

# APPENDIX E

Air Quality and Greenhouse Gas Emissions Data



## Appendix E

### Air Quality and Greenhouse Gas Emissions Data



**Path 46 Construction - Annual  
San Bernardino-Mojave Desert County, Annual**

**1.0 Project Characteristics**

**1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Parking	10.70	User Defined Unit	10.70	0.00	0

**1.2 Other Project Characteristics**

<b>Urbanization</b>	Rural	<b>Wind Speed (m/s)</b>	2.6	<b>Precipitation Freq (Days)</b>	32
<b>Climate Zone</b>	10	<b>Operational Year</b>		2018	
<b>Utility Company</b>	Los Angeles Department of Water & Power				
<b>CO2 Intensity (lb/MW hr)</b>	1227.89	<b>CH4 Intensity (lb/MW hr)</b>	0.029	<b>N2O Intensity (lb/MW hr)</b>	0.006

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

Project Characteristics - Annual construction only; no increase/change in routine maintenance operations  
 Land Use - Assuming 10.7 acre project area total (all grading sites and tower raising sites)  
 Construction Phase - All 70 grading sites (about 2 days per site average) and tower raising (about 45 days per tower) assumed to occur in same year  
 Off-road Equipment - Equipment list provided by applicant for tower raising  
 Off-road Equipment - Equipment list provided by applicant for grading  
 Trips and VMT - Worker trips from applicant. Vendor trips are water trucks. Increased default trip lengths to 40 miles for rural location of sites. Dump truck (assuming 16CY) would move spoils on-site  
 Grading - Disturbed daily area based on CalEEMod default. 10,809CY spoils based on total grading  
 Consumer Products - Construction emission modeling only  
 Landscape Equipment - Construction emission modeling only  
 Energy Use -  
 Construction Off-road Equipment Mitigation - Water exposed area 2x per day

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	300.00	90.00
tblConstructionPhase	NumDays	30.00	94.00
tblConstructionPhase	NumDays	30.00	23.00
tblConstructionPhase	PhaseEndDate	4/17/2017	12/6/2016
tblConstructionPhase	PhaseStartDate	12/13/2016	8/3/2016
tblGrading	AcresOfGrading	47.00	1.50
tblGrading	AcresOfGrading	23.00	3.00
tblGrading	MaterialExported	0.00	7,206.00
tblGrading	MaterialExported	0.00	3,603.00
tblLandUse	LotAcreage	0.00	10.70
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	LoadFactor	0.31	0.31
tblOffRoadEquipment	LoadFactor	0.40	0.40
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Aerial Lifts
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Air Compressors
tblOffRoadEquipment	OffRoadEquipmentType		Rough Terrain Forklifts
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00

tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblProjectCharacteristics	OperationalYear	2014	2018
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	HaulingTripLength	20.00	0.50
tblTripsAndVMT	HaulingTripLength	20.00	0.50
tblTripsAndVMT	VendorTripLength	6.60	40.00
tblTripsAndVMT	VendorTripLength	6.60	40.00
tblTripsAndVMT	VendorTripLength	6.60	40.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	WorkerTripLength	16.80	40.00
tblTripsAndVMT	WorkerTripLength	16.80	40.00
tblTripsAndVMT	WorkerTripLength	16.80	40.00
tblTripsAndVMT	WorkerTripNumber	15.00	20.00
tblTripsAndVMT	WorkerTripNumber	0.00	48.00
tblTripsAndVMT	WorkerTripNumber	30.00	20.00

## 2.0 Emissions Summary

### 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	0.4818	4.8909	3.7585	5.1500e-003	0.5324	0.2578	0.7902	0.2609	0.2381	0.4989	0.0000	461.2942	461.2942	0.1087	0.0000	463.5772
<b>Total</b>	<b>0.4818</b>	<b>4.8909</b>	<b>3.7585</b>	<b>5.1500e-003</b>	<b>0.5324</b>	<b>0.2578</b>	<b>0.7902</b>	<b>0.2609</b>	<b>0.2381</b>	<b>0.4989</b>	<b>0.0000</b>	<b>461.2942</b>	<b>461.2942</b>	<b>0.1087</b>	<b>0.0000</b>	<b>463.5772</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	0.4818	4.8909	3.7585	5.1500e-003	0.2988	0.2578	0.5566	0.1332	0.2381	0.3713	0.0000	461.2937	461.2937	0.1087	0.0000	463.5768
<b>Total</b>	<b>0.4818</b>	<b>4.8909</b>	<b>3.7585</b>	<b>5.1500e-003</b>	<b>0.2988</b>	<b>0.2578</b>	<b>0.5566</b>	<b>0.1332</b>	<b>0.2381</b>	<b>0.3713</b>	<b>0.0000</b>	<b>461.2937</b>	<b>461.2937</b>	<b>0.1087</b>	<b>0.0000</b>	<b>463.5768</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>43.87</b>	<b>0.00</b>	<b>29.56</b>	<b>48.94</b>	<b>0.00</b>	<b>25.58</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	Double Site	Grading	7/1/2016	8/2/2016	5	23	
2	Single Site	Grading	8/3/2016	12/12/2016	5	94	
3	Building Construction	Building Construction	8/3/2016	12/6/2016	5	90	

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
Single Site	Excavators	1	8.00	162	0.38
Single Site	Graders	1	8.00	174	0.41
Single Site	Rubber Tired Dozers	1	8.00	255	0.40
Double Site	Scrapers	0	8.00	361	0.48
Single Site	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Double Site	Skid Steer Loaders	2		64	0.37
Single Site	Skid Steer Loaders	1	8.00	64	0.37
Building Construction	Cranes	4	8.00	226	0.29
Building Construction	Forklifts	0	8.00	89	0.20
Building Construction	Generator Sets	0	8.00	84	0.74
Building Construction	Aerial Lifts	2	8.00	62	0.31
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Welders	0	8.00	46	0.45
Double Site	Excavators	2	8.00	162	0.38
Double Site	Graders	2	8.00	174	0.41
Double Site	Rubber Tired Dozers	2	8.00	255	0.40

Building Construction	Air Compressors	1	8.00	78	0.48
Single Site	Scrapers	0	8.00	361	0.48
Double Site	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Building Construction	Rough Terrain Forklifts	1	8.00	100	0.40

### 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
Single Site	6	20.00	2.00	901.00	40.00	40.00	0.50	LD_Mix	HDT_Mix	HHDT
Building Construction	10	48.00	2.00	0.00	40.00	40.00	20.00	LD_Mix	HDT_Mix	HHDT
Double Site	12	20.00	4.00	450.00	40.00	40.00	0.50	LD_Mix	HDT_Mix	HHDT

### 3.1 Mitigation Measures Construction

Water Exposed Area

Clean Paved Roads

### 3.2 Double Site - 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					0.1404	0.0000	0.1404	0.0764	0.0000	0.0764	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0765	0.8094	0.5443	6.1000e-004		0.0448	0.0448		0.0412	0.0412	0.0000	57.7991	57.7991	0.0174	0.0000	58.1652
<b>Total</b>	<b>0.0765</b>	<b>0.8094</b>	<b>0.5443</b>	<b>6.1000e-004</b>	<b>0.1404</b>	<b>0.0448</b>	<b>0.1852</b>	<b>0.0764</b>	<b>0.0412</b>	<b>0.1176</b>	<b>0.0000</b>	<b>57.7991</b>	<b>57.7991</b>	<b>0.0174</b>	<b>0.0000</b>	<b>58.1652</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	tons/yr										MT/yr					
Hauling	4.2000e-003	6.8700e-003	0.0644	1.0000e-005	1.0000e-004	5.0000e-005	1.5000e-004	3.0000e-005	4.0000e-005	7.0000e-005	0.0000	0.7080	0.7080	1.0000e-005	0.0000	0.7083
Vendor	1.1600e-003	0.0162	0.0149	5.0000e-005	1.6300e-003	5.1000e-004	2.1300e-003	4.6000e-004	4.7000e-004	9.3000e-004	0.0000	4.6529	4.6529	2.0000e-005	0.0000	4.6533
Worker	1.9500e-003	5.5700e-003	0.0482	8.0000e-005	6.8600e-003	4.0000e-005	6.9000e-003	1.8200e-003	4.0000e-005	1.8600e-003	0.0000	5.8664	5.8664	3.8000e-004	0.0000	5.8743
<b>Total</b>	<b>7.3100e-003</b>	<b>0.0286</b>	<b>0.1275</b>	<b>1.4000e-004</b>	<b>8.5900e-003</b>	<b>6.0000e-004</b>	<b>9.1800e-003</b>	<b>2.3100e-003</b>	<b>5.5000e-004</b>	<b>2.8600e-003</b>	<b>0.0000</b>	<b>11.2272</b>	<b>11.2272</b>	<b>4.1000e-004</b>	<b>0.0000</b>	<b>11.2360</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					0.0632	0.0000	0.0632	0.0344	0.0000	0.0344	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0765	0.8094	0.5443	6.1000e-004		0.0448	0.0448		0.0412	0.0412	0.0000	57.7990	57.7990	0.0174	0.0000	58.1651
<b>Total</b>	<b>0.0765</b>	<b>0.8094</b>	<b>0.5443</b>	<b>6.1000e-004</b>	<b>0.0632</b>	<b>0.0448</b>	<b>0.1080</b>	<b>0.0344</b>	<b>0.0412</b>	<b>0.0756</b>	<b>0.0000</b>	<b>57.7990</b>	<b>57.7990</b>	<b>0.0174</b>	<b>0.0000</b>	<b>58.1651</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	tons/yr										MT/yr					
Hauling	4.2000e-003	6.8700e-003	0.0644	1.0000e-005	1.0000e-004	5.0000e-005	1.5000e-004	3.0000e-005	4.0000e-005	7.0000e-005	0.0000	0.7080	0.7080	1.0000e-005	0.0000	0.7083

Vendor	1.1600e-003	0.0162	0.0149	5.0000e-005	1.6300e-003	5.1000e-004	2.1300e-003	4.6000e-004	4.7000e-004	9.3000e-004	0.0000	4.6529	4.6529	2.0000e-005	0.0000	4.6533
Worker	1.9500e-003	5.5700e-003	0.0482	8.0000e-005	6.8600e-003	4.0000e-005	6.9000e-003	1.8200e-003	4.0000e-005	1.8600e-003	0.0000	5.8664	5.8664	3.8000e-004	0.0000	5.8743
<b>Total</b>	<b>7.3100e-003</b>	<b>0.0286</b>	<b>0.1275</b>	<b>1.4000e-004</b>	<b>8.5900e-003</b>	<b>6.0000e-004</b>	<b>9.1800e-003</b>	<b>2.3100e-003</b>	<b>5.5000e-004</b>	<b>2.8600e-003</b>	<b>0.0000</b>	<b>11.2272</b>	<b>11.2272</b>	<b>4.1000e-004</b>	<b>0.0000</b>	<b>11.2360</b>

### 3.3 Single Site - 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					0.2843	0.0000	0.2843	0.1557	0.0000	0.1557	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1617	1.7231	1.1774	1.3500e-003		0.0954	0.0954		0.0878	0.0878	0.0000	127.0904	127.0904	0.0383	0.0000	127.8954
<b>Total</b>	<b>0.1617</b>	<b>1.7231</b>	<b>1.1774</b>	<b>1.3500e-003</b>	<b>0.2843</b>	<b>0.0954</b>	<b>0.3797</b>	<b>0.1557</b>	<b>0.0878</b>	<b>0.2435</b>	<b>0.0000</b>	<b>127.0904</b>	<b>127.0904</b>	<b>0.0383</b>	<b>0.0000</b>	<b>127.8954</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	tons/yr										MT/yr					
Hauling	8.4000e-003	0.0138	0.1289	2.0000e-005	2.0000e-004	1.0000e-004	3.0000e-004	6.0000e-005	9.0000e-005	1.5000e-004	0.0000	1.4176	1.4176	3.0000e-005	0.0000	1.4182
Vendor	2.3600e-003	0.0331	0.0304	1.0000e-004	3.3200e-003	1.0400e-003	4.3600e-003	9.4000e-004	9.6000e-004	1.9000e-003	0.0000	9.5080	9.5080	5.0000e-005	0.0000	9.5090
Worker	7.9700e-003	0.0228	0.1970	3.2000e-004	0.0280	1.8000e-004	0.0282	7.4400e-003	1.6000e-004	7.6100e-003	0.0000	23.9755	23.9755	1.5600e-003	0.0000	24.0082
<b>Total</b>	<b>0.0187</b>	<b>0.0696</b>	<b>0.3563</b>	<b>4.4000e-004</b>	<b>0.0316</b>	<b>1.3200e-003</b>	<b>0.0329</b>	<b>8.4400e-003</b>	<b>1.2100e-003</b>	<b>9.6600e-003</b>	<b>0.0000</b>	<b>34.9011</b>	<b>34.9011</b>	<b>1.6400e-003</b>	<b>0.0000</b>	<b>34.9353</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					0.1280	0.0000	0.1280	0.0701	0.0000	0.0701	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1617	1.7231	1.1774	1.3500e-003		0.0954	0.0954		0.0878	0.0878	0.0000	127.0903	127.0903	0.0383	0.0000	127.8953
<b>Total</b>	<b>0.1617</b>	<b>1.7231</b>	<b>1.1774</b>	<b>1.3500e-003</b>	<b>0.1280</b>	<b>0.0954</b>	<b>0.2234</b>	<b>0.0701</b>	<b>0.0878</b>	<b>0.1579</b>	<b>0.0000</b>	<b>127.0903</b>	<b>127.0903</b>	<b>0.0383</b>	<b>0.0000</b>	<b>127.8953</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	tons/yr										MT/yr					
Hauling	8.4000e-003	0.0138	0.1289	2.0000e-005	2.0000e-004	1.0000e-004	3.0000e-004	6.0000e-005	9.0000e-005	1.5000e-004	0.0000	1.4176	1.4176	3.0000e-005	0.0000	1.4182
Vendor	2.3600e-003	0.0331	0.0304	1.0000e-004	3.3200e-003	1.0400e-003	4.3600e-003	9.4000e-004	9.6000e-004	1.9000e-003	0.0000	9.5080	9.5080	5.0000e-005	0.0000	9.5090
Worker	7.9700e-003	0.0228	0.1970	3.2000e-004	0.0280	1.8000e-004	0.0282	7.4400e-003	1.6000e-004	7.6100e-003	0.0000	23.9755	23.9755	1.5600e-003	0.0000	24.0082
<b>Total</b>	<b>0.0187</b>	<b>0.0696</b>	<b>0.3563</b>	<b>4.4000e-004</b>	<b>0.0316</b>	<b>1.3200e-003</b>	<b>0.0329</b>	<b>8.4400e-003</b>	<b>1.2100e-003</b>	<b>9.6600e-003</b>	<b>0.0000</b>	<b>34.9011</b>	<b>34.9011</b>	<b>1.6400e-003</b>	<b>0.0000</b>	<b>34.9353</b>

### 3.4 Building Construction - 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	0.1970	2.1761	1.0712	1.7800e-003		0.1142	0.1142		0.1060	0.1060	0.0000	166.0803	166.0803	0.0473	0.0000	167.0732

<b>Total</b>	<b>0.1970</b>	<b>2.1761</b>	<b>1.0712</b>	<b>1.7800e-003</b>		<b>0.1142</b>	<b>0.1142</b>		<b>0.1060</b>	<b>0.1060</b>	<b>0.0000</b>	<b>166.0803</b>	<b>166.0803</b>	<b>0.0473</b>	<b>0.0000</b>	<b>167.0732</b>
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**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	0.0000	0.0000	0.0000
Vendor	2.2600e-003	0.0317	0.0291	1.0000e-004	3.1800e-003	1.0000e-003	4.1800e-003	9.0000e-004	9.2000e-004	1.8200e-003	0.0000	9.1034	9.1034	4.0000e-005	0.0000	9.1043
Worker	0.0183	0.0524	0.4528	7.4000e-004	0.0644	4.1000e-004	0.0648	0.0171	3.8000e-004	0.0175	0.0000	55.0926	55.0926	3.5800e-003	0.0000	55.1677
<b>Total</b>	<b>0.0206</b>	<b>0.0840</b>	<b>0.4819</b>	<b>8.4000e-004</b>	<b>0.0676</b>	<b>1.4100e-003</b>	<b>0.0690</b>	<b>0.0180</b>	<b>1.3000e-003</b>	<b>0.0193</b>	<b>0.0000</b>	<b>64.1960</b>	<b>64.1960</b>	<b>3.6200e-003</b>	<b>0.0000</b>	<b>64.2721</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	0.1970	2.1761	1.0712	1.7800e-003		0.1142	0.1142		0.1060	0.1060	0.0000	166.0801	166.0801	0.0473	0.0000	167.0730
<b>Total</b>	<b>0.1970</b>	<b>2.1761</b>	<b>1.0712</b>	<b>1.7800e-003</b>		<b>0.1142</b>	<b>0.1142</b>		<b>0.1060</b>	<b>0.1060</b>	<b>0.0000</b>	<b>166.0801</b>	<b>166.0801</b>	<b>0.0473</b>	<b>0.0000</b>	<b>167.0730</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	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	0.0000	0.0000	0.0000
Vendor	2.2600e-003	0.0317	0.0291	1.0000e-004	3.1800e-003	1.0000e-003	4.1800e-003	9.0000e-004	9.2000e-004	1.8200e-003	0.0000	9.1034	9.1034	4.0000e-005	0.0000	9.1043
Worker	0.0183	0.0524	0.4528	7.4000e-004	0.0644	4.1000e-004	0.0648	0.0171	3.8000e-004	0.0175	0.0000	55.0926	55.0926	3.5800e-003	0.0000	55.1677
<b>Total</b>	<b>0.0206</b>	<b>0.0840</b>	<b>0.4819</b>	<b>8.4000e-004</b>	<b>0.0676</b>	<b>1.4100e-003</b>	<b>0.0690</b>	<b>0.0180</b>	<b>1.3000e-003</b>	<b>0.0193</b>	<b>0.0000</b>	<b>64.1960</b>	<b>64.1960</b>	<b>3.6200e-003</b>	<b>0.0000</b>	<b>64.2721</b>

**Path 46 Construction - Annual  
San Bernardino-Mojave Desert County, Mitigation Report**

**Construction Mitigation Summary**

Phase	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Building Construction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Double Site	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Single Site	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

**OFFROAD Equipment Mitigation**

Equipment Type	Fuel Type	Tier	Number Mitigated	Total Number of Equipment	DPF	Oxidation Catalyst
Aerial Lifts	Diesel	No Change	0	2	No Change	0.00
Air Compressors	Diesel	No Change	0	1	No Change	0.00
Cranes	Diesel	No Change	0	4	No Change	0.00
Excavators	Diesel	No Change	0	3	No Change	0.00
Forklifts	Diesel	No Change	0	0	No Change	0.00
Generator Sets	Diesel	No Change	0	0	No Change	0.00
Graders	Diesel	No Change	0	3	No Change	0.00
Rough Terrain Forklifts	Diesel	No Change	0	1	No Change	0.00
Rubber Tired Dozers	Diesel	No Change	0	3	No Change	0.00
Skid Steer Loaders	Diesel	No Change	0	3	No Change	0.00
Tractors/Loaders/Backhoes	Diesel	No Change	0	8	No Change	0.00



Welders	Diesel	No Change	0	No Change	0.00
Scrapers	Diesel	No Change	0	No Change	0.00

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Unmitigated tons/yr							Unmitigated mt/yr					
Aerial Lifts	5.02000E-003	8.25700E-002	9.70900E-002	1.50000E-004	3.39000E-003	3.12000E-003	0.00000E+000	1.39290E+001	1.39290E+001	4.20000E-003	0.00000E+000	1.40172E+001
Air Compressors	2.21100E-002	1.42330E-001	1.13040E-001	1.80000E-004	1.18000E-002	1.18000E-002	0.00000E+000	1.53195E+001	1.53195E+001	1.81000E-003	0.00000E+000	1.53575E+001
Cranes	1.29600E-001	1.53568E+000	5.37270E-001	1.01000E-003	6.96800E-002	6.41100E-002	0.00000E+000	9.57282E+001	9.57282E+001	2.88800E-002	0.00000E+000	9.63346E+001
Excavators	2.71700E-002	3.10160E-001	2.39990E-001	3.70000E-004	1.52600E-002	1.40400E-002	0.00000E+000	3.49214E+001	3.49214E+001	1.05300E-002	0.00000E+000	3.51426E+001
Forklifts	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Generator Sets	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Graders	7.13100E-002	7.26590E-001	3.44930E-001	4.40000E-004	4.08200E-002	3.75500E-002	0.00000E+000	4.12392E+001	4.12392E+001	1.24400E-002	0.00000E+000	4.15005E+001
Rough Terrain Forklifts	9.62000E-003	1.22520E-001	1.06620E-001	1.60000E-004	6.80000E-003	6.26000E-003	0.00000E+000	1.46765E+001	1.46765E+001	4.43000E-003	0.00000E+000	1.47695E+001
Rubber Tired Dozers	8.66800E-002	9.70950E-001	7.33940E-001	6.20000E-004	4.51800E-002	4.15600E-002	0.00000E+000	5.86406E+001	5.86406E+001	1.76900E-002	0.00000E+000	5.90121E+001
Scrapers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Skid Steer Loaders	5.34000E-003	6.91000E-002	6.50500E-002	1.00000E-004	3.86000E-003	3.55000E-003	0.00000E+000	8.97926E+000	8.97926E+000	2.71000E-003	0.00000E+000	9.03614E+000
Tractors/Loaders/Backhoes	7.83300E-002	7.48660E-001	5.54900E-001	7.20000E-004	5.76400E-002	5.30300E-002	0.00000E+000	6.75361E+001	6.75361E+001	2.03700E-002	0.00000E+000	6.79639E+001
Welders	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Mitigated tons/yr							Mitigated mt/yr					
Aerial Lifts	5.02000E-003	8.25700E-002	9.70900E-002	1.50000E-004	3.39000E-003	3.12000E-003	0.00000E+000	1.39289E+001	1.39289E+001	4.20000E-003	0.00000E+000	1.40172E+001
Air Compressors	2.21100E-002	1.42330E-001	1.13030E-001	1.80000E-004	1.18000E-002	1.18000E-002	0.00000E+000	1.53195E+001	1.53195E+001	1.81000E-003	0.00000E+000	1.53574E+001
Cranes	1.29600E-001	1.53567E+000	5.37270E-001	1.01000E-003	6.96800E-002	6.41100E-002	0.00000E+000	9.57281E+001	9.57281E+001	2.88700E-002	0.00000E+000	9.63344E+001
Excavators	2.71700E-002	3.10160E-001	2.39990E-001	3.70000E-004	1.52600E-002	1.40400E-002	0.00000E+000	3.49214E+001	3.49214E+001	1.05300E-002	0.00000E+000	3.51426E+001
Forklifts	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Generator Sets	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000

Graders	7.13100E-002	7.26590E-001	3.44920E-001	4.40000E-004	4.08200E-002	3.75500E-002	0.00000E+000	4.12392E+001	4.12392E+001	1.24400E-002	0.00000E+000	4.15004E+001
Rough Terrain Forklifts	9.62000E-003	1.22520E-001	1.06620E-001	1.60000E-004	6.80000E-003	6.26000E-003	0.00000E+000	1.46765E+001	1.46765E+001	4.43000E-003	0.00000E+000	1.47695E+001
Rubber Tired Dozers	8.66800E-002	9.70950E-001	7.33940E-001	6.20000E-004	4.51800E-002	4.15600E-002	0.00000E+000	5.86406E+001	5.86406E+001	1.76900E-002	0.00000E+000	5.90120E+001
Scrapers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Skid Steer Loaders	5.34000E-003	6.91000E-002	6.50500E-002	1.00000E-004	3.86000E-003	3.55000E-003	0.00000E+000	8.97925E+000	8.97925E+000	2.71000E-003	0.00000E+000	9.03613E+000
Tractors/Loaders/Bac khoes	7.83300E-002	7.48660E-001	5.54900E-001	7.20000E-004	5.76400E-002	5.30300E-002	0.00000E+000	6.75360E+001	6.75360E+001	2.03700E-002	0.00000E+000	6.79638E+001
Welders	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Aerial Lifts	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.43586E-006	1.43586E-006	0.00000E+000	0.00000E+000	1.42682E-006
Air Compressors	0.00000E+000	0.00000E+000	8.84643E-005	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.30552E-006	1.30552E-006	0.00000E+000	0.00000E+000	1.30230E-006
Cranes	0.00000E+000	6.51177E-006	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.25355E-006	1.25355E-006	3.46260E-004	0.00000E+000	1.14185E-006
Excavators	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.14543E-006	1.14543E-006	0.00000E+000	0.00000E+000	1.42277E-006
Forklifts	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Generator Sets	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Graders	0.00000E+000	0.00000E+000	2.89914E-005	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.21244E-006	1.21244E-006	0.00000E+000	0.00000E+000	1.20481E-006
Rough Terrain Forklifts	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	6.81361E-007	6.81361E-007	0.00000E+000	0.00000E+000	1.35414E-006
Rubber Tired Dozers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.19371E-006	1.19371E-006	0.00000E+000	0.00000E+000	1.18620E-006
Scrapers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Skid Steer Loaders	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.11368E-006	1.11368E-006	0.00000E+000	0.00000E+000	1.10667E-006
Tractors/Loaders/Bac khoes	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.18455E-006	1.18455E-006	0.00000E+000	0.00000E+000	1.17710E-006
Welders	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000

### Fugitive Dust Mitigation

Yes/No Mitigation Measure Mitigation Input Mitigation Input Mitigation Input

No	Soil Stabilizer for unpaved Roads	PM10 Reduction	0.00	PM2.5 Reduction	0.00		
No	Replace Ground Cover of Area Disturbed	PM10 Reduction	0.00	PM2.5 Reduction	0.00		
Yes	Water Exposed Area	PM10 Reduction	55.00	PM2.5 Reduction	55.00	Frequency (per day)	2.00
No	Unpaved Road Mitigation	Moisture Content %	0.00	Vehicle Speed (mph)	0.00		
Yes	Clean Paved Road	% PM Reduction	0.00				

Phase	Source	Unmitigated		Mitigated		Percent Reduction	
		PM10	PM2.5	PM10	PM2.5	PM10	PM2.5
Building Construction	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Building Construction	Roads	0.07	0.02	0.07	0.02	0.00	0.00
Double Site	Fugitive Dust	0.14	0.08	0.06	0.03	0.55	0.55
Double Site	Roads	0.01	0.00	0.01	0.00	0.00	0.00
Single Site	Fugitive Dust	0.28	0.16	0.13	0.07	0.55	0.55
Single Site	Roads	0.03	0.01	0.03	0.01	0.00	0.00

**Path 46 Construction - Concurrent Tower Raising/Grading  
San Bernardino-Mojave Desert County, Winter**

**1.0 Project Characteristics**

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**1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Parking	2.00	User Defined Unit	2.00	0.00	0

**1.2 Other Project Characteristics**

<b>Urbanization</b>	Rural	<b>Wind Speed (m/s)</b>	2.6	<b>Precipitation Freq (Days)</b>	32
<b>Climate Zone</b>	10	<b>Operational Year</b>		2018	
<b>Utility Company</b>	Los Angeles Department of Water & Power				
<b>CO2 Intensity (lb/MW hr)</b>	1227.89	<b>CH4 Intensity (lb/MW hr)</b>	0.029	<b>N2O Intensity (lb/MW hr)</b>	0.006

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

Project Characteristics - Simultaneous tower raising and grading activities only; no increase/change in routine maintenance operations

Land Use - Assuming 1.85 ac for tower raising and about 0.1 ac for daily grading

Construction Phase - Simultaneous tower raising and grading activity

Off-road Equipment - Equipment list provided by applicant

Off-road Equipment - Equipment list provided by applicant

Trips and VMT - Worker trips from applicant. Vendor trips are water trucks. Increased default trip lengths to 40 miles for rural location of sites. Dump truck (assuming 16CY) would move spoils on-site

Grading - Disturbed daily area based on CalEEMod default. 1,080 CY spoils based on worse-case grading

Consumer Products - Construction emission modeling only

Landscape Equipment - Construction emission modeling only

Energy Use -

Construction Off-road Equipment Mitigation - Water exposed area 2x per day

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	200.00	45.00
tblConstructionPhase	NumDays	4.00	3.00
tblConstructionPhase	PhaseEndDate	9/6/2016	9/1/2016
tblConstructionPhase	PhaseStartDate	7/6/2016	7/1/2016
tblGrading	MaterialExported	0.00	1,080.00
tblLandUse	LotAcreage	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblProjectCharacteristics	OperationalYear	2014	2018
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	HaulingTripLength	20.00	0.50
tblTripsAndVMT	VendorTripLength	6.60	40.00
tblTripsAndVMT	VendorTripLength	6.60	40.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	WorkerTripLength	16.80	40.00
tblTripsAndVMT	WorkerTripLength	16.80	40.00
tblTripsAndVMT	WorkerTripNumber	15.00	20.00
tblTripsAndVMT	WorkerTripNumber	0.00	48.00

## 2.0 Emissions Summary

### 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					
2016	9.2788	89.2826	74.6783	0.0967	8.8343	4.6356	13.4699	3.9697	4.2856	8.2552	0.0000	9,499.9475	9,499.9475	2.1869	0.0000	9,545.8731
<b>Total</b>	<b>9.2788</b>	<b>89.2826</b>	<b>74.6783</b>	<b>0.0967</b>	<b>8.8343</b>	<b>4.6356</b>	<b>13.4699</b>	<b>3.9697</b>	<b>4.2856</b>	<b>8.2552</b>	<b>0.0000</b>	<b>9,499.9475</b>	<b>9,499.9475</b>	<b>2.1869</b>	<b>0.0000</b>	<b>9,545.8731</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					
2016	9.2788	89.2826	74.6783	0.0967	5.2027	4.6356	9.8383	2.1133	4.2856	6.3989	0.0000	9,499.9474	9,499.9474	2.1869	0.0000	9,545.8731
<b>Total</b>	<b>9.2788</b>	<b>89.2826</b>	<b>74.6783</b>	<b>0.0967</b>	<b>5.2027</b>	<b>4.6356</b>	<b>9.8383</b>	<b>2.1133</b>	<b>4.2856</b>	<b>6.3989</b>	<b>0.0000</b>	<b>9,499.9474</b>	<b>9,499.9474</b>	<b>2.1869</b>	<b>0.0000</b>	<b>9,545.8731</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>41.11</b>	<b>0.00</b>	<b>26.96</b>	<b>46.76</b>	<b>0.00</b>	<b>22.49</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	Grading	Grading	7/1/2016	7/5/2016	5	3	
2	Building Construction	Building Construction	7/1/2016	9/1/2016	5	45	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 1.5

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
Grading	Excavators	1	8.00	162	0.38
Grading	Graders	1	8.00	174	0.41
Grading	Rubber Tired Dozers	1	8.00	255	0.40
Grading	Skid Steer Loaders	1	8.00	64	0.37
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Aerial Lifts	2	8.00	62	0.31
Building Construction	Air Compressors	1	8.00	78	0.48
Building Construction	Cranes	4	8.00	226	0.29
Building Construction	Forklifts	0	7.00	89	0.20
Building Construction	Generator Sets	0	8.00	84	0.74
Building Construction	Rough Terrain Forklifts	1	8.00	100	0.40
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Welders	0	8.00	46	0.45

#### 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

Grading	6	20.00	2.00	135.00	40.00	40.00	0.50	LD_Mix	HDT_Mix	HHDT
Building Construction	10	48.00	2.00	0.00	40.00	40.00	20.00	LD_Mix	HDT_Mix	HHDT

### 3.1 Mitigation Measures Construction

Water Exposed Area

### 3.2 Grading - 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	lb/day										lb/day					
Fugitive Dust					6.6029	0.0000	6.6029	3.3751	0.0000	3.3751			0.0000			0.0000
Off-Road	3.4404	36.6677	25.0559	0.0287		2.0302	2.0302		1.8678	1.8678		2,981.5634	2,981.5634	0.8994		3,000.4497
<b>Total</b>	<b>3.4404</b>	<b>36.6677</b>	<b>25.0559</b>	<b>0.0287</b>	<b>6.6029</b>	<b>2.0302</b>	<b>8.6331</b>	<b>3.3751</b>	<b>1.8678</b>	<b>5.2430</b>		<b>2,981.5634</b>	<b>2,981.5634</b>	<b>0.8994</b>		<b>3,000.4497</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	0.7979	1.3390	11.4362	1.6900e-003	0.0207	9.9200e-003	0.0306	5.7500e-003	9.0700e-003	0.0148		151.4771	151.4771	3.0900e-003		151.5419
Vendor	0.0492	0.6913	0.6085	2.2200e-003	0.0718	0.0222	0.0940	0.0204	0.0204	0.0407		222.7832	222.7832	1.0900e-003		222.8060
Worker	0.1660	0.4528	3.8721	6.5900e-003	0.6080	3.8400e-003	0.6118	0.1612	3.5000e-003	0.1647		544.9602	544.9602	0.0365		545.7266
<b>Total</b>	<b>1.0131</b>	<b>2.4831</b>	<b>15.9168</b>	<b>0.0105</b>	<b>0.7005</b>	<b>0.0359</b>	<b>0.7364</b>	<b>0.1873</b>	<b>0.0329</b>	<b>0.2202</b>		<b>919.2205</b>	<b>919.2205</b>	<b>0.0407</b>		<b>920.0745</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	lb/day										lb/day					
Fugitive Dust					2.9713	0.0000	2.9713	1.5188	0.0000	1.5188			0.0000			0.0000
Off-Road	3.4404	36.6677	25.0559	0.0287		2.0302	2.0302		1.8678	1.8678	0.0000	2,981.5634	2,981.5634	0.8994		3,000.4497
<b>Total</b>	<b>3.4404</b>	<b>36.6677</b>	<b>25.0559</b>	<b>0.0287</b>	<b>2.9713</b>	<b>2.0302</b>	<b>5.0015</b>	<b>1.5188</b>	<b>1.8678</b>	<b>3.3866</b>	<b>0.0000</b>	<b>2,981.5634</b>	<b>2,981.5634</b>	<b>0.8994</b>		<b>3,000.4497</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	0.7979	1.3390	11.4362	1.6900e-003	0.0207	9.9200e-003	0.0306	5.7500e-003	9.0700e-003	0.0148		151.4771	151.4771	3.0900e-003		151.5419
Vendor	0.0492	0.6913	0.6085	2.2200e-003	0.0718	0.0222	0.0940	0.0204	0.0204	0.0407		222.7832	222.7832	1.0900e-003		222.8060
Worker	0.1660	0.4528	3.8721	6.5900e-003	0.6080	3.8400e-003	0.6118	0.1612	3.5000e-003	0.1647		544.9602	544.9602	0.0365		545.7266
<b>Total</b>	<b>1.0131</b>	<b>2.4831</b>	<b>15.9168</b>	<b>0.0105</b>	<b>0.7005</b>	<b>0.0359</b>	<b>0.7364</b>	<b>0.1873</b>	<b>0.0329</b>	<b>0.2202</b>		<b>919.2205</b>	<b>919.2205</b>	<b>0.0407</b>		<b>920.0745</b>

**3.3 Building Construction - 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
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Category	lb/day										lb/day					
Off-Road	4.3775	48.3539	23.8042	0.0395		2.5381	2.5381		2.3561	2.3561		4,068.4759	4,068.4759	1.1583		4,092.7991
<b>Total</b>	<b>4.3775</b>	<b>48.3539</b>	<b>23.8042</b>	<b>0.0395</b>		<b>2.5381</b>	<b>2.5381</b>		<b>2.3561</b>	<b>2.3561</b>		<b>4,068.4759</b>	<b>4,068.4759</b>	<b>1.1583</b>		<b>4,092.7991</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	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0492	0.6913	0.6085	2.2200e-003	0.0718	0.0222	0.0940	0.0204	0.0204	0.0407		222.7832	222.7832	1.0900e-003		222.8060
Worker	0.3985	1.0867	9.2931	0.0158	1.4591	9.2100e-003	1.4683	0.3869	8.4000e-003	0.3953		1,307.9045	1,307.9045	0.0876		1,309.7439
<b>Total</b>	<b>0.4477</b>	<b>1.7780</b>	<b>9.9015</b>	<b>0.0180</b>	<b>1.5309</b>	<b>0.0314</b>	<b>1.5623</b>	<b>0.4072</b>	<b>0.0288</b>	<b>0.4360</b>		<b>1,530.6877</b>	<b>1,530.6877</b>	<b>0.0887</b>		<b>1,532.5499</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	lb/day										lb/day					
Off-Road	4.3775	48.3539	23.8042	0.0395		2.5381	2.5381		2.3561	2.3561	0.0000	4,068.4759	4,068.4759	1.1583		4,092.7991
<b>Total</b>	<b>4.3775</b>	<b>48.3539</b>	<b>23.8042</b>	<b>0.0395</b>		<b>2.5381</b>	<b>2.5381</b>		<b>2.3561</b>	<b>2.3561</b>	<b>0.0000</b>	<b>4,068.4759</b>	<b>4,068.4759</b>	<b>1.1583</b>		<b>4,092.7991</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	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0492	0.6913	0.6085	2.2200e-003	0.0718	0.0222	0.0940	0.0204	0.0204	0.0407		222.7832	222.7832	1.0900e-003		222.8060
Worker	0.3985	1.0867	9.2931	0.0158	1.4591	9.2100e-003	1.4683	0.3869	8.4000e-003	0.3953		1,307.9045	1,307.9045	0.0876		1,309.7439
<b>Total</b>	<b>0.4477</b>	<b>1.7780</b>	<b>9.9015</b>	<b>0.0180</b>	<b>1.5309</b>	<b>0.0314</b>	<b>1.5623</b>	<b>0.4072</b>	<b>0.0288</b>	<b>0.4360</b>		<b>1,530.6877</b>	<b>1,530.6877</b>	<b>0.0887</b>		<b>1,532.5499</b>

**Path 46 Construction - Concurrent Tower Raising/Grading  
San Bernardino-Mojave Desert County, Summer**

**1.0 Project Characteristics**

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**1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Parking	2.00	User Defined Unit	2.00	0.00	0

**1.2 Other Project Characteristics**

<b>Urbanization</b>	Rural	<b>Wind Speed (m/s)</b>	2.6	<b>Precipitation Freq (Days)</b>	32
<b>Climate Zone</b>	10			<b>Operational Year</b>	2018
<b>Utility Company</b>	Los Angeles Department of Water & Power				
<b>CO2 Intensity (lb/MW hr)</b>	1227.89	<b>CH4 Intensity (lb/MW hr)</b>	0.029	<b>N2O Intensity (lb/MW hr)</b>	0.006

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

Project Characteristics - Simultaneous tower raising and grading activities only; no increase/change in routine maintenance operations

Land Use - Assuming 1.85 ac for tower raising and about 0.1 ac for daily grading

Construction Phase - Simultaneous tower raising and grading activity

Off-road Equipment - Equipment list provided by applicant

Off-road Equipment - Equipment list provided by applicant

Trips and VMT - Worker trips from applicant. Vendor trips are water trucks. Increased default trip lengths to 40 miles for rural location of sites. Dump truck (assuming 16CY) would move spoils on-site

Grading - Disturbed daily area based on CalEEMod default. 1,080 CY spoils based on worse-case grading

Consumer Products - Construction emission modeling only

Landscape Equipment - Construction emission modeling only

Energy Use -

Construction Off-road Equipment Mitigation - Water exposed area 2x per day

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	200.00	45.00
tblConstructionPhase	NumDays	4.00	3.00
tblConstructionPhase	PhaseEndDate	9/6/2016	9/1/2016
tblConstructionPhase	PhaseStartDate	7/6/2016	7/1/2016
tblGrading	MaterialExported	0.00	1,080.00
tblLandUse	LotAcreage	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblProjectCharacteristics	OperationalYear	2014	2018
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	HaulingTripLength	20.00	0.50
tblTripsAndVMT	VendorTripLength	6.60	40.00
tblTripsAndVMT	VendorTripLength	6.60	40.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	WorkerTripLength	16.80	40.00
tblTripsAndVMT	WorkerTripLength	16.80	40.00
tblTripsAndVMT	WorkerTripNumber	15.00	20.00
tblTripsAndVMT	WorkerTripNumber	0.00	48.00

## 2.0 Emissions Summary

### 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					
2016	9.2735	89.1495	76.7701	0.1000	8.8343	4.6351	13.4694	3.9697	4.2851	8.2548	0.0000	9,768.5327	9,768.5327	2.1866	0.0000	9,814.4508
<b>Total</b>	<b>9.2735</b>	<b>89.1495</b>	<b>76.7701</b>	<b>0.1000</b>	<b>8.8343</b>	<b>4.6351</b>	<b>13.4694</b>	<b>3.9697</b>	<b>4.2851</b>	<b>8.2548</b>	<b>0.0000</b>	<b>9,768.5327</b>	<b>9,768.5327</b>	<b>2.1866</b>	<b>0.0000</b>	<b>9,814.4508</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					
2016	9.2735	89.1495	76.7701	0.1000	5.2027	4.6351	9.8378	2.1133	4.2851	6.3985	0.0000	9,768.5327	9,768.5327	2.1866	0.0000	9,814.4508
<b>Total</b>	<b>9.2735</b>	<b>89.1495</b>	<b>76.7701</b>	<b>0.1000</b>	<b>5.2027</b>	<b>4.6351</b>	<b>9.8378</b>	<b>2.1133</b>	<b>4.2851</b>	<b>6.3985</b>	<b>0.0000</b>	<b>9,768.5327</b>	<b>9,768.5327</b>	<b>2.1866</b>	<b>0.0000</b>	<b>9,814.4508</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>41.11</b>	<b>0.00</b>	<b>26.96</b>	<b>46.76</b>	<b>0.00</b>	<b>22.49</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	Grading	Grading	7/1/2016	7/5/2016	5	3	
2	Building Construction	Building Construction	7/1/2016	9/1/2016	5	45	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 1.5

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
Grading	Excavators	1	8.00	162	0.38
Grading	Graders	1	8.00	174	0.41
Grading	Rubber Tired Dozers	1	8.00	255	0.40
Grading	Skid Steer Loaders	1	8.00	64	0.37
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Aerial Lifts	2	8.00	62	0.31
Building Construction	Air Compressors	1	8.00	78	0.48
Building Construction	Cranes	4	8.00	226	0.29
Building Construction	Forklifts	0	7.00	89	0.20
Building Construction	Generator Sets	0	8.00	84	0.74
Building Construction	Rough Terrain Forklifts	1	8.00	100	0.40
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Welders	0	8.00	46	0.45

#### 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

Grading	6	20.00	2.00	135.00	40.00	40.00	0.50	LD_Mix	HDT_Mix	HHDT
Building Construction	10	48.00	2.00	0.00	40.00	40.00	20.00	LD_Mix	HDT_Mix	HHDT

### 3.1 Mitigation Measures Construction

Water Exposed Area

### 3.2 Grading - 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	lb/day										lb/day					
Fugitive Dust					6.6029	0.0000	6.6029	3.3751	0.0000	3.3751			0.0000			0.0000
Off-Road	3.4404	36.6677	25.0559	0.0287		2.0302	2.0302		1.8678	1.8678		2,981.5634	2,981.5634	0.8994		3,000.4497
<b>Total</b>	<b>3.4404</b>	<b>36.6677</b>	<b>25.0559</b>	<b>0.0287</b>	<b>6.6029</b>	<b>2.0302</b>	<b>8.6331</b>	<b>3.3751</b>	<b>1.8678</b>	<b>5.2430</b>		<b>2,981.5634</b>	<b>2,981.5634</b>	<b>0.8994</b>		<b>3,000.4497</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	0.7150	1.3336	9.7461	1.7400e-003	0.0207	9.5000e-003	0.0302	5.7500e-003	8.6800e-003	0.0144		159.4337	159.4337	2.7500e-003		159.4915
Vendor	0.0470	0.6591	0.5662	2.2200e-003	0.0718	0.0221	0.0939	0.0204	0.0204	0.0407		223.1484	223.1484	1.0800e-003		223.1710
Worker	0.1902	0.4342	5.0093	7.5400e-003	0.6080	3.8400e-003	0.6118	0.1612	3.5000e-003	0.1647		621.4008	621.4008	0.0365		622.1673
<b>Total</b>	<b>0.9522</b>	<b>2.4268</b>	<b>15.3216</b>	<b>0.0115</b>	<b>0.7005</b>	<b>0.0355</b>	<b>0.7359</b>	<b>0.1873</b>	<b>0.0325</b>	<b>0.2198</b>		<b>1,003.9830</b>	<b>1,003.9830</b>	<b>0.0403</b>		<b>1,004.8297</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	lb/day										lb/day					
Fugitive Dust					2.9713	0.0000	2.9713	1.5188	0.0000	1.5188			0.0000			0.0000
Off-Road	3.4404	36.6677	25.0559	0.0287		2.0302	2.0302		1.8678	1.8678	0.0000	2,981.5634	2,981.5634	0.8994		3,000.4497
<b>Total</b>	<b>3.4404</b>	<b>36.6677</b>	<b>25.0559</b>	<b>0.0287</b>	<b>2.9713</b>	<b>2.0302</b>	<b>5.0015</b>	<b>1.5188</b>	<b>1.8678</b>	<b>3.3866</b>	<b>0.0000</b>	<b>2,981.5634</b>	<b>2,981.5634</b>	<b>0.8994</b>		<b>3,000.4497</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	0.7150	1.3336	9.7461	1.7400e-003	0.0207	9.5000e-003	0.0302	5.7500e-003	8.6800e-003	0.0144		159.4337	159.4337	2.7500e-003		159.4915
Vendor	0.0470	0.6591	0.5662	2.2200e-003	0.0718	0.0221	0.0939	0.0204	0.0204	0.0407		223.1484	223.1484	1.0800e-003		223.1710
Worker	0.1902	0.4342	5.0093	7.5400e-003	0.6080	3.8400e-003	0.6118	0.1612	3.5000e-003	0.1647		621.4008	621.4008	0.0365		622.1673
<b>Total</b>	<b>0.9522</b>	<b>2.4268</b>	<b>15.3216</b>	<b>0.0115</b>	<b>0.7005</b>	<b>0.0355</b>	<b>0.7359</b>	<b>0.1873</b>	<b>0.0325</b>	<b>0.2198</b>		<b>1,003.9830</b>	<b>1,003.9830</b>	<b>0.0403</b>		<b>1,004.8297</b>

**3.3 Building Construction - 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
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Category	lb/day										lb/day				
Off-Road	4.3775	48.3539	23.8042	0.0395		2.5381	2.5381		2.3561	2.3561	4,068.4759	4,068.4759	1.1583		4,092.7991
<b>Total</b>	<b>4.3775</b>	<b>48.3539</b>	<b>23.8042</b>	<b>0.0395</b>		<b>2.5381</b>	<b>2.5381</b>		<b>2.3561</b>	<b>2.3561</b>	<b>4,068.4759</b>	<b>4,068.4759</b>	<b>1.1583</b>		<b>4,092.7991</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	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0470	0.6591	0.5662	2.2200e-003	0.0718	0.0221	0.0939	0.0204	0.0204	0.0407		223.1484	223.1484	1.0800e-003		223.1710
Worker	0.4564	1.0421	12.0223	0.0181	1.4591	9.2100e-003	1.4683	0.3869	8.4000e-003	0.3953		1,491.3620	1,491.3620	0.0876		1,493.2014
<b>Total</b>	<b>0.5034</b>	<b>1.7012</b>	<b>12.5885</b>	<b>0.0203</b>	<b>1.5309</b>	<b>0.0313</b>	<b>1.5623</b>	<b>0.4072</b>	<b>0.0288</b>	<b>0.4360</b>		<b>1,714.5104</b>	<b>1,714.5104</b>	<b>0.0887</b>		<b>1,716.3724</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	lb/day										lb/day					
Off-Road	4.3775	48.3539	23.8042	0.0395		2.5381	2.5381		2.3561	2.3561	0.0000	4,068.4759	4,068.4759	1.1583		4,092.7991
<b>Total</b>	<b>4.3775</b>	<b>48.3539</b>	<b>23.8042</b>	<b>0.0395</b>		<b>2.5381</b>	<b>2.5381</b>		<b>2.3561</b>	<b>2.3561</b>	<b>0.0000</b>	<b>4,068.4759</b>	<b>4,068.4759</b>	<b>1.1583</b>		<b>4,092.7991</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	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0470	0.6591	0.5662	2.2200e-003	0.0718	0.0221	0.0939	0.0204	0.0204	0.0407		223.1484	223.1484	1.0800e-003		223.1710
Worker	0.4564	1.0421	12.0223	0.0181	1.4591	9.2100e-003	1.4683	0.3869	8.4000e-003	0.3953		1,491.3620	1,491.3620	0.0876		1,493.2014
<b>Total</b>	<b>0.5034</b>	<b>1.7012</b>	<b>12.5885</b>	<b>0.0203</b>	<b>1.5309</b>	<b>0.0313</b>	<b>1.5623</b>	<b>0.4072</b>	<b>0.0288</b>	<b>0.4360</b>		<b>1,714.5104</b>	<b>1,714.5104</b>	<b>0.0887</b>		<b>1,716.3724</b>

**Path 46 Construction - Concurrent Tower Raising/Grading**  
**San Bernardino-Mojave Desert County, Mitigation Report**

**Construction Mitigation Summary**

Phase	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Building Construction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

**OFFROAD Equipment Mitigation**

Equipment Type	Fuel Type	Tier	Number Mitigated	Total Number of Equipment	DPF	Oxidation Catalyst
Aerial Lifts	Diesel	No Change	0	2	No Change	0.00
Air Compressors	Diesel	No Change	0	1	No Change	0.00
Cranes	Diesel	No Change	0	4	No Change	0.00
Excavators	Diesel	No Change	0	1	No Change	0.00
Forklifts	Diesel	No Change	0	0	No Change	0.00
Generator Sets	Diesel	No Change	0	0	No Change	0.00
Graders	Diesel	No Change	0	1	No Change	0.00
Rough Terrain Forklifts	Diesel	No Change	0	1	No Change	0.00
Rubber Tired Dozers	Diesel	No Change	0	1	No Change	0.00
Skid Steer Loaders	Diesel	No Change	0	1	No Change	0.00
Tractors/Loaders/Backhoes	Diesel	No Change	0	4	No Change	0.00

Welders	Diesel	No Change	0	No Change	0.00
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Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Unmitigated tons/yr						Unmitigated mt/yr						
Aerial Lifts	2.52000E-003	4.15200E-002	4.88300E-002	7.00000E-005	1.71000E-003	1.57000E-003	0.00000E+000	7.00515E+000	7.00515E+000	2.11000E-003	0.00000E+000	7.04953E+000
Air Compressors	1.10500E-002	7.11700E-002	5.65200E-002	9.00000E-005	5.90000E-003	5.90000E-003	0.00000E+000	7.65976E+000	7.65976E+000	9.00000E-004	0.00000E+000	7.67873E+000
Cranes	6.48000E-002	7.67840E-001	2.68640E-001	5.10000E-004	3.48400E-002	3.20500E-002	0.00000E+000	4.78641E+001	4.78641E+001	1.44400E-002	0.00000E+000	4.81673E+001
Excavators	5.80000E-004	6.65000E-003	5.14000E-003	1.00000E-005	3.30000E-004	3.00000E-004	0.00000E+000	7.48320E-001	7.48320E-001	2.30000E-004	0.00000E+000	7.53060E-001
Forklifts	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Generator Sets	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Graders	1.53000E-003	1.55700E-002	7.39000E-003	1.00000E-005	8.70000E-004	8.00000E-004	0.00000E+000	8.83700E-001	8.83700E-001	2.70000E-004	0.00000E+000	8.89300E-001
Rough Terrain Forklifts	4.79000E-003	6.09500E-002	5.30400E-002	8.00000E-005	3.38000E-003	3.11000E-003	0.00000E+000	7.30175E+000	7.30175E+000	2.20000E-003	0.00000E+000	7.34800E+000
Rubber Tired Dozers	1.86000E-003	2.08100E-002	1.57300E-002	1.00000E-005	9.70000E-004	8.90000E-004	0.00000E+000	1.25659E+000	1.25659E+000	3.80000E-004	0.00000E+000	1.26454E+000
Skid Steer Loaders	1.70000E-004	2.21000E-003	2.08000E-003	0.00000E+000	1.20000E-004	1.10000E-004	0.00000E+000	2.87740E-001	2.87740E-001	9.00000E-005	0.00000E+000	2.89560E-001
Tractors/Loaders/Backhoes	1.63500E-002	1.56240E-001	1.15810E-001	1.50000E-004	1.20300E-002	1.10700E-002	0.00000E+000	1.40945E+001	1.40945E+001	4.25000E-003	0.00000E+000	1.41838E+001
Welders	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Mitigated tons/yr						Mitigated mt/yr						
Aerial Lifts	2.52000E-003	4.15200E-002	4.88300E-002	7.00000E-005	1.71000E-003	1.57000E-003	0.00000E+000	7.00515E+000	7.00515E+000	2.11000E-003	0.00000E+000	7.04952E+000
Air Compressors	1.10500E-002	7.11700E-002	5.65200E-002	9.00000E-005	5.90000E-003	5.90000E-003	0.00000E+000	7.65975E+000	7.65975E+000	9.00000E-004	0.00000E+000	7.67872E+000
Cranes	6.48000E-002	7.67840E-001	2.68630E-001	5.10000E-004	3.48400E-002	3.20500E-002	0.00000E+000	4.78640E+001	4.78640E+001	1.44400E-002	0.00000E+000	4.81672E+001
Excavators	5.80000E-004	6.65000E-003	5.14000E-003	1.00000E-005	3.30000E-004	3.00000E-004	0.00000E+000	7.48320E-001	7.48320E-001	2.30000E-004	0.00000E+000	7.53060E-001
Forklifts	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Generator Sets	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Graders	1.53000E-003	1.55700E-002	7.39000E-003	1.00000E-005	8.70000E-004	8.00000E-004	0.00000E+000	8.83700E-001	8.83700E-001	2.70000E-004	0.00000E+000	8.89290E-001
Rough Terrain Forklifts	4.79000E-003	6.09500E-002	5.30400E-002	8.00000E-005	3.38000E-003	3.11000E-003	0.00000E+000	7.30174E+000	7.30174E+000	2.20000E-003	0.00000E+000	7.34799E+000

Rubber Tired Dozers	1.86000E-003	2.08100E-002	1.57300E-002	1.00000E-005	9.70000E-004	8.90000E-004	0.00000E+000	1.25658E+000	1.25658E+000	3.80000E-004	0.00000E+000	1.26454E+000
Skid Steer Loaders	1.70000E-004	2.21000E-003	2.08000E-003	0.00000E+000	1.20000E-004	1.10000E-004	0.00000E+000	2.87740E-001	2.87740E-001	9.00000E-005	0.00000E+000	2.89560E-001
Tractors/Loaders/Bac khoes	1.63500E-002	1.56240E-001	1.15810E-001	1.50000E-004	1.20300E-002	1.10700E-002	0.00000E+000	1.40945E+001	1.40945E+001	4.25000E-003	0.00000E+000	1.41838E+001
Welders	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Aerial Lifts	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.41853E-006
Air Compressors	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.30552E-006	1.30552E-006	0.00000E+000	0.00000E+000	1.30230E-006
Cranes	0.00000E+000	0.00000E+000	3.72245E-005	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.25355E-006	1.25355E-006	0.00000E+000	0.00000E+000	1.24566E-006
Excavators	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Forklifts	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Generator Sets	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Graders	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.12448E-005
Rough Terrain Forklifts	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.36953E-006	1.36953E-006	0.00000E+000	0.00000E+000	1.36091E-006
Rubber Tired Dozers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	7.95805E-006	7.95805E-006	0.00000E+000	0.00000E+000	0.00000E+000
Skid Steer Loaders	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Tractors/Loaders/Bac khoes	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	7.09498E-007	7.09498E-007	0.00000E+000	0.00000E+000	7.05032E-007
Welders	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000

### Fugitive Dust Mitigation

Yes/No	Mitigation Measure	Mitigation Input	Mitigation Input	Mitigation Input			
No	Soil Stabilizer for unpaved Roads	PM10 Reduction	0.00	PM2.5 Reduction	0.00		
No	Replace Ground Cover of Area Disturbed	PM10 Reduction	0.00	PM2.5 Reduction	0.00		
Yes	Water Exposed Area	PM10 Reduction	55.00	PM2.5 Reduction	55.00	Frequency (per day)	2.00

No	Unpaved Road Mitigation	Moisture Content %	0.00	Vehicle Speed (mph)	0.00		
No	Clean Paved Road	% PM Reduction	0.00				

Phase	Source	Unmitigated		Mitigated		Percent Reduction	
		PM10	PM2.5	PM10	PM2.5	PM10	PM2.5
Building Construction	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Building Construction	Roads	0.03	0.01	0.03	0.01	0.00	0.00
Grading	Fugitive Dust	0.01	0.01	0.00	0.00	0.55	0.55
Grading	Roads	0.00	0.00	0.00	0.00	0.00	0.00

**Path 46 Construction - Concurrent Grading**  
**San Bernardino-Mojave Desert County, Winter**

**1.0 Project Characteristics**

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**1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Parking	0.20	User Defined Unit	0.20	0.00	0

**1.2 Other Project Characteristics**

<b>Urbanization</b>	Rural	<b>Wind Speed (m/s)</b>	2.6	<b>Precipitation Freq (Days)</b>	32
<b>Climate Zone</b>	10			<b>Operational Year</b>	2018
<b>Utility Company</b>	Los Angeles Department of Water & Power				
<b>CO2 Intensity (lb/MW hr)</b>	1227.89	<b>CH4 Intensity (lb/MW hr)</b>	0.029	<b>N2O Intensity (lb/MW hr)</b>	0.006

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

Project Characteristics - Concurrent grading activities at 2 locations only; no increase/change in routine maintenance operations

Land Use - Assuming 0.1 ac for each daily grading site

Construction Phase - Two simultaneous grading sites

Off-road Equipment - Equipment list provided by applicant

Off-road Equipment - Equipment list provided by applicant for concurrent grading sites

Trips and VMT - Worker trips from applicant. Vendor trips are water trucks. Increased default trip lengths to 40 miles for rural location of sites. Dump trucks (assuming 16CY) would move spoils on-site

Grading - Disturbed daily area based on CalEEMod default. 1,080 + 731 CY spoils based on worse-case grading sites

Consumer Products - Construction emission modeling only

Landscape Equipment - Construction emission modeling only

Energy Use -

Construction Off-road Equipment Mitigation - Water exposed area 2x per day



Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	2.00	3.00
tblGrading	MaterialExported	0.00	1,811.00
tblLandUse	LotAcreage	0.00	0.20
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	PhaseName		Grading
tblOffRoadEquipment	PhaseName		Grading
tblOffRoadEquipment	PhaseName		Grading
tblOffRoadEquipment	UsageHours	1.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblProjectCharacteristics	OperationalYear	2014	2018
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	HaulingTripLength	20.00	0.50
tblTripsAndVMT	HaulingTripNumber	226.00	227.00
tblTripsAndVMT	VendorTripLength	6.60	40.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	WorkerTripLength	16.80	40.00
tblTripsAndVMT	WorkerTripNumber	30.00	20.00

## 2.0 Emissions Summary

### 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					
2016	8.4869	77.4223	74.4306	0.0712	13.9759	4.1253	18.1011	6.9594	3.7951	10.7545	0.0000	7,208.3593	7,208.3593	1.8426	0.0000	7,247.0528
<b>Total</b>	<b>8.4869</b>	<b>77.4223</b>	<b>74.4306</b>	<b>0.0712</b>	<b>13.9759</b>	<b>4.1253</b>	<b>18.1011</b>	<b>6.9594</b>	<b>3.7951</b>	<b>10.7545</b>	<b>0.0000</b>	<b>7,208.3593</b>	<b>7,208.3593</b>	<b>1.8426</b>	<b>0.0000</b>	<b>7,247.0528</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					
2016	8.4869	77.4223	74.4306	0.0712	6.7216	4.1253	10.8469	3.2481	3.7951	7.0432	0.0000	7,208.3593	7,208.3593	1.8426	0.0000	7,247.0528
<b>Total</b>	<b>8.4869</b>	<b>77.4223</b>	<b>74.4306</b>	<b>0.0712</b>	<b>6.7216</b>	<b>4.1253</b>	<b>10.8469</b>	<b>3.2481</b>	<b>3.7951</b>	<b>7.0432</b>	<b>0.0000</b>	<b>7,208.3593</b>	<b>7,208.3593</b>	<b>1.8426</b>	<b>0.0000</b>	<b>7,247.0528</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>51.91</b>	<b>0.00</b>	<b>40.08</b>	<b>53.33</b>	<b>0.00</b>	<b>34.51</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	Grading	Grading	7/1/2016	7/5/2016	5	3	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 3

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
Grading	Concrete/Industrial Saws	0	8.00	81	0.73
Grading	Excavators	2	8.00	162	0.38
Grading	Graders	2	8.00	174	0.41
Grading	Rubber Tired Dozers	2	8.00	255	0.40
Grading	Skid Steer Loaders	2	8.00	64	0.37
Grading	Tractors/Loaders/Backhoes	4	8.00	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
Grading	12	20.00	4.00	227.00	40.00	40.00	0.50	LD_Mix	HDT_Mix	HHDT

### 3.1 Mitigation Measures Construction

Water Exposed Area

### 3.2 Grading - 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	lb/day										lb/day					
Fugitive Dust					13.1895	0.0000	13.1895	6.7478	0.0000	6.7478			0.0000			0.0000
Off-Road	6.8808	73.3353	50.1118	0.0573		4.0605	4.0605		3.7356	3.7356		5,963.1269	5,963.1269	1.7987		6,000.8994
<b>Total</b>	<b>6.8808</b>	<b>73.3353</b>	<b>50.1118</b>	<b>0.0573</b>	<b>13.1895</b>	<b>4.0605</b>	<b>17.2500</b>	<b>6.7478</b>	<b>3.7356</b>	<b>10.4834</b>		<b>5,963.1269</b>	<b>5,963.1269</b>	<b>1.7987</b>		<b>6,000.8994</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	1.3416	2.2515	19.2298	2.8400e-003	0.0347	0.0167	0.0514	9.6700e-003	0.0153	0.0249		254.7059	254.7059	5.1900e-003		254.8149
Vendor	0.0985	1.3826	1.2169	4.4300e-003	0.1436	0.0443	0.1879	0.0407	0.0408	0.0815		445.5663	445.5663	2.1700e-003		445.6119
Worker	0.1660	0.4528	3.8721	6.5900e-003	0.6080	3.8400e-003	0.6118	0.1612	3.5000e-003	0.1647		544.9602	544.9602	0.0365		545.7266
<b>Total</b>	<b>1.6061</b>	<b>4.0869</b>	<b>24.3188</b>	<b>0.0139</b>	<b>0.7864</b>	<b>0.0648</b>	<b>0.8512</b>	<b>0.2116</b>	<b>0.0595</b>	<b>0.2711</b>		<b>1,245.2324</b>	<b>1,245.2324</b>	<b>0.0439</b>		<b>1,246.1535</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	lb/day										lb/day					
Fugitive Dust					5.9353	0.0000	5.9353	3.0365	0.0000	3.0365			0.0000			0.0000

Off-Road	6.8808	73.3353	50.1118	0.0573		4.0605	4.0605		3.7356	3.7356	0.0000	5,963.1268	5,963.1268	1.7987		6,000.8993
<b>Total</b>	<b>6.8808</b>	<b>73.3353</b>	<b>50.1118</b>	<b>0.0573</b>	<b>5.9353</b>	<b>4.0605</b>	<b>9.9957</b>	<b>3.0365</b>	<b>3.7356</b>	<b>6.7721</b>	<b>0.0000</b>	<b>5,963.1268</b>	<b>5,963.1268</b>	<b>1.7987</b>		<b>6,000.8993</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	1.3416	2.2515	19.2298	2.8400e-003	0.0347	0.0167	0.0514	9.6700e-003	0.0153	0.0249		254.7059	254.7059	5.1900e-003		254.8149
Vendor	0.0985	1.3826	1.2169	4.4300e-003	0.1436	0.0443	0.1879	0.0407	0.0408	0.0815		445.5663	445.5663	2.1700e-003		445.6119
Worker	0.1660	0.4528	3.8721	6.5900e-003	0.6080	3.8400e-003	0.6118	0.1612	3.5000e-003	0.1647		544.9602	544.9602	0.0365		545.7266
<b>Total</b>	<b>1.6061</b>	<b>4.0869</b>	<b>24.3188</b>	<b>0.0139</b>	<b>0.7864</b>	<b>0.0648</b>	<b>0.8512</b>	<b>0.2116</b>	<b>0.0595</b>	<b>0.2711</b>		<b>1,245.2324</b>	<b>1,245.2324</b>	<b>0.0439</b>		<b>1,246.1535</b>

**Path 46 Construction - Concurrent Grading**  
**San Bernardino-Mojave Desert County, Summer**

**1.0 Project Characteristics**

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**1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Parking	0.20	User Defined Unit	0.20	0.00	0

**1.2 Other Project Characteristics**

<b>Urbanization</b>	Rural	<b>Wind Speed (m/s)</b>	2.6	<b>Precipitation Freq (Days)</b>	32
<b>Climate Zone</b>	10			<b>Operational Year</b>	2018
<b>Utility Company</b>	Los Angeles Department of Water & Power				
<b>CO2 Intensity (lb/MW hr)</b>	1227.89	<b>CH4 Intensity (lb/MW hr)</b>	0.029	<b>N2O Intensity (lb/MW hr)</b>	0.006

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

Project Characteristics - Concurrent grading activities at 2 locations only; no increase/change in routine maintenance operations

Land Use - Assuming 0.1 ac for each daily grading site

Construction Phase - Two simultaneous grading sites

Off-road Equipment - Equipment list provided by applicant

Off-road Equipment - Equipment list provided by applicant for concurrent grading sites

Trips and VMT - Worker trips from applicant. Vendor trips are water trucks. Increased default trip lengths to 40 miles for rural location of sites. Dump trucks (assuming 16CY) would move spoils on-site

Grading - Disturbed daily area based on CalEEMod default. 1,080 + 731 CY spoils based on worse-case grading sites

Consumer Products - Construction emission modeling only

Landscape Equipment - Construction emission modeling only

Energy Use -

Construction Off-road Equipment Mitigation - Water exposed area 2x per day

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	2.00	3.00
tblGrading	MaterialExported	0.00	1,811.00
tblLandUse	LotAcreage	0.00	0.20
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	PhaseName		Grading
tblOffRoadEquipment	PhaseName		Grading
tblOffRoadEquipment	PhaseName		Grading
tblOffRoadEquipment	UsageHours	1.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblProjectCharacteristics	OperationalYear	2014	2018
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	HaulingTripLength	20.00	0.50
tblTripsAndVMT	HaulingTripNumber	226.00	227.00
tblTripsAndVMT	VendorTripLength	6.60	40.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	WorkerTripLength	16.80	40.00
tblTripsAndVMT	WorkerTripNumber	30.00	20.00

## 2.0 Emissions Summary

### 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					
2016	8.3673	77.3300	72.6414	0.0723	13.9759	4.1245	18.1003	6.9594	3.7944	10.7538	0.0000	7,298.9093	7,298.9093	1.8420	0.0000	7,337.5905
<b>Total</b>	<b>8.3673</b>	<b>77.3300</b>	<b>72.6414</b>	<b>0.0723</b>	<b>13.9759</b>	<b>4.1245</b>	<b>18.1003</b>	<b>6.9594</b>	<b>3.7944</b>	<b>10.7538</b>	<b>0.0000</b>	<b>7,298.9093</b>	<b>7,298.9093</b>	<b>1.8420</b>	<b>0.0000</b>	<b>7,337.5905</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					
2016	8.3673	77.3300	72.6414	0.0723	6.7216	4.1245	10.8461	3.2481	3.7944	7.0425	0.0000	7,298.9093	7,298.9093	1.8420	0.0000	7,337.5905
<b>Total</b>	<b>8.3673</b>	<b>77.3300</b>	<b>72.6414</b>	<b>0.0723</b>	<b>6.7216</b>	<b>4.1245</b>	<b>10.8461</b>	<b>3.2481</b>	<b>3.7944</b>	<b>7.0425</b>	<b>0.0000</b>	<b>7,298.9093</b>	<b>7,298.9093</b>	<b>1.8420</b>	<b>0.0000</b>	<b>7,337.5905</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>51.91</b>	<b>0.00</b>	<b>40.08</b>	<b>53.33</b>	<b>0.00</b>	<b>34.51</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	Grading	Grading	7/1/2016	7/5/2016	5	3	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 3

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
Grading	Concrete/Industrial Saws	0	8.00	81	0.73
Grading	Excavators	2	8.00	162	0.38
Grading	Graders	2	8.00	174	0.41
Grading	Rubber Tired Dozers	2	8.00	255	0.40
Grading	Skid Steer Loaders	2	8.00	64	0.37
Grading	Tractors/Loaders/Backhoes	4	8.00	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
Grading	12	20.00	4.00	227.00	40.00	40.00	0.50	LD_Mix	HDT_Mix	HHDT

### 3.1 Mitigation Measures Construction

Water Exposed Area

### 3.2 Grading - 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	lb/day										lb/day					
Fugitive Dust					13.1895	0.0000	13.1895	6.7478	0.0000	6.7478			0.0000			0.0000
Off-Road	6.8808	73.3353	50.1118	0.0573		4.0605	4.0605		3.7356	3.7356		5,963.1269	5,963.1269	1.7987		6,000.8994
<b>Total</b>	<b>6.8808</b>	<b>73.3353</b>	<b>50.1118</b>	<b>0.0573</b>	<b>13.1895</b>	<b>4.0605</b>	<b>17.2500</b>	<b>6.7478</b>	<b>3.7356</b>	<b>10.4834</b>		<b>5,963.1269</b>	<b>5,963.1269</b>	<b>1.7987</b>		<b>6,000.8994</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	1.2023	2.2424	16.3880	2.9300e-003	0.0347	0.0160	0.0507	9.6700e-003	0.0146	0.0243		268.0849	268.0849	4.6300e-003		268.1820
Vendor	0.0941	1.3181	1.1324	4.4400e-003	0.1436	0.0442	0.1879	0.0407	0.0407	0.0814		446.2968	446.2968	2.1500e-003		446.3419
Worker	0.1902	0.4342	5.0093	7.5400e-003	0.6080	3.8400e-003	0.6118	0.1612	3.5000e-003	0.1647		621.4008	621.4008	0.0365		622.1673
<b>Total</b>	<b>1.4865</b>	<b>3.9947</b>	<b>22.5296</b>	<b>0.0149</b>	<b>0.7864</b>	<b>0.0640</b>	<b>0.8504</b>	<b>0.2116</b>	<b>0.0588</b>	<b>0.2704</b>		<b>1,335.7825</b>	<b>1,335.7825</b>	<b>0.0433</b>		<b>1,336.6912</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	lb/day										lb/day					
Fugitive Dust					5.9353	0.0000	5.9353	3.0365	0.0000	3.0365			0.0000			0.0000

Off-Road	6.8808	73.3353	50.1118	0.0573		4.0605	4.0605		3.7356	3.7356	0.0000	5,963.1268	5,963.1268	1.7987		6,000.8993
<b>Total</b>	<b>6.8808</b>	<b>73.3353</b>	<b>50.1118</b>	<b>0.0573</b>	<b>5.9353</b>	<b>4.0605</b>	<b>9.9957</b>	<b>3.0365</b>	<b>3.7356</b>	<b>6.7721</b>	<b>0.0000</b>	<b>5,963.1268</b>	<b>5,963.1268</b>	<b>1.7987</b>		<b>6,000.8993</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	1.2023	2.2424	16.3880	2.9300e-003	0.0347	0.0160	0.0507	9.6700e-003	0.0146	0.0243		268.0849	268.0849	4.6300e-003		268.1820
Vendor	0.0941	1.3181	1.1324	4.4400e-003	0.1436	0.0442	0.1879	0.0407	0.0407	0.0814		446.2968	446.2968	2.1500e-003		446.3419
Worker	0.1902	0.4342	5.0093	7.5400e-003	0.6080	3.8400e-003	0.6118	0.1612	3.5000e-003	0.1647		621.4008	621.4008	0.0365		622.1673
<b>Total</b>	<b>1.4865</b>	<b>3.9947</b>	<b>22.5296</b>	<b>0.0149</b>	<b>0.7864</b>	<b>0.0640</b>	<b>0.8504</b>	<b>0.2116</b>	<b>0.0588</b>	<b>0.2704</b>		<b>1,335.7825</b>	<b>1,335.7825</b>	<b>0.0433</b>		<b>1,336.6912</b>

**Path 46 Construction - Concurrent Grading**  
**San Bernardino-Mojave Desert County, Mitigation Report**

**Construction Mitigation Summary**

Phase	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Grading	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

**OFFROAD Equipment Mitigation**

Equipment Type	Fuel Type	Tier	Number Mitigated	Total Number of Equipment	DPF	Oxidation Catalyst
Concrete/Industrial Saws	Diesel	No Change	0	0	No Change	0.00
Excavators	Diesel	No Change	0	2	No Change	0.00
Graders	Diesel	No Change	0	2	No Change	0.00
Rubber Tired Dozers	Diesel	No Change	0	2	No Change	0.00
Skid Steer Loaders	Diesel	No Change	0	2	No Change	0.00
Tractors/Loaders/Backhoes	Diesel	No Change	0	4	No Change	0.00

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Unmitigated tons/yr						Unmitigated mt/yr						
Concrete/Industrial Saws	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Excavators	1.16000E-003	1.32900E-002	1.02900E-002	2.00000E-005	6.50000E-004	6.00000E-004	0.00000E+000	1.49663E+000	1.49663E+000	4.50000E-004	0.00000E+000	1.50611E+000
Graders	3.06000E-003	3.11400E-002	1.47800E-002	2.00000E-005	1.75000E-003	1.61000E-003	0.00000E+000	1.76740E+000	1.76740E+000	5.30000E-004	0.00000E+000	1.77859E+000

Rubber Tired Dozers	3.71000E-003	4.16100E-002	3.14500E-002	3.00000E-005	1.94000E-003	1.78000E-003	0.00000E+000	2.51317E+000	2.51317E+000	7.60000E-004	0.00000E+000	2.52909E+000
Skid Steer Loaders	3.40000E-004	4.43000E-003	4.17000E-003	1.00000E-005	2.50000E-004	2.30000E-004	0.00000E+000	5.75480E-001	5.75480E-001	1.70000E-004	0.00000E+000	5.79120E-001
Tractors/Loaders/Backhoes	2.04000E-003	1.95300E-002	1.44800E-002	2.00000E-005	1.50000E-003	1.38000E-003	0.00000E+000	1.76181E+000	1.76181E+000	5.30000E-004	0.00000E+000	1.77297E+000

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Mitigated tons/yr						Mitigated mt/yr						
Concrete/Industrial Saws	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Excavators	1.16000E-003	1.32900E-002	1.02900E-002	2.00000E-005	6.50000E-004	6.00000E-004	0.00000E+000	1.49663E+000	1.49663E+000	4.50000E-004	0.00000E+000	1.50611E+000
Graders	3.06000E-003	3.11400E-002	1.47800E-002	2.00000E-005	1.75000E-003	1.61000E-003	0.00000E+000	1.76739E+000	1.76739E+000	5.30000E-004	0.00000E+000	1.77859E+000
Rubber Tired Dozers	3.71000E-003	4.16100E-002	3.14500E-002	3.00000E-005	1.94000E-003	1.78000E-003	0.00000E+000	2.51317E+000	2.51317E+000	7.60000E-004	0.00000E+000	2.52909E+000
Skid Steer Loaders	3.40000E-004	4.43000E-003	4.17000E-003	1.00000E-005	2.50000E-004	2.30000E-004	0.00000E+000	5.75480E-001	5.75480E-001	1.70000E-004	0.00000E+000	5.79120E-001
Tractors/Loaders/Backhoes	2.04000E-003	1.95300E-002	1.44800E-002	2.00000E-005	1.50000E-003	1.38000E-003	0.00000E+000	1.76181E+000	1.76181E+000	5.30000E-004	0.00000E+000	1.77297E+000

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Concrete/Industrial Saws	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Excavators	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Graders	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	5.65803E-006	5.65803E-006	0.00000E+000	0.00000E+000	0.00000E+000
Rubber Tired Dozers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Skid Steer Loaders	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Tractors/Loaders/Backhoes	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000

### Fugitive Dust Mitigation

Yes/No	Mitigation Measure	Mitigation Input	Mitigation Input	Mitigation Input
No	Soil Stabilizer for unpaved Roads	PM10 Reduction	0.00	PM2.5 Reduction
No	Replace Ground Cover of Area Disturbed	PM10 Reduction	0.00	PM2.5 Reduction

Yes	Water Exposed Area	PM10 Reduction	55.00	PM2.5 Reduction	55.00	Frequency (per day)	2.00
No	Unpaved Road Mitigation	Moisture Content %	0.00	Vehicle Speed (mph)	0.00		
No	Clean Paved Road	% PM Reduction	0.00				

Phase	Source	Unmitigated		Mitigated		Percent Reduction	
		PM10	PM2.5	PM10	PM2.5	PM10	PM2.5
Grading	Fugitive Dust	0.02	0.01	0.01	0.00	0.55	0.55
Grading	Roads	0.00	0.00	0.00	0.00	0.00	0.00

# APPENDIX F

## Archeology Resource Inventory





*Confidential Appendix F is on file at the Los Angeles Department of Water and Power, Environmental Affairs, 111 North Hope Street, Room 1044, Los Angeles, California 90012.*

*To view this document, please contact Brian Gonzalez at (213) 367-2612.*



# APPENDIX G

## Historic Resource Assessment Report



*Confidential Appendix G is on file at the Los Angeles Department of Water and Power, Environmental Affairs, 111 North Hope Street, Room 1044, Los Angeles, California 90012.*

*To view this document, please contact Brian Gonzalez at (213) 367-2612.*



# APPENDIX H

## Paleontological Resources Survey Report





*Confidential Appendix H is on file at the Los Angeles Department of Water and Power, Environmental Affairs, 111 North Hope Street, Room 1044, Los Angeles, California 90012.*

*To view this document, please contact Brian Gonzalez at (213) 367-2612.*

