Appendix F
Air Quality Appendix

Table 1. Emission Source Data for Reservoir Construction- Drop 2 Reservoir Project

Equipment Type/Equipment	*Hp Rating*	*Ave. Daily Load Factor*	*Number Active*	*Hourly Hp-Hrs*	*Equip-Hrs Per Day*	*Daily Hp-Hrs*	*Work Days*	*Total Hp-Hrs*
Off-Road Equipment								
Tractor w/scrapers	482	0.75	6	2,169	20	43,380	193	8,372,340
Compressor	60	0.75	1	45	10	450	84	37,800
Vibratory Compactor	150	0.75	4	450	20	9,000	120	1,080,000
Steel Wheel Roller	100	0.50	2	100	20	2,000	20	40,000
Grader	220	0.20	2	88	10	880	160	140,800
Backhoe	100	0.20	1	20	10	200	105	21,000
Front-end Loader	204	0.20	1	41	20	816	8	6,528
Excavator	513	0.50	2	513	20	10,260	215	2,205,900
Excavator	321	0.50	1	161	10	1,605	5	8,025
Crane	350	0.10	1	35	10	350	84	29,400
Dozer	200	0.20	2	80	20	1,600	168	268,800
Water Truck	450	0.35	3	473	20	9,450	202	1,941,100
Generator, gasoline	16	0.75	1	12	10	120	79	9,480
Pump, gasoline	7.5	0.75	1	6	10	56	350	19,688
Welder, gasoline	20	0.75	1	15	10	150	84	12,600
End Dump Truck	457	0.30	6	823	20	16,452	91	1,497,132
On-Road Equipment (1)								
Highway Dump Truck - Soil Cement	NA	NA	NA	2	70	140	60	8,418
Material Truck	NA	NA	NA	64	25	1,600	360	576,000
Fugitive Dust Sources								
Disturbed Construction Area (3)	NA	NA	NA	NA	23	NA	360	8,280
Soil Cement Pugmill (4)	NA	NA	NA	NA	1,403	NA	60	84,180

Notes: (1) Hourly Hp-Hrs = miles/roundtrip, Equip-Hrs/Day = daily truck trips, Daily Hp-Hrs = daily miles, and Total Hp-Hrs = total miles.

(2) Equip-Hrs per Day = daily production in tons and Total Hp-Hrs = total production in tons.

(3) Hours/Day is acres disturbed per day and Total Hp-Hrs is acre-days for the entire activity.

(4) Equip-Hrs per Day = daily production in tons and Total Hp-Hrs = total production in tons.

Table 2. Emission Source Data for Inlet and Outlet Canal Construction - Drop 2 Reservoir Project

Equipment Type/Equipment	Hp Rating	Ave. Daily Load Factor	Number Active	Hourly Hp-Hrs	Equip-Hrs Per Day	Daily Hp-Hrs	Work Days	Total Hp-Hrs
Off-Road Equipment								
Tractor w/scrapers	782	0.75	2	1,173	10	11,730	86	1,008,780
Compressor	60	0.75	2	90	10	900	82	73,800
Vibratory Compactor	150	0.75	5	563	10	5,625	72	405,000
Grader	220	0.20	2	88	10	880	148	130,240
Backhoe	100	0.20	2	40	10	400	36	14,400
Front-end Loader	204	0.20	2	82	10	816	36	29,376
Excavator	513	0.50	1	257	10	2,565	101	259,065
Excavator	321	0.50	1	161	10	1,605	110	176,550
Crane	350	0.10	2	70	10	700	120	84,000
Canal Trimmer	300	0.75	1	225	10	2,250	35	78,750
Canal Liner	230	0.75	1	173	10	1,725	35	60,375
Dozer	200	0.20	1	40	10	400	50	20,000
Water Truck	450	0.35	3	473	10	4,725	33	260,925
Generator, gasoline	16	0.75	2	24	10	240	112	26,880
Bottom Dump Truck	350	0.50	4	700	10	7,000	35	245,000
Welder, gasoline	20	0.75	2	30	10	300	66	19,800
Drill Rig	350	0.20	1	70	10	700	90	63,000
End Dump Truck	457	0.30	1	137	10	1,371	12	16,452
On-Road Equipment (1)								
Material Truck	NA	NA	NA	64	25	1,600	280	448,000
Fugitive Dust Sources								
Concrete Batch Plant (2)	NA	NA	NA	NA	494	NA	35	17,290
Disturbed Construction Area (3)	NA	NA	NA	NA	20	NA	280	5,600

Notes: (1) Hourly Hp-Hrs = miles/roundtrip, Equip-Hrs/Day = daily truck trips, Daily Hp-Hrs = daily miles, and Total Hp-Hrs = total miles.

(2) Equip-Hrs per Day = daily production in tons and Total Hp-Hrs = total production in tons.

(3) Hours/Day is acres disturbed per day and Total Hp-Hrs is acre-days for the entire activity.

Table 3. Emission Source Data for the All American Turn-In Structure Construction - Drop 2 Reservoir Project. (7/07 - 1/08)

Equipment Type/Equipment	*Hp Rating*	*Ave. Daily Load Factor*	*Number Active*	*Hourly Hp-Hrs*	*Equip-Hrs Per Day*	*Daily Hp-Hrs*	*Work Days*	*Total Hp-Hrs*
Off-Road Equipment								
Compressor	60	0.75	1	45	10	450	140	63,000
Steel Wheel Roller	100	0.75	1	75	20	1,500	5	7,500
Grader	220	0.20	1	44	10	440	25	11,000
Backhoe	100	0.20	1	20	10	200	140	28,000
Front-end Loader	204	0.20	1	41	20	816	140	114,240
Excavator	513	0.50	1	257	20	5,130	8	41,040
Crane	350	0.10	1	35	10	350	140	49,000
Water Truck	350	0.20	1	70	10	700	150	105,000
Generator, gasoline	16	0.75	1	12	10	45	140	6,300
Pump, gasoline	7.5	0.75	1	6	10	56	150	8,438
Welder, gasoline	20	0.75	1	15	10	150	140	21,000
Drill Rig	350	0.20	1	70	10	700	30	21,000
Dump Truck	350	0.30	2	210	20	4,200	8	33,600
On-Road Equipment (1)								
Material Truck	NA	NA	NA	64	25	1,600	150	240,000
Fugitive Dust Sources								
Disturbed Construction Area (3)	NA	NA	NA	NA	2	NA	150	300

Notes: (1) Hourly Hp-Hrs = miles/roundtrip, Equip-Hrs/Day = daily truck trips, Daily Hp-Hrs = daily miles, and Total Hp-Hrs = total miles.

(2) Equip-Hrs per Day = daily production in tons and Total Hp-Hrs = total production in tons.

(3) Hours/Day is acres disturbed per day and Total Hp-Hrs is acre-days for the entire activity.

Table 4. Air Emission Factors for the Drop 2 Reservoir Project Construction and Operational Activities.

Source Type	Fuel Type	Emission Factors (Grams/Horsepower-Hour)						References
		ROG	CO	NOx	SOx	PM	PM10	
Off-Road Equipment - 25-50 Hp	D	1.75	5.58	5.79	0.00	0.65	0.65	(1)
Off-Road Equipment - 51-120 Hp	D	0.99	3.70	6.90	0.00	0.70	0.70	(1)
Off-Road Equipment - 121-175 Hp	D	0.63	3.03	6.22	0.00	0.38	0.38	(1)
Off-Road Equipment - 176-250 Hp	D	0.42	1.41	6.00	0.00	0.22	0.22	(1)
Off-Road Equipment - 251-500 Hp	D	0.35	1.58	4.98	0.00	0.18	0.18	(1)
Off-Road Equipment - 501-750 Hp	D	0.43	1.82	6.01	0.00	0.22	0.22	(1)
Off-Road Equipment - >750 Hp	D	0.43	1.82	6.03	0.00	0.18	0.18	(1)
On-road Truck - Idle (Gms/Hr)	D	5.00	30.04	67.52	0.04	1.39	1.39	(2)
On-road Truck - 5 mph (Gms/Mi)	D	2.43	24.99	16.10	0.02	0.66	0.66	(2)
On-road Truck - 25 mph (Gms/Mi)	D	0.81	6.99	9.81	0.02	0.03	0.03	(2)
On-road Truck - 55 mph (Gms/Mi)	D	0.40	4.94	12.73	0.02	0.16	0.16	(2)
On-Road Trucks - Composite (Gms/Mi)	D	0.54	6.15	12.61	0.02	0.17	0.17	(3)
Fugitive Dust (Lbs/acre-day)	---	---	---	---	---	27.50	13.75	(4)
Off-Road Equipment - Gasoline (Lbs/hp-hr)	G	0.02	0.44	0.01	0.001	0.001	0.001	(5)
Aggregate Processing Plant - Concrete (lb/ton)	---	---	---	---	---	0.0051	0.0024	(6)
Soil Cement Pugmill - Soil Transfer (lb/ton)	---	---	---	---	---	0.524	0.156	(7)

Notes: (1) Composite emission factors developed from ARB OFFROAD emissions model (1999) and based on average California equipment fleet age distributions for project year 2007, interpolated from 2005/2015 data..

(2) Heavy duty diesel truck running emission factors developed from EMFAC2002 (ARB 2003). Units in grams/mile for project year 2005. Based on annual average conditions at 60 degrees and 50% humidity. PM emission factors include combustive and tire/brake wear contributions.

(3) Composite factors based on a round trip of 85% at 55 mph, 10% at 25mph, and 5% at 5 mph. Units in grams/mile. Although not shown in these calculations, emissions from 5 minutes of idling mode included for each truck round trip.

(4) Units in lbs/acre-day from section 11.2.3 of AP-42 (EPA 1995). Emissions reduced by 75% from uncontrolled levels to represent compliance with ICAPCD Rule 800 - Fugitive Dust Requirements for Control of Fine Particulate Matter (PM10).

(5) Emission factors for uncontrolled gasoline engines from Table 3.3-1 of section 3.3 of AP-42 (EPA 1995).

(6) Emission factors for weigh hopper loading from Table 11.12-2 of section 11.12 of AP-42 (EPA 1995).

(7) Same as (6), except for mixer loading.

Table 5. Total Emissions for Reservoir Construction - Drop 2 Reservoir Project

Equipment Type/Equipment	*Total Emissions (Tons)*					
	ROG	*CO*	*NOx*	*SOx*	*PM*	*PM10*
Off-Road Equipment						
Tractor w/scrapers	3.19	14.61	45.92	0.04	1.70	1.70
Compressor	0.04	0.15	0.29	0.00	0.03	0.03
Vibratory Compactor	0.75	3.61	7.40	0.01	0.45	0.45
Steel Wheel Roller	0.04	0.16	0.30	0.00	0.03	0.03
Grader	0.07	0.22	0.93	0.00	0.03	0.03
Backhoe	0.02	0.09	0.16	0.00	0.02	0.02
Front-end Loader	0.00	0.01	0.04	0.00	0.00	0.00
Excavator	1.04	4.42	14.60	0.01	0.55	0.55
Excavator	0.00	0.01	0.04	0.00	0.00	0.00
Crane	0.01	0.05	0.16	0.00	0.01	0.01
Dozer	0.12	0.42	1.78	0.00	0.06	0.06
Water Truck	0.74	3.39	10.65	0.01	0.40	0.40
Generator, gasoline	0.00	0.00	0.00	0.00	0.00	0.00
Pump, gasoline	0.00	0.01	0.00	0.00	0.00	0.00
Welder, gasoline	0.00	0.01	0.00	0.00	0.00	0.00
End Dump Truck	0.57	2.61	8.21	0.01	0.30	0.30
On-Road Equipment						
Highway Dump Truck - Soil Cement	0.01	0.07	0.14	0.00	0.00	0.00
Material Truck	0.35	3.93	8.06	0.01	0.11	0.11
Fugitive Dust Sources						
Disturbed Construction Area	0.00	0.00	0.00	0.00	113.85	56.93
Soil Cement Pugmill	0.00	0.00	0.00	0.00	22.06	6.57
Total	**6.97**	**33.76**	**98.69**	**0.09**	**139.60**	**67.19**

Table 6. Total Emissions for Inlet and Outlet Canal Construction - Drop 2 Reservoir Project

	Total Emissions (Tons)					
Equipment Type/Equipment	*ROG*	*CO*	*NOx*	*SOx*	*PM*	*PM10*
Off-Road Equipment						
Tractor w/scrapers	0.48	2.02	6.70	0.00	0.20	0.20
Compressor	0.08	0.30	0.56	0.00	0.06	0.06
Vibratory Compactor	0.28	1.35	2.77	0.00	0.17	0.17
Grader	0.06	0.20	0.86	0.00	0.03	0.03
Backhoe	0.02	0.06	0.11	0.00	0.01	0.01
Front-end Loader	0.01	0.05	0.19	0.00	0.01	0.01
Excavator	0.12	0.52	1.71	0.00	0.06	0.06
Excavator	0.07	0.31	0.97	0.00	0.04	0.04
Crane	0.03	0.15	0.46	0.00	0.02	0.02
Canal Trimmer	0.03	0.14	0.43	0.00	0.02	0.02
Canal Liner	0.03	0.09	0.40	0.00	0.01	0.01
Dozer	0.01	0.03	0.13	0.00	0.00	0.00
Water Truck	0.10	0.46	1.43	0.00	0.05	0.05
Generator, gasoline	0.00	0.01	0.00	0.00	0.00	0.00
Bottom Dump Truck	0.09	0.43	1.34	0.00	0.05	0.05
Welder, gasoline	0.00	0.01	0.00	0.00	0.00	0.00
Drill Rig	0.02	0.11	0.35	0.00	0.01	0.01
End Dump Truck	0.01	0.03	0.09	0.00	0.00	0.00
On-Road Equipment						
Material Truck	0.27	3.06	6.27	0.01	0.09	0.09
Fugitive Dust Sources						
Concrete Batch Plant	0.00	0.00	0.00	0.00	0.04	0.02
Disturbed Construction Area	0.00	0.00	0.00	0.00	77.00	38.50
Total	**1.71**	**9.32**	**24.79**	**0.02**	**77.88**	**39.35**

Table 7. Total Emissions for the All American Turn-In Structure Construction - Drop 2 Reservoir Project.

Equipment Type/Equipment	*Total Emissions (Tons)*					
	ROG	*CO*	*NOx*	*SOx*	*PM*	*PM10*
Off-Road Equipment						
Compressor	0.07	0.26	0.48	0.00	0.05	0.05
Steel Wheel Roller	0.01	0.03	0.06	0.00	0.01	0.01
Grader	0.01	0.02	0.07	0.00	0.00	0.00
Backhoe	0.03	0.11	0.21	0.00	0.02	0.02
Front-end Loader	0.05	0.18	0.76	0.00	0.03	0.03
Excavator	0.02	0.08	0.27	0.00	0.01	0.01
Crane	0.02	0.09	0.27	0.00	0.01	0.01
Water Truck	0.04	0.18	0.58	0.00	0.02	0.02
Generator, gasoline	0.00	0.00	0.00	0.00	0.00	0.00
Pump, gasoline	0.00	0.00	0.00	0.00	0.00	0.00
Welder, gasoline	0.00	0.01	0.00	0.00	0.00	0.00
Drill Rig	0.01	0.04	0.12	0.00	0.00	0.00
Dump Truck	0.01	0.06	0.18	0.00	0.01	0.01
On-Road Equipment						
Material Truck	0.15	1.64	3.36	0.01	0.05	0.05
Fugitive Dust Sources						
Disturbed Construction Area	0.00	0.00	0.00	0.00	4.13	2.06
Total	**0.41**	**2.70**	**6.35**	**0.01**	**4.33**	**2.27**

Table 8. Annual Emissions for Proposed Construction Activities – Drop 2 Reservoir Project

	Tons/Year					
Year/Construction Activity	*ROG*	*CO*	*NOx*	*SOx*	*PM*	*PM10*
Year 1						
All-American Canal Turn-In (7/07 - 1/08)	0.35	2.31	5.44	0.01	3.71	1.94
Total Year 1 Emissions	**0.35**	**2.31**	**5.44**	**0.01**	**3.71**	**1.94**
Year 2						
All-American Canal Turn-In (7/07 - 1/08)	0.06	0.39	0.91	0.00	0.62	0.32
Reservoir Construction (6/08 - 10/09)	4.18	20.26	59.22	0.05	83.76	40.31
Inlet & Outlet Canal Construction (6/08 - 5/09)	0.86	4.66	12.39	0.01	38.94	19.68
Total Year 2 Emissions	**5.10**	**25.30**	**72.52**	**0.07**	**123.32**	**60.31**
Year 3						
Reservoir Construction (6/08 - 10/09)	2.79	13.50	39.48	0.04	55.84	26.87
Inlet & Outlet Canal Construction (6/08 - 5/09)	0.86	4.66	12.39	0.01	38.94	19.68
Total Year 3 Emissions	**3.65**	**18.16**	**51.87**	**0.05**	**94.78**	**46.55**
Total Project Emissions	**9.10**	**45.78**	**129.83**	**0.12**	**221.81**	**108.81**
NEPA Significance Thresholds	**100.00**	**100.00**	**100.00**	**100.00**	**NA**	**70.00**

Table 9. Emission Source Data for Reservoir Construction- Drop 2 Reservoir Project

Equipment Type/Equipment	*Hp Rating*	*Ave. Daily Load Factor*	*Number Active*	*Hourly Hp-Hrs*	*Equip-Hrs Per Day*	*Daily Hp-Hrs*	*Work Days*	*Total Hp-Hrs*
Off-Road Equipment								
Tractor w/scrapers	482	0.75	6	2,169	20	43,380	193	8,372,340
Compressor	60	0.75	1	45	10	450	84	37,800
Vibratory Compactor	150	0.75	4	450	20	9,000	120	1,080,000
Steel Wheel Roller	100	0.50	2	100	20	2,000	20	40,000
Grader	220	0.20	2	88	10	880	160	140,800
Backhoe	100	0.20	1	20	10	200	105	21,000
Front-end Loader	204	0.20	1	41	20	816	8	6,528
Excavator	513	0.50	2	513	20	10,260	215	2,205,900
Excavator	321	0.50	1	161	10	1,605	5	8,025
Crane	350	0.10	1	35	10	350	84	29,400
Dozer	200	0.20	2	80	20	1,600	168	268,800
Water Truck	450	0.35	3	473	20	9,450	202	1,941,100
Generator, gasoline	16	0.75	1	12	10	120	79	9,480
Pump, gasoline	7.5	0.75	1	6	10	56	350	19,688
Welder, gasoline	20	0.75	1	15	10	150	84	12,600
End Dump Truck	457	0.30	6	823	20	16,452	91	1,497,132
On-Road Equipment (1)								
Highway Dump Truck - Soil Cement	NA	NA	NA	2	-	-	60	-
Material Truck	NA	NA	NA	64	25	1,600	360	576,000
Fugitive Dust Sources								
Disturbed Construction Area (3)	NA	NA	NA	NA	23	NA	360	8,280
Soil Cement Pugmill (4)	Not Applicable							

Notes: (1) Hourly Hp-Hrs = miles/roundtrip, Equip-Hrs/Day = daily truck trips, Daily Hp-Hrs = daily miles, and Total Hp-Hrs = total miles.

(2) Equip-Hrs per Day = daily production in tons and Total Hp-Hrs = total production in tons.

(3) Hours/Day is acres disturbed per day and Total Hp-Hrs is acre-days for the entire activity.

(4) Equip-Hrs per Day = daily production in tons and Total Hp-Hrs = total production in tons.

Table 10. Emission Source Data for Inlet and Outlet Canal Construction - Drop 2 Reservoir Project

Equipment Type/Equipment	Hp Rating	Ave. Daily Load Factor	Number Active	Hourly Hp-Hrs	Equip-Hrs Per Day	Daily Hp-Hrs	Work Days	Total Hp-Hrs
Off-Road Equipment								
Tractor w/scrapers	782	0.75	2	1,173	10	11,730	86	1,008,780
Compressor	60	0.75	2	90	10	900	82	73,800
Vibratory Compactor	150	0.75	5	563	10	5,625	72	405,000
Grader	220	0.20	2	88	10	880	148	130,240
Backhoe	100	0.20	2	40	10	400	36	14,400
Front-end Loader	204	0.20	2	82	10	816	36	29,376
Excavator	513	0.50	1	257	10	2,565	101	259,065
Excavator	321	0.50	1	161	10	1,605	110	176,550
Crane	350	0.10	2	70	10	700	120	84,000
Canal Trimmer	300	0.75	1	225	10	2,250	35	78,750
Canal Liner	230	0.75	1	173	10	1,725	35	60,375
Dozer	200	0.20	1	40	10	400	50	20,000
Water Truck	450	0.35	3	473	10	4,725	33	260,925
Generator, gasoline	16	0.75	2	24	10	240	112	26,880
Bottom Dump Truck	350	0.50	4	700	10	7,000	35	245,000
Welder, gasoline	20	0.75	2	30	10	300	66	19,800
Drill Rig	350	0.20	1	70	10	700	90	63,000
End Dump Truck	457	0.30	1	137	10	1,371	12	16,452
On-Road Equipment (1)								
Material Truck	NA	NA	NA	64	25	1,600	280	448,000
Fugitive Dust Sources								
Concrete Batch Plant (2)	Not Applicable							
Disturbed Construction Area (3)	NA	NA	NA	NA	20	NA	280	5,600

Notes: (1) Hourly Hp-Hrs = miles/roundtrip, Equip-Hrs/Day = daily truck trips, Daily Hp-Hrs = daily miles, and Total Hp-Hrs = total miles.

(2) Equip-Hrs per Day = daily production in tons and Total Hp-Hrs = total production in tons.

(3) Hours/Day is acres disturbed per day and Total Hp-Hrs is acre-days for the entire activity.

Table 11. Emission Source Data for the All American Turn-In Structure Construction - Drop 2 Reservoir Project. (7/07 - 1/08)

Equipment Type/Equipment	*Hp Rating*	*Ave. Daily Load Factor*	*Number Active*	*Hourly Hp-Hrs*	*Equip-Hrs Per Day*	*Daily Hp-Hrs*	*Work Days*	*Total Hp-Hrs*
Off-Road Equipment								
Compressor	60	0.75	1	45	10	450	140	63,000
Steel Wheel Roller	100	0.75	1	75	20	1,500	5	7,500
Grader	220	0.20	1	44	10	440	25	11,000
Backhoe	100	0.20	1	20	10	200	140	28,000
Front-end Loader	204	0.20	1	41	20	816	140	114,240
Excavator	513	0.50	1	257	20	5,130	8	41,040
Crane	350	0.10	1	35	10	350	140	49,000
Water Truck	350	0.20	1	70	10	700	150	105,000
Generator, gasoline	16	0.75	1	12	10	45	140	6,300
Pump, gasoline	7.5	0.75	1	6	10	56	150	8,438
Welder, gasoline	20	0.75	1	15	10	150	140	21,000
Drill Rig	350	0.20	1	70	10	700	30	21,000
Dump Truck	350	0.30	2	210	20	4,200	8	33,600
On-Road Equipment (1)								
Material Truck	NA	NA	NA	64	25	1,600	150	240,000
Fugitive Dust Sources								
Disturbed Construction Area (3)	NA	NA	NA	NA	2	NA	150	300

Notes: (1) Hourly Hp-Hrs = miles/roundtrip, Equip-Hrs/Day = daily truck trips, Daily Hp-Hrs = daily miles, and Total Hp-Hrs = total miles.

(2) Equip-Hrs per Day = daily production in tons and Total Hp-Hrs = total production in tons.

(3) Hours/Day is acres disturbed per day and Total Hp-Hrs is acre-days for the entire activity.

Table 12. Air Emission Factors for the Drop 2 Reservoir Project Construction and Operational Activities.

Source Type	Fuel Type	Emission Factors (Grams/Horsepower-Hour)						References
		ROG	CO	NOx	SOx	PM	PM10	
Off-Road Equipment - 25-50 Hp	D	1.75	5.58	5.79	0.00	0.65	0.65	(1)
Off-Road Equipment - 51-120 Hp	D	0.99	3.70	6.90	0.00	0.70	0.70	(1)
Off-Road Equipment - 121-175 Hp	D	0.63	3.03	6.22	0.00	0.38	0.38	(1)
Off-Road Equipment - 176-250 Hp	D	0.42	1.41	6.00	0.00	0.22	0.22	(1)
Off-Road Equipment - 251-500 Hp	D	0.35	1.58	4.98	0.00	0.18	0.18	(1)
Off-Road Equipment - 501-750 Hp	D	0.43	1.82	6.01	0.00	0.22	0.22	(1)
Off-Road Equipment - >750 Hp	D	0.43	1.82	6.03	0.00	0.18	0.18	(1)
On-road Truck - Idle (Gms/Hr)	D	5.00	30.04	67.52	0.04	1.39	1.39	(2)
On-road Truck - 5 mph (Gms/Mi)	D	2.43	24.99	16.10	0.02	0.66	0.66	(2)
On-road Truck - 25 mph (Gms/Mi)	D	0.81	6.99	9.81	0.02	0.03	0.03	(2)
On-road Truck - 55 mph (Gms/Mi)	D	0.40	4.94	12.73	0.02	0.16	0.16	(2)
On-Road Trucks - Composite (Gms/Mi)	D	0.54	6.15	12.61	0.02	0.17	0.17	(3)
Fugitive Dust (Lbs/acre-day)	---	---	---	---	---	27.50	13.75	(4)
Off-Road Equipment - Gasoline (Lbs/hp-hr)	G	0.02	0.44	0.01	0.001	0.001	0.001	(5)
Aggregate Processing Plant - Concrete (lb/ton)	---	---	---	---	---	0.0051	0.0024	(6)
Soil Cement Pugmill - Soil Transfer (lb/ton)	---	---	---	---	---	0.524	0.156	(7)

Notes: (1) Composite emission factors developed from ARB OFFROAD emissions model (1999) and based on average California equipment fleet age distributions for project year 2007, interpolated from 2005/2015 data..

(2) Heavy duty diesel truck running emission factors developed from EMFAC2002 (ARB 2003). Units in grams/mile for project year 2005. Based on annual average conditions at 60 degrees and 50% humidity. PM emission factors include combustive and tire/brake wear contributions.

(3) Composite factors based on a round trip of 85% at 55 mph, 10% at 25mph, and 5% at 5 mph. Units in grams/mile. Although not shown in these calculations, emissions from 5 minutes of idling mode included for each truck round trip.

(4) Units in lbs/acre-day from section 11.2.3 of AP-42 (EPA 1995). Emissions reduced by 75% from uncontrolled levels to represent compliance with ICAPCD Rule 800 - Fugitive Dust Requirements for Control of Fine Particulate Matter (PM10).

(5) Emission factors for uncontrolled gasoline engines from Table 3.3-1 of section 3.3 of AP-42 (EPA 1995).

(6) Emission factors for weigh hopper loading from Table 11.12-2 of section 11.12 of AP-42 (EPA 1995).

(7) Same as (6), except for mixer loading.

Table 13. Total Emissions for Reservoir Construction - Drop 2 Reservoir Project

Equipment Type/Equipment	*Total Emissions (Tons)*		
	ROG	*NOx*	*PM10*
Off-Road Equipment			
Tractor w/scrapers	3.19	45.92	1.70
Compressor	0.04	0.29	0.03
Vibratory Compactor	0.75	7.40	0.45
Steel Wheel Roller	0.04	0.30	0.03
Grader	0.07	0.93	0.03
Backhoe	0.02	0.16	0.02
Front-end Loader	0.00	0.04	0.00
Excavator	1.04	14.60	0.55
Excavator	0.00	0.04	0.00
Crane	0.01	0.16	0.01
Dozer	0.12	1.78	0.06
Water Truck	0.74	10.65	0.40
Generator, gasoline	0.00	0.00	0.00
Pump, gasoline	0.00	0.00	0.00
Welder, gasoline	0.00	0.00	0.00
End Dump Truck	0.57	8.21	0.30
On-Road Equipment			
Highway Dump Truck - Soil Cement	0.00	0.00	0.00
Material Truck	0.35	8.06	0.11
Fugitive Dust Sources			
Disturbed Construction Area	0.00	0.00	56.93
Soil Cement Pugmill	0.00	0.00	0.00
Total	**6.97**	**98.55**	**60.62**

Table 14. Total Emissions for Inlet and Outlet Canal Construction - Drop 2 Reservoir Project

Equipment Type/Equipment	*Total Emissions (Tons)*		
	ROG	*NOx*	*PM10*
Off-Road Equipment			
Tractor w/scrapers	0.48	6.70	0.20
Compressor	0.08	0.56	0.06
Vibratory Compactor	0.28	2.77	0.17
Grader	0.06	0.86	0.03
Backhoe	0.02	0.11	0.01
Front-end Loader	0.01	0.19	0.01
Excavator	0.12	1.71	0.06
Excavator	0.07	0.97	0.04
Crane	0.03	0.46	0.02
Canal Trimmer	0.03	0.43	0.02
Canal Liner	0.03	0.40	0.01
Dozer	0.01	0.13	0.00
Water Truck	0.10	1.43	0.05
Generator, gasoline	0.00	0.00	0.00
Bottom Dump Truck	0.09	1.34	0.05
Welder, gasoline	0.00	0.00	0.00
Drill Rig	0.02	0.35	0.01
End Dump Truck	0.01	0.09	0.00
On-Road Equipment			
Material Truck	0.27	6.27	0.09
Fugitive Dust Sources			
Concrete Batch Plant	0.00	0.00	0.00
Disturbed Construction Area	0.00	0.00	38.50
Total	**1.71**	**24.79**	**39.33**

Table 15. Total Emissions for the All American Turn-In Structure Construction - Drop 2 Reservoir Project.

Equipment Type/Equipment	*Total Emissions (Tons)*		
	ROG	*NOx*	*PM10*
Off-Road Equipment			
Compressor	0.07	0.48	0.05
Steel Wheel Roller	0.01	0.06	0.01
Grader	0.01	0.07	0.00
Backhoe	0.03	0.21	0.02
Front-end Loader	0.05	0.76	0.03
Excavator	0.02	0.27	0.01
Crane	0.02	0.27	0.01
Water Truck	0.04	0.58	0.02
Generator, gasoline	0.00	0.00	0.00
Pump, gasoline	0.00	0.00	0.00
Welder, gasoline	0.00	0.00	0.00
Drill Rig	0.01	0.12	0.00
Dump Truck	0.01	0.18	0.01
On-Road Equipment			
Material Truck	0.15	3.36	0.05
Fugitive Dust Sources			
Disturbed Construction Area	0.00	0.00	2.06
Total	**0.41**	**6.35**	**2.27**

Table 16. Annual Emissions for Proposed Construction Activities – Drop 2 Reservoir Project

Year/Construction Activity	*Tons/Year*		
	ROG	*NOx*	*PM10*
Year 1			
All-American Canal Turn-In (7/07 - 1/08)	0.35	5.44	1.94
Total Year 1 Emissions	**0.35**	**5.44**	**1.94**
Year 2			
All-American Canal Turn-In (7/07 - 1/08)	0.06	0.91	0.32
Reservoir Construction (6/08 - 10/09)	2.87	40.58	24.96
Inlet & Outlet Canal Construction (6/08 - 5/09)	1.00	14.46	22.94
Total Year 2 Emissions	**3.93**	**55.95**	**48.23**
Year 3			
Reservoir Construction (6/08 - 10/09)	4.10	57.97	35.66
Inlet & Outlet Canal Construction (6/08 - 5/09)	0.71	10.33	16.39
Total Year 3 Emissions	**4.81**	**68.30**	**52.05**
Total Project Emissions	**9.09**	**129.69**	**102.22**
NEPA Significance Thresholds	**100.00**	**100.00**	**70.00**

Table 17. Emission Source Data for Operation of the Drop 2 Reservoir Project

Activity/ Equipment Type	*Hp Rating*	*Ave. Daily Load Factor*	*Number Active*	*Hourly Hp-Hrs*	*Equip-Hrs Per Day*	*Daily Hp-Hrs*	*Work Days*	*Total Hp-Hrs*
Silt Removal - Annual Usages								
Loader	110	0.40	4	176	16	2,816	18	50,688
Dozer/Grader	215	0.40	3	258	16	4,128	18	74,304
Dump Truck	450	0.35	8	1,260	16	20,160	18	362,880
Fugitive Dust (1)	NA	NA	NA	NA	40	NA	18	720

Notes: (1) Hours/Day is acres disturbed per day and Total Hp-Hrs is acre-days for the entire activity.

Table 18. Air Emission Factors for the Drop 2 Reservoir Project Construction and Operational Activities.

Source Type	Fuel Type	Emission Factors (Grams/Horsepower-Hour)						References
		ROG	CO	NOx	SOx	PM	PM10	
Off-Road Equipment - 25-50 Hp	D	1.75	5.58	5.79	0.00	0.65	0.65	(1)
Off-Road Equipment - 51-120 Hp	D	0.99	3.70	6.90	0.00	0.70	0.70	(1)
Off-Road Equipment - 121-175 Hp	D	0.63	3.03	6.22	0.00	0.38	0.38	(1)
Off-Road Equipment - 176-250 Hp	D	0.42	1.41	6.00	0.00	0.22	0.22	(1)
Off-Road Equipment - 251-500 Hp	D	0.35	1.58	4.98	0.00	0.18	0.18	(1)
Off-Road Equipment - 501-750 Hp	D	0.43	1.82	6.01	0.00	0.22	0.22	(1)
Off-Road Equipment - >750 Hp	D	0.43	1.82	6.03	0.00	0.18	0.18	(1)
On-road Truck - Idle (Gms/Hr)	D	5.00	30.04	67.52	0.04	1.39	1.39	(2)
On-road Truck - 5 mph (Gms/Mi)	D	2.43	24.99	16.10	0.02	0.66	0.66	(2)
On-road Truck - 25 mph (Gms/Mi)	D	0.81	6.99	9.81	0.02	0.03	0.03	(2)
On-road Truck - 55 mph (Gms/Mi)	D	0.40	4.94	12.73	0.02	0.16	0.16	(2)
On-Road Trucks - Composite (Gms/Mi)	D	0.54	6.15	12.61	0.02	0.17	0.17	(3)
Fugitive Dust (Lbs/acre-day)	---	---	---	---	---	27.50	13.75	(4)

Notes: (1) Composite emission factors developed from ARB OFFROAD emissions model (1999) and based on average California equipment fleet age distributions for project year 2007, interpolated from 2005/2015 data..

(2) Heavy duty diesel truck running emission factors developed from EMFAC2002 (ARB 2003). Units in grams/mile for project year 2005. Based on annual average conditions at 60 degrees and 50% humidity. PM emission factors include combustive and tire/brake wear contributions.

(3) Composite factors based on a round trip of 85% at 55 mph, 10% at 25mph, and 5% at 5 mph. Units in grams/mile. Although not shov in these calculations, emissions from 5 minutes of idling mode included for each truck round trip.

(4) Units in lbs/acre-day from section 11.2.3 of AP-42 (EPA 1995). Emissions reduced by 75% from uncontrolled levels to represent compliance with ICAPCD Rule 800 - Fugitive Dust Requirements for Control of Fine Particulate Matter (PM10).

(5) Emission factors for uncontrolled gasoline engines from Table 3.3-1 of section 3.3 of AP-42 (EPA 1995).

(6) Emission factors for weigh hopper loading from Table 11.12-2 of section 11.12 of AP-42 (EPA 1995).

(7) Same as (6), except for mixer loading.

Table 19. Annual Emissions for Operation of the Drop 2 Reservoir Project

Activity	*Tons/Year*					
Equipment Type	*ROG*	*CO*	*NOx*	*SOx*	*PM*	*PM10*
Silt Removal Operations						
Loader	0.06	0.21	0.39	0.00	0.04	0.04
Dozer/Grader	0.03	0.12	0.49	0.00	0.02	0.02
Dump Truck	0.14	0.63	1.99	0.00	0.07	0.07
Fugitive Dust	-	-	-	-	9.90	4.95
Total Annual Tons	**0.23**	**0.96**	**2.87**	**0.00**	**10.03**	**5.08**