



E2. AIR QUALITY DATA



MASTER MANAGEMENT PLAN UPDATE AND ASSOCIATED PARK IMPROVEMENT PROJECTS
DRAFT ENVIRONMENTAL IMPACT REPORT

Road Construction Emissions Model

Version 5.2

Data Entry Worksheet

Note: Required data input sections have a yellow background.

Optional data input sections have a blue background. Only areas with a yellow or blue background can be modified. Program defaults have a white background.

The user is required to enter information in cells C10 through C28.

Input Type

Project Name	Bidwell Prk Improvements	
Construction Start Year	2008	Enter a Year between 2000 and 2010 inclusive
Project Type	1	1 New Road Construction 2 Road Widening 3 Bridge/Overpass Construction
Project Construction Time	12	months
Predominate Soil/Site Type: Enter 1, 2, or 3	2	1. Sand Gravel 2. Weathered Rock-Earth 3. Blasted Rock
On-Road Emission Factors: Enter 1, 2, 3, or 4	4	1. Emfac7fv1.1 4. Emfac2002 (default) 2. Emfac7G 3. Emfac2001
Project Length	5	miles
Total Project Area	40	acres
Maximum Area Disturbed/Day	1	acres
Water Trucks Used?	2	1. Yes 2. No
Soil Imported	0	yd ³ /day
Soil Exported	0	yd ³ /day
Average Truck Capacity	20	yd ³ (assume 20 if unknown)

The remaining sections of this sheet contain areas that can be modified by the user, although those modifications are optional.

Construction Periods	User Override of		Program
	Construction Months	Construction Months	Calculated Months
Grubbing/Land Clearing			1.20
Grading/Excavation			5.40
Drainage/Utilities/Sub-Grade			3.60
Paving			1.80
Totals	0.00		12.00

Soil Hauling Emissions		User Override of				
User Input		Soil Hauling Defaults	Default Values			
Miles/round trip			30			
Round trips/day			0			
Vehicle miles traveled/day (calculated)		0				
Hauling Emissions		ROG	NOx	CO	PM10	
Emission rate (grams/mile)		0.75	8.63	7.25	0.27	
Pounds per day		0.0	0.0	0.0	0.0	
Tons per construction period		0.00	0.00	0.00	0.00	

Worker Commute Emissions	User Override of Worker			
	Commute Default Values	Default Values		
Miles/ one-way trip		20		
One-way trips/day		2		
No. of employees: Grubbing/Land Clearing		15		
No. of employees: Grading/Excavation		18		
No. of employees: Drainage/Utilities/Sub-Grade		18		
No. of employees: Paving		16		
	ROG	NOx	CO	PM10
Emission rate (grams/mile)	0.30		6.25	0.04
Emission rate (grams/trip)	1.62	0.72	16.13	0.02
Pounds per day - Grubbing/Land Clearing	0.6	0.1	10.4	0.1
Tons per const. Period - Grub/Land Clear	0.0	0.0	0.1	0.0
Pounds per day - Grading/Excavation	0.7	0.1	12.1	0.1
Tons per const. Period - Grading/Excavation	0.0	0.0	0.7	0.0
Pounds per day - Drainage/Utilities/Sub-Grade	0.7	0.1	12.1	0.1
Tons per const. Period - Drain/Util/Sub-Grade	0.0	0.0	0.5	0.0
Pounds per day - Paving	0.7	0.1	11.3	0.1
Tons per const. Period - Paving	0.0	0.0	0.2	0.0
tons per construction period	0.1	0.0	1.6	0.0

Water Truck Emissions	Program Estimate of		User Override of Water	Default Values
	Number of Water Trucks	Number of Water Trucks	Truck Miles Traveled	Miles Traveled/Day
Grubbing/Land Clearing - Exhaust		0		0
Grading/Excavation - Exhaust		0		0
Drainage/Utilities/Subgrade		0		0
	ROG	NOx	CO	PM10
Emission rate (grams/mile)	0.75	8.63	7.25	0.27
Pounds per day - Grubbing/Land Clearing	0.0	0.0	0.0	0.0
Tons per const. Period - Grub/Land Clear	0.00	0.00	0.00	0.00
Pound per day - Grading/Excavation	0.0	0.0	0.0	0.0
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00
Pound per day - Drainage/Utilities/Subgrade	0.0	0.0	0.0	0.0
Tons per const. Period - Drainage/Utilities/Subgrade	0.00	0.00	0.00	0.00

Fugitive PM10 Dust	User Override of Max	Default	pounds/day	tons/per period
	Acreage/Day	Maximum Acreage/Day		
Fugitive Dust - Grubbing/Land Clearing		1	10.0	0.1
Fugitive Dust - Grading/Excavation		1	10.0	0.6
Fugitive Dust - Drainage/Utilities/Subgrade		1	10.0	0.4

Off-Road Equipment Emissions							
Grubbing/Land Clearing	Default		ROG	CO	NOx	PM10	
	Number of Vehicles	Type					
Override of Default Number of Vehicles	Program-estimate		pounds/day	pounds/day	pounds/day	pounds/day	
1		Backhoes	0.67	2.40	4.54	0.38	
		Bore/Drill Rigs	0.00	0.00	0.00	0.00	
		Concrete/Industrial Saws	0.00	0.00	0.00	0.00	
1		Compactor	2.08	10.32	9.43	0.52	
		Cranes	0.00	0.00	0.00	0.00	
		Crawler Tractors	0.00	0.00	0.00	0.00	
		Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	
1	1	Dozer	3.63	17.20	21.55	1.12	
		Excavator	0.00	0.00	0.00	0.00	
		Forklifts, Rough Terrain	0.00	0.00	0.00	0.00	
1		Grader	1.20	5.64	9.73	0.53	
		Loaders, Rubber Tired	0.00	0.00	0.00	0.00	
		Off-Highway Trucks	0.00	0.00	0.00	0.00	
1		Other Construction Equip.	2.08	10.32	9.43	0.52	
		Pavers	0.00	0.00	0.00	0.00	
		Paving Equipment	0.00	0.00	0.00	0.00	
		Rollers	0.00	0.00	0.00	0.00	
0	1	Scrapper	0.00	0.00	0.00	0.00	
0	10	Signal Boards	0.00	0.00	0.00	0.00	
		Skid Steer Loaders	0.00	0.00	0.00	0.00	
		Surfacing Equipment	0.00	0.00	0.00	0.00	
		Tractors	0.00	0.00	0.00	0.00	
		Trenchers	0.00	0.00	0.00	0.00	
			pounds per day	9.7	45.9	54.7	3.1
			tons per period	0.1	0.6	0.7	0.0

Grading/Excavation		Number of Vehicles		ROG	CO	NOx	PM10
Override of Default Number of Vehicles	Program-estimate	Type	pounds/day	pounds/day	pounds/day	pounds/day	
		Backhoes	0.00	0.00	0.00	0.00	
		Bore/Drill Rigs	0.00	0.00	0.00	0.00	
		Concrete/Industrial Saws	0.00	0.00	0.00	0.00	
		Compactor	0.00	0.00	0.00	0.00	
	0	Cranes	0.00	0.00	0.00	0.00	
		Crawler Tractors	0.00	0.00	0.00	0.00	
		Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	
1		Dozer	3.63	17.20	21.55	1.12	
	1	Excavator	1.84	6.34	6.47	0.34	
		Forklifts, Rough Terrain	0.00	0.00	0.00	0.00	
0	1	Grader	0.00	0.00	0.00	0.00	
0	1	Loaders, Rubber Tired	0.00	0.00	0.00	0.00	
		Off-Highway Trucks	0.00	0.00	0.00	0.00	
1	0	Other Construction Equip.	2.08	10.32	9.43	0.52	
		Pavers	0.00	0.00	0.00	0.00	
		Paving Equipment	0.00	0.00	0.00	0.00	
		Rollers	0.00	0.00	0.00	0.00	
0	1	Scraper	0.00	0.00	0.00	0.00	
0	10	Signal Boards	0.00	0.00	0.00	0.00	
		Skid Steer Loaders	0.00	0.00	0.00	0.00	
		Surfacing Equipment	0.00	0.00	0.00	0.00	
		Tractors	0.00	0.00	0.00	0.00	
		Trenchers	0.00	0.00	0.00	0.00	
			max pounds per day	7.5	33.9	37.4	2.0
			tons per period	0.4	2.0	2.2	0.1

Drainage/Utilities/Subgrade		Number of Vehicles	ROG	CO	NOx	PM10
Override of Default Number of Vehicles	<i>Program-estimate</i>	Type	pounds/day	pounds/day	pounds/day	pounds/day
		Backhoes	0.00	0.00	0.00	0.00
		Bore/Drill Rigs	0.00	0.00	0.00	0.00
		Concrete/Industrial Saws	0.00	0.00	0.00	0.00
0	1	Compactor	0.00	0.00	0.00	0.00
		Cranes	0.00	0.00	0.00	0.00
		Crawler Tractors	0.00	0.00	0.00	0.00
		Crushing/Proc. Equipment	0.00	0.00	0.00	0.00
		Dozer	0.00	0.00	0.00	0.00
		Excavator	0.00	0.00	0.00	0.00
		Forklifts, Rough Terrain	0.00	0.00	0.00	0.00
0	1	Grader	0.00	0.00	0.00	0.00
		Loaders, Rubber Tired	0.00	0.00	0.00	0.00
		Off-Highway Trucks	0.00	0.00	0.00	0.00
		Other Construction Equip.	0.00	0.00	0.00	0.00
		Pavers	0.00	0.00	0.00	0.00
		Paving Equipment	0.00	0.00	0.00	0.00
		Rollers	0.00	0.00	0.00	0.00
0	1	Scraper	0.00	0.00	0.00	0.00
0	10	Signal Boards	0.00	0.00	0.00	0.00
		Skid Steer Loaders	0.00	0.00	0.00	0.00
		Surfacing Equipment	0.00	0.00	0.00	0.00
		Tractors	0.00	0.00	0.00	0.00
0	1	Trenchers	0.00	0.00	0.00	0.00
max pounds per day			0.0	0.0	0.0	0.0
tons per period			0.0	0.0	0.0	0.0

Paving	Number of Vehicles		ROG	CO	NOx	PM10	
	Override of Default Number of Vehicles	Program-estimate	Type	pounds/day	pounds/day	pounds/day	pounds/day
			Backhoes	0.00	0.00	0.00	0.00
			Bore/Drill Rigs	0.00	0.00	0.00	0.00
			Concrete/Industrial Saws	0.00	0.00	0.00	0.00
			Compactor	0.00	0.00	0.00	0.00
			Cranes	0.00	0.00	0.00	0.00
			Crawler Tractors	0.00	0.00	0.00	0.00
			Crushing/Proc. Equipment	0.00	0.00	0.00	0.00
			Dozer	0.00	0.00	0.00	0.00
			Excavator	0.00	0.00	0.00	0.00
			Forklifts, Rough Terrain	0.00	0.00	0.00	0.00
			Grader	0.00	0.00	0.00	0.00
			Loaders, Rubber Tired	0.00	0.00	0.00	0.00
			Off-Highway Trucks	0.00	0.00	0.00	0.00
			Other Construction Equip.	0.00	0.00	0.00	0.00
		1	Pavers	0.93	4.55	7.08	0.38
		1	Paving Equipment	0.78	3.44	7.28	0.39
		1	Rollers	0.59	2.87	4.47	0.24
			Scraper	0.00	0.00	0.00	0.00
		10	Signal Boards	6.52	16.03	23.68	2.21
			Skid Steer Loaders	0.00	0.00	0.00	0.00
			Surfacing Equipment	0.00	0.00	0.00	0.00
			Tractors	0.00	0.00	0.00	0.00
			Trenchers	0.00	0.00	0.00	0.00
			pounds per day	8.8	26.9	42.5	3.2
			tons per period	0.2	0.5	0.8	0.1
Total Emissions (tons per construction period)				0.8	3.1	3.8	0.2

Equipment	Default Values		Default Values		Default Values	
		Horsepower		Load Factor		Hours/day
Bore/Drill Rigs		218		0.75		8
Concrete/Industrial Saws		84		0.73		8
Cranes		190		0.43		8
Crawler Tractors		143		0.575		8
Crushing/Proc. Equipment		154		0.78		8
Excavators		180		0.58		8
Graders		174		0.575		8
Off-Highway Tractors		255		0.41		8
Off-Highway Trucks		417		0.49		8
Other Construction Equipment		190		0.62		8
Pavers		132		0.59		8
Paving Equipment		111		0.53		8
Rollers		114		0.43		8
Rough Terrain Forklifts		94		0.475		8
Rubber Tired Dozers		352		0.59		8
Rubber Tired Loaders		165		0.465		8
Scrapers		313		0.66		8
Signal Boards		25		0.82		8
Skid Steer Loaders		62		0.515		8
Surfacing Equipment		437		0.49		8
Tractors/Loaders/Backhoes		79		0.465		8
Trenchers		82		0.695		8

Default load factors from SCAQMD CEQA Handbook, 1993.

Default horsepower values from Appendix B, California Air Resources Board's Offroad Model (see also Appendix B of this spreadsheet).

Signal board horsepower based on: U.S. EPA, 1998. Final Regulatory Impact Analysis: Control of Emissions from Nonroad Diesel Engines (EPA420-R-98-016).

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END OF DATA ENTRY SHEET

Road Construction Emissions Model, Version 5.2

Emission Estimates for -> Bidwell Prk Improvements					Exhaust	Fugitive Dust
Project Phases (English Units)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	PM10 (lbs/day)	PM10 (lbs/day)	PM10 (lbs/day)
Grubbing/Land Clearing	10	56	55	13	3	10
Grading/Excavation	8	46	38	12	2	10
Drainage/Utilities/Sub-Grade	1	12	0	10	0	10
Paving	9	38	43	3	3	0
Maximum (pounds/day)	10	56	55	13	3	10
Total (tons/construction project)	0.84	3.16	5.35	1.35	0.23	1.12
Notes:	Project Start Year ->	2008				
	Project Length (months) ->	12				
	Total Project Area (acres) ->	40				
	Maximum Area Disturbed/Day (acres) ->	1				
	Total Soil Imported/Exported (yd ³ /day)->	0				

PM10 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I.

Emission Estimates for -> Bidwell Prk Improvements					Exhaust	Fugitive Dust
Project Phases (Metric Units)	ROG (kgs/day)	CO (kgs/day)	NOx (kgs/day)	PM10 (kgs/day)	PM10 (kgs/day)	PM10 (kgs/day)
Grubbing/Land Clearing	5	26	25	6	1	5
Grading/Excavation	4	21	17	5	1	5
Drainage/Utilities/Sub-Grade	0	6	0	5	0	5
Paving	4	17	19	1	1	0
Maximum (kilograms/day)	5	26	25	6	1	5
Total (megagrams/construction project)	0.76	2.87	4.85	1.23	0.21	1.02
Notes:	Project Start Year ->	2008				
	Project Length (months) ->	12				
	Total Project Area (hectares) ->	16				
	Maximum Area Disturbed/Day (hectares) ->	0				
	Total Soil Imported/Exported (meters ³ /day)->	0				

PM10 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I.