

**Appendix D**  
**TECHNICAL AIR QUALITY**

## Operational Emissions Calculations

EOF Current Operations (from Line 96 Modification Project Final EIR, Appendix E, Page E-11)										
NOx	ROC	CO	SO2	PM10	NOx	ROC	CO	SO2	PM10	
lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	
104	517	569	49	18	10	91	64	5.2	1.8	
Increased EOF Operations for Processing PRC 421 Oil (3.75% increase)										
NOx	ROC	CO	SO2	PM10	NOx	ROC	CO	SO2	PM10	
lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	
3.90	19.39	21.34	1.84	0.68	0.38	3.41	2.40	0.20	0.07	

## Fugitive Emissions from PRC 421

Fugitive Components	TOG ton/yr <sup>1</sup>	ROG ton/yr <sup>1</sup>	#comp <sup>1</sup>	TOG/comp	ROG/comp	#comp <sup>2</sup>	TOG ton/yr	TOG lb/day	ROG ton/yr	ROG lb/day	ARB "Exen	ARB Exempt lb/day
Gas/Light Liq: Connections	25.01	16.41	18019	0.001	0.001	12	0.017	0.091	0.011	0.060	0.006	0.031
Gas/Light Liq: Valves	72.72	47.71	3253	0.022	0.015	17	0.380	2.082	0.249	1.366	0.131	0.716
Gas/Lt Liquid: Press Relief Valves	0.58	0.38	15	0.039	0.025	2	0.077	0.424	0.051	0.278	0.027	0.146
Oil: Connections	3.14	2.06	2466	0.001	0.001	5	0.006	0.035	0.004	0.023	0.002	0.012
Oil: Valves	3.72	2.44	471	0.008	0.005	13	0.103	0.563	0.067	0.369	0.035	0.194
						<b>totals</b>	<b>0.583</b>	3.195	<b>0.382</b>	2.096	0.201	1.099

equivalent to 8 tons/year CO2e

1 - total emissions, based on component numbers reported by EOF in 2005 - SBCAPCD

2 - approximate component count from proposed P&ID drawing 2488A-F-028 & 029

## GHG Emissions

	Metric tons CO2e/year
Line 96 Transport Overall Electricity Use	4369
PRC 421 Fraction of Line 96 Transport	<b>157.3</b>
Fugitive PRC 421 Emissions	<b>8</b>
Line 96 Fugitive Emissions	58.3
Project's Share of Line 96 Fugitive Emissions	<b>2.1</b>
Total	<b>167.4</b>

Electricity factor for Southern California Edison from the California Public Utilities Commission GHG Calculator:

0.31 MT CO2e/MWh

GHG emissions from pipeline transportation were estimated based on the projected GHG emissions identified in the Line 96 Modification Project EIR (Santa Barbara County 2011), and correspond to pipeline transportation to the tie-in with the PPLP Coastal Pipeline. The number presented is the Project share of pipeline transport at the average monthly output expected during the highest production rates at the commencement of production (i.e., 150 BOPD for a maximum of 3.75 percent of total transport in the first year).

**PRC-421-1 (2)**  
**Santa Barbara-South of Santa Ynez Range County, Summer**

**1.0 Project Characteristics**

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**1.1 Land Usage**

Land Uses	Size	Metric
User Defined Recreational	0	User Defined Unit

**1.2 Other Project Characteristics**

<b>Urbanization</b>	Urban	<b>Wind Speed (m/s)</b>		<b>Utility Company</b>
<b>Climate Zone</b>	8		2.7	
		<b>Precipitation Freq (Days)</b>		
			37	

**1.3 User Entered Comments**

- Project Characteristics -
- Land Use - -estimated area of trenching and pier work
- Construction Phase - -90 day work schedule as described
- Off-road Equipment - -removing app 400cubic yards
- Off-road Equipment - -based on equipment list, HP, and load factors provided
- Off-road Equipment - -no grading
- Off-road Equipment - -listed in site prep phase includes only repairs
- Off-road Equipment - -no paving

Off-road Equipment - -no coating

Trips and VMT - -assuming 2 trips per day worker and vendor

On-road Fugitive Dust - -project is on sandy beach

Architectural Coating - -no coating

Vehicle Trips - -

Demolition -

## 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					
2013	18.25	141.40	75.17	0.19	4.00	6.96	10.96	0.40	6.96	7.36	0.00	18,724.62	0.00	1.63	0.00	18,758.88
2014	0.71	4.40	3.82	0.01	7.16	0.35	7.51	0.70	0.35	1.05	0.00	505.89	0.00	0.06	0.00	507.19
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

#### 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					
2013	18.25	141.40	75.17	0.19	0.00	6.96	6.96	0.00	6.96	6.96	0.00	18,724.62	0.00	1.63	0.00	18,758.88
2014	0.71	4.40	3.82	0.01	0.15	0.35	0.50	0.00	0.35	0.35	0.00	505.89	0.00	0.06	0.00	507.19

Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
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## 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	5.83	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
<b>Total</b>	<b>5.83</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>

### 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	5.83	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
<b>Total</b>	<b>5.83</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

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#### 3.1 Mitigation Measures Construction

#### 3.6 Site Preparation - 2013

##### 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					0.00	0.00	0.00	0.00	0.00	0.00							0.00
Off-Road	18.22	141.32	74.93	0.19		6.95	6.95		6.95	6.95		18,717.40		1.63			18,751.64
<b>Total</b>	<b>18.22</b>	<b>141.32</b>	<b>74.93</b>	<b>0.19</b>	<b>0.00</b>	<b>6.95</b>	<b>6.95</b>	<b>0.00</b>	<b>6.95</b>	<b>6.95</b>		<b>18,717.40</b>		<b>1.63</b>			<b>18,751.64</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	0.00	0.00	0.00	0.00	1.00	0.00	1.00	0.10	0.00	0.10		0.06		0.00		0.06
Vendor	0.02	0.08	0.20	0.00	1.50	0.00	1.50	0.15	0.00	0.15		5.85		0.00		5.87
Worker	0.01	0.00	0.04	0.00	1.50	0.00	1.50	0.15	0.00	0.15		1.31		0.00		1.31
<b>Total</b>	<b>0.03</b>	<b>0.08</b>	<b>0.24</b>	<b>0.00</b>	<b>4.00</b>	<b>0.00</b>	<b>4.00</b>	<b>0.40</b>	<b>0.00</b>	<b>0.40</b>		<b>7.22</b>		<b>0.00</b>		<b>7.24</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					0.00	0.00	0.00	0.00	0.00	0.00						0.00
Off-Road	18.22	141.32	74.93	0.19		6.95	6.95		6.95	6.95	0.00	18,717.40		1.63		18,751.64
<b>Total</b>	<b>18.22</b>	<b>141.32</b>	<b>74.93</b>	<b>0.19</b>	<b>0.00</b>	<b>6.95</b>	<b>6.95</b>	<b>0.00</b>	<b>6.95</b>	<b>6.95</b>	<b>0.00</b>	<b>18,717.40</b>		<b>1.63</b>		<b>18,751.64</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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.06		0.00		0.06
Vendor	0.02	0.08	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00		5.85		0.00		5.87

Worker	0.01	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.31		0.00		1.31
<b>Total</b>	<b>0.03</b>	<b>0.08</b>	<b>0.24</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>7.22</b>		<b>0.00</b>		<b>7.24</b>

### 3.7 Demolition - 2014

#### 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					0.15	0.00	0.15	0.00	0.00	0.00							0.00
Off-Road	0.67	4.26	3.45	0.01		0.35	0.35		0.35	0.35		495.19		0.06			496.45
<b>Total</b>	<b>0.67</b>	<b>4.26</b>	<b>3.45</b>	<b>0.01</b>	<b>0.15</b>	<b>0.35</b>	<b>0.50</b>	<b>0.00</b>	<b>0.35</b>	<b>0.35</b>		<b>495.19</b>		<b>0.06</b>			<b>496.45</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	0.02	0.09	0.21	0.00	5.00	0.00	5.01	0.50	0.00	0.50		5.85		0.00			5.87
Vendor	0.01	0.05	0.12	0.00	1.00	0.00	1.00	0.10	0.00	0.10		4.00		0.00			4.01
Worker	0.00	0.00	0.03	0.00	1.00	0.00	1.00	0.10	0.00	0.10		0.85		0.00			0.86
<b>Total</b>	<b>0.03</b>	<b>0.14</b>	<b>0.36</b>	<b>0.00</b>	<b>7.00</b>	<b>0.00</b>	<b>7.01</b>	<b>0.70</b>	<b>0.00</b>	<b>0.70</b>		<b>10.70</b>		<b>0.00</b>			<b>10.74</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					0.15	0.00	0.15	0.00	0.00	0.00						0.00
Off-Road	0.67	4.26	3.45	0.01		0.35	0.35		0.35	0.35	0.00	495.19		0.06		496.45
<b>Total</b>	<b>0.67</b>	<b>4.26</b>	<b>3.45</b>	<b>0.01</b>	<b>0.15</b>	<b>0.35</b>	<b>0.50</b>	<b>0.00</b>	<b>0.35</b>	<b>0.35</b>	<b>0.00</b>	<b>495.19</b>		<b>0.06</b>		<b>496.45</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	0.02	0.09	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00		5.85		0.00		5.87
Vendor	0.01	0.05	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00		4.00		0.00		4.01
Worker	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.85		0.00		0.86
<b>Total</b>	<b>0.03</b>	<b>0.14</b>	<b>0.36</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>10.70</b>		<b>0.00</b>		<b>10.74</b>

**4.0 Mobile Detail**

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**4.1 Mitigation Measures Mobile**

	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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Unmitigated	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

#### 4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Recreational	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

#### 4.3 Trip Type Information

Land Use	Miles			Trip %		
	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
User Defined Recreational	0.00	0.00	0.00	0.00	0.00	0.00

### 5.0 Energy Detail

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#### 5.1 Mitigation Measures Energy

	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					
NaturalGas Mitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
NaturalGas Unmitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
<b>Total</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>

## 5.2 Energy by Land Use - NaturalGas

### Unmitigated

	NaturalGas Use	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	CC
Land Use	kBTU	lb/day										lb/day					
User Defined Recreational	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.0
<b>Total</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>0.0</b>

### Mitigated

	NaturalGas Use	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	CC
Land Use	kBTU	lb/day										lb/day					
User Defined Recreational	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.0
<b>Total</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>0.0</b>

## 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	5.83	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Unmitigated	5.83	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
<b>Total</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>

### 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					
Architectural Coating	1.33					0.00	0.00		0.00	0.00						0.00
Consumer Products	4.49					0.00	0.00		0.00	0.00						0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
<b>Total</b>	<b>5.82</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>

**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	1.33					0.00	0.00		0.00	0.00							0.00
Consumer Products	4.49					0.00	0.00		0.00	0.00							0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00			0.00
<b>Total</b>	<b>5.82</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>

**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**