



## Appendix 7-4

# Kern Water Bank Air Quality Modeling Results

Prepared for:



State of California  
California Natural Resources Agency  
Department of Water Resources

Prepared by:

AECOM  
2020 L Street, Suite 400  
Sacramento, CA 95814

April 2016



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**APPENDIX 7-4**

**A. RECHARGE AND RECOVERY CONSTRUCTION  
EMISSIONS (CALEEMOD OUTPUTS)**

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**Monterey Plus - IRWM**  
**Kern-San Joaquin County, Annual**

**1.0 Project Characteristics**

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**1.1 Land Usage**

**1.2 Other Project Characteristics**

<b>Urbanization</b>	Rural	<b>Wind Speed (m/s)</b>	2.7	<b>Precipitation Freq (Days)</b>	32
<b>Climate Zone</b>	3			<b>Operational Year</b>	2016
<b>Utility Company</b>					
<b>CO2 Intensity (lb/MWhr)</b>	0	<b>CH4 Intensity (lb/MWhr)</b>	0	<b>N2O Intensity (lb/MWhr)</b>	0

**1.3 User Entered Comments & Non-Default Data**

Project Characteristics -

Land Use -

Construction Phase - KWB provided schedule

Off-road Equipment - KWB provided data

Off-road Equipment - KWB provided data

Off-road Equipment - KWB provided data

Off-road Equipment - KWB provided data

Off-road Equipment - KWB provided data

Off-road Equipment - KWB provided data

Off-road Equipment - KWB provided data

Grading - KWB provided data (assumed 5 acres of disturbed area for both phases)

Trips and VMT - Construction workers and vendor trips provided by KWB;

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	0.00	15.00
tblConstructionPhase	NumDays	0.00	7.00
tblConstructionPhase	NumDays	0.00	15.00
tblConstructionPhase	NumDays	0.00	7.00
tblConstructionPhase	NumDays	0.00	5.00
tblConstructionPhase	NumDays	0.00	15.00
tblConstructionPhase	NumDays	0.00	7.00
tblConstructionPhase	PhaseEndDate	7/7/2016	7/8/2016
tblConstructionPhase	PhaseStartDate	7/9/2016	7/11/2016
tblConstructionPhase	PhaseStartDate	6/11/2016	6/13/2016
tblConstructionPhase	PhaseStartDate	7/1/2016	7/4/2016
tblConstructionPhase	PhaseStartDate	5/21/2016	5/23/2016
tblConstructionPhase	PhaseStartDate	7/30/2016	8/1/2016



tblGrading	AcresOfGrading	25.00	5.00
tblGrading	AcresOfGrading	75.00	5.00
tblGrading	MaterialImported	0.00	24,000.00
tblGrading	MaterialImported	0.00	95,000.00
tblOffRoadEquipment	HorsePower	361.00	750.00
tblOffRoadEquipment	HorsePower	361.00	750.00
tblOffRoadEquipment	HorsePower	78.00	200.00
tblOffRoadEquipment	HorsePower	205.00	600.00
tblOffRoadEquipment	HorsePower	162.00	250.00
tblOffRoadEquipment	HorsePower	97.00	265.00
tblOffRoadEquipment	HorsePower	80.00	240.00
tblOffRoadEquipment	HorsePower	97.00	90.00
tblOffRoadEquipment	HorsePower	174.00	265.00
tblOffRoadEquipment	HorsePower	174.00	265.00
tblOffRoadEquipment	HorsePower	97.00	90.00
tblOffRoadEquipment	HorsePower	78.00	200.00
tblOffRoadEquipment	HorsePower	162.00	250.00
tblOffRoadEquipment	HorsePower	97.00	90.00
tblOffRoadEquipment	HorsePower	97.00	265.00
tblOffRoadEquipment	HorsePower	80.00	240.00
tblOffRoadEquipment	HorsePower	97.00	90.00
tblOffRoadEquipment	LoadFactor	0.48	0.32
tblOffRoadEquipment	LoadFactor	0.48	0.32
tblOffRoadEquipment	OffRoadEquipmentType	Air Compressors	Scrapers
tblOffRoadEquipment	OffRoadEquipmentType	Cement and Mortar Mixers	Scrapers
tblOffRoadEquipment	OffRoadEquipmentType	Concrete/Industrial Saws	Air Compressors
tblOffRoadEquipment	OffRoadEquipmentType	Concrete/Industrial Saws	Bore/Drill Rigs
tblOffRoadEquipment	OffRoadEquipmentType	Cranes	Excavators

tblOffRoadEquipment	OffRoadEquipmentType	Pavers	Rollers
tblOffRoadEquipment	OffRoadEquipmentType	Concrete/Industrial Saws	Graders
tblOffRoadEquipment	OffRoadEquipmentType	Concrete/Industrial Saws	Graders
tblOffRoadEquipment	OffRoadEquipmentType	Cranes	Air Compressors
tblOffRoadEquipment	OffRoadEquipmentType	Cranes	Excavators
tblOffRoadEquipment	OffRoadEquipmentType	Rubber Tired Dozers	Rollers
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	8.00	24.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblProjectCharacteristics	OperationalYear	2014	2016
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural

## 2.0 Emissions Summary

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**2.1 Overall Construction**

**Unmitigated Construction**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	0.1743	2.0997	1.1096	2.3600e-003	0.0249	0.0896	0.1145	6.8400e-003	0.0830	0.0898	0.0000	220.9577	220.9577	0.0621	0.0000	222.2611
<b>Total</b>	<b>0.1743</b>	<b>2.0997</b>	<b>1.1096</b>	<b>2.3600e-003</b>	<b>0.0249</b>	<b>0.0896</b>	<b>0.1145</b>	<b>6.8400e-003</b>	<b>0.0830</b>	<b>0.0898</b>	<b>0.0000</b>	<b>220.9577</b>	<b>220.9577</b>	<b>0.0621</b>	<b>0.0000</b>	<b>222.2611</b>

**Mitigated Construction**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	0.1743	2.0997	1.1096	2.3600e-003	0.0130	0.0896	0.1026	3.5200e-003	0.0830	0.0865	0.0000	220.9574	220.9574	0.0621	0.0000	222.2608
<b>Total</b>	<b>0.1743</b>	<b>2.0997</b>	<b>1.1096</b>	<b>2.3600e-003</b>	<b>0.0130</b>	<b>0.0896</b>	<b>0.1026</b>	<b>3.5200e-003</b>	<b>0.0830</b>	<b>0.0865</b>	<b>0.0000</b>	<b>220.9574</b>	<b>220.9574</b>	<b>0.0621</b>	<b>0.0000</b>	<b>222.2608</b>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
<b>Percent Reduction</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>47.81</b>	<b>0.00</b>	<b>10.39</b>	<b>48.54</b>	<b>0.00</b>	<b>3.70</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

**2.2 Overall Operational**

**Unmitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>0.0000</b>					<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**Mitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>0.0000</b>					<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
<b>Percent Reduction</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

### 3.0 Construction Detail

#### Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Well Drilling (Active)	Building Construction	5/2/2016	5/20/2016	5	15	
2	Well Drilling (Setup)	Building Construction	5/23/2016	6/10/2016	5	15	
3	Well Development	Building Construction	6/13/2016	6/21/2016	5	7	
4	Pipeline Installation	Building Construction	6/22/2016	6/30/2016	5	7	
5	Pioneer Canal	Grading	7/4/2016	7/8/2016	5	5	
6	Basin Levees	Grading	7/11/2016	7/29/2016	5	15	
7	Basin Discharge Structures	Building Construction	8/1/2016	8/9/2016	5	7	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

#### OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Basin Levees	Scrapers	4	8.00	750	0.48
Pioneer Canal	Scrapers	4	8.00	750	0.48
Well Drilling (Active)	Air Compressors	1	24.00	200	0.32
Well Development	Bore/Drill Rigs	1	7.00	600	0.50
Pipeline Installation	Excavators	2	8.00	250	0.38
Pipeline Installation	Tractors/Loaders/Backhoes	1	8.00	265	0.37
Pioneer Canal	Concrete/Industrial Saws	1	8.00	81	0.73
Pioneer Canal	Rollers	2	8.00	240	0.38

Basin Levees	Concrete/Industrial Saws	1	8.00	81	0.73
Well Drilling (Active)	Cranes	1	4.00	226	0.29
Well Drilling (Setup)	Cranes	1	4.00	226	0.29
Pipeline Installation	Tractors/Loaders/Backhoes	1	8.00	90	0.37
Well Development	Cranes	1	4.00	226	0.29
Pipeline Installation	Cranes	1	4.00	226	0.29
Basin Discharge Structures	Cranes	1	4.00	226	0.29
Well Drilling (Active)	Forklifts	2	6.00	89	0.20
Pioneer Canal	Graders	2	8.00	265	0.41
Basin Levees	Graders	2	8.00	265	0.41
Well Drilling (Active)	Tractors/Loaders/Backhoes	1	24.00	90	0.37
Well Drilling (Setup)	Air Compressors	1	2.00	200	0.32
Well Drilling (Setup)	Forklifts	2	6.00	89	0.20
Basin Discharge Structures	Excavators	2	8.00	250	0.38
Well Development	Forklifts	2	6.00	89	0.20
Well Drilling (Setup)	Tractors/Loaders/Backhoes	1	2.00	90	0.37
Pipeline Installation	Forklifts	2	6.00	89	0.20
Basin Discharge Structures	Tractors/Loaders/Backhoes	1	8.00	265	0.37
Basin Discharge Structures	Forklifts	2	6.00	89	0.20
Basin Levees	Rollers	2	8.00	240	0.38
Basin Discharge Structures	Tractors/Loaders/Backhoes	1	8.00	90	0.37
Pioneer Canal	Rubber Tired Dozers	1	1.00	255	0.40
Basin Levees	Rubber Tired Dozers	1	1.00	255	0.40
Well Development	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Pioneer Canal	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Basin Levees	Tractors/Loaders/Backhoes	2	6.00	97	0.37

**Trips and VMT**

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Well Drilling (Active)	5	0.00		0.00	16.80	6.60				
Well Drilling (Setup)	5	0.00		0.00	16.80	6.60				
Well Development	6	0.00		0.00	16.80	6.60				
Pipeline Installation	7	0.00		0.00	16.80	6.60				
Pioneer Canal	12	30.00		3,000.00	16.80	6.60				
Basin Levees	12	30.00		11,875.00	16.80	6.60				
Basin Discharge Structures	7	0.00		0.00	16.80	6.60				

### 3.1 Mitigation Measures Construction

Water Exposed Area

Clean Paved Roads

### 3.2 Well Drilling (Active) - 2016

#### Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0215	0.2122	0.1058	2.6000e-004		0.0113	0.0113		0.0106	0.0106	0.0000	22.8379	22.8379	3.6800e-003	0.0000	22.9151
<b>Total</b>	<b>0.0215</b>	<b>0.2122</b>	<b>0.1058</b>	<b>2.6000e-004</b>		<b>0.0113</b>	<b>0.0113</b>		<b>0.0106</b>	<b>0.0106</b>	<b>0.0000</b>	<b>22.8379</b>	<b>22.8379</b>	<b>3.6800e-003</b>	<b>0.0000</b>	<b>22.9151</b>

### 3.2 Well Drilling (Active) - 2016

#### Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Category	tons/yr										MT/yr						
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>					<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

#### Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0215	0.2122	0.1058	2.6000e-004		0.0113	0.0113		0.0106	0.0106	0.0000	22.8378	22.8378	3.6800e-003	0.0000	22.9150
<b>Total</b>	<b>0.0215</b>	<b>0.2122</b>	<b>0.1058</b>	<b>2.6000e-004</b>		<b>0.0113</b>	<b>0.0113</b>		<b>0.0106</b>	<b>0.0106</b>	<b>0.0000</b>	<b>22.8378</b>	<b>22.8378</b>	<b>3.6800e-003</b>	<b>0.0000</b>	<b>22.9150</b>



### 3.2 Well Drilling (Active) - 2016

#### Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>					<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

### 3.3 Well Drilling (Setup) - 2016

#### Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.6100e-003	0.0672	0.0321	6.0000e-005		3.9600e-003	3.9600e-003		3.6600e-003	3.6600e-003	0.0000	5.2162	5.2162	1.3100e-003	0.0000	5.2436
<b>Total</b>	<b>6.6100e-003</b>	<b>0.0672</b>	<b>0.0321</b>	<b>6.0000e-005</b>		<b>3.9600e-003</b>	<b>3.9600e-003</b>		<b>3.6600e-003</b>	<b>3.6600e-003</b>	<b>0.0000</b>	<b>5.2162</b>	<b>5.2162</b>	<b>1.3100e-003</b>	<b>0.0000</b>	<b>5.2436</b>

### 3.3 Well Drilling (Setup) - 2016

#### Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>					<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

#### Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.6100e-003	0.0672	0.0321	6.0000e-005		3.9600e-003	3.9600e-003		3.6600e-003	3.6600e-003	0.0000	5.2162	5.2162	1.3100e-003	0.0000	5.2436
<b>Total</b>	<b>6.6100e-003</b>	<b>0.0672</b>	<b>0.0321</b>	<b>6.0000e-005</b>		<b>3.9600e-003</b>	<b>3.9600e-003</b>		<b>3.6600e-003</b>	<b>3.6600e-003</b>	<b>0.0000</b>	<b>5.2162</b>	<b>5.2162</b>	<b>1.3100e-003</b>	<b>0.0000</b>	<b>5.2436</b>

### 3.3 Well Drilling (Setup) - 2016

#### Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>					<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

### 3.4 Well Development - 2016

#### Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	7.3100e-003	0.0831	0.0469	1.2000e-004		4.4500e-003	4.4500e-003		4.1000e-003	4.1000e-003	0.0000	11.3109	11.3109	3.4100e-003	0.0000	11.3825
<b>Total</b>	<b>7.3100e-003</b>	<b>0.0831</b>	<b>0.0469</b>	<b>1.2000e-004</b>		<b>4.4500e-003</b>	<b>4.4500e-003</b>		<b>4.1000e-003</b>	<b>4.1000e-003</b>	<b>0.0000</b>	<b>11.3109</b>	<b>11.3109</b>	<b>3.4100e-003</b>	<b>0.0000</b>	<b>11.3825</b>

### 3.4 Well Development - 2016

#### Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Category	tons/yr										MT/yr						
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>					<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

#### Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	7.3100e-003	0.0831	0.0469	1.2000e-004		4.4500e-003	4.4500e-003		4.1000e-003	4.1000e-003	0.0000	11.3109	11.3109	3.4100e-003	0.0000	11.3825
<b>Total</b>	<b>7.3100e-003</b>	<b>0.0831</b>	<b>0.0469</b>	<b>1.2000e-004</b>		<b>4.4500e-003</b>	<b>4.4500e-003</b>		<b>4.1000e-003</b>	<b>4.1000e-003</b>	<b>0.0000</b>	<b>11.3109</b>	<b>11.3109</b>	<b>3.4100e-003</b>	<b>0.0000</b>	<b>11.3825</b>

### 3.4 Well Development - 2016

#### Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>					<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

### 3.5 Pipeline Installation - 2016

#### Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	8.3500e-003	0.1017	0.0455	1.1000e-004		4.5000e-003	4.5000e-003		4.1400e-003	4.1400e-003	0.0000	10.8042	10.8042	3.2600e-003	0.0000	10.8726
<b>Total</b>	<b>8.3500e-003</b>	<b>0.1017</b>	<b>0.0455</b>	<b>1.1000e-004</b>		<b>4.5000e-003</b>	<b>4.5000e-003</b>		<b>4.1400e-003</b>	<b>4.1400e-003</b>	<b>0.0000</b>	<b>10.8042</b>	<b>10.8042</b>	<b>3.2600e-003</b>	<b>0.0000</b>	<b>10.8726</b>

### 3.5 Pipeline Installation - 2016

#### Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>					<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

#### Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	8.3500e-003	0.1017	0.0455	1.1000e-004		4.5000e-003	4.5000e-003		4.1400e-003	4.1400e-003	0.0000	10.8042	10.8042	3.2600e-003	0.0000	10.8726
<b>Total</b>	<b>8.3500e-003</b>	<b>0.1017</b>	<b>0.0455</b>	<b>1.1000e-004</b>		<b>4.5000e-003</b>	<b>4.5000e-003</b>		<b>4.1400e-003</b>	<b>4.1400e-003</b>	<b>0.0000</b>	<b>10.8042</b>	<b>10.8042</b>	<b>3.2600e-003</b>	<b>0.0000</b>	<b>10.8726</b>

### 3.5 Pipeline Installation - 2016

#### Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>					<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

### 3.6 Pioneer Canal - 2016

#### Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					6.3000e-003	0.0000	6.3000e-003	1.5900e-003	0.0000	1.5900e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0305	0.3835	0.2085	4.3000e-004		0.0152	0.0152		0.0141	0.0141	0.0000	39.9961	39.9961	0.0118	0.0000	40.2437
<b>Total</b>	<b>0.0305</b>	<b>0.3835</b>	<b>0.2085</b>	<b>4.3000e-004</b>	<b>6.3000e-003</b>	<b>0.0152</b>	<b>0.0215</b>	<b>1.5900e-003</b>	<b>0.0141</b>	<b>0.0157</b>	<b>0.0000</b>	<b>39.9961</b>	<b>39.9961</b>	<b>0.0118</b>	<b>0.0000</b>	<b>40.2437</b>

### 3.6 Pioneer Canal - 2016

#### Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					8.1000e-004	0.0000	8.1000e-004	2.0000e-004	0.0000	2.0000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>					<b>8.1000e-004</b>	<b>0.0000</b>	<b>8.1000e-004</b>	<b>2.0000e-004</b>	<b>0.0000</b>	<b>2.0000e-004</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

#### Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.8400e-003	0.0000	2.8400e-003	7.2000e-004	0.0000	7.2000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0305	0.3835	0.2085	4.3000e-004		0.0152	0.0152		0.0141	0.0141	0.0000	39.9961	39.9961	0.0118	0.0000	40.2436
<b>Total</b>	<b>0.0305</b>	<b>0.3835</b>	<b>0.2085</b>	<b>4.3000e-004</b>	<b>2.8400e-003</b>	<b>0.0152</b>	<b>0.0181</b>	<b>7.2000e-004</b>	<b>0.0141</b>	<b>0.0148</b>	<b>0.0000</b>	<b>39.9961</b>	<b>39.9961</b>	<b>0.0118</b>	<b>0.0000</b>	<b>40.2436</b>



### 3.6 Pioneer Canal - 2016

#### Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					8.1000e-004	0.0000	8.1000e-004	2.0000e-004	0.0000	2.0000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>					<b>8.1000e-004</b>	<b>0.0000</b>	<b>8.1000e-004</b>	<b>2.0000e-004</b>	<b>0.0000</b>	<b>2.0000e-004</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

### 3.7 Basin Levees - 2016

#### Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0153	0.0000	0.0153	4.4500e-003	0.0000	4.4500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0916	1.1504	0.6254	1.2800e-003		0.0457	0.0457		0.0422	0.0422	0.0000	119.9883	119.9883	0.0354	0.0000	120.7310
<b>Total</b>	<b>0.0916</b>	<b>1.1504</b>	<b>0.6254</b>	<b>1.2800e-003</b>	<b>0.0153</b>	<b>0.0457</b>	<b>0.0610</b>	<b>4.4500e-003</b>	<b>0.0422</b>	<b>0.0467</b>	<b>0.0000</b>	<b>119.9883</b>	<b>119.9883</b>	<b>0.0354</b>	<b>0.0000</b>	<b>120.7310</b>

### 3.7 Basin Levees - 2016

#### Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					2.4400e-003	0.0000	2.4400e-003	6.0000e-004	0.0000	6.0000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>					<b>2.4400e-003</b>	<b>0.0000</b>	<b>2.4400e-003</b>	<b>6.0000e-004</b>	<b>0.0000</b>	<b>6.0000e-004</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

#### Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					6.8900e-003	0.0000	6.8900e-003	2.0000e-003	0.0000	2.0000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0916	1.1504	0.6254	1.2800e-003		0.0457	0.0457		0.0422	0.0422	0.0000	119.9882	119.9882	0.0354	0.0000	120.7309
<b>Total</b>	<b>0.0916</b>	<b>1.1504</b>	<b>0.6254</b>	<b>1.2800e-003</b>	<b>6.8900e-003</b>	<b>0.0457</b>	<b>0.0526</b>	<b>2.0000e-003</b>	<b>0.0422</b>	<b>0.0442</b>	<b>0.0000</b>	<b>119.9882</b>	<b>119.9882</b>	<b>0.0354</b>	<b>0.0000</b>	<b>120.7309</b>

### 3.7 Basin Levees - 2016

#### Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					2.4400e-003	0.0000	2.4400e-003	6.0000e-004	0.0000	6.0000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>					<b>2.4400e-003</b>	<b>0.0000</b>	<b>2.4400e-003</b>	<b>6.0000e-004</b>	<b>0.0000</b>	<b>6.0000e-004</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

### 3.8 Basin Discharge Structures - 2016

#### Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	8.3500e-003	0.1017	0.0455	1.1000e-004		4.5000e-003	4.5000e-003		4.1400e-003	4.1400e-003	0.0000	10.8042	10.8042	3.2600e-003	0.0000	10.8726
<b>Total</b>	<b>8.3500e-003</b>	<b>0.1017</b>	<b>0.0455</b>	<b>1.1000e-004</b>		<b>4.5000e-003</b>	<b>4.5000e-003</b>		<b>4.1400e-003</b>	<b>4.1400e-003</b>	<b>0.0000</b>	<b>10.8042</b>	<b>10.8042</b>	<b>3.2600e-003</b>	<b>0.0000</b>	<b>10.8726</b>

### 3.8 Basin Discharge Structures - 2016

#### Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>					<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

#### Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	8.3500e-003	0.1017	0.0455	1.1000e-004		4.5000e-003	4.5000e-003		4.1400e-003	4.1400e-003	0.0000	10.8042	10.8042	3.2600e-003	0.0000	10.8726
<b>Total</b>	<b>8.3500e-003</b>	<b>0.1017</b>	<b>0.0455</b>	<b>1.1000e-004</b>		<b>4.5000e-003</b>	<b>4.5000e-003</b>		<b>4.1400e-003</b>	<b>4.1400e-003</b>	<b>0.0000</b>	<b>10.8042</b>	<b>10.8042</b>	<b>3.2600e-003</b>	<b>0.0000</b>	<b>10.8726</b>

### 3.8 Basin Discharge Structures - 2016

#### Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>					<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

### 4.0 Operational Detail - Mobile

#### 4.1 Mitigation Measures Mobile

#### 4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Total					

#### 4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.353475	0.055502	0.137138	0.182247	0.057845	0.010587	0.022262	0.167952	0.001534	0.001841	0.005971	0.001121	0.002524

**5.0 Energy Detail**

**4.4 Fleet Mix**

Historical Energy Use: N

**5.1 Mitigation Measures Energy**

**6.0 Area Detail**

**6.1 Mitigation Measures Area**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

## 6.2 Area by SubCategory

### Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
SubCategory	tons/yr										MT/yr						
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>0.0000</b>					<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

### Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
SubCategory	tons/yr										MT/yr						
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>0.0000</b>					<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

## 7.0 Water Detail

### 7.1 Mitigation Measures Water

## 8.0 Waste Detail

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### 8.1 Mitigation Measures Waste

## 9.0 Operational Offroad

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Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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## 10.0 Vegetation

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**APPENDIX 7-4**

**B. KWB RECHARGE AND RECOVERY PROJECT AND FULL  
BUILD-OUT CONSTRUCTION EMISSIONS SUMMARY**

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Monterey Plus  
Construction of Recharge and Recovery Project

Phase	Workdays	Start	End	Number	Days	Hrs/Day	Horsepower	Load Factor	Emissions (tons/year)				MT/yr
									ROG	NO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2e</sub>
Well Drilling - Active Drilling (3)	15	5/2/2016	5/20/2016						0.0645	0.6366	0.0339	0.0318	68.7453
Air Compressor				1	15	24	200	0.3216					
Backhoe				1	15	24	90	0.3685					
Construction Workers				3	15				0.001	0.005	0.001	0.001	1.351
Well Drilling - Set/Breakdown (3)	15	5/23/2016	6/10/2016						0.01983	0.2016	0.01188	0.01098	15.7308
Air Compressor				1	15	2	200	0.3216					
Backhoe				1	15	2	90	0.3685					
Construction Workers				3	15	2			0.001	0.005	0.001	0.001	1.351
Well Development (3)	7	6/13/2016	6/21/2016						0.02193	0.2493	0.0135	0.0123	34.1475
Drill Rig				1	7	10	600	0.5025					
Construction Workers				1	7				1.98E-04	7.50E-04	9.37E-05	7.79E-05	2.10E-01
Well Discharge Piping/Pipeline Installation	7	6/22/2016	6/30/2016						0.00835	0.1017	0.0045	0.0041	10.8726
Excavator				2	5	8	250	0.3819					
Loader				1	5	8	265	0.3685					
Backhoe				1	5	8	90	0.3685					
Construction Workers				7	5				0.001	0.004	0.000	0.000	1.051
Pioneer Canal	5	7/4/2016	7/8/2016						0.0305	0.3835	0.0215	0.0157	40.2437
Scraper				4	5	8	750	0.4824					
Grader				2	5	8	265	0.4087					
Compactor (Roller)				2	5	8	240	0.3752					
Construction Workers				10	5				0.001	0.005	0.001	0.001	1.501
Basin Levees/Levee Construction	15	7/11/2016	7/29/2016						0.0916	1.1504	0.061	0.0467	120.731
Scraper				4	15	8	750	0.4824					
Grader				2	15	8	265	0.4087					
Compactor (Roller)				2	15	8	240	0.3752					
Construction Workers				10	15				0.004	0.016	0.002	0.002	4.503
Basin Discharge Structures	7	8/1/2016	8/9/2016						0.00835	0.1017	0.0045	0.00414	10.8726
Excavator				2	7	8	250	0.3819					
Loader				1	7	8	265	0.3685					
Backhoe				1	7	8	90	0.3685					
Construction Workers				7	7				0.001	0.005	0.001	0.001	1.471
<b>Total</b>									<b>0.26</b>	<b>2.87</b>	<b>0.16</b>	<b>0.13</b>	<b>312.78</b>

Construction Worker Assumptions

Trip Distance	30 miles
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Monterey Plus  
 Construction of KWB Full Buildout  
 900 acres of recharge ponds

Phase	Workdays	Start	End	Number	Days	Hrs/Day	Horsepower	Load Factor	Emissions (tons/year)				MT/yr
									ROG	NO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2e</sub>
Basin Levees/Levee Construction	72	7/11/2016	7/29/2016						0.43968	5.52192	0.2928	0.22416	579.5088
Scraper				4	72	8	750	0.4824					
Grader				2	72	8	265	0.4087					
Compactor (Roller)				2	72	8	240	0.3752					
Construction Workers				10	72				0.020	0.077	0.010	0.008	21.612
Basin Discharge Structures	34	8/1/2016	8/9/2016						0.04008	0.48816	0.0216	0.019872	52.18848
Excavator				2	34	8	250	0.3819					
Loader				1	34	8	265	0.3685					
Backhoe				1	34	8	90	0.3685					
Construction Workers				7	34				0.007	0.025	0.003	0.003	7.144
<b>Total</b>									<b>0.51</b>	<b>6.11</b>	<b>0.33</b>	<b>0.25</b>	<b>660.45</b>

Construction Worker Assumptions

Trip Distance	30 miles
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Project	Recharge Pond (Acres)	Days	
		Construction Phase	Discharge Structure Phase
Recharge and Recovery	190	15	7
KWB Full Buildout	900	72	34
Schedule Scaling Factor		4.8	4.9

**APPENDIX 7-4**

**C. KWB O&M EQUIPMENT (CALEEMOD OUTPUTS)**

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## Monterey Plus (O&M) Equipment Kern-San Joaquin County, Summer

### 1.0 Project Characteristics

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#### 1.1 Land Usage

#### 1.2 Other Project Characteristics

<b>Urbanization</b>	Rural	<b>Wind Speed (m/s)</b>	2.7	<b>Precipitation Freq (Days)</b>	32
<b>Climate Zone</b>	3			<b>Operational Year</b>	1990
<b>Utility Company</b>					
<b>CO2 Intensity (lb/MWhr)</b>	0	<b>CH4 Intensity (lb/MWhr)</b>	0	<b>N2O Intensity (lb/MWhr)</b>	0

#### 1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - 1 day each

Off-road Equipment - for 1hr backhoe

Off-road Equipment - for 1hr tractor

Off-road Equipment - for 1 hr water truck

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	PhaseEndDate	1/4/1995	1/5/1995
tblConstructionPhase	PhaseStartDate	1/4/1995	1/5/1995
tblOffRoadEquipment	HorsePower	97.00	75.00
tblOffRoadEquipment	HorsePower	97.00	115.00
tblOffRoadEquipment	HorsePower	400.00	381.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Water Truck
tblOffRoadEquipment	UsageHours	8.00	1.00
tblOffRoadEquipment	UsageHours	8.00	1.00
tblProjectCharacteristics	OperationalYear	2014	1990
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural

## 2.0 Emissions Summary

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**2.1 Overall Construction (Maximum Daily Emission)**

**Unmitigated Construction**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
1995	0.5608	4.6279	4.0019	0.2113	0.0000	0.3061	0.3061	0.0000	0.3061	0.3061	0.0000	181.3927	181.3927	0.0504	0.0000	182.4517
<b>Total</b>	<b>0.5608</b>	<b>4.6279</b>	<b>4.0019</b>	<b>0.2113</b>	<b>0.0000</b>	<b>0.3061</b>	<b>0.3061</b>	<b>0.0000</b>	<b>0.3061</b>	<b>0.3061</b>	<b>0.0000</b>	<b>181.3927</b>	<b>181.3927</b>	<b>0.0504</b>	<b>0.0000</b>	<b>182.4517</b>

**Mitigated Construction**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
1995	0.5608	4.6279	4.0019	0.2113	0.0000	0.3061	0.3061	0.0000	0.3061	0.3061	0.0000	181.3927	181.3927	0.0504	0.0000	182.4517
<b>Total</b>	<b>0.5608</b>	<b>4.6279</b>	<b>4.0019</b>	<b>0.2113</b>	<b>0.0000</b>	<b>0.3061</b>	<b>0.3061</b>	<b>0.0000</b>	<b>0.3061</b>	<b>0.3061</b>	<b>0.0000</b>	<b>181.3927</b>	<b>181.3927</b>	<b>0.0504</b>	<b>0.0000</b>	<b>182.4517</b>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
<b>Percent Reduction</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

**2.2 Overall Operational**

**Unmitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
<b>Total</b>	<b>0.0000</b>					<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>			<b>0.0000</b>			<b>0.0000</b>

**Mitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
<b>Total</b>	<b>0.0000</b>					<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>			<b>0.0000</b>			<b>0.0000</b>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
<b>Percent Reduction</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

### 3.0 Construction Detail

#### Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Backhoe	Building Construction	1/2/1995	1/2/1995	5	1	
2	Tractor	Building Construction	1/3/1995	1/3/1995	5	1	
3	Water Truck	Building Construction	1/5/1995	1/5/1995	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

#### OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Backhoe	Tractors/Loaders/Backhoes	1	1.00	75	0.37
Tractor	Tractors/Loaders/Backhoes	1	1.00	115	0.37
Water Truck	Off-Highway Trucks	1	1.00	381	0.38

#### Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Backhoe	1	0.00		0.00	16.80	6.60				
Tractor	1	0.00		0.00	16.80	6.60				
Water Truck	1	0.00		0.00	16.80	6.60				

### 3.1 Mitigation Measures Construction

**3.2 Backhoe - 1995**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1427	0.9042	0.3462	0.0484		0.0812	0.0812		0.0812	0.0812		34.7676	34.7676	0.0129		35.0374
<b>Total</b>	<b>0.1427</b>	<b>0.9042</b>	<b>0.3462</b>	<b>0.0484</b>		<b>0.0812</b>	<b>0.0812</b>		<b>0.0812</b>	<b>0.0812</b>		<b>34.7676</b>	<b>34.7676</b>	<b>0.0129</b>		<b>35.0374</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
<b>Total</b>					<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>			<b>0.0000</b>			<b>0.0000</b>

**3.2 Backhoe - 1995**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1427	0.9042	0.3462	0.0484		0.0812	0.0812		0.0812	0.0812	0.0000	34.7676	34.7676	0.0129		35.0374
<b>Total</b>	<b>0.1427</b>	<b>0.9042</b>	<b>0.3462</b>	<b>0.0484</b>		<b>0.0812</b>	<b>0.0812</b>		<b>0.0812</b>	<b>0.0812</b>	<b>0.0000</b>	<b>34.7676</b>	<b>34.7676</b>	<b>0.0129</b>		<b>35.0374</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
<b>Total</b>					<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>			<b>0.0000</b>			<b>0.0000</b>

**3.3 Tractor - 1995**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2189	1.3864	0.5309	0.0742		0.1245	0.1245		0.1245	0.1245		53.3103	53.3103	0.0197		53.7239
<b>Total</b>	<b>0.2189</b>	<b>1.3864</b>	<b>0.5309</b>	<b>0.0742</b>		<b>0.1245</b>	<b>0.1245</b>		<b>0.1245</b>	<b>0.1245</b>		<b>53.3103</b>	<b>53.3103</b>	<b>0.0197</b>		<b>53.7239</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
<b>Total</b>					<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>			<b>0.0000</b>			<b>0.0000</b>

**3.3 Tractor - 1995**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2189	1.3864	0.5309	0.0742		0.1245	0.1245		0.1245	0.1245	0.0000	53.3103	53.3103	0.0197		53.7239
<b>Total</b>	<b>0.2189</b>	<b>1.3864</b>	<b>0.5309</b>	<b>0.0742</b>		<b>0.1245</b>	<b>0.1245</b>		<b>0.1245</b>	<b>0.1245</b>	<b>0.0000</b>	<b>53.3103</b>	<b>53.3103</b>	<b>0.0197</b>		<b>53.7239</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
<b>Total</b>					<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>			<b>0.0000</b>			<b>0.0000</b>

### 3.4 Water Truck - 1995

#### Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5608	4.6279	4.0019	0.2113		0.3061	0.3061		0.3061	0.3061		181.3927	181.3927	0.0504		182.4517
<b>Total</b>	<b>0.5608</b>	<b>4.6279</b>	<b>4.0019</b>	<b>0.2113</b>		<b>0.3061</b>	<b>0.3061</b>		<b>0.3061</b>	<b>0.3061</b>		<b>181.3927</b>	<b>181.3927</b>	<b>0.0504</b>		<b>182.4517</b>

#### Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
<b>Total</b>					<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>			<b>0.0000</b>			<b>0.0000</b>



### 3.4 Water Truck - 1995

#### Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5608	4.6279	4.0019	0.2113		0.3061	0.3061		0.3061	0.3061	0.0000	181.3927	181.3927	0.0504		182.4517
<b>Total</b>	<b>0.5608</b>	<b>4.6279</b>	<b>4.0019</b>	<b>0.2113</b>		<b>0.3061</b>	<b>0.3061</b>		<b>0.3061</b>	<b>0.3061</b>	<b>0.0000</b>	<b>181.3927</b>	<b>181.3927</b>	<b>0.0504</b>		<b>182.4517</b>

#### Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
<b>Total</b>					<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>			<b>0.0000</b>			<b>0.0000</b>

### 4.0 Operational Detail - Mobile

#### 4.1 Mitigation Measures Mobile

#### 4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Total					

#### 4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.354809	0.055593	0.137444	0.183744	0.058392	0.010707	0.021690	0.164576	0.001542	0.001856	0.005975	0.001134	0.002537

#### 5.0 Energy Detail

#### 5.1 Fleet Mix

Historical Energy Use: N

#### 5.1 Mitigation Measures Energy

#### 6.0 Area Detail

#### 6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Unmitigated	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000

## 6.2 Area by SubCategory

### Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
<b>Total</b>	<b>0.0000</b>					<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>			<b>0.0000</b>			<b>0.0000</b>

## 6.2 Area by SubCategory

### Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
<b>Total</b>	<b>0.0000</b>					<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>			<b>0.0000</b>			<b>0.0000</b>

## 7.0 Water Detail

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### 7.1 Mitigation Measures Water

## 8.0 Waste Detail

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### 8.1 Mitigation Measures Waste

## 9.0 Operational Offroad

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Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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## 10.0 Vegetation

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## Monterey Plus (O&M) Equipment

### Kern-San Joaquin County, Winter

## 1.0 Project Characteristics

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### 1.1 Land Usage

### 1.2 Other Project Characteristics

<b>Urbanization</b>	Rural	<b>Wind Speed (m/s)</b>	2.7	<b>Precipitation Freq (Days)</b>	32
<b>Climate Zone</b>	3			<b>Operational Year</b>	1990
<b>Utility Company</b>					
<b>CO2 Intensity (lb/MWhr)</b>	0	<b>CH4 Intensity (lb/MWhr)</b>	0	<b>N2O Intensity (lb/MWhr)</b>	0

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - 1 day each

Off-road Equipment - for 1hr backhoe

Off-road Equipment - for 1hr tractor

Off-road Equipment - for 1 hr water truck

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	PhaseEndDate	1/4/1995	1/5/1995
tblConstructionPhase	PhaseStartDate	1/4/1995	1/5/1995
tblOffRoadEquipment	HorsePower	97.00	75.00
tblOffRoadEquipment	HorsePower	97.00	115.00
tblOffRoadEquipment	HorsePower	400.00	381.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Water Truck
tblOffRoadEquipment	UsageHours	8.00	1.00
tblOffRoadEquipment	UsageHours	8.00	1.00
tblProjectCharacteristics	OperationalYear	2014	1990
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural

## 2.0 Emissions Summary

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**2.1 Overall Construction (Maximum Daily Emission)**

**Unmitigated Construction**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
1995	0.5608	4.6279	4.0019	0.2113	0.0000	0.3061	0.3061	0.0000	0.3061	0.3061	0.0000	181.3927	181.3927	0.0504	0.0000	182.4517
<b>Total</b>	<b>0.5608</b>	<b>4.6279</b>	<b>4.0019</b>	<b>0.2113</b>	<b>0.0000</b>	<b>0.3061</b>	<b>0.3061</b>	<b>0.0000</b>	<b>0.3061</b>	<b>0.3061</b>	<b>0.0000</b>	<b>181.3927</b>	<b>181.3927</b>	<b>0.0504</b>	<b>0.0000</b>	<b>182.4517</b>

**Mitigated Construction**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
1995	0.5608	4.6279	4.0019	0.2113	0.0000	0.3061	0.3061	0.0000	0.3061	0.3061	0.0000	181.3927	181.3927	0.0504	0.0000	182.4517
<b>Total</b>	<b>0.5608</b>	<b>4.6279</b>	<b>4.0019</b>	<b>0.2113</b>	<b>0.0000</b>	<b>0.3061</b>	<b>0.3061</b>	<b>0.0000</b>	<b>0.3061</b>	<b>0.3061</b>	<b>0.0000</b>	<b>181.3927</b>	<b>181.3927</b>	<b>0.0504</b>	<b>0.0000</b>	<b>182.4517</b>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
<b>Percent Reduction</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

**2.2 Overall Operational**

**Unmitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
<b>Total</b>	<b>0.0000</b>					<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>			<b>0.0000</b>			<b>0.0000</b>

**Mitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
<b>Total</b>	<b>0.0000</b>					<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>			<b>0.0000</b>			<b>0.0000</b>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
<b>Percent Reduction</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>



### 3.0 Construction Detail

#### Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Backhoe	Building Construction	1/2/1995	1/2/1995	5	1	
2	Tractor	Building Construction	1/3/1995	1/3/1995	5	1	
3	Water Truck	Building Construction	1/5/1995	1/5/1995	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

#### OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Backhoe	Tractors/Loaders/Backhoes	1	1.00	75	0.37
Tractor	Tractors/Loaders/Backhoes	1	1.00	115	0.37
Water Truck	Off-Highway Trucks	1	1.00	381	0.38

#### Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Backhoe	1	0.00		0.00	16.80	6.60				
Tractor	1	0.00		0.00	16.80	6.60				
Water Truck	1	0.00		0.00	16.80	6.60				

### 3.1 Mitigation Measures Construction

**3.2 Backhoe - 1995**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Category	lb/day										lb/day						
Off-Road	0.1427	0.9042	0.3462	0.0484		0.0812	0.0812		0.0812	0.0812			34.7676	34.7676	0.0129		35.0374
<b>Total</b>	<b>0.1427</b>	<b>0.9042</b>	<b>0.3462</b>	<b>0.0484</b>		<b>0.0812</b>	<b>0.0812</b>		<b>0.0812</b>	<b>0.0812</b>			<b>34.7676</b>	<b>34.7676</b>	<b>0.0129</b>		<b>35.0374</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
<b>Total</b>					<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>			<b>0.0000</b>			<b>0.0000</b>

**3.2 Backhoe - 1995**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1427	0.9042	0.3462	0.0484		0.0812	0.0812		0.0812	0.0812	0.0000	34.7676	34.7676	0.0129		35.0374
<b>Total</b>	<b>0.1427</b>	<b>0.9042</b>	<b>0.3462</b>	<b>0.0484</b>		<b>0.0812</b>	<b>0.0812</b>		<b>0.0812</b>	<b>0.0812</b>	<b>0.0000</b>	<b>34.7676</b>	<b>34.7676</b>	<b>0.0129</b>		<b>35.0374</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
<b>Total</b>					<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>			<b>0.0000</b>			<b>0.0000</b>

**3.3 Tractor - 1995**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2189	1.3864	0.5309	0.0742		0.1245	0.1245		0.1245	0.1245		53.3103	53.3103	0.0197		53.7239
<b>Total</b>	<b>0.2189</b>	<b>1.3864</b>	<b>0.5309</b>	<b>0.0742</b>		<b>0.1245</b>	<b>0.1245</b>		<b>0.1245</b>	<b>0.1245</b>		<b>53.3103</b>	<b>53.3103</b>	<b>0.0197</b>		<b>53.7239</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
<b>Total</b>					<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>			<b>0.0000</b>			<b>0.0000</b>

**3.3 Tractor - 1995**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2189	1.3864	0.5309	0.0742		0.1245	0.1245		0.1245	0.1245	0.0000	53.3103	53.3103	0.0197		53.7239
<b>Total</b>	<b>0.2189</b>	<b>1.3864</b>	<b>0.5309</b>	<b>0.0742</b>		<b>0.1245</b>	<b>0.1245</b>		<b>0.1245</b>	<b>0.1245</b>	<b>0.0000</b>	<b>53.3103</b>	<b>53.3103</b>	<b>0.0197</b>		<b>53.7239</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
<b>Total</b>					<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>			<b>0.0000</b>			<b>0.0000</b>

### 3.4 Water Truck - 1995

#### Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5608	4.6279	4.0019	0.2113		0.3061	0.3061		0.3061	0.3061		181.3927	181.3927	0.0504		182.4517
<b>Total</b>	<b>0.5608</b>	<b>4.6279</b>	<b>4.0019</b>	<b>0.2113</b>		<b>0.3061</b>	<b>0.3061</b>		<b>0.3061</b>	<b>0.3061</b>		<b>181.3927</b>	<b>181.3927</b>	<b>0.0504</b>		<b>182.4517</b>

#### Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
<b>Total</b>					<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>			<b>0.0000</b>			<b>0.0000</b>

### 3.4 Water Truck - 1995

#### Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5608	4.6279	4.0019	0.2113		0.3061	0.3061		0.3061	0.3061	0.0000	181.3927	181.3927	0.0504		182.4517
<b>Total</b>	<b>0.5608</b>	<b>4.6279</b>	<b>4.0019</b>	<b>0.2113</b>		<b>0.3061</b>	<b>0.3061</b>		<b>0.3061</b>	<b>0.3061</b>	<b>0.0000</b>	<b>181.3927</b>	<b>181.3927</b>	<b>0.0504</b>		<b>182.4517</b>

#### Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
<b>Total</b>					<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>			<b>0.0000</b>			<b>0.0000</b>

### 4.0 Operational Detail - Mobile

#### 4.1 Mitigation Measures Mobile

#### 4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Total					

#### 4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.354809	0.055593	0.137444	0.183744	0.058392	0.010707	0.021690	0.164576	0.001542	0.001856	0.005975	0.001134	0.002537

#### 5.0 Energy Detail

#### 5.1 Fleet Mix

Historical Energy Use: N

#### 5.1 Mitigation Measures Energy

#### 6.0 Area Detail

#### 6.1 Mitigation Measures Area



	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Unmitigated	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000

## 6.2 Area by SubCategory

### Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
<b>Total</b>	<b>0.0000</b>					<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>			<b>0.0000</b>			<b>0.0000</b>

## 6.2 Area by SubCategory

### Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
<b>Total</b>	<b>0.0000</b>					<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>			<b>0.0000</b>			<b>0.0000</b>

## 7.0 Water Detail

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### 7.1 Mitigation Measures Water

## 8.0 Waste Detail

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### 8.1 Mitigation Measures Waste

## 9.0 Operational Offroad

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Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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## 10.0 Vegetation

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**APPENDIX 7-4**  
**D. KWB ON- AND OFF-ROAD VEHICLE EMISSIONS**  
**SUMMARY**

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Monterey Plus  
On-Road Emission Sources

ACTIVITY DATA

Emissions Source	Activity	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Average	Max	
Pick-up Trucks	miles/year	84,565	84,565	84,565	84,565	84,565	72,703	76,657	81,828	92,930	80,307	84,565	84,565	89,128	86,086	95,211	98,015	100,130	96,328	100,890	102,715	110,015	89,281	110,015	
Backhoe	hour/year	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1,248	1,248	
Tractor	hour/year	384	384	384	384	384	384	384	384	384	384	384	384	384	384	384	384	384	384	384	384	384	384	384	384
Water Truck	hour/year	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Gravel Loads	loads	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	20	20	20	20	20	20
Heavy Duty Trucks	miles/year	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1200	1200	1200	1200	1200	1200	1200	1200

Assumptions

HHDOT Trip Distance	30 miles/one-way
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**Monterey Plus**  
**On-Road Emission Sources**

**ON- AND OFF-ROAD EMISSIONS (tons/year)**

Year/Source		ROG	NO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub> e
<b>1995</b>						
Pick-up Trucks	2	0.040	0.151	0.019	0.016	42.307
Backhoe	3	0.089	0.564	0.051	0.051	19.836
Tractor	4	0.042	0.266	0.024	0.024	9.357
Water Truck	5	0.081	0.666	0.044	0.044	23.835
Heavy Duty Trucks	7	0.000	0.000	0.000	0.000	0.000
<b>Total</b>		<b>0.252</b>	<b>1.648</b>	<b>0.138</b>	<b>0.134</b>	<b>95.334</b>
<b>1996</b>		<b>ROG</b>	<b>NO<sub>x</sub></b>	<b>PM<sub>10</sub></b>	<b>PM<sub>2.5</sub></b>	<b>CO<sub>2</sub>e</b>
Pick-up Trucks	2	0.040	0.151	0.019	0.016	42.307
Backhoe	3	0.089	0.564	0.051	0.051	19.836
Tractor	4	0.042	0.266	0.024	0.024	9.357
Water Truck	5	0.081	0.666	0.044	0.044	23.835
Heavy Duty Trucks	7	0.000	0.000	0.000	0.000	0.000
<b>Total</b>		<b>0.252</b>	<b>1.648</b>	<b>0.138</b>	<b>0.134</b>	<b>95.334</b>
<b>1997</b>		<b>ROG</b>	<b>NO<sub>x</sub></b>	<b>PM<sub>10</sub></b>	<b>PM<sub>2.5</sub></b>	<b>CO<sub>2</sub>e</b>
Pick-up Trucks	2	0.040	0.151	0.019	0.016	42.307
Backhoe	3	0.089	0.564	0.051	0.051	19.836
Tractor	4	0.042	0.266	0.024	0.024	9.357
Water Truck	5	0.081	0.666	0.044	0.044	23.835
Heavy Duty Trucks	7	0.000	0.000	0.000	0.000	0.000
<b>Total</b>		<b>0.252</b>	<b>1.648</b>	<b>0.138</b>	<b>0.134</b>	<b>95.334</b>
<b>1998</b>		<b>ROG</b>	<b>NO<sub>x</sub></b>	<b>PM<sub>10</sub></b>	<b>PM<sub>2.5</sub></b>	<b>CO<sub>2</sub>e</b>
Pick-up Trucks	2	0.040	0.151	0.019	0.016	42.307
Backhoe	3	0.089	0.564	0.051	0.051	19.836
Tractor	4	0.042	0.266	0.024	0.024	9.357
Water Truck	5	0.081	0.666	0.044	0.044	23.835
Heavy Duty Trucks	7	0.000	0.000	0.000	0.000	0.000
<b>Total</b>		<b>0.252</b>	<b>1.648</b>	<b>0.138</b>	<b>0.134</b>	<b>95.334</b>

<b>1999</b>		<b>ROG</b>	<b>NO<sub>x</sub></b>	<b>PM<sub>10</sub></b>	<b>PM<sub>2.5</sub></b>	<b>CO<sub>2</sub>e</b>
Pick-up Trucks	2	0.040	0.151	0.019	0.016	42.307
Backhoe	3	0.089	0.564	0.051	0.051	19.836
Tractor	4	0.042	0.266	0.024	0.024	9.357
Water Truck	5	0.081	0.666	0.044	0.044	23.835
Heavy Duty Trucks	7	0.000	0.000	0.000	0.000	0.000
<b>Total</b>		<b>0.252</b>	<b>1.648</b>	<b>0.138</b>	<b>0.134</b>	<b>95.334</b>
<b>2000</b>		<b>ROG</b>	<b>NO<sub>x</sub></b>	<b>PM<sub>10</sub></b>	<b>PM<sub>2.5</sub></b>	<b>CO<sub>2</sub>e</b>
Pick-up Trucks	2	0.034	0.130	0.016	0.013	36.372
Backhoe	3	0.089	0.564	0.051	0.051	19.836
Tractor	4	0.042	0.266	0.024	0.024	9.357
Water Truck	5	0.081	0.666	0.044	0.044	23.835
Heavy Duty Trucks	7	0.000	0.000	0.000	0.000	0.000
<b>Total</b>		<b>0.246</b>	<b>1.627</b>	<b>0.135</b>	<b>0.132</b>	<b>89.400</b>
<b>2001</b>		<b>ROG</b>	<b>NO<sub>x</sub></b>	<b>PM<sub>10</sub></b>	<b>PM<sub>2.5</sub></b>	<b>CO<sub>2</sub>e</b>
Pick-up Trucks	2	0.036	0.137	0.017	0.014	38.350
Backhoe	3	0.089	0.564	0.051	0.051	19.836
Tractor	4	0.042	0.266	0.024	0.024	9.357
Water Truck	5	0.081	0.666	0.044	0.044	23.835
Heavy Duty Trucks	7	0.000	0.000	0.000	0.000	0.000
<b>Total</b>		<b>0.248</b>	<b>1.634</b>	<b>0.136</b>	<b>0.133</b>	<b>91.378</b>
<b>2002</b>		<b>ROG</b>	<b>NO<sub>x</sub></b>	<b>PM<sub>10</sub></b>	<b>PM<sub>2.5</sub></b>	<b>CO<sub>2</sub>e</b>
Pick-up Trucks	2	0.039	0.146	0.018	0.015	40.937
Backhoe	3	0.089	0.564	0.051	0.051	19.836
Tractor	4	0.042	0.266	0.024	0.024	9.357
Water Truck	5	0.081	0.666	0.044	0.044	23.835
Heavy Duty Trucks	7	0.000	0.000	0.000	0.000	0.000
<b>Total</b>		<b>0.250</b>	<b>1.643</b>	<b>0.137</b>	<b>0.134</b>	<b>93.965</b>
<b>2003</b>		<b>ROG</b>	<b>NO<sub>x</sub></b>	<b>PM<sub>10</sub></b>	<b>PM<sub>2.5</sub></b>	<b>CO<sub>2</sub>e</b>
Pick-up Trucks	2	0.044	0.166	0.021	0.017	46.492
Backhoe	3	0.089	0.564	0.051	0.051	19.836
Tractor	4	0.042	0.266	0.024	0.024	9.357
Water Truck	5	0.081	0.666	0.044	0.044	23.835
Heavy Duty Trucks	7	0.000	0.000	0.000	0.000	0.000
<b>Total</b>		<b>0.256</b>	<b>1.663</b>	<b>0.139</b>	<b>0.136</b>	<b>99.519</b>

<b>2004</b>		<b>ROG</b>	<b>NO<sub>x</sub></b>	<b>PM<sub>10</sub></b>	<b>PM<sub>2.5</sub></b>	<b>CO<sub>2</sub>e</b>
Pick-up Trucks	2	0.038	0.143	0.018	0.015	40.177
Backhoe	3	0.089	0.564	0.051	0.051	19.836
Tractor	4	0.042	0.266	0.024	0.024	9.357
Water Truck	5	0.081	0.666	0.044	0.044	23.835
Heavy Duty Trucks	7	0.000	0.000	0.000	0.000	0.000
<b>Total</b>		<b>0.250</b>	<b>1.640</b>	<b>0.137</b>	<b>0.134</b>	<b>93.204</b>
<b>2005</b>		<b>ROG</b>	<b>NO<sub>x</sub></b>	<b>PM<sub>10</sub></b>	<b>PM<sub>2.5</sub></b>	<b>CO<sub>2</sub>e</b>
Pick-up Trucks	2	0.040	0.151	0.019	0.016	42.307
Backhoe	3	0.089	0.564	0.051	0.051	19.836
Tractor	4	0.042	0.266	0.024	0.024	9.357
Water Truck	5	0.081	0.666	0.044	0.044	23.835
Heavy Duty Trucks	7	0.000	0.000	0.000	0.000	0.000
<b>Total</b>		<b>0.252</b>	<b>1.648</b>	<b>0.138</b>	<b>0.134</b>	<b>95.334</b>
<b>2006</b>		<b>ROG</b>	<b>NO<sub>x</sub></b>	<b>PM<sub>10</sub></b>	<b>PM<sub>2.5</sub></b>	<b>CO<sub>2</sub>e</b>
Pick-up Trucks	2	0.040	0.151	0.019	0.016	42.307
Backhoe	3	0.089	0.564	0.051	0.051	19.836
Tractor	4	0.042	0.266	0.024	0.024	9.357
Water Truck	5	0.081	0.666	0.044	0.044	23.835
Heavy Duty Trucks	7	0.000	0.000	0.000	0.000	0.000
<b>Total</b>		<b>0.252</b>	<b>1.648</b>	<b>0.138</b>	<b>0.134</b>	<b>95.334</b>
<b>2007</b>		<b>ROG</b>	<b>NO<sub>x</sub></b>	<b>PM<sub>10</sub></b>	<b>PM<sub>2.5</sub></b>	<b>CO<sub>2</sub>e</b>
Pick-up Trucks	2	0.042	0.159	0.020	0.017	44.589
Backhoe	3	0.089	0.564	0.051	0.051	19.836
Tractor	4	0.042	0.266	0.024	0.024	9.357
Water Truck	5	0.081	0.666	0.044	0.044	23.835
Heavy Duty Trucks	7	0.000	0.000	0.000	0.000	0.000
<b>Total</b>		<b>0.254</b>	<b>1.656</b>	<b>0.139</b>	<b>0.135</b>	<b>97.617</b>
<b>2008</b>		<b>ROG</b>	<b>NO<sub>x</sub></b>	<b>PM<sub>10</sub></b>	<b>PM<sub>2.5</sub></b>	<b>CO<sub>2</sub>e</b>
Pick-up Trucks	2	0.041	0.154	0.019	0.016	43.068
Backhoe	3	0.089	0.564	0.051	0.051	19.836
Tractor	4	0.042	0.266	0.024	0.024	9.357
Water Truck	5	0.081	0.666	0.044	0.044	23.835
Heavy Duty Trucks	7	0.000	0.000	0.000	0.000	0.000
<b>Total</b>		<b>0.252</b>	<b>1.650</b>	<b>0.138</b>	<b>0.135</b>	<b>96.095</b>



<b>2009</b>		<b>ROG</b>	<b>NO<sub>x</sub></b>	<b>PM<sub>10</sub></b>	<b>PM<sub>2.5</sub></b>	<b>CO<sub>2</sub>e</b>
Pick-up Trucks	2	0.045	0.170	0.021	0.018	47.633
Backhoe	3	0.089	0.564	0.051	0.051	19.836
Tractor	4	0.042	0.266	0.024	0.024	9.357
Water Truck	5	0.081	0.666	0.044	0.044	23.835
Heavy Duty Trucks	7	0.000	0.000	0.000	0.000	0.000
<b>Total</b>		<b>0.257</b>	<b>1.667</b>	<b>0.140</b>	<b>0.136</b>	<b>100.660</b>
<b>2010</b>		<b>ROG</b>	<b>NO<sub>x</sub></b>	<b>PM<sub>10</sub></b>	<b>PM<sub>2.5</sub></b>	<b>CO<sub>2</sub>e</b>
Pick-up Trucks	2	0.046	0.175	0.022	0.018	49.036
Backhoe	3	0.089	0.564	0.051	0.051	19.836
Tractor	4	0.042	0.266	0.024	0.024	9.357
Water Truck	5	0.081	0.666	0.044	0.044	23.835
Heavy Duty Trucks	7	0.000	0.000	0.000	0.000	0.000
<b>Total</b>		<b>0.258</b>	<b>1.672</b>	<b>0.141</b>	<b>0.137</b>	<b>102.063</b>
<b>2011</b>		<b>ROG</b>	<b>NO<sub>x</sub></b>	<b>PM<sub>10</sub></b>	<b>PM<sub>2.5</sub></b>	<b>CO<sub>2</sub>e</b>
Pick-up Trucks	2	0.047	0.179	0.022	0.019	50.094
Backhoe	3	0.089	0.564	0.051	0.051	19.836
Tractor	4	0.042	0.266	0.024	0.024	9.357
Water Truck	5	0.081	0.666	0.044	0.044	23.835
Heavy Duty Trucks	7	0.001	0.027	0.001	0.001	2.247
<b>Total</b>		<b>0.261</b>	<b>1.703</b>	<b>0.142</b>	<b>0.138</b>	<b>105.368</b>
<b>2012</b>		<b>ROG</b>	<b>NO<sub>x</sub></b>	<b>PM<sub>10</sub></b>	<b>PM<sub>2.5</sub></b>	<b>CO<sub>2</sub>e</b>
Pick-up Trucks	2	0.045	0.172	0.021	0.018	48.192
Backhoe	3	0.089	0.564	0.051	0.051	19.836
Tractor	4	0.042	0.266	0.024	0.024	9.357
Water Truck	5	0.081	0.666	0.044	0.044	23.835
Heavy Duty Trucks	7	0.001	0.027	0.001	0.001	2.247
<b>Total</b>		<b>0.259</b>	<b>1.696</b>	<b>0.141</b>	<b>0.138</b>	<b>103.466</b>
<b>2013</b>		<b>ROG</b>	<b>NO<sub>x</sub></b>	<b>PM<sub>10</sub></b>	<b>PM<sub>2.5</sub></b>	<b>CO<sub>2</sub>e</b>
Pick-up Trucks	2	0.048	0.180	0.023	0.019	50.474
Backhoe	3	0.089	0.564	0.051	0.051	19.836
Tractor	4	0.042	0.266	0.024	0.024	9.357
Water Truck	5	0.081	0.666	0.044	0.044	23.835
Heavy Duty Trucks	7	0.001	0.027	0.001	0.001	2.247
<b>Total</b>		<b>0.261</b>	<b>1.704</b>	<b>0.142</b>	<b>0.138</b>	<b>105.749</b>

<b>2014</b>		<b>ROG</b>	<b>NO<sub>x</sub></b>	<b>PM<sub>10</sub></b>	<b>PM<sub>2.5</sub></b>	<b>CO<sub>2</sub>e</b>
Pick-up Trucks	2	0.049	0.183	0.023	0.019	51.387
Backhoe	3	0.089	0.564	0.051	0.051	19.836
Tractor	4	0.042	0.266	0.024	0.024	9.357
Water Truck	5	0.081	0.666	0.044	0.044	23.835
Heavy Duty Trucks	7	0.001	0.027	0.001	0.001	2.247
<b>Total</b>		<b>0.262</b>	<b>1.707</b>	<b>0.143</b>	<b>0.139</b>	<b>106.662</b>
<b>2015</b>		<b>ROG</b>	<b>NO<sub>x</sub></b>	<b>PM<sub>10</sub></b>	<b>PM<sub>2.5</sub></b>	<b>CO<sub>2</sub>e</b>
Pick-up Trucks	2	0.052	0.196	0.025	0.020	55.039
Backhoe	3	0.089	0.564	0.051	0.051	19.836
Tractor	4	0.042	0.266	0.024	0.024	9.357
Water Truck	5	0.081	0.666	0.044	0.044	23.835
Heavy Duty Trucks	7	0.001	0.027	0.001	0.001	2.247
<b>Total</b>		<b>0.265</b>	<b>1.720</b>	<b>0.144</b>	<b>0.140</b>	<b>110.314</b>
<b>Max</b>	<b>2020</b>	<b>ROG</b>	<b>NO<sub>x</sub></b>	<b>PM<sub>10</sub></b>	<b>PM<sub>2.5</sub></b>	<b>CO<sub>2</sub>e</b>
Pick-up Trucks	2	0.006	0.032	0.009	0.006	35.095
Backhoe	3	0.013	0.127	0.008	0.007	16.568
Tractor	4	0.006	0.060	0.004	0.003	7.816
Water Truck	5	0.011	0.108	0.004	0.004	19.923
Heavy Duty Trucks	7	0.000	0.005	0.000	0.000	2.049
<b>Total</b>		<b>0.036</b>	<b>0.333</b>	<b>0.025</b>	<b>0.020</b>	<b>81.451</b>
<b>Max</b>	<b>2030</b>	<b>ROG</b>	<b>NO<sub>x</sub></b>	<b>PM<sub>10</sub></b>	<b>PM<sub>2.5</sub></b>	<b>CO<sub>2</sub>e</b>
Pick-up Trucks	2	0.001	0.007	0.006	0.003	25.039
Backhoe	3	0.010	0.062	0.001	0.001	19.699
Tractor	4	0.005	0.029	0.001	0.001	9.294
Water Truck	5	0.010	0.021	0.001	0.001	23.713
Heavy Duty Trucks	7	0.000	0.002	0.000	0.000	1.891
<b>Total</b>		<b>0.027</b>	<b>0.120</b>	<b>0.008</b>	<b>0.005</b>	<b>79.636</b>

**APPENDIX 7-4**

**E. KWB O&M ON-ROAD VEHICLE EMISSION FACTORS  
(EMFAC OUTPUTS)**

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EMFAC2014 (v1.0.7) Emission Rates

Region Type: County

Region: Kern

Calendar Year: 2015

Season: Annual

Vehicle Classification: EMFAC2011 Categories

Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HTSK and RUNLS, g/vehicle/day for IDLEX, RESTL and DIURN

Region	CalYr	VehClass	MdlYr	Speed	Fuel	Populatio	VMT	Trips	ROG_RUNEX	NOx_RUNEX	CO2_RUNEX	CO2_IDLE	CO2_STRE	PM10	PM10_RUNEX	PM10_PMTW	PM10_PMBW	PM2.5	PM2_5_RUNEX	PM2_5_PMTW	PM2_5_PMBW
Kern	2015	LDA	Aggregate	Aggregate	GAS	321251.4	11597969	2019238	0.030508447	0.107672996	343.8165502	0	70.35873	0.046484	0.001733714	0.008000002	0.036750011	0.01934733	0.001597325	0.002000001	0.015750005
Kern	2015	LDA	Aggregate	Aggregate	DSL	2352.089	97559.21	14555.03	0.031812103	0.233534388	322.1497582	0	0	0.064613	0.019862766	0.008000002	0.036750011	0.036753517	0.019003512	0.002000001	0.015750005
Kern	2015	LDA	Aggregate	Aggregate	ELEC	1348.157	71791.6	8768.249	0	0	0	0	0	0.04475	0	0.008000002	0.036750011	0.017750005	0	0.002000001	0.015750005
Kern	2015	LDT1	Aggregate	Aggregate	GAS	33965.48	987679.4	203333.1	0.120608541	0.3539655	398.8737913	0	82.19961	0.049163	0.004413128	0.008000002	0.036750011	0.021829505	0.0040795	0.002000001	0.015750005
Kern	2015	LDT1	Aggregate	Aggregate	DSL	88.946	1698.924	434.4977	0.236476433	1.361346594	426.4417355	0	0	0.231428	0.186677765	0.008000002	0.036750011	0.196352173	0.178602168	0.002000001	0.015750005
Kern	2015	LDT1	Aggregate	Aggregate	ELEC	15.82059	461.3486	90.91995	0	0	0	0	0	0.04475	0	0.008000002	0.036750011	0.017750005	0	0.002000001	0.015750005
Kern	2015	LDT2	Aggregate	Aggregate	GAS	126194.6	4343014	789603.6	0.047471396	0.224417804	462.912004	0	95.24591	0.046698	0.00194838	0.008000002	0.036750011	0.019546377	0.001796372	0.002000001	0.015750005
Kern	2015	LDT2	Aggregate	Aggregate	DSL	126.9101	5771.543	814.4784	0.018390101	0.064526844	404.8111072	0	0	0.052385	0.007634985	0.008000002	0.036750011	0.025054704	0.007304699	0.002000001	0.015750005
Kern	2015	T7 single c	Aggregate	Aggregate	DSL	806.5837	61301.66	0	0.349936899	9.256393822	1706.46944	3156.124	0	0.25225	0.154510315	0.03600001	0.061740018	0.183286277	0.147826267	0.009000003	0.026460008
Kern	2000	LDA	Aggregate	Aggregate	GAS	269791.3	10552993	1685655	0.321040069	0.8321188	371.0575967	0	78.15393	0.056283	0.011532602	0.008000002	0.036750011	0.028397379	0.010647374	0.002000001	0.015750005
Kern	2000	LDA	Aggregate	Aggregate	DSL	1894.355	50023.64	11264.53	0.362380888	1.765390332	378.0429526	0	0	0.33619	0.29144012	0.008000002	0.036750011	0.296582554	0.278832549	0.002000001	0.015750005
Kern	2000	LDA	Aggregate	Aggregate	ELEC	10.24248	338.8981	61.48715	0	0	0	0	0	0.04475	0	0.008000002	0.036750011	0.017750005	0	0.002000001	0.015750005
Kern	2000	LDT1	Aggregate	Aggregate	GAS	60843.56	2158477	369127.8	0.628760408	1.512271439	416.4041907	0	94.65455	0.060079	0.015329364	0.008000002	0.036750011	0.031989175	0.01423917	0.002000001	0.015750005
Kern	2000	LDT1	Aggregate	Aggregate	DSL	252.3971	6582.986	1501.586	0.343497828	1.656366833	439.4037274	0	0	0.338861	0.294111265	0.008000002	0.036750011	0.299138147	0.281388142	0.002000001	0.015750005
Kern	2000	LDT1	Aggregate	Aggregate	ELEC	12.83089	424.2415	77.76629	0	0	0	0	0	0.04475	0	0.008000002	0.036750011	0.017750005	0	0.002000001	0.015750005
Kern	2000	LDT2	Aggregate	Aggregate	GAS	89206.39	3633702	561032.2	0.381291196	1.483323067	509.2311728	0	105.4598	0.055705	0.010955454	0.008000002	0.036750011	0.027873418	0.010123413	0.002000001	0.015750005
Kern	2000	LDT2	Aggregate	Aggregate	DSL	9.181731	240.9398	54.64505	0.359925446	1.825822047	536.0579938	0	0	0.35479	0.310040283	0.008000002	0.036750011	0.314378082	0.296628077	0.002000001	0.015750005
Kern	2000	T7 single c	Aggregate	Aggregate	DSL	477.431	36210.46	0	1.078514589	20.40414435	1779.183525	5154.372	0	0.876864	0.779123548	0.03600001	0.061740018	0.780879019	0.745419008	0.009000003	0.026460008

EMFAC2014 (v1.0.7) Emission Rates

Region Type: County

Region: Kern

Calendar Year: 2020, 2030

Season: Annual

Vehicle Classification: EMFAC2011 Categories

Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HTSK and RUNLS, g/vehicle/day for IDLEX, RESTL and DIURN

Region	CalYr	VehClass	MdlYr	Speed	Fuel	Populatio	VMT	Trips	ROG_RUNEX	NOx_RUNEX	CO2_RUNEX	CO2_IDLE	CO2_STRE	PM10	PM10_RUNEX	PM10_PMTW	PM10_PMBW	PM2.5	PM2_5_RUNEX	PM2_5_PMTW	PM2_5_PMBW
Kern	2020	LDA	Aggregate	Aggregate	GAS	391056.9	14443695	2475291	0.012389937	0.057387203	296.8159478	0	62.47238	0.046581	0.001831337	0.008000002	0.036750011	0.019433924	0.001683918	0.002000001	0.015750005
Kern	2020	LDA	Aggregate	Aggregate	DSL	4007.011	158768.5	25283.01	0.017542585	0.0865864	278.1879428	0	0	0.053795	0.009044929	0.008000002	0.036750011	0.026403654	0.008653649	0.002000001	0.015750005
Kern	2020	LDA	Aggregate	Aggregate	ELEC	8794.849	445686.4	57312.01	0	0	0	0	0	0.04475	0	0.008000002	0.036750011	0.017750005	0	0.002000001	0.015750005
Kern	2020	LDT1	Aggregate	Aggregate	GAS	31960.31	994547.3	193602.3	0.034654749	0.164710492	352.5221829	0	73.87314	0.047548	0.002797621	0.008000002	0.036750011	0.020322844	0.002572839	0.002000001	0.015750005
Kern	2020	LDT1	Aggregate	Aggregate	DSL	63.82052	1206.427	308.5433	0.174205023	1.031343066	395.7926962	0	0	0.181509	0.136758562	0.008000002	0.036750011	0.148592452	0.130842447	0.002000001	0.015750005
Kern	2020	LDT1	Aggregate	Aggregate	ELEC	14.08781	455.5809	86.22137	0	0	0	0	0	0.04475	0	0.008000002	0.036750011	0.017750005	0	0.002000001	0.015750005
Kern	2020	LDT2	Aggregate	Aggregate	GAS	150930.1	5283592	950764.7	0.018811482	0.103417013	402.262394	0	84.56616	0.046577	0.001827283	0.008000002	0.036750011	0.01943024	0.001680235	0.002000001	0.015750005
Kern	2020	LDT2	Aggregate	Aggregate	DSL	255.5242	10062.3	1644.468	0.014808389	0.037535344	364.6947278	0	0	0.049482	0.004732061	0.008000002	0.036750011	0.022277359	0.004527354	0.002000001	0.015750005
Kern	2020	T7 single c	Aggregate	Aggregate	DSL	1013.262	96459.05	0	0.101076052	4.088762737	1621.801092	4656.183	0	0.116655	0.018915242	0.036000001	0.061740018	0.053556987	0.018096977	0.009000003	0.026460008
Kern	2030	LDA	Aggregate	Aggregate	GAS	522281.8	17108702	3304123	0.005763113	0.029366986	225.3786493	0	47.74535	0.046123	0.00137249	0.008000002	0.036750011	0.019011959	0.001261954	0.002000001	0.015750005
Kern	2030	LDA	Aggregate	Aggregate	DSL	6767.155	228549.7	43107.77	0.005775673	0.014291472	214.78632	0	0	0.046367	0.001617309	0.008000002	0.036750011	0.01929735	0.001547345	0.002000001	0.015750005
Kern	2030	LDA	Aggregate	Aggregate	ELEC	64305.01	2442668	415209.9	0	0	0	0	0	0.04475	0	0.008000002	0.036750011	0.017750005	0	0.002000001	0.015750005
Kern	2030	LDT1	Aggregate	Aggregate	GAS	37599.83	1143132	231991.2	0.010407647	0.052700683	255.2407767	0	54.8782	0.046318	0.001567634	0.008000002	0.036750011	0.019191387	0.001441382	0.002000001	0.015750005
Kern	2030	LDT1	Aggregate	Aggregate	DSL	23.4554	679.7055	143.4692	0.02212755	0.144490418	257.2345833	0	0	0.054204	0.009453832	0.008000002	0.036750011	0.026794868	0.009044863	0.002000001	0.015750005
Kern	2030	LDT1	Aggregate	Aggregate	ELEC	16.74186	516.4385	104.3805	0	0	0	0	0	0.04475	0	0.008000002	0.036750011	0.017750005	0	0.002000001	0.015750005
Kern	2030	LDT2	Aggregate	Aggregate	GAS	220499.3	6951301	1390749	0.008412807	0.042992443	291.3922578	0	62.02341	0.046174	0.001423984	0.008000002	0.036750011	0.019059305	0.0013093	0.002000001	0.015750005
Kern	2030	LDT2	Aggregate	Aggregate	DSL	473.8153	15187.42	3011.822	0.013834382	0.028159352	277.2221288	0	0	0.048668	0.003918124	0.008000002	0.036750011	0.021498633	0.003748627	0.002000001	0.015750005
Kern	2030	T7 single c	Aggregate	Aggregate	DSL	1299.027	121029.4	0	0.062833188	1.166517429	1496.921357	4646.14	0	0.102234	0.004493665	0.036000001	0.061740018	0.039759281	0.004299271	0.009000003	0.026460008

**APPENDIX 7-4**

**F. KWB O&M ELECTRICITY CONSUMPTION AND  
EMISSIONS SUMMARY**

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Monterey Plus  
Water Pumping Electricity and Emissions

Year	WELLS-COMBINED		MAIN PUMP STATION		RIVER PUMP STATION		TOTALS-COMBINED		Recovery	Recharge	
	kWh/yr	Emissions (MT CO <sub>2</sub> e/yr)	kWh/yr	Emissions (MT CO <sub>2</sub> e/yr)	kWh/yr	Emissions (MT CO <sub>2</sub> e/yr)	kWh/yr	Emissions (MT CO <sub>2</sub> e/yr)	Acre-Feet	SWP Main PS (AF)	SWP River PS (AF)
2010	34,827,177	7,067	556,800	113	0	-	35,383,977	7,180	64,174	12,047	0
2011	196,558	35	6,010,800	1,078	2,710,720	486	8,918,078	1,599	0	361,961	53,850
2012	37,533,761	7,617	898,800	182	1,416	0	38,433,977	7,799	91,747	1,047	0
2013	85,596,805	16,671	70,800	14	3,448	1	85,671,053	16,685	186,362	0	0
2014	107,571,871	20,219	64,793	12	3,585	1	107,640,249	20,232	186,875	0	0
Total	265,726,172	51,609	7,601,993	1,399	2,719,169	488	276,047,334	53,496			
Annual Average	53,145,234	10,322	1,520,399	280	543,834	98	55,209,467	10,699			

Note: Electricity emission factors were obtained from PG&E emission factors for each year.

Future GHG Emissions

Year	WELLS-COMBINED		MAIN PUMP STATION		RIVER PUMP STATION		TOTALS-COMBINED		Recovery	Recharge	
	kWh/yr	Emissions (MT CO <sub>2</sub> e/yr)	kWh/yr	Emissions (MT CO <sub>2</sub> e/yr)	kWh/yr	Emissions (MT CO <sub>2</sub> e/yr)	kWh/yr	Emissions (MT CO <sub>2</sub> e/yr)	Acre-Feet	SWP Main PS (AF)	SWP River PS (AF)
2020	53,145,234	8,641	1,520,399	247	543,834	88	55,209,467	8,977			
2030	53,145,234	6,463	1,520,399	185	543,834	66	55,209,467	6,714			

Note: Electricity emission factors for 2020 and 2030 account for PG&E achieving the 2020 RPS goal of 33% and 2030 RPS goal of 50%



**APPENDIX 7-4**  
**G. K&B O&M PUMP EFFICIENCY ELECTRICITY AND**  
**EMISSIONS REDUCTIONS**

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Monterey Plus  
KWB Pump Efficiency Actions

YEAR 2015 PUMP EFFICIENCY MEASURES

Year Completed	Overall Pump Program	Pumps Affected	Energy Savings (kWh/yr)	Emissions (MT CO <sub>2</sub> e/yr)
2015	WISE-035	3R-1	531,741	
		9-J-1	159,042	
		<b>Total</b>	<b>690,783</b>	123.26
	WISE-035	11-A-1	243,352	
		<b>Total</b>	<b>243,352</b>	43.42
2015	WISE-076	14-K-1	120,604	
		16-D-1	931,483	
		18-K-1	118,337	
		6-N-1	440,500	
		6-P-1	543,050	
		7-J-1	426,739	
		7-N-1	30,995	
		<b>Total</b>	<b>2,611,708</b>	466.01
<b>Total 2015 Pump Efficiency Energy Savings</b>			<b>3,545,843</b>	<b>633</b>
<b>Percent of Total Electricity Consumption/Emissions</b>			<b>6.4%</b>	<b>5.9%</b>

YEAR 2011 PUMP EFFICIENCY MEASURES

Year Completed	Overall Pump Program	Pumps Affected	Energy Savings (kWh/yr)	Emissions (MT CO <sub>2</sub> e/yr)
2011	WISE-035	30S/25E-1Q01	508,543	
		30S/25E-11Q01	277,890	
		30S/25E-18A01	323,423	
		30S/25E-15N01	203,807	
		30S/25E-17F01	132,572	
		30S/25E-7R01	59,079	
		30S/25E-3Q02	90,115	
		30S/25E-13F01	174,214	
		30S/25E-15C01	23,264	
		<b>Total</b>	<b>1,792,907</b>	321.54
<b>Total 2011 Pump Efficiency Energy Savings</b>			<b>1,792,907</b>	<b>322</b>
<b>Percent of Total Consumption</b>			<b>3.2%</b>	<b>3.0%</b>



**APPENDIX 7-4**  
**H. KWB O&M BURN EMISSIONS**

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Monterey Plus  
O&M Burn Emissions

Year	Acres burned	Emissions (MT/year)			
		CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	CO <sub>2</sub> e
1995	No Data	-	-	-	-
1996	No Data	-	-	-	-
1997	11731	4,124.04	6.31	0.35	4,392.48
1998	No Burns	-	-	-	-
1999	5768	2,027.74	3.10	0.17	2,159.73
2000	5290	1,859.70	2.84	0.16	1,980.75
2001	3434	1,207.22	1.85	0.10	1,285.81
2002	154	54.14	0.08	0.00	57.66
2003	133	46.76	0.07	0.00	49.80
2004	No Burns	-	-	-	-
2005	No Burns	-	-	-	-
2006	No Burns	-	-	-	-
2007	NoBurns	-	-	-	-
2008	"Minimal" Approx 90	-	-	-	-
2009	"Minimal"	-	-	-	-
2010	"Minimal"	-	-	-	-
2011	937	329.40	0.50	0.03	350.84
2012	1340	471.08	0.72	0.04	501.74
2013	2000	703.10	1.08	0.06	748.87
2014	231	81.21	0.12	0.01	86.49
<b>Total</b>		<b>10,904.39</b>	<b>16.68</b>	<b>0.92</b>	<b>11,614.18</b>
<b>Annual Average</b>		<b>545.22</b>	<b>0.83</b>	<b>0.05</b>	<b>580.71</b>

Note: Conservatively assumes burned acres is similar to burning weeds.



**APPENDIX 7-4**  
**I. KWB O&M LIVESTOCK EMISSIONS AND ACTIVITY**  
**SUMMARY**

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Monterey Plus  
Livestock Grazing Operations Summary

Year	Sheep						Cattle					
	Sheep Head-Days	Annual Total (sheep/year)	Enteric Fermentation (MT CH <sub>4</sub> /yr)	Manure Management (MT CH <sub>4</sub> /yr)	Manure Management (MT N <sub>2</sub> O/yr)	Total Emissions (MT CO <sub>2</sub> e/yr)	Cattle Head-Days	Annual Total (cattle/year)	Enteric Fermentation (MT CH <sub>4</sub> /yr)	Manure Management (MT CH <sub>4</sub> /yr)	Manure Management (MT N <sub>2</sub> O/yr)	Total Emissions (MT CO <sub>2</sub> e/yr)
1995												
1996												
1997												
1998												
1999												
2000												
2001												
2002	293,200	803.29	6.43	0.57	-	195.78	52,390	287.07	15.21	0.54	-	441.09
2003	97,530	267.21	2.14	0.19	-	65.12	71,280	390.58	20.70	0.73	-	600.13
2004							17,530	96.05	5.09	0.18	-	147.59
2005												
2006												
2007	81,612	223.59	1.79	0.16	-	54.49	119,045	652.30	34.57	1.22	-	1,002.29
2008							2,520	13.81	0.73	0.03	-	21.22
2009	63,680	174.47	1.40	0.12	-	42.52	44,361	243.07	12.88	0.46	-	373.49
2010	57,721	158.14	1.27	0.11	-	38.54	138,201	757.27	40.14	1.42	-	1,163.57
2011							148,030	811.12	42.99	1.52	-	1,246.32
2012							970	5.32	0.28	0.01	-	8.17
2013	4,350	11.92	0.10	0.01	-	2.90	183,138	1,003.50	53.19	1.88	-	1,541.91
2014	8,638	23.67	0.19	0.02	-	5.77	15,812	86.64	4.59	0.16	-	133.13



**APPENDIX 7-4**  
**J. KWB O&M LIVESTOCK RAW DATA**

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**Monterey Plus  
Sheep Grazing**

No head data prior to 2002, only general information on areas grazed. Widespread sheep grazing in 1999, some in 2000.

	Sheep	Days	Sheep-Days
Jul-02	2200	31	68,200
Aug-02	2800	31	86,800
Sep-02	2800	30	84,000
Oct-02	800	31	24,800
Nov-02	980	30	29,400
Aug-03	1200	31	37,200
Sep-03	1050	30	31,500
Oct-03	930	31	28,830

**Sheep (2007)**

Date In	Head In	Head Out	Date Out	Days On	Fee at \$ 0.04	Sheep-Days
10/1/2007	2186		10/31/2007	30.00	\$ 2,623.20	65580
10/23/2007	1014		10/31/2007	8.00	\$ -	8112
10/27/2007	-1220		10/31/2007	4.00	\$ (164.32)	7920

**Sheep (2009)**

Date In	Head In	Head Out	Head On	Date Out	Days On	Fee at \$ 0.04	Sheep-Days
3/26/2009 5/17/2009	530		530		52	\$ -	27,560
3/24/2009 5/6/2009	840		840		43	\$ -	36,120

**Sheep (2010)**

Date In	Head In	Head Out	Head On	Date Out	Days On	Fee at \$ 0.04	Sheep-Days
5/1/2010	1153	0	1153	5/4/2010	3	\$ -	3,459
5/4/2010	1153	-800	353	5/14/2010	10	\$ -	3,530

**Sheep (2010)**

Date In	Head In	Head Out	Head On	Date Out	Days On	Fee at \$ 0.04	Sheep-Days
3/14/2010	1,153	0	1153	4/27/2010	44	\$ -	50,732
	0	0	0	1/0/1900	-	\$ -	

**Monterey Plus**  
**Operation and Maintenance Emissions**  
**Cattle Grazing**

Year	Date In	Head In	Head Out	Date Out	Days On	Cattle-Days
2007	10/6/2007	50		10/31/2007	25.00	1,250
2007	10/6/2007	86		10/31/2007	25.00	2,150
2007	10/17/2007	50		10/31/2007	14.00	700
2007	10/18/2007	130		10/31/2007	13.00	1,690
2007	10/23/2007	69		10/31/2007	8.00	552
2007	10/29/2007	200		10/31/2007	2.00	400
2007	11/30/2007	584	584	12/29/2007	29.00	16,936
2007	12/29/2007	398	398	12/31/2007	2.00	796
2007	12/31/2007	952	0	1/31/2008	31.00	29,512
2007	12/31/2007	155	0	1/31/2008	31.00	4,805
2007	12/31/2007	10	0	1/31/2008	31.00	310
2009	2/28/2009	174	0	3/31/2009	31.00	5,394
2009	4/1/2009	174	79	4/10/2009	9.00	1,566
2009	4/10/2009	95	0	4/25/2009	15.00	1,425
2009	4/25/2009	131	0	5/1/2009	6.00	786
2009	5/2/2009	131	0	6/1/2009	30.00	3,930
2009	6/1/2009	96	0	6/30/2009	30.00	2,880
2009	7/1/2009	126	0	8/1/2009	31.00	3,906
2009	12/1/2009	126	0	1/1/2010	31.00	3,906
2010	1/1/2010	126	0	2/1/2010	31.00	3,906
2010	2/1/2010	203	0	3/1/2010	28.00	5,684
2010	3/1/2010	203	0	4/1/2010	31.00	6,293
2010	4/1/2010	203	0	5/1/2010	30.00	6,090
2010	5/1/2010	203	0	6/1/2010	31.00	6,293
2010	6/1/2010	203	0	7/1/2010	30.00	6,090
2010	7/1/2010	203	0	8/1/2010	31.00	6,293
2010	8/1/2010	203	0	8/16/2010	15.00	3,045
2010	8/16/2010	239	0	9/1/2010	16.00	3,824
2010	9/1/2010	239	21	10/1/2010	30.00	7,170
2010	10/1/2010	239	0	10/10/2010	9.00	2,151
2010	10/10/2010	218	0	11/1/2010	22.00	4,796
2010	11/1/2010	218	0	12/1/2010	30.00	6,540
2010	11/30/2010	218	0	12/15/2010	15.00	3,270
2010	12/15/2010	225	0	12/31/2010	16.00	3,600
2010	12/31/2010	225	0	1/31/2011	31.00	6,975
2011	1/31/2011	225	0	2/28/2011	28.00	6,300
2011	1/31/2011	225	0	2/28/2011	28.00	6,300
2011	2/28/2011	225	0	3/31/2011	31.00	6,975
2011	3/31/2011	225	0	4/30/2011	30.00	6,750
2011	4/15/2011	28	0	4/30/2011	15.00	420
2011	4/30/2011	253	0	5/31/2011	31.00	7,843
2011	5/31/2011	253	0	6/30/2011	30.00	7,590
2011	7/1/2011	253	0	7/25/2011	24	6,072
2011	7/25/2011	341	0	8/1/2011	7	2,387
2011	7/31/2011	341	0	8/6/2011	6	2,046
2011	8/6/2011	343	0	8/31/2011	25	8,575
2011	8/31/2011	343	0	9/10/2011	10	3,430
2011	9/10/2011	493	0	9/30/2011	20	9,860
2011	9/30/2011	493	0	10/31/2011	31	15,283
2011	10/31/2011	493	0	11/15/2011	15	7,395
2011	11/15/2011	492	1	11/30/2011	15	7,380

	Date In	Head In	Head Out	Date Out	Days On	Cattle-Days
2007	9/30/2007	657		10/31/2007	31.00	20,367
2007	10/1/2007	121		10/31/2007	30.00	3,630
2007	10/4/2007	49		10/31/2007	27.00	1,323
2007	10/12/2007	73		10/31/2007	19.00	1,387
2007	10/25/2007	52		10/31/2007	6.00	312

	Date In	Head In	Head Out	Date Out	Days On	Cattle-Days
2007	11/30/2007	954	0	12/31/2007	31.00	29,574
2007	11/17/2007	33	0	12/31/2007	44.00	1,452
2007	12/5/2007	21	0	12/31/2007	26.00	546
2007	12/17/2007	38	0	12/31/2007	14.00	532
2007	12/20/2007	32	0	12/31/2007	11.00	352
2007	12/22/2007	31	0	12/31/2007	9.00	279
2007	12/11/2007	3	0	12/31/2007	20.00	60
2007	12/12/2007	4	0	12/31/2007	19.00	76
2007	12/13/2007	3	0	12/31/2007	18.00	54

	Date In	Head In	Head Out	Date Out	Days On	Cattle-Days
2008	12/31/2008	28	0	3/31/2009	90.00	2,520
2008	12/28/2008	-91	0	12/31/2008	3.00	
2009	12/31/2008	31	0	1/31/2009	31.00	961
2009	1/31/2009	37	0	3/31/2009	59.00	2,183
2009	12/31/2008	77	0	3/31/2009	90.00	6,930
	12/20/2008	-100	0	12/31/2008	11.00	

	Date In	Head In	Head Out	Head On	Date Out	Days On	Cattle-Days
2009	4/1/2009	28	0	28		19	532
2009	4/20/2009	28	-17	11		34	374
2009	5/24/2009	11	42	53		24	1,272
2009	6/18/2009	53	129	182		12	2,184
	6/30/2009						
2009	4/1/2009	37	0	37		78	2,886
2009	6/18/2009	71	0	71		12	852
	6/30/2009						
2009	4/1/2009	77	0	77		6	462
2009	4/7/2009	77	-35	42		46	1,932
	5/24/2009						

	Date In	Head In	Head Out	Head On	Date Out	Days On	Cattle-Days
2010	12/1/2010	182	0	182	12/4/2010	3	546
2010	12/4/2010	141	0	141	12/5/2010	1	141
2010	12/5/2010	66	0	66	12/6/2010	1	66
2010	12/6/2010	71	0	71	12/12/2010	6	426
2010	12/13/2010	75	0	75	12/31/2010	18	1,350

	Date In	Head In	Head Out	Head On	Date Out	Days On	Cattle-Days
2010	1/1/2010	132	0	132	1/15/2010	14	1,848
	1/14/2010	132	31	101			
2010	1/14/2010	101	0	101	1/15/2010	1	101
	1/15/2010	101	31	70			
2010	1/15/2010	70	0	70	3/31/2010	75	5,250

2010	1/1/2010	34	0	34	3/31/2010	89	3,026
2010	1/1/2010	123	0	123	1/6/2010	5	615
2010	1/6/2010	123	-94	29			
2010	1/7/2010	29	0	29	1/16/2010	9	261
2010	1/16/2010	29	-1	28			
2010	1/17/2010	28	0	28	3/31/2010	73	2,044
	<b>Date In</b>	<b>Head In</b>	<b>Head Out</b>	<b>Head On</b>	<b>Date Out</b>	<b>Days On</b>	<b>Cattle-Days</b>
2010	3/31/2010	70	0	70	5/1/2010	31	2,170
2010	4/18/2010	70	0	73	5/31/2010	43	3,139
2010	5/3/2010	6	0	6	5/31/2010	28	168
2010	5/20/2010	2	0	2	5/31/2010	11	22
2010	4/30/2010	34	0	34	5/31/2010	31	1,054
2010	4/30/2010	28	0	28	5/31/2010	31	868
	<b>Date In</b>	<b>Head In</b>	<b>Head Out</b>	<b>Head On</b>	<b>Date Out</b>	<b>Days On</b>	<b>Cattle-Days</b>
2010	6/1/2010	151	0	151	8/1/2010	61	9,211
2010	6/1/2010	34	0	34	8/1/2010	61	2,074
	<b>Date In</b>	<b>Head In</b>	<b>Head Out</b>	<b>Head On</b>	<b>Date Out</b>	<b>Days On</b>	<b>Cattle-Days</b>
2010	8/1/2010	185	0	185	11/18/2010	109	20,165
2010	11/18/2010	42	0	227	11/22/2010	4	908
2010	11/23/2010	0	45	182	11/27/2010	4	728

	Date In	Head In	Head Out	Head On	Date Out	Days On	Cattle-Days
2011	12/31/2010	75	0	75	1/29/2011	29	2,175
2011	1/30/2011	53	0	53	1/31/2011	1	53
2011	1/31/2011	36	0	36	2/1/2011	1	36
2011	2/1/2011	20	0	20	2/2/2011	1	20
	Date In	Head In	Head Out	Head On	Date Out	Days On	Cattle-Days
2011	2/3/2011	30	0	30	2/7/2011	4	120
2011	2/8/2011	19	0	19	2/15/2011	7	133
2011	2/16/2011	36	0	6	2/27/2011	11	66
	Date In	Head In	Head Out	Head On	Date Out	Days On	Cattle-Days
2011	8/29/2011	44	0	44	9/1/2011	3	132
	Date In	Head In	Head Out	Head On	Date Out	Days On	Cattle-Days
2011	8/30/2011	44	0	44	9/2/2011	3	132
2011	9/2/2011	44	42	86	9/3/2011	1	86
2011	9/3/2011	86	79	165	9/4/2011	1	165
2011	9/4/2011	165	74	239	9/5/2011	1	239
2011	9/6/2011	239	103	342	9/30/2011	24	8,208
	Date In	Head In	Head Out	Head On	Date Out	Days On	Cattle-Days
2011	10/1/2011	325	0	325	10/31/2011	30	9,750
	Date In	Head In	Head Out	Head On	Date Out	Days On	Cattle-Days
2011	11/1/2011	325	0	325	12/1/2011	30	9,750
	Date In	Head In	Head Out	Head On	Date Out	Days On	Cattle-Days
2011	12/1/2011	325	0	325	1/1/2012	31	10,075
	Date In	Head In	Head Out	Head On	Date Out	Days On	Cattle-Days
2011	12/31/2010	75	0	75	1/29/2011	29	2,175
2011	1/30/2011	53	0	53	1/31/2011	1	53
2011	1/31/2011	36	0	36	2/1/2011	1	36
2011	2/1/2011	20	0	20	2/2/2011	1	20
	Date In	Head In	Head Out	Head On	Date Out	Days On	Cattle-Days
2012	1/31/2012	51	0	51	2/16/2012	16	816
2012	2/17/2012	51	40	11	3/2/2012	14	154
2012	3/2/2012	11	11	0	2/27/2011	(369)	

**Monterey Plus**  
**Operation and Maintenance Emissions**  
**Cattle Grazing**

	<b>Cattle (AU)</b>	<b>Days</b>	<b>Cattle-Days</b>
Jun-02	160	30	4800
Jul-02	350	31	10850
Sep-02	635	30	19050
Nov-02	290	30	8700
Dec-02	290	31	8990
Jan-03	163	31	5053
Feb-03	167	28	4676
Mar-03	292	31	9052
Apr-03	245	30	7350
May-03	245	31	7595
Jun-03	245	30	7350
Jul-03	179	31	5549
Aug-03	173	31	5363
Sep-03	173	30	5190
Oct-03	173	31	5363
Nov-03	158	30	4740
Dec-03	129	31	3999
Jan-04	127	31	3937
Feb-04	127	28	3556
Mar-04	127	31	3937
Apr-04	100	30	3000
May-04	100	31	3100

Note: No head data prior to 2002, only general information on areas grazed. Widespread sheep grazing in 1999, some in 2000.

Source: KWB

**Monterey Plus**  
**Operation and Maintenance Emissions**  
**Sheep and Cattle Grazing (Year 2014)**

Date	Start	In	Out	Amount	Cattle-Days	Memo
1/1/2014	72			72	288	RCJ Cattle Company, LLC
1/5/2014			47	25	675	RCJ Cattle Company, LLC
2/1/2014	25			25	700	RCJ Cattle Company, LLC
3/1/2014	25			25	775	RCJ Cattle Company, LLC
4/1/2014	24			24	336	RCJ Cattle Company, LLC
4/15/2014		53		77	847	RCJ Cattle Company, LLC
4/26/2014		58		135	270	RCJ Cattle Company, LLC
4/28/2014		41		176	528	RCJ Cattle Company, LLC
5/1/2014	176			176	4048	RCJ Cattle Company, LLC
5/24/2014			24	152	0	RCJ Cattle Company, LLC
5/24/2014			22	130	910	RCJ Cattle Company, LLC
5/31/2014			15	115	0	RCJ Cattle Company, LLC
5/31/2014			41	74	74	RCJ Cattle Company, LLC
6/1/2014	74			74	444	RCJ Cattle Company, LLC
6/7/2014			28	46	1104	RCJ Cattle Company, LLC
7/1/2014	46			46	506	RCJ Cattle Company, LLC
7/12/2014			46	0	0	RCJ Cattle Company, LLC
8/1/2014	0			0	0	RCJ Cattle Company, LLC
8/8/2014		46		46	644	RCJ Cattle Company, LLC
8/22/2014		41		87	1044	RCJ Cattle Company, LLC
9/3/2014		10		97	2619	RCJ Cattle Company, LLC
Jan-14					682	Diamond Sheep Co - 22 head @ 31 days
Feb-14					2240	Diamond Sheep Co - 80 head @ 28 days
Feb-14					616	Diamond Sheep Co - 22 head @ 28 days
Mar-14					2790	Diamond Sheep Co - 90 head @ 31 days
Mar-14					240	Diamond Sheep Co - 12 head @ 20 days
May-14					2070	Diamond Sheep Co - 90 head @ 23 days

Source: KWB

**Monterey Plus**  
**Operation and Maintenance Emissions**  
**Sheep and Cattle Grazing (Year 2013)**

Date	Start	In	Out	Amount	Cattle-Days	Memo
1/1/2013	954			954	17172	RCJ Cattle Company, LLC
1/19/2013			246	708	9204	RCJ Cattle Company, LLC
Jan-13	50			50	1550	Hay Brothers Sheep
2/1/2013	708			708	10620	RCJ Cattle Company, LLC
2/16/2013		21		729	9477	RCJ Cattle Company, LLC
3/1/2013	729			729	22599	RCJ Cattle Company, LLC
4/1/2013	729			729	12393	RCJ Cattle Company, LLC
4/18/2013			40	689	8957	RCJ Cattle Company, LLC
5/1/2013	689			689	7579	RCJ Cattle Company, LLC
5/12/2013			29	660	8580	RCJ Cattle Company, LLC
5/25/2013			9	651	3255	RCJ Cattle Company, LLC
5/30/2013			29	622	1244	RCJ Cattle Company, LLC
6/1/2013	622			622	18660	RCJ Cattle Company, LLC
7/1/2013	622			622	7464	RCJ Cattle Company, LLC
7/13/2013			20	602	9030	RCJ Cattle Company, LLC
7/28/2013			12	590	2360	RCJ Cattle Company, LLC
8/1/2013	590			590	5310	RCJ Cattle Company, LLC
8/10/2013			117	473	6622	RCJ Cattle Company, LLC
8/24/2013			48	425	3400	RCJ Cattle Company, LLC
9/1/2013	425			425	2550	RCJ Cattle Company, LLC
9/7/2013			145	280	3920	RCJ Cattle Company, LLC
9/21/2013			70	210	1470	RCJ Cattle Company, LLC
9/28/2013			76	204	612	RCJ Cattle Company, LLC
10/1/2013	134			134	4154	RCJ Cattle Company, LLC
11/1/2013	134			134	2948	RCJ Cattle Company, LLC
11/23/2013			8	126	1008	RCJ Cattle Company, LLC
Nov-13					320	Diamond Sheep Co - 80 head @ 4 days
12/1/2013	126			126	882	RCJ Cattle Company, LLC
12/8/2013			50	76	228	RCJ Cattle Company, LLC
12/11/2013			4	72	1440	RCJ Cattle Company, LLC
Dec-13					2480	Diamond Sheep Co - 80 head @ 31 days

Source: KWB



**APPENDIX 7-4**  
**K. AIR QUALITY AND GREENHOUSE GAS EMISSION**  
**FACTORS**

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Monterey Plus  
 Operation and Maintenance Emissions  
 Emission Factors and Methods

Pickup Truck Emission Factors (g/mile) - Year 2000

Vehicle Category	ROG	NO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub> e
LDT1&2	0.428	1.619	0.202	0.168	475.274
HHDT	1.079	20.404	0.877	0.781	1779.184

Pickup Truck Emission Factors (g/mile) - Year 2020

Vehicle Category	ROG	NO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub> e
LDT1&2	0.048	0.267	0.074	0.046	303.054
HHDT	0.101	4.089	0.117	0.054	1621.801

Pickup Truck Emission Factors (g/mile) - Year 2030

Vehicle Category	ROG	NO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub> e
LDT1&2	0.011	0.054	0.048	0.021	216.218
HHDT	0.063	1.167	0.102	0.040	1496.921

Construction Equipment Hourly Emissions (lbs/hr, Year 1995, Kern County)

Construction Equipment	ROG	NO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub> e
Backhoe (75 hp)	0.1427	0.9042	0.0812	0.0812	35.04
Tractor (115 hp)	0.2189	1.3864	0.1245	0.1245	53.72
Water Truck (381 hp)	0.5608	4.6279	0.3061	0.3061	182.45

Construction Equipment Hourly Emissions (lbs/hr, Year 2020, Kern County)

Construction Equipment	ROG	NO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub> e
Backhoe (75 hp)	0.0203	0.2035	0.0129	0.0118	29.2666
Tractor (115 hp)	0.0311	0.312	0.0197	0.0182	44.8754
Water Truck (381 hp)	0.0786	0.7491	0.0273	0.0251	152.5074

Construction Equipment Hourly Emissions (lbs/hr, Year 2030, Kern County)

Construction Equipment	ROG	NO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub> e
Backhoe (75 hp)	0.0166	0.0994	0.00184	0.00184	34.7984
Tractor (115 hp)	0.0255	0.1523	0.00281	0.00281	53.3575
Water Truck (381 hp)	0.0689	0.1462	0.00543	0.00543	181.52

**Agricultural Burning**

**Emission Factors and Methods**

$$E_{GHG,crop} = A_{crop} \times 0.404685642 \times FB_{crop} \times MR_{crop} \times EF_{GHG,crop}$$

- $E_{GHG,crop}$  Emissions of GHG from crop residue (g)
- $A_{crop}$  Harvested area of given crop (acres)
- $FB_{crop}$  Fraction of harvested area on which crop residues burned
- $MR_{crop}$  Mass of given crop's residue (g dry matter per ha)
- $EF_{GHG,crop}$  Emission factor for the given GHG and crop (unit mass of GHG per unit mass of residue dry matter)

0.404685642

Year 2012 Factors			CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O
Crop Type	FB <sub>crop</sub>	MR <sub>crop</sub>	EF	EF	EF
Almond	0.84	1,890,000	1.83	1.17E-03	2.00E-04
Barley	0.07	2,510,000	1.17	2.47E-03	2.00E-04
Corn	0.03	9,060,000	1.31	1.75E-03	1.00E-04
Rice	0.088	6,750,000	1.16	7.20E-04	2.00E-04
Walnut	0.95	1,460,000	1.64	1.64E-03	2.00E-04
Wheat	0.11	3,660,000	1.19	1.82E-03	1.00E-04
Weeds	1	730,000	1.19	1.82E-03	1.00E-04

Source: [http://www.arb.ca.gov/cc/inventory/doc/methods\\_00-12/annex\\_3d\\_agricultural\\_residue\\_burning.pdf](http://www.arb.ca.gov/cc/inventory/doc/methods_00-12/annex_3d_agricultural_residue_burning.pdf)

Assumes all of the acreage is burned and that MR<sub>CROP</sub> equals approximately 50% of Walnut crops.

**Livestock Management**

**Emission Factors and Methods**

Enteric Fermentation Livestock Type	Emission Factor	Units	Source
Sheep	8	kg CH4/head-year	<a href="http://www.arb.ca.gov/cc/inventory/doc/doc_index.php">http://www.arb.ca.gov/cc/inventory/doc/doc_index.php</a>
Cattle	53	kg CH4/head-year	IPCC. 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Chapter 10 Emissions from Livestock and Manure Management. 2006

**Manure Management**

$$E_{CH4} = [\text{Livestock Population}] * [\text{Volatile Solids Production Rate}] * [\text{Methane Conversion Factor}] * [\text{Maximum Methane Production Capacity}] * [\text{Methane Density}]$$

**Sheep Parameters**

Livestock Population	heads	
Volatile Solids Production Rate	208	kg/yr
Methane Conversion Factor	0.015	factor
Max Methane Production Capacity	0.341	m <sup>3</sup> /kg
Methane Density	662	g/m <sup>3</sup>

$$E_{N2O} = [\text{Livestock Population}] * [\text{Nitrogen Excretion Rate}] * ([\text{Direct N as N2O EF}] + ([\text{Volatilized Fraction}] * [\text{Redeposited Nitrogen Emitted as N2O}]) + ([\text{Runoff Fraction}] * [\text{Runoff N Emitted as N2O}])) * [\text{MW Ratio of N2O to N2}]$$

Factor	Units	Sheep	Calf/Cow
Nitrogen Excretion Rate	g/year	11,275	33,258
Direct N as N2O EF	g/g	0	0
Volatilized Fraction	percent	0	0
Redeposited N Emitted as N2O	g/g	0.01	0.01
Runoff Fraction	percent	0	0
Runoff N Emitted as N2o	g/g	0.0075	0.0075
MW Ratio		1.57	1.57

**Cattle**

$$E = [\text{Livestock Population}] * [\text{Volatile Solids Production Rate}] * [\text{Methane Conversion Factor}] * [\text{Max Methane Production Capacity}] * [\text{Methane Density}]$$

Parameter	Calves	Beef Cow	
Maximum CH4 Production Capacity	0.17	0.17	m3/kg
Methane Conversion Factor	0.015	0.015	
Volatile Solids Production Rate	332	1891	kg/yr
Methane Density	662	662	g/m <sup>3</sup>
	560.45	3192.20	g CH4/head

**Electricity Intensity Emission Factors**

Year	CO <sub>2</sub>	Units	CH <sub>4</sub>	Units	N <sub>2</sub> O	Units	CO <sub>2</sub> e	Units
2010	445	lb/MWh	0.03112	lb/MWh	0.00567	lb/MWh	447.37	lb/MWh
2011	393	lb/MWh	0.03112	lb/MWh	0.00567	lb/MWh	395.37	lb/MWh
2012	445	lb/MWh	0.03112	lb/MWh	0.00567	lb/MWh	447.37	lb/MWh
2013	427	lb/MWh	0.03112	lb/MWh	0.00567	lb/MWh	429.37	lb/MWh
2014	412	lb/MWh	0.03112	lb/MWh	0.00567	lb/MWh	414.37	lb/MWh
2015	391	lb/MWh	0.03112	lb/MWh	0.00567	lb/MWh	393.37	lb/MWh
2020	356	lb/MWh	0.03112	lb/MWh	0.00567	lb/MWh	358.45	lb/MWh
2030	266	lb/MWh	0.03112	lb/MWh	0.00567	lb/MWh	268.10	lb/MWh

Source: [http://www.pge.com/includes/docs/pdfs/shared/environment/calculator/pge\\_ghg\\_emission\\_factor\\_info\\_sheet.pdf](http://www.pge.com/includes/docs/pdfs/shared/environment/calculator/pge_ghg_emission_factor_info_sheet.pdf)

Pollutant	GWP
CO <sub>2</sub>	1
CH <sub>4</sub>	28
N <sub>2</sub> O	265

**PG&E RPS**

Year	RPS %
2013	23.8%
2015	26.4%
2020	33.0%
2030	50%

[http://www.cpuc.ca.gov/RPS\\_Homepage/](http://www.cpuc.ca.gov/RPS_Homepage/)  
 interpolated (assuming linear growth to target)  
 State Mandated (SB1078, SB107, SB2)  
 SB350

**L. KWB CONSTRUCTION AND O&M EMISSIONS SUMMARY**





Monterey Plus  
Construction and O&M Emissions

Emission Category	Start Year	End Year	Total Years	Pollutants (tons/year)				Total Emissions	Annual Metric Tons	2020 Annual Emissions	2030 Annual Emissions
				ROG	NO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	MT CO <sub>2</sub> e	MT CO <sub>2</sub> e/yr	MT CO <sub>2</sub> e/yr	MT CO <sub>2</sub> e/yr
<b>Operations &amp; Maintenance</b>											
On- and Off-Road	1995	2014	20	5.08	33.19	2.77	2.70	1,952.48	97.62	81.45	79.64
Electricity	2010	2014	5	0	0	0	0	53,495.96	10,699.19	8,976.51	6,714
Burns	1995	2014	20	0	0	0	0	11,614.18	580.71	580.71	580.71
Grazing	1995	2014	20	0	0	0	0	7,084.03	354.20	354.20	354.20
Sheep	1995	2014	20					405.13			
Cattle	1995	2014	20					6,678.90			
<b>Total Emissions</b>				5.08	33.19	2.77	2.70	234,634.55	11,731.73	9,992.87	7,728.52
<b>Emission Reductions (emissions)</b>										1,738.86	4,003.21
<b>Emission Reductions (%)</b>										-15%	-34%

**Note:** Year 2020 and 2030 emissions assume compliance with RPS requirements and changes in the vehicle/equipment fleet in 2020 and 2030 per EMFAC and OFFROAD. Burns and grazing were assumed to remain constant.

Construction	Start Year	End Year	Total Years	Pollutants (tons/year)				Metric Tons
				ROG	NO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub> e
Recharge and Recovery	2016	2016	1	0.26	2.87	0.16	0.13	312.78
KWB Full Buildout	2016	2016	1	0.51	6.11	0.33	0.25	660.45
				0.76	8.98	0.48	0.38	973.23

