

APPENDIX C

MOBILE SOURCE AIR TOXICS HEALTH RISK ASSESSMENT

PVL Health Risk Assessment

Project Conditions:

Number of diesel locomotives used (engines)	6
Total diesel engine running time (hours)	24
Diesel Particulate Emission Factor (g/hr)	0.18
Acrolien Emission Factor (g/hr)	0.012
Days of Operation per year	260

Annual DPM emissions (g/yr)	1123.2
Annual DPM emissions (g/s)	3.56164E-05

Annual Acrolien emissions (g/yr)	74.88
Annual Acrolien emissions (g/s)	2.37443E-06

SCREEN3 DPM Maximum Hourly Concentration ($\mu\text{g}/\text{m}^3$)	0.1344
SCREEN3 DPM Annual Average Concentration ($\mu\text{g}/\text{m}^3$)	0.010752
SCREEN3 Acrolien Maximum Hourly Concentration ($\mu\text{g}/\text{m}^3$)	0.008959
SCREEN3 Acrolien Annual Average Concentration ($\mu\text{g}/\text{m}^3$)	0.00071672

DPM Cancer Risk Factor = C x URF x LEA (people/million) 3.2256

C = Annual Average Concentration of DPM ($\mu\text{g}/\text{m}^3$)

URF = Unit Risk Factor for DPM (300 in one million), the estimated probability that a person will contract cancer as a result of inhalation of DPM concentration of 1 microgram per cubic meter continuously over a period of 70 years

LEA = Lifetime Exposure Adjustment = 1.0 for residential uses and schools

DPM Chronic Hazard Risk Calculation = C/REL 0.002

C = Annual Average Concentration of DPM ($\mu\text{g}/\text{m}^3$)

REL = Reference Exposure Level for DPM = $5 \mu\text{g}/\text{m}^3$

Acrolien Chronic Hazard Risk Calculation = C/REL 0.004

C = Annual Average Concentration of DPM ($\mu\text{g}/\text{m}^3$)

REL = Reference Exposure Level for DPM = $0.19 \mu\text{g}/\text{m}^3$

Notes:

Assume 6 train sets needed to perform 12 daily trips from Perris to LA

Acrolien and DPM Emission factors obtained from USEPA

Annual DPM and acrolien average is 8% of maximum hourly concentration per USEPA

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

Perris Valley Line Health Risk Assessment Acrolein

SIMPLE TERRAIN INPUTS:

SOURCE TYPE = POINT
EMISSION RATE (G/S) = .237443E-05
STACK HEIGHT (M) = 4.5000
STK INSIDE DIAM (M) = .1000
STK EXIT VELOCITY (M/S) = 9.1000
STK GAS EXIT TEMP (K) = 455.0000
AMBIENT AIR TEMP (K) = 293.0000
RECEPTOR HEIGHT (M) = 1.5000
URBAN/RURAL OPTION = URBAN
BUILDING HEIGHT (M) = .0000
MIN HORIZ BLDG DIM (M) = .0000
MAX HORIZ BLDG DIM (M) = .0000

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

BOUY. FLUX = .079 M**4/S**3; MOM. FLUX = .133 M**4/S**2.

*** FULL METEOROLOGY ***

*** SCREEN AUTOMATED DISTANCES ***

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
5.	.4220E-03	2	5.0	5.0	1600.0	5.14	1.60	1.21	NO
100.	.2966E-02	4	1.0	1.0	320.0	7.71	15.72	13.82	NO
200.	.1416E-02	6	1.0	1.0	10000.0	15.10	21.39	14.36	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 5. M:

25.	.8959E-02	3	1.0	1.0	320.0	7.71	5.76	5.28	NO
-----	-----------	---	-----	-----	-------	------	------	------	----

DWASH= MEANS NO CALC MADE (CONC = 0.0)
 DWASH=NO MEANS NO BUILDING DOWNWASH USED
 DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
 DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
 DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

* SUMMARY OF TERRAIN HEIGHTS ENTERED FOR *
* SIMPLE ELEVATED TERRAIN PROCEDURE *

TERRAIN HT (M)	DISTANCE RANGE (M)	
	MINIMUM	MAXIMUM
0.	5.	200.

*** SUMMARY OF SCREEN MODEL RESULTS ***

Appendix C - Acrolein.txt

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	.8959E-02	25.	0.

** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

Perris Valley Line Health Risk Assessment

SIMPLE TERRAIN INPUTS:

SOURCE TYPE = POINT
EMISSION RATE (G/S) = .356164E-04
STACK HEIGHT (M) = 4.5000
STK INSIDE DIAM (M) = .1000
STK EXIT VELOCITY (M/S) = 9.1000
STK GAS EXIT TEMP (K) = 455.0000
AMBIENT AIR TEMP (K) = 293.0000
RECEPTOR HEIGHT (M) = 1.5000
URBAN/RURAL OPTION = URBAN
BUILDING HEIGHT (M) = .0000
MIN HORIZ BLDG DIM (M) = .0000
MAX HORIZ BLDG DIM (M) = .0000

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

BOUY. FLUX = .079 M**4/S**3; MOM. FLUX = .133 M**4/S**2.

*** FULL METEOROLOGY ***

*** SCREEN AUTOMATED DISTANCES ***

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
5.	.6330E-02	2	5.0	5.0	1600.0	5.14	1.60	1.21	NO
100.	.4449E-01	4	1.0	1.0	320.0	7.71	15.72	13.82	NO
200.	.2125E-01	6	1.0	1.0	10000.0	15.10	21.39	14.36	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 5. M:
25. .1344 3 1.0 1.0 320.0 7.71 5.76 5.28 NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

* SUMMARY OF TERRAIN HEIGHTS ENTERED FOR *
* SIMPLE ELEVATED TERRAIN PROCEDURE *

TERRAIN HT (M)	DISTANCE RANGE (M)	
	MINIMUM	MAXIMUM
0.	5.	200.

*** SUMMARY OF SCREEN MODEL RESULTS ***

Appendix C - DieselPM.txt

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	.1344	25.	0.

** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
