APPENDIX D

Air Quality

EMFAC2014 - Emission Factor Calculations 5 Miles Per Hour

calendar_year	season_month	sub_area	vehicle_class	speed	process	pollutant	VMT	Emissions (tons)	Emissions (grams)	Emission Factor (grams/mile)
2035	Annual	San Diego (SD)	LDA	5	RUNEX	CO	94,127	0.077	69,427	0.738
2035	Annual	San Diego (SD)	LDT1	5	RUNEX	CO	5,555	0.005	4,526	0.815
2035	Annual	San Diego (SD)	LDT2	5	RUNEX	CO	26,960	0.022	20,389	0.756
2035	Annual	San Diego (SD)	MDV	5	RUNEX	CO	14,758	0.016	14,481	0.981
2035	Annual	San Diego (SD)	MH	5	RUNEX	CO	560	0.001	542	0.967
2035	Annual	San Diego (SD)	MCY	5	RUNEX	CO	845	0.040	35,858	42.411
2035	Annual	San Diego (SD)	LHDT1	5	RUNEX	CO	22,228	0.052	47,217	2.124
2035	Annual	San Diego (SD)	LHDT2	5	RUNEX	CO	10,151	0.023	21,149	2.083
2035	Annual	San Diego (SD)	MHDT	5	RUNEX	CO	13,861	0.018	16,151	1.165
2035	Annual	San Diego (SD)	HHDT	5	RUNEX	CO	13,174	0.253	229,536	17.424
2035	Annual	San Diego (SD)	SBUS	5	RUNEX	CO	735	0.001	671	0.913
2035	Annual	San Diego (SD)	UBUS	5	RUNEX	CO	2,221	0.052	47,359	21.322
2035	Annual	San Diego (SD)	OBUS	5	RUNEX	CO	1,460	0.002	1,601	1.096

2.463

EMFAC2014 - Emission Factor Calculations 10 Miles Per Hour

calendar_year	season_month	sub_area	vehicle_class	speed	process	pollutant	VMT	Emissions (tons)	Emissions (grams)	Emission Factor (grams/mile)
2035	Annual	San Diego (SD)	LDA	10	RUNEX	CO	316,565	0.233	211,729	0.669
2035	Annual	San Diego (SD)	LDT1	10	RUNEX	CO	18,683	0.015	13,824	0.740
2035	Annual	San Diego (SD)	LDT2	10	RUNEX	CO	90,672	0.069	62,518	0.689
2035	Annual	San Diego (SD)	MDV	10	RUNEX	CO	49,634	0.048	43,759	0.882
2035	Annual	San Diego (SD)	MH	10	RUNEX	CO	2,809	0.003	2,278	0.811
2035	Annual	San Diego (SD)	MCY	10	RUNEX	CO	2,843	0.102	92,845	32.652
2035	Annual	San Diego (SD)	LHDT1	10	RUNEX	CO	66,888	0.129	116,654	1.744
2035	Annual	San Diego (SD)	LHDT2	10	RUNEX	CO	30,864	0.058	52,515	1.702
2035	Annual	San Diego (SD)	MHDT	10	RUNEX	CO	69,075	0.072	65,488	0.948
2035	Annual	San Diego (SD)	HHDT	10	RUNEX	CO	43,725	0.541	490,390	11.215
2035	Annual	San Diego (SD)	SBUS	10	RUNEX	CO	2,577	0.002	1,937	0.752
2035	Annual	San Diego (SD)	UBUS	10	RUNEX	CO	7,357	0.132	119,427	16.233
2035	Annual	San Diego (SD)	OBUS	10	RUNEX	CO	7,303	0.007	6,630	0.908
										1.805

Emission Factor Determination Assumptions

Murray Ridge Road & Sandrock Road

Speed Limit (MPH)	35
Arterial Classification	II - Intermediate/Minor Arterial
Percentage Red Time	50
Average Cruise Speed	28
Assumed Cruise Speed	25

	Vehicle Volume	Average Speed (MPH)	Emfac Speed (MPH)	Emission Factor (grams/mile)
Murray Ridge Road Approach	200	10.4	10	1.81
Murray Ridge Road Departure	200	10.4	10	1.81
Sandrock Road Approach	300	10.4	10	1.81
Sandrock Road Departure	200	10.4	10	1.81

Murray Ridge Road & I-805 NB Ramp

Speed Limit (MPH)	35
Arterial Classification	II - Intermediate/Principal Arterial
Percentage Red Time	50
Average Cruise Speed	28
Assumed Cruise Speed	25

	Vehicle Volume	Average Speed (MPH)	Emfac Speed (MPH)	Emission Factor (grams/mile)
Murray Ridge Road Approach	600	7.3	5	2.5
Murray Ridge Road Departure	600	7.3	5	2.5
I805 Approach	600	7.3	5	2.5
I805 Departure	700	7.3	5	2.5

Qualcomm Way & Friars Road EB Ramp

Speed Limit (MPH)	35
Arterial Classification	II - Intermediate/Principal Arterial
Percentage Red Time	50
Average Cruise Speed	28
Assumed Cruise Speed	25

	Vehicle Volume	Average Speed (MPH)	Emfac Speed (MPH)	Emission Factor (grams/mile)
Friars Road Approach	300	9.8	10	1.81
Friars Road Departure	600	7.3	5	2.5
Qualcomm Way Approach	900	1.6	5	2.5
Qualcomm Way Departure	700	2.5	5	2.5

Qualcomm Way & Rio San Diego Drive

Speed Limit (MPH)	35
Arterial Classification	II - Intermediate/Principal Arterial
Percentage Red Time	50
Average Cruise Speed	28
Assumed Cruise Speed	25

	Vehicle Volume	Average Speed (MPH)	Emfac Speed (MPH)	Emission Factor (grams/mile)
Rio San Diego Drive Approach	400	9.2	10	1.81
Rio San Diego Drive Departure	300	9.8	10	1.81
Qualcomm Way Approach	500	8.4	10	1.81
Qualcomm Way Departure	600	7.3	5	2.5

Serra Mesa Community Plan Amendment/Franklin Ridge Road Extension PEIR
Murray Ridge Road & Sandrock Road

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CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
         JUNE 1989 VERSION
         PAGE   1

     JOB: FRR MRR & SR
     RUN: Hour 1           (WORST CASE ANGLE)
POLLUTANT: CARBON MONOXIDE


 I.  SITE VARIABLES

       U=   1.0 M/S            Z0= 100. CM           ALT= 127.4 (M)
     BRG= WORST CASE           VD=  0.0 CM/S
    CLAS=     7 (G)            VS=  0.0 CM/S
    MIXH= 1000. M             AMB=  0.0 PPM
   SIGTH=   10. DEGREES       TEMP=  8.3 DEGREE (C)


 II.  LINK VARIABLES

      LINK      *  LINK COORDINATES (FT)  *              EF     H     W
  DESCRIPTION   *   X1    Y1    X2    Y2  * TYPE  VPH  (G/MI)  (FT)
(FT)
 ----------------*-------------------------*----------------------------
--
 A. MRR WBRA     *   500    24     0    24 *  AG     50   2.5    0.0
33.0
 B. MRR WBTA     *   500    12     0    12 *  AG    105   2.5    0.0
33.0
 C. MRR WBLA     *   500     0     0     0 *  AG     20   2.5    0.0
33.0
 D. MRR WBD      *     0    12  -430  -376 *  AG    935   2.5    0.0
33.0
 E. MRR EBLA     *     0     0  -430  -400 *  AG    270   2.5    0.0
33.0
 F. MRR EBTA     *     0   -12  -454  -434 *  AG    180   2.5    0.0
33.0
 G. MRR EBRA     *     0   -24  -466  -458 *  AG    250   2.5    0.0
33.0
 H. MRR EBD      *     0   -12   500   -12 *  AG    290   2.5    0.0
33.0
 I. SR NBLA      *     0     0   280  -420 *  AG    100   2.5    0.0
33.0
 J. SR NBTA      *     0    25   287  -398 *  AG    230   2.5    0.0
33.0
 K. SR NBRA      *     0    25   287  -398 *  AG     30   2.5    0.0
33.0
 L. SR NBD       *    12     0    12   500 *  AG    550   2.5    0.0
33.0
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  M. SR SBLA      *     0   500     0     0 *  AG     80   2.5    0.0
33.0
  N. SR SBTA      *   -12   500   -12     0 *  AG    450   2.5    0.0
33.0
  O. SR SBRA      *   -24   500   -24     0 *  AG    730   2.5    0.0
33.0
  P. SR SBD       *   -12     0   300  -470 *  AG    720   2.5    0.0
33.0
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          CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                   JUNE 1989 VERSION
                   PAGE   2

              JOB: FRR MRR & SR
              RUN: Hour 1           (WORST CASE ANGLE)
        POLLUTANT:
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III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. Recpt 1	40	60	5.9
2. Recpt 2	60	-25	5.9
3. Recpt 3	-65	40	5.9
4. Recpt 4	-20	-80	5.9
5. Recpt 5	-65	-180	5.9
6. Recpt 6	230	-25	5.9
7. Recpt 7	230	60	5.9
8. Recpt 8	-120	40	5.9

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. Recpt 1	223.	0.4	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0
2. Recpt 2	244.	0.3	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
3. Recpt 3	136.	0.3	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
4. Recpt 4	3.	0.4	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
5. Recpt 5	10.	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6. Recpt 6	275.	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
7. Recpt 7	243.	0.2	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
8. Recpt 8	129.	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
         JUNE 1989 VERSION
         PAGE   3

     JOB: FRR MRR & SR
     RUN: Hour 1            (WORST CASE ANGLE)
POLLUTANT:
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IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

RECEPTOR	CONC/LINK (PPM) I	J	K	L	M	N	O	P
1. Recpt 1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
2. Recpt 2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3. Recpt 3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
4. Recpt 4	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.0
5. Recpt 5	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
6. Recpt 6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7. Recpt 7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8. Recpt 8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1

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CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
         JUNE 1989 VERSION
         PAGE   1

     JOB: FRR MRR and I805
     RUN: Hour 1           (WORST CASE ANGLE)
POLLUTANT: CARBON MONOXIDE
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I. SITE VARIABLES

```
      U=   1.0 M/S            Z0= 100. CM           ALT= 118.0 (M)
    BRG= WORST CASE           VD=  0.0 CM/S
   CLAS=     7 (G)            VS=  0.0 CM/S
   MIXH= 1000. M             AMB=  0.0 PPM
  SIGTH=   10. DEGREES       TEMP=  8.3 DEGREE (C)
```

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (FT) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)
A. MRR NBLA	0	0	-183	-465	AG	1035	2.5	0.0	33.0
B. MRR NBTA	12	-7	-171	-472	AG	350	2.5	0.0	33.0
C. MRR NBD	12	-7	18	488	AG	1025	2.5	0.0	33.0
D. MRR SBTA	-4	0	4	464	AG	675	2.5	0.0	33.0
E. MRR SBRA	-12	0	-6	464	AG	420	2.5	0.0	33.0
F. MRR SBD	-12	-7	-195	-472	AG	1160	2.5	0.0	33.0
G. I805 WBLA	-12	-7	276	-437	AG	485	2.5	0.0	33.0
H. I805 WBRA	12	-7	288	-418	AG	675	2.5	0.0	33.0
I. I805 WBD	0	0	-250	250	AG	1455	2.5	0.0	33.0

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. Recpt 1	60	0	5.9
2. Recpt 2	97	41	5.9
3. Recpt 3	-50	410	5.9

4. Recpt 4	*	-50	0	5.9
5. Recpt 5	*	0	-80	5.9

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: FRR MRR and I805 v3
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT:

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. Recpt 1	218.	0.3	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0
2. Recpt 2	220.	0.2	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0
3. Recpt 3	166.	0.3	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0
4. Recpt 4	134.	0.3	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1
5. Recpt 5	359.	0.6	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0

RECEPTOR	CONC/LINK (PPM) I
1. Recpt 1	0.0
2. Recpt 2	0.0
3. Recpt 3	0.0
4. Recpt 4	0.0
5. Recpt 5	0.1

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CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
         JUNE 1989 VERSION
         PAGE   1

     JOB: FRR QW and FR
     RUN: Hour 1           (WORST CASE ANGLE)
POLLUTANT: CARBON MONOXIDE
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I. SITE VARIABLES

```
   U=   1.0 M/S            Z0= 100. CM           ALT= 11.9 (M)
 BRG= WORST CASE           VD=  0.0 CM/S
CLAS=     7 (G)            VS=  0.0 CM/S
MIXH= 1000. M             AMB=  0.0 PPM
SIGTH=   10. DEGREES      TEMP=  8.3 DEGREE (C)
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II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (FT) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)
A. FR EBLA	-500	0	0	0	AG	450	1.8	0.0	33.0
B. FR EBRA	-500	-12	-12	-12	AG	205	1.8	0.0	33.0
C. FR EBD	0	0	500	0	AG	1115	2.5	0.0	33.0
D. QW NBTA	12	-500	12	0	AG	1380	2.5	0.0	33.0
E. QW NBRA	24	-500	24	0	AG	635	2.5	0.0	33.0
F. QW NBD	12	0	12	500	AG	1830	2.5	0.0	33.0
G. QW SBLA	0	500	0	0	AG	480	2.5	0.0	33.0
H. QW SBTA	-12	500	-12	0	AG	890	2.5	0.0	33.0
I. QW SBD	-12	0	-12	-500	AG	1095	2.5	0.0	33.0

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. Recpt 1	-70	70	5.9
2. Recpt 2	70	70	5.9
3. Recpt 3	-70	-70	5.9
4. Recpt 4	70	-70	5.9

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CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
         JUNE 1989 VERSION
         PAGE   2

     JOB: FRR QW and FR
     RUN: Hour 1           (WORST CASE ANGLE)
POLLUTANT:
```

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. Recpt 1	160.	0.3	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
2. Recpt 2	197.	0.3	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0
3. Recpt 3	19.	0.3	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1
4. Recpt 4	340.	0.3	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.1

RECEPTOR	CONC/LINK (PPM) I
1. Recpt 1	0.1
2. Recpt 2	0.1
3. Recpt 3	0.0
4. Recpt 4	0.0

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Qualcomm Way & Rio San Diego Drive

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CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
         JUNE 1989 VERSION
         PAGE   1

     JOB: FRR QW and RSDD
     RUN: Hour 1           (WORST CASE ANGLE)
POLLUTANT: CARBON MONOXIDE
```

I. SITE VARIABLES

```
   U=   1.0 M/S            Z0= 100. CM           ALT= 14.6 (M)
 BRG= WORST CASE           VD=  0.0 CM/S
CLAS=     7 (G)            VS=  0.0 CM/S
MIXH= 1000. M             AMB=  0.0 PPM
SIGTH=   10. DEGREES      TEMP=  8.3 DEGREE (C)
```

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (FT) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)
A. Rio EBLA	-500	0	36	0	AG	395	1.8	0.0	33.0
B. Rio EBTA	-500	-36	0	-36	AG	145	1.8	0.0	33.0
C. Rio EBRA	-500	-60	-36	-60	AG	355	1.8	0.0	33.0
D. Rio EBD	0	-36	500	-36	AG	865	1.8	0.0	33.0
E. Rio WBRA	500	60	0	60	AG	415	1.8	0.0	33.0
F. Rio WBTA	500	36	0	36	AG	200	1.8	0.0	33.0
G. Rio WBLA	500	0	0	0	AG	625	1.8	0.0	33.0
H. Rio WBD	0	36	-500	36	AG	705	1.8	0.0	33.0
I. Qual NBLA	0	-500	0	36	AG	285	1.8	0.0	33.0
J. Qual NBTA	36	-500	36	0	AG	1120	1.8	0.0	33.0
K. Qual NBRA	60	-500	60	-36	AG	430	1.8	0.0	33.0
L. Qual NBD	36	0	36	500	AG	1930	2.5	0.0	33.0
M. Qual SBLA	0	500	0	-36	AG	290	1.8	0.0	33.0
N. Qual SBTA	-36	500	-36	0	AG	540	1.8	0.0	33.0
O. Qual SBRA	-60	500	-60	36	AG	220	1.8	0.0	33.0
P. Qual SBD	-36	0	-36	-500	AG	1520	2.5	0.0	33.0

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. Recpt 1	-70	70	5.9
2. Recpt 2	70	70	5.9
3. Recpt 3	-70	-70	5.9
4. Recpt 4	70	-70	5.9
5. Recpt 5	-150	-125	5.9

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CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
         JUNE 1989 VERSION
         PAGE   2

     JOB: FRR QW and RSDD
     RUN: Hour 1           (WORST CASE ANGLE)
POLLUTANT:
```

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. Recpt 1	164.	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2. Recpt 2	217.	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3. Recpt 3	45.	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. Recpt 4	345.	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5. Recpt 5	50.	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

RECEPTOR	CONC/LINK (PPM) I	J	K	L	M	N	O	P
1. Recpt 1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
2. Recpt 2	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.1
3. Recpt 3	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
4. Recpt 4	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0
5. Recpt 5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1