	100%	6.4	1.29	1.16	9.14	4.90	18.35	0.02	2091.70	0.00	0.00	2092.76
Concrete Truck	3.20	100%	3.2	2.14	1.93	15.24	8.16	30.58	0.03	3486.17	0.01	0.01	3487.93
Pick-up trucks	1.60	100%	1.6	0.04	0.03	0.69	0.13	1.83	0.00	172.00	0.00	0.00	172.16
Worker Vehicles	1.80	100%	1.8	0.13	0.09	15.67	1.22	0.93	0.02	1909.30	0.08	0.14	1953.30
Hourly Emissions Total (lb/hour)				**3.59**	**3.21**	**40.74**	**14.40**	**51.69**	**0.07**	**7,659.17**	**0.09**	**0.15**	**7,706.15**

Yearly Emissions For Off-site Combustion Exhaust Emissions

Equipment		Annual Emissions (ton/year)									
		PM_{10}	$PM_{2.5}$	CO	VOC	NO_x	SO_x	CO_2	CH_4	N_20	Total GHG - CO_2e
Off-road Equipment											
Wheeled Loader											
Scrapers											
Forklift											
Welding Machine											
HDPE fusion machine											
Excavator											
Compactor											
Misc. small power tools											
Temporary Field construction trailer											
On-road Vehicles or Vehicles with On-road Engines for Emissions Estimates											
Water Truck											
Dump Truck		0.14402	0.12970	1.02384	0.54826	2.05485	0.00222	234.27089	0.00038	0.00036	234.38894
Concrete Truck		0.03429	0.03088	0.24377	0.13054	0.48925	0.00053	55.77878	0.00009	0.00008	55.80689
Pick-up trucks		0.00176	0.00139	0.03218	0.00586	0.08545	0.00008	8.02666	0.00002	0.00002	8.03415
Worker Vehicles		0.00424	0.00304	0.52885	0.04118	0.03145	0.00059	64.43871	0.00257	0.00462	65.92383
Annual Emissions Total (ton/year)		**0.18431**	**0.16501**	**1.82864**	**0.72584**	**2.66100**	**0.00342**	**362.51505**	**0.00305**	**0.00508**	**364.15382**

Wastewater Surface Impoundments Construction -Fugitive Dust Emissions
OFF-SITE (week 6 (or 7) is selected here for the peak week)

Travel on paved surfaces

$E = [k * (sL/2)^{0.65} * (W/3)^{1.5} - C] (1 - P/4N)$

EPA AP-42 Section 13.2.1 Paved Roads Equation 2
E = particulate emission factor (lb/VMT),
k = particle size multiplier for particle size range and units of interest
0.32 sL = road surface silt loading (grams per square meter) (g/m^2), Local Streets (emission inventory code: 640-641-5400-0000), June 2006
W = average weight (tons) of the vehicles traveling the road, and
C = emission factor for 1980's vehicle fleet exhaust, brake wear and tire wear.

constants

	$PM_{2.5}$	PM_{10}
k	0.0024	0.016
C	0.00036	0.00047

98 P = Mean number of days per with at least 0.01 inches of precipitation (from Panoche Junction COOP weather station Western Regional Climate Center))
365 N = number of days in the year (averaging period)

Vehicle Type	Number of Vehicles per day (week 6)	Max Daily Distance per Vehicle (mile/day)	Assumed distance percentage to drive on paved roads	Max Daily Distance per Vehicle to drive on paved roads (mile/day)	Max Daily VMT (all vehicles)	Mean Vehicle Weight (tons)	Max. Operating Hours / Day	Number of Vehicles per year (week 1-12)	Max Annual VMT (all vehicles)	$PM_{2.5}$ EF (lbs/VMT)	PM_{10} EF (lbs/VMT)
Off-road Equipment											
Wheeled Loader	1	0.0	0%	0.0	0.0	10.0	4.3	5	0	0.004	0.027
Scrapers	3	0.0	0%	0.0	0.0	15.0	5.3	15	0	0.007	0.050
Forklift	1	0.0	0%	0.0	0.0	5.0	2.4	11	0	0.001	0.009
Welding Machine	1	0.0	0%	0.0	0.0	1.0	3.6	6	0	0.000	0.000
HDPE fusion machine	1	0.0	0%	0.0	0.0	1.0	3.6	6	0	0.000	0.000
Excavator	1	0.0	0%	0.0	0.0	10.0	4.6	6	0	0.004	0.027
Compactor	4	0.0	0%	0.0	0.0	10.0	4.6	16	0	0.004	0.027
Misc. small power tools	4	0.0	0%	0.0	0.0	1.0	6.0	28	0	0.000	0.000
Temporary Field construction trailer	1	0.0	0%	0.0	0.0	5.0	6.0	11	0	0.001	0.009
On-road Vehicle or Vehicles with On-road Engines for Emissions Estimates											
Water Truck	1	0.0	0%	0.0	0.0	20.0	8.0	5	0	0.011	0.078
Dump Truck	6	320.0	100%	320.0	1920.0	20.0	8.0	42	67200	0.011	0.078
Concrete Truck	10	160.0	100%	160.0	1600.0	7.5	8.0	20	16000	0.002	0.017
Pick-up trucks	3	80.0	100%	80.0	240.0	4.5	8.0	35	14000	0.001	0.008
Worker Vehicles	20	90.0	100%	90.0	1800.0	2.0	8.0	150	67500	0.000	0.002

Vehicle Type	Watering Control Efficiency		PM_{10} Emissions (lb/hr)		PM_{10} Emissions (lb/day)		% of daily emissions	PM_{10} Emissions (tons/year)		$PM_{2.5}$ Emissions (lb/hr)		$PM_{2.5}$ Emissions (lb/day)		$PM_{2.5}$ Emissions (tons/year)	
	Unmitigated	Mitigated	Unmitigated	Mitigated	Unmitigated	Mitigated		Unmitigated	Mitigated	Unmitigated	Mitigated	Unmitigated	Mitigated	Unmitigated	Mitigated
Off-road Equipment															
Wheeled Loader	0%	0%	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
Scrapers	0%	0%	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
Forklift	0%	0%	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
Welding Machine	0%	0%	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
HDPE fusion machine	0%	0%	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
Excavator	0%	0%	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
Compactor	0%	0%	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
Misc. small power tools	0%	0%	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
Temporary Field construction trailer	0%	0%	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
On-road Vehicle or Vehicles with On-road Engines for Emissions Estimates															
Water Truck	0%	0%	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
Dump Truck	0%	0%	18.63	18.63	149.05	149.05	81.63%	2.61	2.61	2.73	2.73	21.84	21.84	0.38	0.38
Concrete Truck	0%	0%	3.50	3.50	27.98	27.98	15.33%	0.14	0.14	0.47	0.47	3.77	3.77	0.02	0.02
Pick-up trucks	0%	0%	0.24	0.24	1.89	1.89	1.04%	0.06	0.06	0.03	0.03	0.22	0.22	0.01	0.01
Worker Vehicles	0%	0%	0.46	0.46	3.65	3.65	2.00%	0.07	0.07	0.01	0.01	0.06	0.06	0.00	0.00
TOTAL Fugitive emissions for vehicles traveled on paved surfaces			**22.82**	**22.82**	**182.59**	**182.59**		**2.87**	**2.87**	**3.24**	**3.24**	**25.89**	**25.89**	**0.41**	**0.41**

Notes:
1. Water efficiency from CEQA Table 11-4 maximum value for watering active sites 2 times daily

OFFROAD2007 Output CARB Emissions Inventory Model for Mobile Offroad Sources and Calculations for Tons/hr

CY	Season	AvgDays	Code	Equipment	Fuel	MaxHP	Class	C/R	Pre	Head	Fuel	County	Air Basin	Air Dist	Population	Activity (hr/day) total population	Consumption	ROG Exhaust (tons/day)	CO Exhaust (tons/day)	NOX Exhaust (tons/day)	CO2 Exhaust (tons/day)	SO2 Exhaust (tons/day)	PM Exhaust (tons/day)	CH4 Exhaust (tons/day)	N2O Exhaust (tons/day)	PM Exhaust/Activity (tons/hr)	CO Exhaust/Activity (tons/hr)	ROG Exhaust/Activity (tons/hr)	NOX Exhaust/Activity (tons/hr)	SO2 Exhaust/Activity (tons/hr)	CO2 Exhaust/Activity (tons/hr)	CH4 Exhaust/Activity (tons/hr)	N2O Exhaust/ Activity (tons/hr)
2009	Annual	Mon-Sun	2.265E+09	Other Construction Equipment	G1	175	Construction and Mining Equipment	U	P	NHH	NP	San Benito	NCC	MBU	8.16E-02	8.50E-02	4.69E-01	3.10E-06	1.54E-04	1.96E-05	4.27E-03	4.24E-06	3.40E-07	1.61E-07	5.84E-07	4.00E-06	1.82E-03	3.65E-05	2.31E-04	4.99E-07	5.02E-02	1.92E-06	6.87E-06
2009	Annual	Mon-Sun	2.27E+09	Other Construction Equipment	D	15	Construction and Mining Equipment	U	P	NHH	NP	San Benito	NCC	MBU	4.62E-01	8.71E-01	4.04E-01	5.15E-06	2.70E-05	3.21E-05	4.42E-03	6.88E-08	1.63E-06	4.65E-07	0.00E+00	1.86E-06	3.08E-05	5.94E-06	3.69E-05	7.86E-08	5.05E-03	5.31E-07	0.00E+00
2009	Annual	Mon-Sun	2.27E+09	Other Construction Equipment	D	25	Construction and Mining Equipment	U	P	NHH	NP	San Benito	NCC	MBU	7.82E-02	1.48E-01	8.91E-02	1.23E-06	4.06E-06	7.91E-06	9.78E-04	1.24E-08	4.39E-07	1.11E-07	0.00E+00	2.96E-06	2.74E-03	8.33E-06	5.33E-05	8.38E-06	6.60E-03	7.31E-07	0.00E+00
2009	Annual	Mon-Sun	2.27E+09	Other Construction Equipment	D	50	Construction and Mining Equipment	U	P	NHH	NP	San Benito	NCC	MBU	1.20E-01	2.32E-01	3.92E-01	1.32E-05	3.52E-05	3.29E-05	3.25E-03	4.20E-08	3.27E-06	1.19E-06	0.00E+00	1.41E-05	1.51E-04	5.67E-05	1.42E-04	1.81E-07	1.48E-02	5.11E-06	0.00E+00
2009	Annual	Mon-Sun	2.27E+09	Other Construction Equipment	D	120	Construction and Mining Equipment	U	P	NHH	NP	San Benito	NCC	MBU	1.09E-01	1.83E-01	1.42E+00	2.75E-05	1.05E-04	1.77E-04	1.55E-02	1.02E-07	1.51E-05	2.48E-06	0.00E+00	3.91E-05	2.71E-04	7.18E-05	4.61E-04	4.73E-07	4.04E-02	6.48E-06	0.00E+00
2009	Annual	Mon-Sun	2.27E+09	Other Construction Equipment	D	175	Construction and Mining Equipment	U	P	NHH	NP	San Benito	NCC	MBU	2.74E-01	5.29E-01	2.57E+00	3.32E-05	1.56E-04	2.81E-04	2.82E-02	3.17E-07	1.51E-05	2.99E-06	0.00E+00	2.86E-05	2.85E-04	6.27E-05	5.32E-04	5.99E-07	5.32E-02	3.66E-06	0.00E+00
2009	Annual	Mon-Sun	2.27E+09	Other Construction Equipment	D	500	Construction and Mining Equipment	U	N	NHH	NP	San Benito	NCC	MBU	6.36E-01	1.23E+00	1.41E+01	1.11E-04	4.02E-04	1.30E-03	1.54E-01	1.53E-06	4.43E-05	1.01E-05	0.00E+00	3.61E-05	3.27E-04	9.07E-05	1.06E-03	1.25E-06	1.27E-01	8.18E-06	0.00E+00

Table : Pomona_Exp2.mod
Version : Emfac2007 V2.3 Mar 2 2004
Run Date : 2009/05/12 16:55:29
Data Year : 2009 -- All model years in the range 1965 to 2009 selected
Scenario : Annual
Area : Elm Bardel

Year : 2009 --Model Years 1965 to 2009 Inclusive -- Annual
Emfac2007 Emissions Factors V2.3 Mar 2 2004

County Average | Est Breaks | County Average

Table 1 : Running Exhaust Emissions (grams/mile, grams/idle-hour)

Pollutant Name: Total Organic Gases | Temperature: 96F | Relative Humidity: 10%

Speed MPH	LDA MCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 MCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 MCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	MDV MCAT	MDV CAT	MDV DSL	MDV ALL	LHDT1 MCAT	LHDT1 CAT	LHDT1 DSL	LHDT1 ALL	LHDT2 MCAT	LHDT2 CAT	LHDT2 DSL	LHDT2 ALL	MHDT MCAT	MHDT CAT	MHDT DSL	MHDT ALL	HHDT MCAT	HHDT CAT	HHDT DSL	HHDT ALL	MCY MCAT	MCY CAT	MCY DSL	MCY ALL	SBUS MCAT	SBUS CAT	SBUS DSL	SBUS ALL	MH MCAT	MH CAT	MH DSL	MH ALL	ALL MCAT	ALL CAT	ALL DSL	ALL ALL
5	28.991	0.026	0.106	0.026	20.139	0.046	0.236	0.047	0.765	0.007	0.092	0.007	25.974	0.057	0.192	0.057	10.197	22.469	90.004	2.432	10.197	22.469	90.004	2.432	32.459	33.977	24.564	3.432	4.3	6	9	15.431	15.281	9	34.93	3.413	16.941	9	9	23.468	20.123	3.012	4.741	6	9	0.727	13.958	1.514
10	14.591	0.019	0.187	0.019	14.447	0.035	0.161	0.035	14.334	0.024	0.104	0.024	18.581	0.026	0.119	0.026	7.472	12.176	1.902	0.485	1.118	29.781	4.198	0.014	1.971	102.916	14.32	13.271	12.174	9	5.173	0.976	2.275	19.834	9.793	1.766	6.970	6.905	0.263	9	4.464	29.756	19.743	1.121	9.951	23.499	2.264	0.615	1.179	11.861	0.864	19.976	1.928
15	11.071	0.015	0.285	0.016	10.779	0.025	0.109	0.025	10.819	0.016	0.066	0.016	14.74	0.17	0.126	0.017	6.329	8.829	0.232	0.183	0.249	0.222	0.204	0.031	0.471	14.179	2.74	0.15	0.972	10.962	4.7	3.968	2.197	9	3.32	0.457	3.115	14.603	0.669	0.579	2.881	1.924	3.511	9	1.671	12.218	7.011	0.796	1.915	13.196	1.065	0.211	1.636	0.4	2.942	1.102
20	8.672	0.028	0.189	0.029	9.423	0.032	0.122	0.032	9.632	0.17	0.201	0.018	10.956	0.073	0.185	0.073	5.167	6.109	0.017	0.174	0.745	0.471	0.367	0.004	0.779	12.912	4.518	1.002	1.012	9	1.024	0.4	0.927	11.121	2.269	0.279	2.78	3.187	.4	0	2.975	9.418	5.867	0.679	1.427	9.17	0.778	0.439	0.615	5.193	0.287	1.947	0.637
25	7.061	0.169	0.359	0.254	8.878	0.277	0.182	0.243	8.899	0.21	0.169	0.21	8.779	0.112	0.052	0.249	4.97	0.158	0.11	0.158	4.67	0.179	0.297	0.196	7.691	3.443	0.586	0.6	0.7511	3.37	1.319	1.556	9	1.219	0.225	0.96	0.479	2.224	0.664	2.874	7.871	3.678	4	2.479	4.999	3.73	0.434	1.197	7.011	0.511	0.165	0.412	4.57	0.232	1.28	0.551
30	6.011	0.127	0.339	0.191	7.472	0.228	0.107	0.191	7.579	0.17	0.144	0.17	7.371	0.071	0.051	0.167	3.611	0.093	0.18	0.103	3.833	0.153	0.215	0.12	5.132	1.182	0.345	0.448	0.5405	1.968	1.528	1.242	9	0.971	0.217	0.556	0.367	1.922	0.199	1.414	2.513	1.681	4	1.671	2.597	2.517	0.401	0.543	4.625	0.114	0.107	0.319	4.487	0.107	0.856	0.319
35	5.291	0.117	0.318	0.147	7.249	0.194	0.077	0.147	7.347	0.117	0.117	0.117	7.177	0.062	0.147	0.146	3.178	0.077	0.084	0.089	3.937	0.147	0.155	0.104	4.39	0.924	0.385	0.43	0.5167	1.105	1.014	1.025	9	0.77	0.225	0.428	0.293	1.175	0.174	1.331	2.097	1.64	4	1.164	1.87	2.37	0.341	0.715	4.35	0.109	0.193	0.293	3.8	0.104	0.916	0.19
40	5.061	0.105	0.307	0.131	6.909	0.176	0.068	0.131	6.976	0.105	0.105	0.105	6.94	0.054	0.132	0.054	3.128	0.056	0.067	0.064	2.973	0.123	0.1	0.101	4.052	0.769	0.273	0.343	0.4	1.77	1.39	0.975	9	0.666	0.226	0.37	0.251	1.125	0.181	1.189	2.063	1.67	4	1.164	1.675	1.96	0.327	0.642	3.693	0.221	0.169	0.253	3.726	0.167	0.703	0.19
45	4.913	0.098	0.438	0.164	6.864	0.164	0.063	0.164	6.92	0.123	0.101	0.123	6.151	0.053	0.35	0.151	3.053	0.135	0.063	0.146	3.135	0.193	0.104	0.236	0.474	0.35	0.332	0.193	0.7911	1.695	0.579	0.975	9	0.645	0.367	0.37	0.7911	1.695	0.579	0.975	2.316	1.799	4	1.776	3.221	1.759	0.3	0.136	3.333	0.264	0.064	0.291	3.875	0.119	0.692	0.185
50	5.051	0.097	0.992	0.193	6.919	0.145	0.059	0.152	6.934	0.152	0.101	0.152	6.017	0.053	0.169	0.153	3.003	0.152	0.063	0.153	3.003	0.151	0.101	0.151	2.956	0.016	0.218	0.151	0.972	1.585	0.191	0.571	9	0.519	0.192	0.597	1.565	0.991	0.167	0.487	2.014	1.565	4	1.316	2.862	1.598	0.28	0.151	3.487	0.264	0.064	0.291	3.875	0.119	0.692	0.185
55	5.413	.07	0.995	0.15	5.7	0.166	0.054	0.123	5.208	0.123	0.051	0.123	5.179	0.124	0.167	0.124	3.073	0.174	0.073	0.174	3.073	0.166	0.051	0.166	3.187	0.224	0.294	0.72	1.23	0.924	0.229	0.924	9	0.519	0.192	0.597	1.565	0.991	0.167	0.487	2.014	1.565	4	1.316	2.862	1.598	0.28	0.151	3.487	0.264	0.064	0.291	3.875	0.119	0.692	0.185
60	4.069	0.108	0.096	0.104	3.964	0.101	0.053	0.24	3.958	0.115	0.091	0.149	3.134	0.127	0.044	0.104	1.937	0.097	0.111	0.101	1.937	0.107	0.16	0.101	2.791	0.582	0.119	0.189	0.616	1.14	1.691	1.096	9	0.471	0.181	0.187	1.166	0.974	0.276	0.953	1.666	1.964	4	1.442	2.78	1.693	0.262	0.499	2.792	0.511	0.078	0.232	3.592	0.118	0.551	0.431
65	3.119	0.115	0.036	0.09	4.031	0.245	0.053	0.221	4.274	0.219	0.091	0.191	0.91	0.156	0.064	0.155	1.93	0.078	0.111	0.076	1.93	0.109	0.16	0.104	2.888	0.662	0.119	0.252	0.797	1.195	1.119	1.19	9	0.549	0.181	0.251	1.166	0.974	0.276	0.953	1.666	1.964	4	0.864	2.875	1.564	0.262	0.539	2.898	0.52	0.078	0.26	4.488	0.182	1.111	0.531

Pollutant Name: Carbon Monoxide | Temperature: 96F | Relative Humidity: 10%

Speed MPH	LDA MCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 MCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 MCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	MDV MCAT	MDV CAT	MDV DSL	MDV ALL	LHDT1 MCAT	LHDT1 CAT	LHDT1 DSL	LHDT1 ALL	LHDT2 MCAT	LHDT2 CAT	LHDT2 DSL	LHDT2 ALL	MHDT MCAT	MHDT CAT	MHDT DSL	MHDT ALL	HHDT MCAT	HHDT CAT	HHDT DSL	HHDT ALL	MCY MCAT	MCY CAT	MCY DSL	MCY ALL	SBUS MCAT	SBUS CAT	SBUS DSL	SBUS ALL	MH MCAT	MH CAT	MH DSL	MH ALL	ALL MCAT	ALL CAT	ALL DSL	ALL ALL
5	196.164	4.737	2.715	4.91	194.114	3.181	2.181	3.733	194.733	4.792	2.704	4.871	173.72	7.422	3.019	6.164	112.57	4.171	1.824	4.61	112.161	18.948	1.486	12.994	173.827	90.818	9.82	21.931	2747.32	185.424	18.418	20.318	0	53.681	9.196	23.421	442.868	105.591	1.69	106.734	46.993	18.978	0	37.812	573.544	159.127	14.789	49.871	573.005	49.184	5.724	16.419	119.751	9.168	16.949	12.814
10	116.124	3.769	1.721	3.114	142.004	10.253	1.585	10.294	141.949	7.747	1.342	8.9	172.192	4.733	1.496	7.854	234.192	2.772	2.087	2.184	224.19	12.214	1.441	8.274	393.3	48.443	4.774	16.799	1024.664	152.157	12.814	15.941	0	18.321	4.279	15.199	437.345	71.872	3.867	49.615	19.51	14.261	0	21.211	341.551	102.009	8.549	29.134	282.127	28.675	3.568	12.917	88.335	7.798	12.882	10.259
15	105.172	3.137	1.251	2.179	139.814	8.931	1.449	9.741	134.937	4.972	1.316	7.414	194.642	3.989	2.013	6.834	179.522	1.8	2.566	1.139	178.818	9.674	1.751	7.362	248.91	28.461	4.985	19.514	1264.814	34.81	30.137	19.874	0	24.918	4.751	12.147	369.257	71.134	2.452	49.884	12.262	14.472	0	27.188	269.127	71.783	4.165	29.437	218.39	29.269	1.811	23.144	49.742	4.777	8.769	8.191
20	93.218	4.472	0.965	2.472	88.783	7.87	0.821	7.375	86.875	4.158	1.016	6.411	169.011	3.199	4.736	6.471	112.604	1.449	3.137	1.617	112.183	4.628	1.13	6.192	189.718	21.224	4.032	7.842	575.442	44.472	7.701	8.136	0	20.066	3.428	9.096	221.991	16.963	1.74	34.184	14.254	13.264	0	34.734	189.224	93.219	4.459	17.42	159.712	17.475	2.189	13.136	37.962	6.068	6.417	7.115
25	79.563	4.112	0.767	4.924	75.551	7.094	.842	7.153	78.956	3.589	0.963	5.985	163.973	4.769	4.684	5.472	104.269	1.137	4.099	1.284	104.194	5.844	1.693	3.419	154.712	14.579	3.919	4.187	369.226	28.783	4.53	5	0	15.499	3.795	7.131	154.973	21.951	1.311	28.455	10.95	12.493	0	28.651	134.139	41.784	3.433	13.844	114.707	11.924	1.184	13.459	28.928	5.597	3.531	4.281
30	71.844	3.879	0.438	.5	67.214	6.48	0.537	6.731	67.318	3.066	0.893	5.065	151.081	5.065	4.182	4.937	97.181	1.065	4.761	1.066	96.19	4.182	1.937	2.819	128.912	7.91	2.414	3.12	420.328	13.818	3.15	4.962	0	13.014	2.217	5.81	145.818	24.567	1.027	23.179	23.254	11.61	0	23.775	128.305	34.644	2.847	11.486	127.811	8.908	1.017	11.146	27.811	4.908	4.788	3.419
35	67.372	3.392	0.315	1.69	63.691	5.859	0.443	6.231	63.458	4.724	0.755	5.46	121.774	4.158	0.614	4.193	75.473	0.825	0.844	0.971	75.669	3.845	0.671	2.67	111.797	12.034	2.095	4.447	343.947	16.715	4.45	5.922	0	11.109	1.957	5.163	127.057	11.478	0.951	28.643	11.956	11.23	0	17.46	110.819	34.013	2.511	10.925	115.789	6.59	0.712	9.796	44.613	4.519	3.457	4.581
40	64.784	2.721	0.454	1.917	63.462	5.193	0.422	5.954	63.096	4.109	0.521	4.716	121.874	3.87	0.193	3.111	75.824	0.784	0.551	0.855	76.614	3.19	0.472	2.284	105.21	11.038	1.095	4.095	332.875	15.347	3.92	5.09	0	10.599	1.797	5.163	107.955	10.604	0.686	19.697	10.765	11.81	0	17.46	105.819	28.68	2.185	9.114	105.307	7.865	0.717	9.086	44.614	4.519	3.457	4.581
45	69.858	2.125	0.419	1.701	66.579	5.115	.4	5.495	66.661	3.139	0.491	4.491	124.772	3.634	0.579	4.134	85.47	0.737	0.531	0.853	85.448	3.116	0.437	2.222	103.947	10.99	1.735	3.958	351.442	23.219	3.594	4.881	0	10.154	1.964	4.832	113.866	19.613	.877	19.867	10.916	11.03	0	16.524	102.782	27.653	2.245	8.965	102.961	7.752	.642	8.858	53.475	4.054	3.969	4.717
50	77.188	2.551	0.498	1.843	73.414	5.318	0.397	5.81	72.844	3.954	0.49	4.321	145.787	3.645	0.47	4.138	98.731	0.771	0.569	0.932	98.7	3.424	0.492	2.18	104.149	12.23	1.781	4.023	367.882	18.127	3.285	3.414	0	10.402	2.431	4.739	110.768	18.241	0.783	19.28	10.761	10.189	0	20.864	104.995	28.362	2.249	9.194	104.345	8.859	0.673	9.164	62.905	3.843	2.819	4.571
55	88.943	2.822	0.471	2.63	85.274	5.909	0.432	5.488	82.341	3.772	0.504	4.35	162.134	3.31	0.386	3.992	117.199	0.962	0.719	1.173	117.8	3.475	0.474	2.118	114.694	13.23	1.74	4.093	389.621	14.127	3.427	3.146	0	9.7	2.7	4.2	109.42	22.514	0.641	21.86	10.167	10.756	0	23.761	117.997	30.974	2.334	9.926	114.993	9.363	0.901	9.763	69.963	2.787	2.701	4.099
60	109.5	2.951	0.518	1.729	104.282	5.121	0.449	5.972	103.449	3.681	0.553	4.27	198.511	3.324	0.417	3.941	139.983	0.971	0.819	1.069	139.621	4.399	0.717	2.912	133.974	14.16	2.01	4.865	438.32	13.127	3.275	3.684	0	11.121	3.063	3.796	109.436	25.501	0.87	26.141	11.323	13.403	0	28.115	133.873	35.105	2.732	11.115	133.873	10.105	0.742	11.146	100.621	3.868	2.854	5.177
65	141.052	2.691	0.282	2.994	134.102	5.149	0.509	6.549	133.237	3.47	0.619	4.416	255.433	3.25	0.475	.4	180.448	1.088	0.966	1.365	180.129	5.25	0.931	2.446	162.194	17.321	2.288	5.783	558.742	12.423	3.64	4.623	0	14.319	3.115	4.845	180.334	31.669	1.182	29.168	12.462	16.204	0	30.106	180.334	44.491	2.995	14.411	161.192	12.412	0.945	14.996	127.784	.94	2.182	6.32

Pollutant Name: Oxides of Nitrogen | Temperature: 96F | Relative Humidity: 10%

Speed MPH	LDA MCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 MCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 MCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	MDV MCAT	MDV CAT	MDV DSL	MDV ALL	LHDT1 MCAT	LHDT1 CAT	LHDT1 DSL	LHDT1 ALL	LHDT2 MCAT	LHDT2 CAT	LHDT2 DSL	LHDT2 ALL	MHDT MCAT	MHDT CAT	MHDT DSL	MHDT ALL	HHDT MCAT	HHDT CAT	HHDT DSL	HHDT ALL	MCY MCAT	MCY CAT	MCY DSL	MCY ALL	SBUS MCAT	SBUS CAT	SBUS DSL	SBUS ALL	MH MCAT	MH CAT	MH DSL	MH ALL	ALL MCAT	ALL CAT	ALL DSL	ALL ALL
5	3.992	0.456	1.992	0.485	2.953	0.935	2.064	0.957	2.964	0.993	1.929	0.951	4.914	0.949	1.612	0.929	1.549	0.334	0.479	0.334	1.299	0.722	0.33	0.426	1.573	2.425	13.879	13.404	14.766	0.129	48.441	40.175	0	1.368	13.441	9.15	1.537	4.702	12.151	0.595	8.892	1.967	0	0.426	0.945	0.252	0.054	0.153	1.689	0.748	34.28	0.429
10	3.272	0.291	1.544	0.423	3.072	0.691	1.681	0.779	3.094	0.72	1.061	0.782	5.167	0.777	1.676	0.887	1.185	0.227	0.342	0.266	1.181	0.759	0.528	0.351	1.288	2.542	18.71	11.242	17.42	0.031	17.265	27.97	0	1.097	10.594	.58	2.573	7.873	10.09	7.014	9.014	1.062	0	0.864	2.378	1.625	14.798	11.705	2.305	.13	11.414	2.842	1.737	0.615	13.917	0.914
15	2.425	0.337	1.412	0.379	2.127	0.645	1.42	0.655	2.121	0.675	1.276	0.687	3.428	0.68	1.949	0.71	1.042	0.176	0.786	.5	3.594	2.088	2.473	10.724	3.741	10.267	8.562	28.81	19.9	0	7.268	8.01	7.859	3.014	7.414	3.119	7.682	0.919	0.972	0	0.985	2.487	1.755	12.843	11.432	2.619	3.169	0.729	2.115	0.748	1.741	0.695	16.902	3.91
20	2.591	0.21	1.228	0.366	2.054	0.561	1.273	0.424	1.609	0.607	1.228	0.605	2.808	0.581	1.281	0.639	0.728	0.166	0.241	0.175	0.758	0.623	1.525	0.554	2.609	2.796	9.578	9.753	19.126	7.972	19.167	19.664	0	1.196	8.661	6.419	9.929	7.755	6.859	7.222	1.667	9.914	0	0.987	2.487	1.755	12.843	11.432	2.619	3.169	0.729	2.115	0.748	1.741	0.695	16.902	3.91
25	.375	0.354	1.162	0.32	1.324	0.459	1.175	0.379	1.37	0.551	1.121	0.574	1.559	0.574	1.181	0.599	1.313	0.127	1.216	0.174	1.413	0.669	0.425	0.541	2.351	2.937	8.44	9.957	18.949	7.166	16.447	18.17	0	1.215	7.422	5.181	9.292	8.607	4.993	7.2	1.367	9.967	0	1.014	2.722	2.926	13.87	10.666	2.704	3.291	6.967	2.448	2.051	0.682	16.235	1.664
30	2.012	0.185	1.111	0.283	1.706	0.416	1.124	0.348	1.736	0.518	1.012	0.54	1.312	0.518	1.119	0.555	1.781	0.104	1.214	1.118	1.881	0.608	0.424	0.504	2.449	3.64	8.472	7.778	20.96	7.458	15.992	19.926	0	1.109	7.095	5.838	.65	8.018	3.494	7.206	1.092	9.01	0	1.042	2.897	4.095	13.65	10.18	2.969	3.266	7.752	2.637	2.144	0.677	19.907	2.518
35	4.994	0.333	.1	0.293	3.973	0.464	1.104	0.521	.4	0.453	1.072	0.516	1.339	0.516	1.129	0.528	1.968	0.143	1.175	1.023	1.969	0.843	0.571	0.818	5.943	3.341	8.375	7.721	21.67	8.005	15.49	19.43	0	1.464	7.021	5.844	3.949	8.779	2.594	7.492	1.137	9.941	0	1.148	2.815	4.155	11.214	10.125	5.968	3.603	7.964	2.672	2.238	0.931	15.672	1.652
40	4.272	0.316	1.15	0.287	4.019	0.436	1.167	0.537	1.067	0.479	.1	0.519	1.709	0.48	1.258	0.516	2.066	0.29	1.408	1.459	2.066	0.979	0.493	1.111	3.08	3.204	8.199	7.811	22.475	8.118	15.259	19.181	0	1.893	7.219	6.12	3.962	9.138	3.13	7.7	7.712	1.183	9.979	0	1.154	2.968	4.42	11.545	10.401	5.86	3.87	7.664	2.151	2.529	0.914	15.233	1.346
45	4.45	0.343	1.283	0.319	4.266	0.414	1.314	0.542	1.237	0.473	1.7	.5	1.871	0.476	1.225	0.535	2.121	0.399	1.401	1.511	2.11	1.015	0.592	.1	3.195	3.199	9.164	8.424	23.211	8.419	15.137	19.444	0	1.583	7.479	6.436	3.367	9.441	4.248	8.141	1.223	9.996	0	1.154	3.191	4.586	11.28	11.047	3.191	3.913	8.444	2.041	2.421	0.934	15.223	3.292
50	4.619	0.245	1.329	0.291	4.175	0.441	1.34	0.553	1.449	0.481	1.28	0.548	1.938	.255	0.412	0.525	2.187	0.241	1.492	1.695	2.187	1.092	0.762	1.048	3.31	1.698	9.219	8.151	8.91	15.245	15.154	0	1.282	8.061	7.941	3.991	8.983	5.257	8.865	1.273	1.616	0	1.189	3.299	4.751	12.593	12.138	3.81	3.568	9.196	2.871	2.517	0.853	15.348	1.421
55	4.888	0.252	1.712	0.3	4.744	0.445	1.39	0.564	1.779	0.487	1.475	0.557	2.431	0.489	1.741	0.542	2.278	0.222	1.989	1.912	2.271	1.109	0.891	1.278	3.428	0.474	10.311	10.526	24.993	8.222	17.249	19.534	0	1.443	8.461	7.865	4.124	10.388	5.351	8.322	1.518	1.067	0	1.211	3.41	4.916	13.414	13.793	3.425	4.423	10.292	3.134	2.814	0.833	15.478	1.585
60	5.584	0.184	1.139	0.338	4.996	0.541	1.32	0.79	1.83	0.547	1.117	0.599	2.121	0.249	2.23	0.429	2.328	0.194	1.142	1.111	2.321	0.987	0.592	1.186	3.61	0.551	10.921	10.975	26.474	8.344	18.416	19.824	0	1.74	10.01	10.878	4.185	10.824	5.194	8.141	1.406	1.266	0	1.325	3.61	5.247	13.421	13.917	3.874	5.12	10.224	3.811	2.981	0.891	14.963	1.834

Pollutant Name: Carbon Dioxide | Temperature: 96F | Relative Humidity: 10%

Speed MPH	LDA MCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 MCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 MCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	MDV MCAT	MDV CAT	MDV DSL	MDV ALL	LHDT1 MCAT	LHDT1 CAT	LHDT1 DSL	LHDT1 ALL	LHDT2 MCAT	LHDT2 CAT	LHDT2 DSL	LHDT2 ALL	MHDT MCAT	MHDT CAT	MHDT DSL	MHDT ALL	HHDT MCAT	HHDT CAT	HHDT DSL	HHDT ALL	MCY MCAT	MCY CAT	MCY DSL	MCY ALL	SBUS MCAT	SBUS CAT	SBUS DSL	SBUS ALL	MH MCAT	MH CAT	MH DSL	MH ALL	ALL MCAT	ALL CAT	ALL DSL	ALL ALL
5	1183.79	1144.17	352.954	1169.347	1187.448	1431.218	346.487	1357.218	1366.793	1447.345	279.373	1442.787	1671.444	1497.112	345.72	1466.779	2213.73	2119.51	731.72	2178.449	2212.73	2213.73	1399.449	2176.9	2754.91	4098.981	4192.924	6	9	4444.157	4412.424	9	3774.9	4099	4129.349	9	9	3774.9	4099	4129.349	9	9	84.851	137.937	7315.266	1414.779
10	1169.282	847.174	352.894	836.82	1027.078	1042.54	346.485	1011.801	1024.442	1047.36	279.373	1047.078	1237.444	1412.414	345.72	1458.443	1472.287	1472.287	728.344	1389.792	1472.287	1472.247	731.737	1439.839	1472.247	1472.287	1472.247	1472.287	1472.287	1163.444	1192.934	9	1173.451	1395	1392.781	1179.444	1179.444	1173.444	1395	1392.781	1179.444	1179.444	1395	1444.39	527.152	1045.712	2193.758	1414.647
15	822.819	672.721	352.894	672.919	869.449	893.971	346.485	793.829	869.449	893.971	279.373	893.971	1047.843	1184.37	345.72	1234.154	1375.484	1375.484	728.344	957.94	1375.484	1375.484	731.737	1375.484	1375.484	1375.484	1375.484	1375.484	1375.484	1375.484	1375.484	9	1375.484	1395	1392.781	1375.484	1375.484	1375.484	1395	1392.781	1375.484	1375.484	1395	1234.654

Pollutant Name: PM10 Temperature: 90F Relative Humidity: 10%

Speed MPH	LDA NOAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NOAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NOAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	MDV NOAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NOAT	LHD1 CAT	LHD1 DSL	LHD1 ALL	LHD2 NOAT	LHD2 CAT	LHD2 DSL	LHD2 ALL	MHD NOAT	MHD CAT	MHD DSL	MHD ALL	HHD NOAT	HHD CAT	HHD DSL	HHD ALL	SBUS NOAT	SBUS CAT	SBUS DSL	SBUS ALL	MCY NOAT	MCY CAT	MCY DSL	MCY ALL	ALL NOAT	ALL CAT	ALL DSL	ALL ALL
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0.184	0.059	0.112	0.074	0.101	0.071	0.135	0.074	0.103	0.136	0.215	0.174	0.104	0.109	0.108	0.109	0.101	0.024	0.111	0.054	0.101	0.066	0.166	0.104	0.101	0.068	0.143	0.078	0.101	0.066	0.777	0.379	0	0	0.992	0.582	0	0	1.139	0.996	0	0	2.121	3.103	0	0	1.194	0.953	0	0	1.256	1.045	0	0	1.019	0.122
10	0.074	0.056	0.192	0.036	0.071	0.047	0.105	0.051	0.075	0.099	0.184	0.009	0.071	0.073	0.085	0.071	0.064	0.016	0.009	0.04	0.064	0.025	0.133	0.070	0.064	0.046	0.164	0.037	0.064	0.054	1.092	1.844	0	0	0.864	0.750	0.404	0.044	0.864	0.192	0.119	0.041	0.501	0	0.834	0.046	0.808	0.193	0.915	0.066	0.032	0.4	0.577	0.047	0.053	1.109	0.435
15	0.075	0.054	0.136	0.025	0.074	0.042	0.088	0.036	0.066	0.041	0.128	0.001	0.074	0.048	0.049	0.045	0.065	0.011	0.072	0.031	0.065	0.02	0.092	0.041	0.067	0.02	0.119	0.026	0.065	0.018	1.23	1.22	0	0	0.671	0.286	0.065	0.024	0.674	0.154	0.085	0.013	0.001	0	0.656	0.045	0.609	0.077	0.757	0.015	0.008	0.338	0.601	0.033	0.013	1.047	0.248
20	0.063	0.038	0.12	0.018	0.061	0.034	0.069	0.027	0.061	0.066	0.128	0.045	0.061	0.035	0.056	0.038	0.063	0.008	0.059	0.015	0.061	0.016	0.075	0.019	0.061	0.023	0.09	0.016	0.061	0.017	0.81	0	0	0.621	0.468	0.234	0.032	0.011	0.135	0.068	0.045	0.005	0	0.611	0.023	0.535	0.758	0.633	0.023	0.009	0.264	0.049	0.014	0.007	0.74	0.189
25	0.055	0.031	0.101	0.011	0.054	0.019	0.058	0.021	0.055	0.031	0.101	0.024	0.054	0.027	0.047	0.027	0.052	0.006	0.049	0.02	0.054	0.011	0.063	0.018	0.054	0.018	0.071	0.013	0.054	0.013	0.718	0.732	0	0.416	0.351	0.261	0.024	0.011	0.109	0.051	0.043	0.005	0	0.528	0.024	0.521	0.63	0.52	0.021	0.011	0.223	0.018	0.018	0.017	0.617	0.157
30	0.05	0.031	0.086	0.014	0.049	0.015	0.05	0.017	0.05	0.027	0.087	0.018	0.049	0.021	0.042	0.04	0.023	0.019	0.064	0.017	0.019	0.008	0.054	0.015	0.019	0.016	0.061	0.009	0	0.013	0.217	0.326	0.019	0.019	0.019	0.011	0.041	0.010	0.062	0	0.027	0.016	0.016	0.533	0.045	0.019	0.063	0.39	0.034	0.015	0.014	0.028	0.139
35	0.027	0.009	0.074	0.01	0.025	0.013	0.032	0.012	0.025	0.013	0.078	0.023	0.025	0.012	0.038	0.02	0.012	0.009	0.028	0.015	0.012	0.008	0.048	0.01	0.012	0.01	0.055	0.01	0	0.01	0.285	0.139	0.015	0.015	0.015	0.011	0.041	0.009	0.062	0	0.027	0.015	0.012	0.472	0.19	0.015	0.063	0.166	0.01	0.014	0.011	0.048	0.118
40	0.025	0.008	0.045	0.009	0.024	0.011	0.019	0.013	0.025	0.013	0.069	0.021	0.024	0.011	0.017	0.013	0.011	0.011	0.005	0.013	0.011	0.008	0.043	0.012	0.011	0.009	0.036	0.013	0.011	0.013	0.73	0.364	0	0.009	0.264	0.197	0.023	0.012	0.097	0.031	0.04	0.002	0	0.028	0.011	0.011	0.018	0.033	0.005	0.013	0.169	0.027	0.014	0.012	0.157	0.11
45	0.024	0.008	0.042	0.009	0.024	0.01	0.018	0.012	0.023	0.018	0.061	0.019	0.023	0.015	0.029	0.016	0.011	0.012	0.011	0.005	0.009	0.009	0.034	0.011	0.009	0.013	0.031	0.009	0.013	0.013	0.238	0.594	0	0.007	0.243	0.162	0.011	0.011	0.065	0.025	0.041	0.002	0	0.01	0.011	0.01	0.376	0.12	0.033	0.002	0.136	0.024	0.014	0.011	0.145	0.109
50	0.025	0.008	0.038	0.009	0.024	0.01	0.017	0.012	0.023	0.019	0.059	0.019	0.024	0.015	0.027	0.015	0.01	0.011	0.006	0.005	0.01	0.009	0.034	0.011	0.01	0.009	0.029	0.009	0.01	0.009	0.327	0.152	0.01	0.01	0.041	0.037	0.012	0.01	0.046	0.023	0.04	0.002	0	0.014	0.01	0.009	0.232	0.199	0.01	0.003	0.082	0.024	0.013	0.011	0.102	0.113
55	0.027	0.008	0.034	0.009	0.024	0.011	0.017	0.012	0.027	0.02	0.054	0.02	0.024	0.016	0.01	0.017	0.01	0.011	0.006	0.005	0.009	0.009	0.027	0.011	0.009	0.009	0.027	0.009	0.01	0.009	0.508	0.237	0.015	0.01	0.009	0.042	0.026	0.009	0.061	0.01	0.041	0.01	0.003	0.397	0.037	0.01	0.092	0.433	0.022	0.004	0.011	0.217	0.129
60	0.03	0.008	0.034	0.009	0.028	0.011	0.017	0.011	0.03	0.022	0.053	0.021	0.028	0.017	0.015	0.017	0.009	0.012	0.007	0.01	0.009	0.009	0.024	0.011	0.009	0.009	0.022	0.009	0.01	0.009	0.718	0.731	0	0.006	0.312	0.212	0.009	0.009	0.064	0.027	0.038	0.003	0	0.01	0.009	0.008	0.51	0.28	0.009	0.002	0.119	0.023	0.016	0.011	0.101	0.148
65	0.035	0.01	0.054	0.01	0.034	0.013	0.031	0.013	0.035	0.025	0.055	0.025	0.034	0.021	0.02	0.023	0.01	0.01	0.01	0.01	0.01	0.01	0.024	0.011	0.01	0.01	0.022	0.01	0.01	0.01	0.009	0.212	0.012	0.01	0.009	0.043	0.028	0.009	0.063	0.028	0.036	0.003	0	0.006	0.01	0.009	0.163	0.128	0.01	0.003	0.059	0.023	0.016	0.011	0.073	0.176

Pollutant Name: PM10 - Tire Wear Temperature: 90F Relative Humidity: 10%

Speed MPH	LDA NOAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NOAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NOAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	MDV NOAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NOAT	LHD1 CAT	LHD1 DSL	LHD1 ALL	LHD2 NOAT	LHD2 CAT	LHD2 DSL	LHD2 ALL	MHD NOAT	MHD CAT	MHD DSL	MHD ALL	HHD NOAT	HHD CAT	HHD DSL	HHD ALL	SBUS NOAT	SBUS CAT	SBUS DSL	SBUS ALL	MCY NOAT	MCY CAT	MCY DSL	MCY ALL	ALL NOAT	ALL CAT	ALL DSL	ALL ALL
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0.009	0.008	0.009	0.009	0.008	0.009	0.006	0.008	0.008	0.009	0.006	0.008	0.008	0.008	0.008	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.034	0.034	0	0.012	0.012	0.012	0.012	0.012	0.007	0.011	0.004	0.003	0	0.004	0.012	0.012	0.012	0.012	0.003	0.012	0.006	0.003	0.011	0.011
10	0.008	0.009	0.008	0.008	0.008	0.008	0.006	0.008	0.008	0.008	0.006	0.008	0.008	0.008	0.008	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.034	0.034	0	0.012	0.012	0.012	0.012	0.012	0.008	0.011	0.004	0.004	0	0.004	0.012	0.012	0.012	0.012	0.003	0.012	0.006	0.003	0.011	0.011
15	0.007	0.008	0.008	0.008	0.008	0.008	0.006	0.008	0.008	0.008	0.006	0.008	0.008	0.008	0.008	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.034	0.034	0	0.012	0.012	0.012	0.012	0.012	0.008	0.011	0.004	0.004	0	0.004	0.012	0.012	0.012	0.012	0.003	0.012	0.006	0.003	0.011	0.011
20	0.005	0.008	0.005	0.005	0.005	0.008	0.004	0.008	0.008	0.008	0.005	0.008	0.005	0.008	0.005	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.034	0.034	0	0.012	0.012	0.012	0.012	0.012	0.009	0.011	0.004	0.004	0	0.004	0.012	0.012	0.012	0.012	0.003	0.012	0.006	0.003	0.011	0.011
25	0.005	0.008	0.005	0.005	0.005	0.008	0.004	0.008	0.008	0.008	0.005	0.008	0.005	0.008	0.005	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.034	0.034	0	0.012	0.012	0.012	0.012	0.012	0.009	0.011	0.004	0.004	0	0.004	0.012	0.012	0.012	0.012	0.003	0.012	0.006	0.003	0.011	0.011
30	0.006	0.008	0.006	0.006	0.006	0.008	0.005	0.008	0.008	0.008	0.006	0.008	0.006	0.008	0.006	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.034	0.034	0	0.012	0.012	0.012	0.012	0.012	0.008	0.011	0.004	0.004	0	0.004	0.012	0.012	0.012	0.012	0.003	0.012	0.006	0.003	0.011	0.011
35	0.009	0.008	0.009	0.009	0.008	0.008	0.006	0.008	0.008	0.008	0.006	0.008	0.008	0.008	0.008	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.034	0.034	0	0.012	0.012	0.012	0.012	0.012	0.008	0.011	0.004	0.004	0	0.004	0.012	0.012	0.012	0.012	0.003	0.012	0.006	0.003	0.011	0.011
40	0.009	0.008	0.009	0.009	0.008	0.008	0.006	0.008	0.008	0.008	0.006	0.008	0.008	0.008	0.008	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.034	0.034	0	0.012	0.012	0.012	0.012	0.012	0.008	0.011	0.004	0.004	0	0.004	0.012	0.012	0.012	0.012	0.003	0.012	0.006	0.003	0.011	0.011
45	0.008	0.008	0.008	0.008	0.008	0.008	0.006	0.008	0.008	0.008	0.006	0.008	0.008	0.008	0.008	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.034	0.034	0	0.012	0.012	0.012	0.012	0.012	0.008	0.011	0.004	0.004	0	0.004	0.012	0.012	0.012	0.012	0.003	0.012	0.006	0.003	0.011	0.011
50	0.008	0.008	0.008	0.008	0.008	0.008	0.006	0.008	0.008	0.008	0.006	0.008	0.008	0.008	0.008	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.034	0.034	0	0.012	0.012	0.012	0.012	0.012	0.008	0.011	0.004	0.004	0	0.004	0.012	0.012	0.012	0.012	0.003	0.012	0.006	0.003	0.011	0.011
55	0.003	0.009	0.008	0.009	0.003	0.009	0.008	0.008	0.003	0.009	0.008	0.008	0.008	0.008	0.008	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.034	0.034	0	0.012	0.012	0.012	0.012	0.012	0.008	0.011	0.004	0.004	0	0.004	0.012	0.012	0.012	0.012	0.003	0.012	0.006	0.003	0.011	0.011
60	0.003	0.008	0.008	0.008	0.003	0.008	0.008	0.008	0.003	0.008	0.008	0.008	0.008	0.008	0.008	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.034	0.034	0	0.012	0.012	0.012	0.012	0.012	0.008	0.011	0.004	0.004	0	0.004	0.012	0.012	0.012	0.012	0.003	0.012	0.006	0.003	0.011	0.011
65	0.008	0.009	0.008	0.009	0.008	0.008	0.008	0.008	0.008	0.009	0.008	0.008	0.008	0.008	0.008	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.034	0.034	0	0.012	0.012	0.012	0.012	0.012	0.008	0.011	0.004	0.004	0	0.004	0.012	0.012	0.012	0.012	0.003	0.012	0.006	0.003	0.011	0.011

Pollutant Name: PM10 - Brake Wear Temperature: 90F Relative Humidity: 10%

Speed MPH	LDA NOAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NOAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NOAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	MDV NOAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NOAT	LHD1 CAT	LHD1 DSL	LHD1 ALL	LHD2 NOAT	LHD2 CAT	LHD2 DSL	LHD2 ALL	MHD NOAT	MHD CAT	MHD DSL	MHD ALL	HHD NOAT	HHD CAT	HHD DSL	HHD ALL	SBUS NOAT	SBUS CAT	SBUS DSL	SBUS ALL	MCY NOAT	MCY CAT	MCY DSL	MCY ALL	ALL NOAT	ALL CAT	ALL DSL	ALL ALL
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.024	0.024	0	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.004	0.004	0	0.004	0.013	0.013	0.013	0.013	0.003	0.013	0.006	0.003	0.013	0.013
10	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.024	0.024	0	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.004	0.004	0	0.004	0.013	0.013	0.013	0.013	0.003	0.013	0.006	0.003	0.013	0.013
15	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.024	0.024	0	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.004	0.004	0	0.004	0.013	0.013	0.013	0.013	0.003	0.013	0.006	0.003	0.013	0.013
20	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.024	0.024	0	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.004	0.004	0	0.004	0.013	0.013	0.013	0.013	0.003	0.013	0.006	0.003	0.013	0.013
25	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.024	0.024	0	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.004	0.004	0	0.004	0.013	0.013	0.013	0.013	0.003	0.013	0.006	0.003	0.013	0.013
30	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.024	0.024	0	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.004	0.004	0	0.004	0.013	0.013	0.013	0.013	0.003	0.013	0.006	0.003	0.013	0.013
35	0.014	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.024	0.024	0	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.004	0.004	0	0.004	0.013	0.013	0.013	0.013	0.003	0.013	0.006	0.003	0.013	0.013
40	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.024	0.024	0	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.004	0.004	0	0.004	0.013	0.013	0.013	0.013	0.003	0.013	0.006	0.003	0.013	0.013
45	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.024	0.024	0	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.004	0.004	0	0.004	0.013	0.013	0.013	0.013	0.003	0.013	0.006	0.003	0.013	0.013
50	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.024	0.024	0	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.004	0.004	0	0.004	0.013	0.013	0.013	0.013	0.003	0.013	0.006	0.003	0.013	0.013
55	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.024	0.024	0	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.004	0.004	0	0.004	0.013	0.013	0.013	0.013	0.003	0.013	0.006	0.003	0.013	0.013
60	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.024	0.024	0	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.004	0.004	0	0.004	0.013	0.013	0.013	0.013	0.003	0.013	0.006	0.003	0.013	0.013
65	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.024	0.024	0	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.004	0.004	0	0.004	0.013	0.013	0.013	0.013	0.003	0.013	0.006	0.003	0.013	0.013

Pollutant Name: Gasoline - exhaust Temperature: 90F Relative Humidity: 10%

Speed MPH	LDA NOAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NOAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NOAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	MDV NOAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NOAT	LHD1 CAT	LHD1 DSL	LHD1 ALL	LHD2 NOAT	LHD2 CAT	LHD2 DSL	LHD2 ALL	MHD NOAT	MHD CAT	MHD DSL	MHD ALL	HHD NOAT	HHD CAT	HHD DSL	HHD ALL	SBUS NOAT	SBUS CAT	SBUS DSL	SBUS ALL	MCY NOAT	MCY CAT	MCY DSL	MCY ALL	ALL NOAT	ALL CAT	ALL DSL	ALL ALL
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	1.85	5.5	0	7.474	5.101	4.895	0	4.986	7.131	4.857	0	4.819	3.793	4.112	0	4.429	2.793	7.511	0	3.331	2.792	4.477	0	3.466	2.537	3.471	0	3.259	1.243	3.112	0	1.079	0	3.161	0	1.103	2.441	1.263	0	4.199	38.063	29.025	0	38.181	3.529	7.163	0	1.007	3.527	3.121	0	3.196	37.357	6.179	0	6.981
10	4.661	10.999	0	10.646	6.421	5.2	0	5.161	6.451	5.2	0	5.14	5.09	5.4	0	5.066	4.158	5.262	0	5.379	4.158	5.237	0	5.21	4.5	5.07	0	4.937	3.166

GHG Reference source 1: Table C.4, California Climate Action Registry General Reporting Protocol Version 3.1, January 2009

Table C.4 Methane and Nitrous Oxide Emission Factors for Highway Vehicles by Model Year

Vehicle Types/Model Years	N_2O (g/mile)	CH_4 (g/mile)
Gasoline Passenger Cars		
Model Years 1984-1993	0.0647	0.0704
Model Year 1994	0.0560	0.0531
Model Year 1995	0.0473	0.0358
Model Year 1996	0.0426	0.0272
Model Year 1997	0.0422	0.0268
Model Year 1998	0.0393	0.0249
Model Year 1999	0.0337	0.0216
Model Year 2000	0.0273	0.0178
Model Year 2001	0.0158	0.0110
Model Year 2002	0.0153	0.0107
Model Year 2003	0.0135	0.0114
Model Year 2004	0.0083	0.0145
Model Year 2005 - Present	0.0079	0.0147
Gasoline Light Trucks (Vans, Pickup Trucks, SUVs)		
Model Years 1987-1993	0.1035	0.0813
Model Year 1994	0.0982	0.0646
Model Year 1995	0.0908	0.0517
Model Year 1996	0.0871	0.0452
Model Year 1997	0.0871	0.0452
Model Year 1998	0.0728	0.0391
Model Year 1999	0.0564	0.0321
Model Year 2000	0.0621	0.0346
Model Year 2001	0.0164	0.0151
Model Year 2002	0.0228	0.0178
Model Year 2003	0.0114	0.0155
Model Year 2004	0.0132	0.0152
Model Year 2005 - Present	0.0101	0.0157

Table C.4 Methane and Nitrous Oxide Emission Factors for Highway Vehicles by Model Year (continued)

Vehicle Types/Model Years	N_2O (g/mile)	CH_4 (g/mile)
Gasoline Heavy-Duty Vehicles		
Model Years 1985-1986	0.0515	0.4090
Model Year 1987	0.0549	0.3675
Model Years 1988-1989	0.0933	0.3492
Model Years 1990-1995	0.1142	0.3246
Model Year 1996	0.1680	0.1278
Model Year 1997	0.1726	0.0924
Model Year 1998	0.1693	0.0641
Model Year 1999	0.1435	0.0578
Model Year 2000	0.1092	0.0493
Model Year 2001	0.1235	0.0528
Model Year 2002	0.1307	0.0546
Model Year 2003	0.1240	0.0533
Model Year 2004	0.0285	0.0341
Model Year 2005 - Present	0.0177	0.0326
Diesel Passenger Cars		
Model Years 1960-1982	0.0012	0.0006
Model Years 1983 - Present	0.0010	0.0005
Diesel Light Trucks		
Model Years 1960-1982	0.0017	0.0011
Model Years 1983-1995	0.0014	0.0009
Model Years 1996 - Present	0.0015	0.0010
Diesel Heavy-Duty Vehicles		
All Model Years	0.0048	0.0051

Source: Gasoline vehicle factors from EPA Climate Leaders, Mobile Combustion Guidance, (2008) based on U.S. EPA, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2005 (2007). Diesel vehicle factors based on U.S. EPA, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2005 (2007), Annex 3.2, Table A-98.

Reference source 2:

Greenhouse Gas Global Warming Potential (GWP) - Intergovernmental Panel on Climate Change, Second Assessment Report (1996)

CO_2 GWP (SAR, 1996) = 1

CH_4 GWP (SAR, 1996) = 21

N_2O GWP (SAR, 1996) = 310