

### 3.0 Construction Detail

#### Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Trenching	Trenching	8/1/2015	8/25/2015	5	17	

#### OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Trenching	Tractors/Loaders/Backhoes	1	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
Trenching	1	4.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

### 3.1 Mitigation Measures Construction

Water Exposed Area

### 3.2 Trenching - 2015

#### Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3589	3.4182	2.4158	3.1000e-003		0.2676	0.2676		0.2461	0.2461		326.1600	326.1600	0.0974		328.2048
<b>Total</b>	<b>0.3589</b>	<b>3.4182</b>	<b>2.4158</b>	<b>3.1000e-003</b>		<b>0.2676</b>	<b>0.2676</b>		<b>0.2461</b>	<b>0.2461</b>		<b>326.1600</b>	<b>326.1600</b>	<b>0.0974</b>		<b>328.2048</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	0.0374	0.3918	0.4253	8.4000e-004	0.0252	7.8000e-003	0.0330	7.1900e-003	7.1700e-003	0.0144		84.7713	84.7713	6.3000e-004			84.7846
Worker	0.0163	0.0215	0.2181	4.9000e-004	0.0447	2.9000e-004	0.0450	0.0119	2.7000e-004	0.0121		42.0974	42.0974	2.1000e-003			42.1414
<b>Total</b>	<b>0.0537</b>	<b>0.4133</b>	<b>0.6434</b>	<b>1.3300e-003</b>	<b>0.0699</b>	<b>8.0900e-003</b>	<b>0.0780</b>	<b>0.0191</b>	<b>7.4400e-003</b>	<b>0.0265</b>		<b>126.8687</b>	<b>126.8687</b>	<b>2.7300e-003</b>			<b>126.9260</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	0.3589	3.4182	2.4158	3.1000e-003		0.2676	0.2676		0.2461	0.2461	0.0000	326.1600	326.1600	0.0974			328.2048
<b>Total</b>	<b>0.3589</b>	<b>3.4182</b>	<b>2.4158</b>	<b>3.1000e-003</b>		<b>0.2676</b>	<b>0.2676</b>		<b>0.2461</b>	<b>0.2461</b>	<b>0.0000</b>	<b>326.1600</b>	<b>326.1600</b>	<b>0.0974</b>			<b>328.2048</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	0.0374	0.3918	0.4253	8.4000e-004	0.0252	7.8000e-003	0.0330	7.1900e-003	7.1700e-003	0.0144		84.7713	84.7713	6.3000e-004			84.7846
Worker	0.0163	0.0215	0.2181	4.9000e-004	0.0447	2.9000e-004	0.0450	0.0119	2.7000e-004	0.0121		42.0974	42.0974	2.1000e-003			42.1414
<b>Total</b>	<b>0.0537</b>	<b>0.4133</b>	<b>0.6434</b>	<b>1.3300e-003</b>	<b>0.0699</b>	<b>8.0900e-003</b>	<b>0.0780</b>	<b>0.0191</b>	<b>7.4400e-003</b>	<b>0.0265</b>		<b>126.8687</b>	<b>126.8687</b>	<b>2.7300e-003</b>			<b>126.9260</b>

**RCFCD North Norco Channel Project - Phase 1 Utility Relocation**  
**Riverside-South Coast 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 Industrial	307.00	User Defined Unit	0.10	307.00	0

**1.2 Other Project Characteristics**

<b>Urbanization</b>	Urban	<b>Wind Speed (m/s)</b>	2.4	<b>Precipitation Freq (Days)</b>	28
<b>Climate Zone</b>	10			<b>Operational Year</b>	2016
<b>Utility Company</b>	Southern California Edison				
<b>CO2 Intensity (lb/MWhr)</b>	630.89	<b>CH4 Intensity (lb/MWhr)</b>	0.029	<b>N2O Intensity (lb/MWhr)</b>	0.006

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

Land Use - Estimated total utility length: 307 feet

## 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					
2015	0.4111	3.8202	3.0459	4.4800e-003	0.0699	0.2756	0.3454	0.0191	0.2535	0.2726	0.0000	457.7287	457.7287	0.1001	0.0000	459.8304
<b>Total</b>	<b>0.4111</b>	<b>3.8202</b>	<b>3.0459</b>	<b>4.4800e-003</b>	<b>0.0699</b>	<b>0.2756</b>	<b>0.3454</b>	<b>0.0191</b>	<b>0.2535</b>	<b>0.2726</b>	<b>0.0000</b>	<b>457.7287</b>	<b>457.7287</b>	<b>0.1001</b>	<b>0.0000</b>	<b>459.8304</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					
2015	0.4111	3.8202	3.0459	4.4800e-003	0.0699	0.2756	0.3454	0.0191	0.2535	0.2726	0.0000	457.7287	457.7287	0.1001	0.0000	459.8304
<b>Total</b>	<b>0.4111</b>	<b>3.8202</b>	<b>3.0459</b>	<b>4.4800e-003</b>	<b>0.0699</b>	<b>0.2756</b>	<b>0.3454</b>	<b>0.0191</b>	<b>0.2535</b>	<b>0.2726</b>	<b>0.0000</b>	<b>457.7287</b>	<b>457.7287</b>	<b>0.1001</b>	<b>0.0000</b>	<b>459.8304</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
Percent Reduction	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	0.00	0.00	0.00

### 3.0 Construction Detail

#### Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Trenching	Trenching	8/1/2015	8/25/2015	5	17	

#### OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Trenching	Tractors/Loaders/Backhoes	1	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
Trenching	1	4.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

### 3.1 Mitigation Measures Construction

Water Exposed Area

### 3.2 Trenching - 2015

#### Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3589	3.4182	2.4158	3.1000e-003		0.2676	0.2676		0.2461	0.2461		326.1600	326.1600	0.0974		328.2048
<b>Total</b>	<b>0.3589</b>	<b>3.4182</b>	<b>2.4158</b>	<b>3.1000e-003</b>		<b>0.2676</b>	<b>0.2676</b>		<b>0.2461</b>	<b>0.2461</b>		<b>326.1600</b>	<b>326.1600</b>	<b>0.0974</b>		<b>328.2048</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	0.0351	0.3818	0.3777	8.4000e-004	0.0252	7.7100e-003	0.0329	7.1900e-003	7.0900e-003	0.0143		85.5075	85.5075	6.2000e-004		85.5204
Worker	0.0170	0.0202	0.2524	5.4000e-004	0.0447	2.9000e-004	0.0450	0.0119	2.7000e-004	0.0121		46.0613	46.0613	2.1000e-003		46.1053
<b>Total</b>	<b>0.0521</b>	<b>0.4020</b>	<b>0.6301</b>	<b>1.3800e-003</b>	<b>0.0699</b>	<b>8.0000e-003</b>	<b>0.0779</b>	<b>0.0191</b>	<b>7.3600e-003</b>	<b>0.0264</b>		<b>131.5687</b>	<b>131.5687</b>	<b>2.7200e-003</b>		<b>131.6256</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	0.3589	3.4182	2.4158	3.1000e-003		0.2676	0.2676		0.2461	0.2461	0.0000	326.1600	326.1600	0.0974		328.2048
<b>Total</b>	<b>0.3589</b>	<b>3.4182</b>	<b>2.4158</b>	<b>3.1000e-003</b>		<b>0.2676</b>	<b>0.2676</b>		<b>0.2461</b>	<b>0.2461</b>	<b>0.0000</b>	<b>326.1600</b>	<b>326.1600</b>	<b>0.0974</b>		<b>328.2048</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	0.0351	0.3818	0.3777	8.4000e-004	0.0252	7.7100e-003	0.0329	7.1900e-003	7.0900e-003	0.0143		85.5075	85.5075	6.2000e-004		85.5204
Worker	0.0170	0.0202	0.2524	5.4000e-004	0.0447	2.9000e-004	0.0450	0.0119	2.7000e-004	0.0121		46.0613	46.0613	2.1000e-003		46.1053
<b>Total</b>	<b>0.0521</b>	<b>0.4020</b>	<b>0.6301</b>	<b>1.3800e-003</b>	<b>0.0699</b>	<b>8.0000e-003</b>	<b>0.0779</b>	<b>0.0191</b>	<b>7.3600e-003</b>	<b>0.0264</b>		<b>131.5687</b>	<b>131.5687</b>	<b>2.7200e-003</b>		<b>131.6256</b>

**RCFCD North Norco Channel Project - Line N-2, Line NC, and Lateral NC-1**  
**Riverside-South Coast 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 Industrial	109.50	User Defined Unit	4.37	109,500.00	0
Other Asphalt Surfaces	1.65	Acre	1.65	71,874.00	0

**1.2 Other Project Characteristics**

<b>Urbanization</b>	Urban	<b>Wind Speed (m/s)</b>	2.4	<b>Precipitation Freq (Days)</b>	28
<b>Climate Zone</b>	10			<b>Operational Year</b>	2017
<b>Utility Company</b>	Southern California Edison				
<b>CO2 Intensity (lb/MW hr)</b>	630.89	<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**

Land Use - 2,175 linear feet. 4.37 acres.

## 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	2.0213	21.9409	15.6253	0.0330	0.8375	0.9579	1.7954	0.2173	0.8835	1.1008	0.0000	3,255.8720	3,255.8720	0.6433	0.0000	3,269.3809
2017	1.8915	20.2039	15.2446	0.0330	0.7210	0.8779	1.5989	0.1887	0.8099	0.9986	0.0000	3,195.5811	3,195.5811	0.6415	0.0000	3,209.0517
<b>Total</b>	<b>3.9128</b>	<b>42.1448</b>	<b>30.8699</b>	<b>0.0660</b>	<b>1.5585</b>	<b>1.8358</b>	<b>3.3943</b>	<b>0.4059</b>	<b>1.6934</b>	<b>2.0993</b>	<b>0.0000</b>	<b>6,451.4531</b>	<b>6,451.4531</b>	<b>1.2847</b>	<b>0.0000</b>	<b>6,478.4326</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	2.0213	21.9409	15.6253	0.0330	0.8223	0.9579	1.7802	0.2154	0.8835	1.0989	0.0000	3,255.8720	3,255.8720	0.6433	0.0000	3,269.3809
2017	1.8915	20.2039	15.2446	0.0330	0.7058	0.8779	1.5837	0.1868	0.8099	0.9967	0.0000	3,195.5811	3,195.5811	0.6415	0.0000	3,209.0517
<b>Total</b>	<b>3.9128</b>	<b>42.1448</b>	<b>30.8699</b>	<b>0.0660</b>	<b>1.5281</b>	<b>1.8358</b>	<b>3.3639</b>	<b>0.4022</b>	<b>1.6934</b>	<b>2.0956</b>	<b>0.0000</b>	<b>6,451.4531</b>	<b>6,451.4531</b>	<b>1.2847</b>	<b>0.0000</b>	<b>6,478.4326</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>1.95</b>	<b>0.00</b>	<b>0.90</b>	<b>0.91</b>	<b>0.00</b>	<b>0.18</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 and Construction	Grading	11/1/2016	4/14/2017	5	119	
2	Paving	Paving	4/15/2017	4/28/2017	5	10	

#### OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading and Construction	Excavators	2	8.00	162	0.38
Grading and Construction	Rubber Tired Loaders	1	8.00	199	0.36
Grading and Construction	Signal Boards	2	8.00	6	0.82
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Paving	Signal Boards	2	8.00	6	0.82
Grading and Construction	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Paving	Pavers	1	8.00	125	0.42
Paving	Rollers	1	8.00	80	0.38

#### Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading and Construction	6	40.00	8.00	938.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	30.00	6.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

### 3.1 Mitigation Measures Construction

Water Exposed Area

### 3.2 Grading and 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	lb/day										lb/day					
Fugitive Dust					0.0249	0.0000	0.0249	3.0400e-003	0.0000	3.0400e-003			0.0000			0.0000
Off-Road	1.6860	18.8917	11.4047	0.0208		0.9037	0.9037		0.8336	0.8336		2,118.0547	2,118.0547	0.6194		2,131.0615
<b>Total</b>	<b>1.6860</b>	<b>18.8917</b>	<b>11.4047</b>	<b>0.0208</b>	<b>0.0249</b>	<b>0.9037</b>	<b>0.9286</b>	<b>3.0400e-003</b>	<b>0.8336</b>	<b>0.8367</b>		<b>2,118.0547</b>	<b>2,118.0547</b>	<b>0.6194</b>		<b>2,131.0615</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	0.1229	2.1683	1.4667	5.6000e-003	0.3151	0.0383	0.3534	0.0813	0.0352	0.1165		564.6612	564.6612	3.6300e-003		564.7374
Vendor	0.0663	0.6882	0.7993	1.6700e-003	0.0503	0.0132	0.0635	0.0144	0.0121	0.0265		167.5613	167.5613	1.1400e-003		167.5852
Worker	0.1462	0.1928	1.9546	4.9000e-003	0.4471	2.8000e-003	0.4499	0.1186	2.5700e-003	0.1211		405.5948	405.5948	0.0191		405.9968
<b>Total</b>	<b>0.3354</b>	<b>3.0493</b>	<b>4.2206</b>	<b>0.0122</b>	<b>0.8126</b>	<b>0.0543</b>	<b>0.8668</b>	<b>0.2142</b>	<b>0.0499</b>	<b>0.2641</b>		<b>1,137.8173</b>	<b>1,137.8173</b>	<b>0.0239</b>		<b>1,138.3194</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					9.7200e-003	0.0000	9.7200e-003	1.1800e-003	0.0000	1.1800e-003			0.0000			0.0000
Off-Road	1.6860	18.8917	11.4047	0.0208		0.9037	0.9037		0.8336	0.8336	0.0000	2,118.0547	2,118.0547	0.6194		2,131.0615
<b>Total</b>	<b>1.6860</b>	<b>18.8917</b>	<b>11.4047</b>	<b>0.0208</b>	<b>9.7200e-003</b>	<b>0.9037</b>	<b>0.9134</b>	<b>1.1800e-003</b>	<b>0.8336</b>	<b>0.8348</b>	<b>0.0000</b>	<b>2,118.0547</b>	<b>2,118.0547</b>	<b>0.6194</b>		<b>2,131.0615</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	0.1229	2.1683	1.4667	5.6000e-003	0.3151	0.0383	0.3534	0.0813	0.0352	0.1165		564.6612	564.6612	3.6300e-003		564.7374
Vendor	0.0663	0.6882	0.7993	1.6700e-003	0.0503	0.0132	0.0635	0.0144	0.0121	0.0265		167.5613	167.5613	1.1400e-003		167.5852
Worker	0.1462	0.1928	1.9546	4.9000e-003	0.4471	2.8000e-003	0.4499	0.1186	2.5700e-003	0.1211		405.5948	405.5948	0.0191		405.9968
<b>Total</b>	<b>0.3354</b>	<b>3.0493</b>	<b>4.2206</b>	<b>0.0122</b>	<b>0.8126</b>	<b>0.0543</b>	<b>0.8668</b>	<b>0.2142</b>	<b>0.0499</b>	<b>0.2641</b>		<b>1,137.8173</b>	<b>1,137.8173</b>	<b>0.0239</b>		<b>1,138.3194</b>

## 3.2 Grading and Construction - 2017

### 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					0.0249	0.0000	0.0249	3.0400e-003	0.0000	3.0400e-003			0.0000			0.0000
Off-Road	1.5872	17.4236	11.3294	0.0208		0.8282	0.8282		0.7642	0.7642		2,086.2717	2,086.2717	0.6193		2,099.2760
<b>Total</b>	<b>1.5872</b>	<b>17.4236</b>	<b>11.3294</b>	<b>0.0208</b>	<b>0.0249</b>	<b>0.8282</b>	<b>0.8531</b>	<b>3.0400e-003</b>	<b>0.7642</b>	<b>0.7672</b>		<b>2,086.2717</b>	<b>2,086.2717</b>	<b>0.6193</b>		<b>2,099.2760</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	0.1139	1.9837	1.4100	5.5900e-003	0.1987	0.0352	0.2339	0.0527	0.0324	0.0851		555.0895	555.0895	3.5500e-003		555.1640
Vendor	0.0598	0.6237	0.7550	1.6700e-003	0.0503	0.0118	0.0621	0.0144	0.0108	0.0252		164.7275	164.7275	1.1000e-003		164.7506
Worker	0.1306	0.1728	1.7503	4.9000e-003	0.4471	2.7200e-003	0.4498	0.1186	2.5100e-003	0.1211		389.4924	389.4924	0.0176		389.8612
<b>Total</b>	<b>0.3043</b>	<b>2.7803</b>	<b>3.9152</b>	<b>0.0122</b>	<b>0.6961</b>	<b>0.0497</b>	<b>0.7458</b>	<b>0.1856</b>	<b>0.0457</b>	<b>0.2314</b>		<b>1,109.3094</b>	<b>1,109.3094</b>	<b>0.0222</b>		<b>1,109.7757</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					9.7200e-003	0.0000	9.7200e-003	1.1800e-003	0.0000	1.1800e-003			0.0000			0.0000
Off-Road	1.5872	17.4236	11.3294	0.0208		0.8282	0.8282		0.7642	0.7642	0.0000	2,086.2717	2,086.2717	0.6193		2,099.2760
<b>Total</b>	<b>1.5872</b>	<b>17.4236</b>	<b>11.3294</b>	<b>0.0208</b>	<b>9.7200e-003</b>	<b>0.8282</b>	<b>0.8379</b>	<b>1.1800e-003</b>	<b>0.7642</b>	<b>0.7653</b>	<b>0.0000</b>	<b>2,086.2717</b>	<b>2,086.2717</b>	<b>0.6193</b>		<b>2,099.2760</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	0.1139	1.9837	1.4100	5.5900e-003	0.1987	0.0352	0.2339	0.0527	0.0324	0.0851		555.0895	555.0895	3.5500e-003		555.1640
Vendor	0.0598	0.6237	0.7550	1.6700e-003	0.0503	0.0118	0.0621	0.0144	0.0108	0.0252		164.7275	164.7275	1.1000e-003		164.7506
Worker	0.1306	0.1728	1.7503	4.9000e-003	0.4471	2.7200e-003	0.4498	0.1186	2.5100e-003	0.1211		389.4924	389.4924	0.0176		389.8612
<b>Total</b>	<b>0.3043</b>	<b>2.7803</b>	<b>3.9152</b>	<b>0.0122</b>	<b>0.6961</b>	<b>0.0497</b>	<b>0.7458</b>	<b>0.1856</b>	<b>0.0457</b>	<b>0.2314</b>		<b>1,109.3094</b>	<b>1,109.3094</b>	<b>0.0222</b>		<b>1,109.7757</b>

### 3.3 Paving - 2017

#### Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1025	10.6948	7.8227	0.0116		0.6654	0.6654		0.6144	0.6144		1,147.0702	1,147.0702	0.3315		1,154.0312
Paving	0.4323					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
<b>Total</b>	<b>1.5348</b>	<b>10.6948</b>	<b>7.8227</b>	<b>0.0116</b>		<b>0.6654</b>	<b>0.6654</b>		<b>0.6144</b>	<b>0.6144</b>		<b>1,147.0702</b>	<b>1,147.0702</b>	<b>0.3315</b>		<b>1,154.0312</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	0.0448	0.4678	0.5662	1.2500e-003	0.0378	8.8300e-003	0.0466	0.0108	8.1200e-003	0.0189		123.5456	123.5456	8.2000e-004		123.5629
Worker	0.0980	0.1296	1.3127	3.6700e-003	0.3353	2.0400e-003	0.3374	0.0889	1.8800e-003	0.0908		292.1193	292.1193	0.0132		292.3959
<b>Total</b>	<b>0.1428</b>	<b>0.5974</b>	<b>1.8789</b>	<b>4.9200e-003</b>	<b>0.3731</b>	<b>0.0109</b>	<b>0.3840</b>	<b>0.0997</b>	<b>0.0100</b>	<b>0.1097</b>		<b>415.6650</b>	<b>415.6650</b>	<b>0.0140</b>		<b>415.9588</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	1.1025	10.6948	7.8227	0.0116		0.6654	0.6654		0.6144	0.6144	0.0000	1,147.0702	1,147.0702	0.3315		1,154.0312
Paving	0.4323					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
<b>Total</b>	<b>1.5348</b>	<b>10.6948</b>	<b>7.8227</b>	<b>0.0116</b>		<b>0.6654</b>	<b>0.6654</b>		<b>0.6144</b>	<b>0.6144</b>	<b>0.0000</b>	<b>1,147.0702</b>	<b>1,147.0702</b>	<b>0.3315</b>		<b>1,154.0312</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	0.0448	0.4678	0.5662	1.2500e-003	0.0378	8.8300e-003	0.0466	0.0108	8.1200e-003	0.0189		123.5456	123.5456	8.2000e-004		123.5629
Worker	0.0980	0.1296	1.3127	3.6700e-003	0.3353	2.0400e-003	0.3374	0.0889	1.8800e-003	0.0908		292.1193	292.1193	0.0132		292.3959
<b>Total</b>	<b>0.1428</b>	<b>0.5974</b>	<b>1.8789</b>	<b>4.9200e-003</b>	<b>0.3731</b>	<b>0.0109</b>	<b>0.3840</b>	<b>0.0997</b>	<b>0.0100</b>	<b>0.1097</b>		<b>415.6650</b>	<b>415.6650</b>	<b>0.0140</b>		<b>415.9588</b>

**RCFCD North Norco Channel Project - Line N-2, Line NC, and Lateral NC-1**  
**Riverside-South Coast 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 Industrial	109.50	User Defined Unit	4.37	109,500.00	0
Other Asphalt Surfaces	1.65	Acre	1.65	71,874.00	0

**1.2 Other Project Characteristics**

<b>Urbanization</b>	Urban	<b>Wind Speed (m/s)</b>	2.4	<b>Precipitation Freq (Days)</b>	28
<b>Climate Zone</b>	10	<b>Operational Year</b>	2017		
<b>Utility Company</b>	Southern California Edison				
<b>CO2 Intensity (lb/MWhr)</b>	630.89	<b>CH4 Intensity (lb/MWhr)</b>	0.029	<b>N2O Intensity (lb/MWhr)</b>	0.006

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

Land Use - 2,175 linear feet. 4.37 acres.

## 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	2.0195	21.8327	15.7095	0.0335	0.8375	0.9577	1.7952	0.2173	0.8834	1.1006	0.0000	3,296.9655	3,296.9655	0.6432	0.0000	3,310.4725
2017	1.8903	20.1060	15.2932	0.0335	0.7210	0.8777	1.5987	0.1887	0.8097	0.9984	0.0000	3,235.1650	3,235.1650	0.6414	0.0000	3,248.6335
<b>Total</b>	<b>3.9098</b>	<b>41.9387</b>	<b>31.0027</b>	<b>0.0670</b>	<b>1.5585</b>	<b>1.8355</b>	<b>3.3940</b>	<b>0.4059</b>	<b>1.6931</b>	<b>2.0990</b>	<b>0.0000</b>	<b>6,532.1305</b>	<b>6,532.1305</b>	<b>1.2846</b>	<b>0.0000</b>	<b>6,559.1060</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	2.0195	21.8327	15.7095	0.0335	0.8223	0.9577	1.7800	0.2154	0.8834	1.0988	0.0000	3,296.9655	3,296.9655	0.6432	0.0000	3,310.4725
2017	1.8903	20.1060	15.2932	0.0335	0.7058	0.8777	1.5835	0.1868	0.8097	0.9966	0.0000	3,235.1650	3,235.1650	0.6414	0.0000	3,248.6335
<b>Total</b>	<b>3.9098</b>	<b>41.9387</b>	<b>31.0027</b>	<b>0.0670</b>	<b>1.5281</b>	<b>1.8355</b>	<b>3.3636</b>	<b>0.4022</b>	<b>1.6931</b>	<b>2.0953</b>	<b>0.0000</b>	<b>6,532.1304</b>	<b>6,532.1304</b>	<b>1.2846</b>	<b>0.0000</b>	<b>6,559.1060</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>1.95</b>	<b>0.00</b>	<b>0.90</b>	<b>0.91</b>	<b>0.00</b>	<b>0.18</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 and Construction	Grading	11/1/2016	4/14/2017	5	119	
2	Paving	Paving	4/15/2017	4/28/2017	5	10	

Acres of Grading (Grading Phase): 0

#### OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading and Construction	Excavators	2	8.00	162	0.38
Grading and Construction	Rubber Tired Loaders	1	8.00	199	0.36
Grading and Construction	Signal Boards	2	8.00	6	0.82
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Paving	Signal Boards	2	8.00	6	0.82
Grading and Construction	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Paving	Pavers	1	8.00	125	0.42
Paving	Rollers	1	8.00	80	0.38

**Trips and VMT**

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading and Construction	6	40.00	8.00	938.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	30.00	6.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

**3.1 Mitigation Measures Construction**

Water Exposed Area

**3.2 Grading and 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	lb/day										lb/day					
Fugitive Dust					0.0249	0.0000	0.0249	3.0400e-003	0.0000	3.0400e-003			0.0000			0.0000
Off-Road	1.6860	18.8917	11.4047	0.0208		0.9037	0.9037		0.8336	0.8336		2,118.0547	2,118.0547	0.6194		2,131.0615
<b>Total</b>	<b>1.6860</b>	<b>18.8917</b>	<b>11.4047</b>	<b>0.0208</b>	<b>0.0249</b>	<b>0.9037</b>	<b>0.9286</b>	<b>3.0400e-003</b>	<b>0.8336</b>	<b>0.8367</b>		<b>2,118.0547</b>	<b>2,118.0547</b>	<b>0.6194</b>		<b>2,131.0615</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	0.1180	2.0887	1.3334	5.6100e-003	0.3151	0.0382	0.3534	0.0813	0.0352	0.1164		566.0540	566.0540	3.5800e-003		566.1291
Vendor	0.0622	0.6713	0.7030	1.6800e-003	0.0503	0.0130	0.0634	0.0144	0.0120	0.0264		169.0241	169.0241	1.1000e-003		169.0472
Worker	0.1533	0.1810	2.2684	5.3700e-003	0.4471	2.8000e-003	0.4499	0.1186	2.5700e-003	0.1211		443.8327	443.8327	0.0191		444.2347
<b>Total</b>	<b>0.3335</b>	<b>2.9410</b>	<b>4.3048</b>	<b>0.0127</b>	<b>0.8126</b>	<b>0.0541</b>	<b>0.8666</b>	<b>0.2142</b>	<b>0.0497</b>	<b>0.2639</b>		<b>1,178.9108</b>	<b>1,178.9108</b>	<b>0.0238</b>		<b>1,179.4110</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					9.7200e-003	0.0000	9.7200e-003	1.1800e-003	0.0000	1.1800e-003			0.0000			0.0000
Off-Road	1.6860	18.8917	11.4047	0.0208		0.9037	0.9037		0.8336	0.8336	0.0000	2,118.0547	2,118.0547	0.6194		2,131.0615
<b>Total</b>	<b>1.6860</b>	<b>18.8917</b>	<b>11.4047</b>	<b>0.0208</b>	<b>9.7200e-003</b>	<b>0.9037</b>	<b>0.9134</b>	<b>1.1800e-003</b>	<b>0.8336</b>	<b>0.8348</b>	<b>0.0000</b>	<b>2,118.0547</b>	<b>2,118.0547</b>	<b>0.6194</b>		<b>2,131.0615</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	0.1180	2.0887	1.3334	5.6100e-003	0.3151	0.0382	0.3534	0.0813	0.0352	0.1164		566.0540	566.0540	3.5800e-003		566.1291
Vendor	0.0622	0.6713	0.7030	1.6800e-003	0.0503	0.0130	0.0634	0.0144	0.0120	0.0264		169.0241	169.0241	1.1000e-003		169.0472
Worker	0.1533	0.1810	2.2684	5.3700e-003	0.4471	2.8000e-003	0.4499	0.1186	2.5700e-003	0.1211		443.8327	443.8327	0.0191		444.2347
<b>Total</b>	<b>0.3335</b>	<b>2.9410</b>	<b>4.3048</b>	<b>0.0127</b>	<b>0.8126</b>	<b>0.0541</b>	<b>0.8666</b>	<b>0.2142</b>	<b>0.0497</b>	<b>0.2639</b>		<b>1,178.9108</b>	<b>1,178.9108</b>	<b>0.0238</b>		<b>1,179.4110</b>

### 3.2 Grading and Construction - 2017

#### 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					0.0249	0.0000	0.0249	3.0400e-003	0.0000	3.0400e-003			0.0000			0.0000
Off-Road	1.5872	17.4236	11.3294	0.0208		0.8282	0.8282		0.7642	0.7642		2,086.2717	2,086.2717	0.6193		2,099.2760
<b>Total</b>	<b>1.5872</b>	<b>17.4236</b>	<b>11.3294</b>	<b>0.0208</b>	<b>0.0249</b>	<b>0.8282</b>	<b>0.8531</b>	<b>3.0400e-003</b>	<b>0.7642</b>	<b>0.7672</b>		<b>2,086.2717</b>	<b>2,086.2717</b>	<b>0.6193</b>		<b>2,099.2760</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	0.1097	1.9111	1.2704	5.6000e-003	0.1987	0.0352	0.2338	0.0527	0.0323	0.0850		556.4606	556.4606	3.4900e-003		556.5339
Vendor	0.0561	0.6089	0.6562	1.6800e-003	0.0503	0.0117	0.0620	0.0144	0.0107	0.0251		166.1701	166.1701	1.0600e-003		166.1924
Worker	0.1373	0.1624	2.0372	5.3600e-003	0.4471	2.7200e-003	0.4498	0.1186	2.5100e-003	0.1211		426.2625	426.2625	0.0176		426.6312
<b>Total</b>	<b>0.3031</b>	<b>2.6824</b>	<b>3.9638</b>	<b>0.0126</b>	<b>0.6961</b>	<b>0.0496</b>	<b>0.7456</b>	<b>0.1856</b>	<b>0.0456</b>	<b>0.2312</b>		<b>1,148.8932</b>	<b>1,148.8932</b>	<b>0.0221</b>		<b>1,149.3576</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					9.7200e-003	0.0000	9.7200e-003	1.1800e-003	0.0000	1.1800e-003			0.0000			0.0000
Off-Road	1.5872	17.4236	11.3294	0.0208		0.8282	0.8282		0.7642	0.7642	0.0000	2,086.2717	2,086.2717	0.6193		2,099.2760
<b>Total</b>	<b>1.5872</b>	<b>17.4236</b>	<b>11.3294</b>	<b>0.0208</b>	<b>9.7200e-003</b>	<b>0.8282</b>	<b>0.8379</b>	<b>1.1800e-003</b>	<b>0.7642</b>	<b>0.7653</b>	<b>0.0000</b>	<b>2,086.2717</b>	<b>2,086.2717</b>	<b>0.6193</b>		<b>2,099.2760</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	0.1097	1.9111	1.2704	5.6000e-003	0.1987	0.0352	0.2338	0.0527	0.0323	0.0850		556.4606	556.4606	3.4900e-003		556.5339
Vendor	0.0561	0.6089	0.6562	1.6800e-003	0.0503	0.0117	0.0620	0.0144	0.0107	0.0251		166.1701	166.1701	1.0600e-003		166.1924
Worker	0.1373	0.1624	2.0372	5.3600e-003	0.4471	2.7200e-003	0.4498	0.1186	2.5100e-003	0.1211		426.2625	426.2625	0.0176		426.6312
<b>Total</b>	<b>0.3031</b>	<b>2.6824</b>	<b>3.9638</b>	<b>0.0126</b>	<b>0.6961</b>	<b>0.0496</b>	<b>0.7456</b>	<b>0.1856</b>	<b>0.0456</b>	<b>0.2312</b>		<b>1,148.8932</b>	<b>1,148.8932</b>	<b>0.0221</b>		<b>1,149.3576</b>

### 3.3 Paving - 2017

#### Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1025	10.6948	7.8227	0.0116		0.6654	0.6654		0.6144	0.6144		1,147.0702	1,147.0702	0.3315		1,154.0312
Paving	0.4323					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
<b>Total</b>	<b>1.5348</b>	<b>10.6948</b>	<b>7.8227</b>	<b>0.0116</b>		<b>0.6654</b>	<b>0.6654</b>		<b>0.6144</b>	<b>0.6144</b>		<b>1,147.0702</b>	<b>1,147.0702</b>	<b>0.3315</b>		<b>1,154.0312</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	0.0421	0.4567	0.4921	1.2600e-003	0.0378	8.7600e-003	0.0465	0.0108	8.0600e-003	0.0188		124.6276	124.6276	7.9000e-004		124.6443
Worker	0.1030	0.1218	1.5279	4.0200e-003	0.3353	2.0400e-003	0.3374	0.0889	1.8800e-003	0.0908		319.6969	319.6969	0.0132		319.9734
<b>Total</b>	<b>0.1451</b>	<b>0.5785</b>	<b>2.0200</b>	<b>5.2800e-003</b>	<b>0.3731</b>	<b>0.0108</b>	<b>0.3839</b>	<b>0.0997</b>	<b>9.9400e-003</b>	<b>0.1097</b>		<b>444.3245</b>	<b>444.3245</b>	<b>0.0140</b>		<b>444.6177</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	1.1025	10.6948	7.8227	0.0116		0.6654	0.6654		0.6144	0.6144	0.0000	1,147.0702	1,147.0702	0.3315		1,154.0312
Paving	0.4323					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
<b>Total</b>	<b>1.5348</b>	<b>10.6948</b>	<b>7.8227</b>	<b>0.0116</b>		<b>0.6654</b>	<b>0.6654</b>		<b>0.6144</b>	<b>0.6144</b>	<b>0.0000</b>	<b>1,147.0702</b>	<b>1,147.0702</b>	<b>0.3315</b>		<b>1,154.0312</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	0.0421	0.4567	0.4921	1.2600e-003	0.0378	8.7600e-003	0.0465	0.0108	8.0600e-003	0.0188		124.6276	124.6276	7.9000e-004		124.6443
Worker	0.1030	0.1218	1.5279	4.0200e-003	0.3353	2.0400e-003	0.3374	0.0889	1.8800e-003	0.0908		319.6969	319.6969	0.0132		319.9734
<b>Total</b>	<b>0.1451</b>	<b>0.5785</b>	<b>2.0200</b>	<b>5.2800e-003</b>	<b>0.3731</b>	<b>0.0108</b>	<b>0.3839</b>	<b>0.0997</b>	<b>9.9400e-003</b>	<b>0.1097</b>		<b>444.3245</b>	<b>444.3245</b>	<b>0.0140</b>		<b>444.6177</b>

**RCFCD North Norco Channel Project - Phase 2 Utility Relocation**  
**Riverside-South Coast 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 Industrial	544.00	User Defined Unit	0.10	544.00	0

**1.2 Other Project Characteristics**

<b>Urbanization</b>	Urban	<b>Wind Speed (m/s)</b>	2.4	<b>Precipitation Freq (Days)</b>	28
<b>Climate Zone</b>	10			<b>Operational Year</b>	2016
<b>Utility Company</b>	Southern California Edison				
<b>CO2 Intensity (lb/MWhr)</b>	630.89	<b>CH4 Intensity (lb/MWhr)</b>	0.029	<b>N2O Intensity (lb/MWhr)</b>	0.006

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

Land Use - Estimated total utility length: 544 feet

## 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	0.3884	3.6184	3.0077	4.4400e-003	0.0699	0.2575	0.3274	0.0191	0.2369	0.2559	0.0000	448.0174	448.0174	0.1001	0.0000	450.1199
<b>Total</b>	<b>0.3884</b>	<b>3.6184</b>	<b>3.0077</b>	<b>4.4400e-003</b>	<b>0.0699</b>	<b>0.2575</b>	<b>0.3274</b>	<b>0.0191</b>	<b>0.2369</b>	<b>0.2559</b>	<b>0.0000</b>	<b>448.0174</b>	<b>448.0174</b>	<b>0.1001</b>	<b>0.0000</b>	<b>450.1199</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	0.3884	3.6184	3.0077	4.4400e-003	0.0699	0.2575	0.3274	0.0191	0.2369	0.2559	0.0000	448.0174	448.0174	0.1001	0.0000	450.1199
<b>Total</b>	<b>0.3884</b>	<b>3.6184</b>	<b>3.0077</b>	<b>4.4400e-003</b>	<b>0.0699</b>	<b>0.2575</b>	<b>0.3274</b>	<b>0.0191</b>	<b>0.2369</b>	<b>0.2559</b>	<b>0.0000</b>	<b>448.0174</b>	<b>448.0174</b>	<b>0.1001</b>	<b>0.0000</b>	<b>450.1199</b>

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



### 3.0 Construction Detail

#### Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Trenching	Trenching	9/16/2016	10/28/2016	5	31	

#### OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Trenching	Tractors/Loaders/Backhoes	1	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
Trenching	1	4.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

### 3.1 Mitigation Measures Construction

Water Exposed Area

### 3.2 Trenching - 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					
Off-Road	0.3406	3.2551	2.4126	3.1100e-003		0.2506	0.2506		0.2306	0.2306		323.6773	323.6773	0.0976		325.7276
<b>Total</b>	<b>0.3406</b>	<b>3.2551</b>	<b>2.4126</b>	<b>3.1100e-003</b>		<b>0.2506</b>	<b>0.2506</b>		<b>0.2306</b>	<b>0.2306</b>		<b>323.6773</b>	<b>323.6773</b>	<b>0.0976</b>		<b>325.7276</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	0.0332	0.3441	0.3997	8.4000e-004	0.0252	6.5700e-003	0.0317	7.1900e-003	6.0400e-003	0.0132		83.7807	83.7807	5.7000e-004		83.7926
Worker	0.0146	0.0193	0.1955	4.9000e-004	0.0447	2.8000e-004	0.0450	0.0119	2.6000e-004	0.0121		40.5595	40.5595	1.9100e-003		40.5997
<b>Total</b>	<b>0.0478</b>	<b>0.3634</b>	<b>0.5951</b>	<b>1.3300e-003</b>	<b>0.0699</b>	<b>6.8500e-003</b>	<b>0.0767</b>	<b>0.0191</b>	<b>6.3000e-003</b>	<b>0.0253</b>		<b>124.3402</b>	<b>124.3402</b>	<b>2.4800e-003</b>		<b>124.3923</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	0.3406	3.2551	2.4126	3.1100e-003		0.2506	0.2506		0.2306	0.2306	0.0000	323.6773	323.6773	0.0976		325.7276
<b>Total</b>	<b>0.3406</b>	<b>3.2551</b>	<b>2.4126</b>	<b>3.1100e-003</b>		<b>0.2506</b>	<b>0.2506</b>		<b>0.2306</b>	<b>0.2306</b>	<b>0.0000</b>	<b>323.6773</b>	<b>323.6773</b>	<b>0.0976</b>		<b>325.7276</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	0.0332	0.3441	0.3997	8.4000e-004	0.0252	6.5700e-003	0.0317	7.1900e-003	6.0400e-003	0.0132		83.7807	83.7807	5.7000e-004		83.7926
Worker	0.0146	0.0193	0.1955	4.9000e-004	0.0447	2.8000e-004	0.0450	0.0119	2.6000e-004	0.0121		40.5595	40.5595	1.9100e-003		40.5997
<b>Total</b>	<b>0.0478</b>	<b>0.3634</b>	<b>0.5951</b>	<b>1.3300e-003</b>	<b>0.0699</b>	<b>6.8500e-003</b>	<b>0.0767</b>	<b>0.0191</b>	<b>6.3000e-003</b>	<b>0.0253</b>		<b>124.3402</b>	<b>124.3402</b>	<b>2.4800e-003</b>		<b>124.3923</b>

**RCFCD North Norco Channel Project - Phase 2 Utility Relocation**  
**Riverside-South Coast 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 Industrial	544.00	User Defined Unit	0.10	544.00	0

**1.2 Other Project Characteristics**

<b>Urbanization</b>	Urban	<b>Wind Speed (m/s)</b>	2.4	<b>Precipitation Freq (Days)</b>	28
<b>Climate Zone</b>	10			<b>Operational Year</b>	2016
<b>Utility Company</b>	Southern California Edison				
<b>CO2 Intensity (lb/MWhr)</b>	630.89	<b>CH4 Intensity (lb/MWhr)</b>	0.029	<b>N2O Intensity (lb/MWhr)</b>	0.006

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

Land Use - Estimated total utility length: 544 feet

## 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	0.3870	3.6088	2.9910	4.4900e-003	0.0699	0.2574	0.3273	0.0191	0.2368	0.2559	0.0000	452.5726	452.5726	0.1001	0.0000	454.6747
<b>Total</b>	<b>0.3870</b>	<b>3.6088</b>	<b>2.9910</b>	<b>4.4900e-003</b>	<b>0.0699</b>	<b>0.2574</b>	<b>0.3273</b>	<b>0.0191</b>	<b>0.2368</b>	<b>0.2559</b>	<b>0.0000</b>	<b>452.5726</b>	<b>452.5726</b>	<b>0.1001</b>	<b>0.0000</b>	<b>454.6747</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	0.3870	3.6088	2.9910	4.4900e-003	0.0699	0.2574	0.3273	0.0191	0.2368	0.2559	0.0000	452.5726	452.5726	0.1001	0.0000	454.6747
<b>Total</b>	<b>0.3870</b>	<b>3.6088</b>	<b>2.9910</b>	<b>4.4900e-003</b>	<b>0.0699</b>	<b>0.2574</b>	<b>0.3273</b>	<b>0.0191</b>	<b>0.2368</b>	<b>0.2559</b>	<b>0.0000</b>	<b>452.5726</b>	<b>452.5726</b>	<b>0.1001</b>	<b>0.0000</b>	<b>454.6747</b>

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

### 3.0 Construction Detail

#### Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Trenching	Trenching	9/16/2016	10/28/2016	5	31	

#### OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Trenching	Tractors/Loaders/Backhoes	1	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
Trenching	1	4.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

### 3.1 Mitigation Measures Construction

Water Exposed Area

### 3.2 Trenching - 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					
Off-Road	0.3406	3.2551	2.4126	3.1100e-003		0.2506	0.2506		0.2306	0.2306		323.6773	323.6773	0.0976		325.7276
<b>Total</b>	<b>0.3406</b>	<b>3.2551</b>	<b>2.4126</b>	<b>3.1100e-003</b>		<b>0.2506</b>	<b>0.2506</b>		<b>0.2306</b>	<b>0.2306</b>		<b>323.6773</b>	<b>323.6773</b>	<b>0.0976</b>		<b>325.7276</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	0.0311	0.3357	0.3515	8.4000e-004	0.0252	6.5200e-003	0.0317	7.1900e-003	5.9900e-003	0.0132		84.5121	84.5121	5.5000e-004		84.5236
Worker	0.0153	0.0181	0.2268	5.4000e-004	0.0447	2.8000e-004	0.0450	0.0119	2.6000e-004	0.0121		44.3833	44.3833	1.9100e-003		44.4235
<b>Total</b>	<b>0.0464</b>	<b>0.3538</b>	<b>0.5783</b>	<b>1.3800e-003</b>	<b>0.0699</b>	<b>6.8000e-003</b>	<b>0.0767</b>	<b>0.0191</b>	<b>6.2500e-003</b>	<b>0.0253</b>		<b>128.8953</b>	<b>128.8953</b>	<b>2.4600e-003</b>		<b>128.9471</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	0.3406	3.2551	2.4126	3.1100e-003		0.2506	0.2506		0.2306	0.2306	0.0000	323.6773	323.6773	0.0976		325.7276
<b>Total</b>	<b>0.3406</b>	<b>3.2551</b>	<b>2.4126</b>	<b>3.1100e-003</b>		<b>0.2506</b>	<b>0.2506</b>		<b>0.2306</b>	<b>0.2306</b>	<b>0.0000</b>	<b>323.6773</b>	<b>323.6773</b>	<b>0.0976</b>		<b>325.7276</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	0.0311	0.3357	0.3515	8.4000e-004	0.0252	6.5200e-003	0.0317	7.1900e-003	5.9900e-003	0.0132		84.5121	84.5121	5.5000e-004		84.5236
Worker	0.0153	0.0181	0.2268	5.4000e-004	0.0447	2.8000e-004	0.0450	0.0119	2.6000e-004	0.0121		44.3833	44.3833	1.9100e-003		44.4235
<b>Total</b>	<b>0.0464</b>	<b>0.3538</b>	<b>0.5783</b>	<b>1.3800e-003</b>	<b>0.0699</b>	<b>6.8000e-003</b>	<b>0.0767</b>	<b>0.0191</b>	<b>6.2500e-003</b>	<b>0.0253</b>		<b>128.8953</b>	<b>128.8953</b>	<b>2.4600e-003</b>		<b>128.9471</b>

# **APPENDIX B**

*CalEEMod Output  
Annual Emissions*





**RCFCD North Norco Channel Project - North Norco Channel**  
**Riverside-South Coast County, Annual**

**1.0 Project Characteristics**

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**1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	445.00	User Defined Unit	10.20	445,000.00	0
Other Asphalt Surfaces	0.30	Acre	0.30	13,068.00	0

**1.2 Other Project Characteristics**

<b>Urbanization</b>	Urban	<b>Wind Speed (m/s)</b>	2.4	<b>Precipitation Freq (Days)</b>	28
<b>Climate Zone</b>	10			<b>Operational Year</b>	2016
<b>Utility Company</b>	Southern California Edison				
<b>CO2 Intensity (lb/MW hr)</b>	630.89	<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**

Land Use - 5,912 linear feet. 10.2 acres.

## 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					
2015	0.1039	1.3328	0.7744	1.9400e-003	0.0440	0.0468	0.0908	0.0109	0.0430	0.0539	0.0000	179.1416	179.1416	0.0274	0.0000	179.7169
2016	0.1661	1.6584	0.9763	2.0200e-003	0.0569	0.0832	0.1401	0.0139	0.0784	0.0923	0.0000	179.5245	179.5245	0.0351	0.0000	180.2625
<b>Total</b>	<b>0.2700</b>	<b>2.9911</b>	<b>1.7506</b>	<b>3.9600e-003</b>	<b>0.1009</b>	<b>0.1300</b>	<b>0.2309</b>	<b>0.0247</b>	<b>0.1214</b>	<b>0.1462</b>	<b>0.0000</b>	<b>358.6661</b>	<b>358.6661</b>	<b>0.0625</b>	<b>0.0000</b>	<b>359.9794</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					
2015	0.1039	1.3328	0.7744	1.9400e-003	0.0399	0.0468	0.0867	0.0104	0.0430	0.0534	0.0000	179.1415	179.1415	0.0274	0.0000	179.7168
2016	0.1661	1.6584	0.9763	2.0200e-003	0.0528	0.0832	0.1360	0.0134	0.0784	0.0918	0.0000	179.5244	179.5244	0.0351	0.0000	180.2624
<b>Total</b>	<b>0.2700</b>	<b>2.9911</b>	<b>1.7506</b>	<b>3.9600e-003</b>	<b>0.0927</b>	<b>0.1300</b>	<b>0.2227</b>	<b>0.0238</b>	<b>0.1214</b>	<b>0.1452</b>	<b>0.0000</b>	<b>358.6658</b>	<b>358.6658</b>	<b>0.0625</b>	<b>0.0000</b>	<b>359.9791</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>8.14</b>	<b>0.00</b>	<b>3.56</b>	<b>3.80</b>	<b>0.01</b>	<b>0.65</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	Site Preparation	Site Preparation	9/1/2015	9/14/2015	5	10	
2	Grading	Grading	9/15/2015	1/14/2016	5	88	
3	Project Construction	Building Construction	1/15/2016	7/14/2016	5	130	
4	Paving	Paving	7/15/2016	7/28/2016	5	10	

Acres of Grading (Grading Phase): 10.4

#### OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading	Excavators	2	8.00	162	0.38
Grading	Rubber Tired Loaders	2	8.00	199	0.36
Project Construction	Cranes	1	7.00	226	0.29
Project Construction	Pumps	1	8.00	84	0.74
Project Construction	Rubber Tired Loaders	1	8.00	199	0.36
Project Construction	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Paving	Pavers	1	8.00	125	0.42
Paving	Rollers	1	8.00	80	0.38
Paving	Signal Boards	2	8.00	6	0.82
Paving	Tractors/Loaders/Backhoes	1	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
Site Preparation	2	30.00	6.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	30.00	10.00	2,415.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Project Construction	4	40.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	30.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

### 3.1 Mitigation Measures Construction

Water Exposed Area

### 3.2 Site Preparation - 2015

#### 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					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.6000e-003	0.0343	0.0243	3.0000e-005		2.6900e-003	2.6900e-003		2.4700e-003	2.4700e-003	0.0000	2.9709	2.9709	8.9000e-004	0.0000	2.9895
<b>Total</b>	<b>3.6000e-003</b>	<b>0.0343</b>	<b>0.0243</b>	<b>3.0000e-005</b>	<b>0.0000</b>	<b>2.6900e-003</b>	<b>2.6900e-003</b>	<b>0.0000</b>	<b>2.4700e-003</b>	<b>2.4700e-003</b>	<b>0.0000</b>	<b>2.9709</b>	<b>2.9709</b>	<b>8.9000e-004</b>	<b>0.0000</b>	<b>2.9895</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	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	2.8000e-004	3.0000e-003	3.2800e-003	1.0000e-005	1.9000e-004	6.0000e-005	2.4000e-004	5.0000e-005	5.0000e-005	1.1000e-004	0.0000	0.5797	0.5797	0.0000	0.0000	0.5798
Worker	5.8000e-004	8.4000e-004	8.4800e-003	2.0000e-005	1.6500e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.4516	1.4516	7.0000e-005	0.0000	1.4531
<b>Total</b>	<b>8.6000e-004</b>	<b>3.8400e-003</b>	<b>0.0118</b>	<b>3.0000e-005</b>	<b>1.8400e-003</b>	<b>7.0000e-005</b>	<b>1.9000e-003</b>	<b>4.9000e-004</b>	<b>6.0000e-005</b>	<b>5.6000e-004</b>	<b>0.0000</b>	<b>2.0313</b>	<b>2.0313</b>	<b>7.0000e-005</b>	<b>0.0000</b>	<b>2.0329</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					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.6000e-003	0.0343	0.0243	3.0000e-005		2.6900e-003	2.6900e-003		2.4700e-003	2.4700e-003	0.0000	2.9709	2.9709	8.9000e-004	0.0000	2.9895
<b>Total</b>	<b>3.6000e-003</b>	<b>0.0343</b>	<b>0.0243</b>	<b>3.0000e-005</b>	<b>0.0000</b>	<b>2.6900e-003</b>	<b>2.6900e-003</b>	<b>0.0000</b>	<b>2.4700e-003</b>	<b>2.4700e-003</b>	<b>0.0000</b>	<b>2.9709</b>	<b>2.9709</b>	<b>8.9000e-004</b>	<b>0.0000</b>	<b>2.9895</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	2.8000e-004	3.0000e-003	3.2800e-003	1.0000e-005	1.9000e-004	6.0000e-005	2.4000e-004	5.0000e-005	5.0000e-005	1.1000e-004	0.0000	0.5797	0.5797	0.0000	0.0000	0.5798
Worker	5.8000e-004	8.4000e-004	8.4800e-003	2.0000e-005	1.6500e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.4516	1.4516	7.0000e-005	0.0000	1.4531
<b>Total</b>	<b>8.6000e-004</b>	<b>3.8400e-003</b>	<b>0.0118</b>	<b>3.0000e-005</b>	<b>1.8400e-003</b>	<b>7.0000e-005</b>	<b>1.9000e-003</b>	<b>4.9000e-004</b>	<b>6.0000e-005</b>	<b>5.6000e-004</b>	<b>0.0000</b>	<b>2.0313</b>	<b>2.0313</b>	<b>7.0000e-005</b>	<b>0.0000</b>	<b>2.0329</b>

### 3.3 Grading - 2015

#### Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					6.7400e-003	0.0000	6.7400e-003	7.8000e-004	0.0000	7.8000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0725	0.9086	0.4141	8.9000e-004		0.0368	0.0368		0.0339	0.0339	0.0000	84.8115	84.8115	0.0253	0.0000	85.3432
<b>Total</b>	<b>0.0725</b>	<b>0.9086</b>	<b>0.4141</b>	<b>8.9000e-004</b>	<b>6.7400e-003</b>	<b>0.0368</b>	<b>0.0435</b>	<b>7.8000e-004</b>	<b>0.0339</b>	<b>0.0346</b>	<b>0.0000</b>	<b>84.8115</b>	<b>84.8115</b>	<b>0.0253</b>	<b>0.0000</b>	<b>85.3432</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	0.0188	0.3405	0.2155	7.6000e-004	0.0202	6.3700e-003	0.0265	5.4800e-003	5.8600e-003	0.0113	0.0000	70.4693	70.4693	5.0000e-004	0.0000	70.4798
Vendor	3.6100e-003	0.0389	0.0426	8.0000e-005	2.4200e-003	7.6000e-004	3.1700e-003	6.9000e-004	6.9000e-004	1.3900e-003	0.0000	7.5358	7.5358	6.0000e-005	0.0000	7.5370
Worker	4.4900e-003	6.5700e-003	0.0661	1.5000e-004	0.0129	9.0000e-005	0.0130	3.4100e-003	8.0000e-005	3.4900e-003	0.0000	11.3227	11.3227	5.6000e-004	0.0000	11.3344
<b>Total</b>	<b>0.0269</b>	<b>0.3860</b>	<b>0.3243</b>	<b>9.9000e-004</b>	<b>0.0355</b>	<b>7.2200e-003</b>	<b>0.0427</b>	<b>9.5800e-003</b>	<b>6.6300e-003</b>	<b>0.0162</b>	<b>0.0000</b>	<b>89.3278</b>	<b>89.3278</b>	<b>1.1200e-003</b>	<b>0.0000</b>	<b>89.3512</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.6300e-003	0.0000	2.6300e-003	3.0000e-004	0.0000	3.0000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0725	0.9086	0.4141	8.9000e-004		0.0368	0.0368		0.0339	0.0339	0.0000	84.8114	84.8114	0.0253	0.0000	85.3431
<b>Total</b>	<b>0.0725</b>	<b>0.9086</b>	<b>0.4141</b>	<b>8.9000e-004</b>	<b>2.6300e-003</b>	<b>0.0368</b>	<b>0.0394</b>	<b>3.0000e-004</b>	<b>0.0339</b>	<b>0.0342</b>	<b>0.0000</b>	<b>84.8114</b>	<b>84.8114</b>	<b>0.0253</b>	<b>0.0000</b>	<b>85.3431</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	0.0188	0.3405	0.2155	7.6000e-004	0.0202	6.3700e-003	0.0265	5.4800e-003	5.8600e-003	0.0113	0.0000	70.4693	70.4693	5.0000e-004	0.0000	70.4798
Vendor	3.6100e-003	0.0389	0.0426	8.0000e-005	2.4200e-003	7.6000e-004	3.1700e-003	6.9000e-004	6.9000e-004	1.3900e-003	0.0000	7.5358	7.5358	6.0000e-005	0.0000	7.5370
Worker	4.4900e-003	6.5700e-003	0.0661	1.5000e-004	0.0129	9.0000e-005	0.0130	3.4100e-003	8.0000e-005	3.4900e-003	0.0000	11.3227	11.3227	5.6000e-004	0.0000	11.3344
<b>Total</b>	<b>0.0269</b>	<b>0.3860</b>	<b>0.3243</b>	<b>9.9000e-004</b>	<b>0.0355</b>	<b>7.2200e-003</b>	<b>0.0427</b>	<b>9.5800e-003</b>	<b>6.6300e-003</b>	<b>0.0162</b>	<b>0.0000</b>	<b>89.3278</b>	<b>89.3278</b>	<b>1.1200e-003</b>	<b>0.0000</b>	<b>89.3512</b>

### 3.3 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	tons/yr										MT/yr					
Fugitive Dust					6.7400e-003	0.0000	6.7400e-003	7.8000e-004	0.0000	7.8000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.8500e-003	0.1089	0.0526	1.1000e-004		4.3800e-003	4.3800e-003		4.0300e-003	4.0300e-003	0.0000	10.7619	10.7619	3.2500e-003	0.0000	10.8300
<b>Total</b>	<b>8.8500e-003</b>	<b>0.1089</b>	<b>0.0526</b>	<b>1.1000e-004</b>	<b>6.7400e-003</b>	<b>4.3800e-003</b>	<b>0.0111</b>	<b>7.8000e-004</b>	<b>4.0300e-003</b>	<b>4.8100e-003</b>	<b>0.0000</b>	<b>10.7619</b>	<b>10.7619</b>	<b>3.2500e-003</b>	<b>0.0000</b>	<b>10.8300</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	2.1300e-003	0.0383	0.0262	1.0000e-004	0.0162	6.7000e-004	0.0169	4.0500e-003	6.1000e-004	4.6700e-003	0.0000	8.9300	8.9300	6.0000e-005	0.0000	8.9312
Vendor	4.1000e-004	4.3900e-003	5.1300e-003	1.0000e-005	3.1000e-004	8.0000e-005	3.9000e-004	9.0000e-005	8.0000e-005	1.6000e-004	0.0000	0.9549	0.9549	1.0000e-005	0.0000	0.9550
Worker	5.2000e-004	7.5000e-004	7.6000e-003	2.0000e-005	1.6500e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.3986	1.3986	7.0000e-005	0.0000	1.4000
<b>Total</b>	<b>3.0600e-003</b>	<b>0.0435</b>	<b>0.0389</b>	<b>1.3000e-004</b>	<b>0.0182</b>	<b>7.6000e-004</b>	<b>0.0190</b>	<b>4.5800e-003</b>	<b>7.0000e-004</b>	<b>5.2800e-003</b>	<b>0.0000</b>	<b>11.2835</b>	<b>11.2835</b>	<b>1.4000e-004</b>	<b>0.0000</b>	<b>11.2862</b>

#### Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.6300e-003	0.0000	2.6300e-003	3.0000e-004	0.0000	3.0000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.8500e-003	0.1089	0.0526	1.1000e-004		4.3800e-003	4.3800e-003		4.0300e-003	4.0300e-003	0.0000	10.7619	10.7619	3.2500e-003	0.0000	10.8300
<b>Total</b>	<b>8.8500e-003</b>	<b>0.1089</b>	<b>0.0526</b>	<b>1.1000e-004</b>	<b>2.6300e-003</b>	<b>4.3800e-003</b>	<b>7.0100e-003</b>	<b>3.0000e-004</b>	<b>4.0300e-003</b>	<b>4.3300e-003</b>	<b>0.0000</b>	<b>10.7619</b>	<b>10.7619</b>	<b>3.2500e-003</b>	<b>0.0000</b>	<b>10.8300</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	2.1300e-003	0.0383	0.0262	1.0000e-004	0.0162	6.7000e-004	0.0169	4.0500e-003	6.1000e-004	4.6700e-003	0.0000	8.9300	8.9300	6.0000e-005	0.0000	8.9312
Vendor	4.1000e-004	4.3900e-003	5.1300e-003	1.0000e-005	3.1000e-004	8.0000e-005	3.9000e-004	9.0000e-005	8.0000e-005	1.6000e-004	0.0000	0.9549	0.9549	1.0000e-005	0.0000	0.9550
Worker	5.2000e-004	7.5000e-004	7.6000e-003	2.0000e-005	1.6500e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.3986	1.3986	7.0000e-005	0.0000	1.4000
<b>Total</b>	<b>3.0600e-003</b>	<b>0.0435</b>	<b>0.0389</b>	<b>1.3000e-004</b>	<b>0.0182</b>	<b>7.6000e-004</b>	<b>0.0190</b>	<b>4.5800e-003</b>	<b>7.0000e-004</b>	<b>5.2800e-003</b>	<b>0.0000</b>	<b>11.2835</b>	<b>11.2835</b>	<b>1.4000e-004</b>	<b>0.0000</b>	<b>11.2862</b>

**3.4 Project 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	0.1361	1.4096	0.6773	1.3200e-003		0.0738	0.0738		0.0697	0.0697	0.0000	121.2115	121.2115	0.0290	0.0000	121.8212
<b>Total</b>	<b>0.1361</b>	<b>1.4096</b>	<b>0.6773</b>	<b>1.3200e-003</b>		<b>0.0738</b>	<b>0.0738</b>		<b>0.0697</b>	<b>0.0697</b>	<b>0.0000</b>	<b>121.2115</b>	<b>121.2115</b>	<b>0.0290</b>	<b>0.0000</b>	<b>121.8212</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	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	2.1300e-003	0.0228	0.0267	5.0000e-005	1.6100e-003	4.3000e-004	2.0400e-003	4.6000e-004	3.9000e-004	8.5000e-004	0.0000	4.9653	4.9653	3.0000e-005	0.0000	4.9660
Worker	8.9400e-003	0.0131	0.1317	3.2000e-004	0.0286	1.8000e-004	0.0288	7.5900e-003	1.7000e-004	7.7600e-003	0.0000	24.2428	24.2428	1.1300e-003	0.0000	24.2665
<b>Total</b>	<b>0.0111</b>	<b>0.0359</b>	<b>0.1584</b>	<b>3.7000e-004</b>	<b>0.0302</b>	<b>6.1000e-004</b>	<b>0.0308</b>	<b>8.0500e-003</b>	<b>5.6000e-004</b>	<b>8.6100e-003</b>	<b>0.0000</b>	<b>29.2081</b>	<b>29.2081</b>	<b>1.1600e-003</b>	<b>0.0000</b>	<b>29.2325</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	0.1361	1.4096	0.6773	1.3200e-003		0.0738	0.0738		0.0697	0.0697	0.0000	121.2113	121.2113	0.0290	0.0000	121.8211
<b>Total</b>	<b>0.1361</b>	<b>1.4096</b>	<b>0.6773</b>	<b>1.3200e-003</b>		<b>0.0738</b>	<b>0.0738</b>		<b>0.0697</b>	<b>0.0697</b>	<b>0.0000</b>	<b>121.2113</b>	<b>121.2113</b>	<b>0.0290</b>	<b>0.0000</b>	<b>121.8211</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	2.1300e-003	0.0228	0.0267	5.0000e-005	1.6100e-003	4.3000e-004	2.0400e-003	4.6000e-004	3.9000e-004	8.5000e-004	0.0000	4.9653	4.9653	3.0000e-005	0.0000	4.9660
Worker	8.9400e-003	0.0131	0.1317	3.2000e-004	0.0286	1.8000e-004	0.0288	7.5900e-003	1.7000e-004	7.7600e-003	0.0000	24.2428	24.2428	1.1300e-003	0.0000	24.2665
<b>Total</b>	<b>0.0111</b>	<b>0.0359</b>	<b>0.1584</b>	<b>3.7000e-004</b>	<b>0.0302</b>	<b>6.1000e-004</b>	<b>0.0308</b>	<b>8.0500e-003</b>	<b>5.6000e-004</b>	<b>8.6100e-003</b>	<b>0.0000</b>	<b>29.2081</b>	<b>29.2081</b>	<b>1.1600e-003</b>	<b>0.0000</b>	<b>29.2325</b>

**3.5 Paving - 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	5.9700e-003	0.0580	0.0394	6.0000e-005		3.6600e-003	3.6600e-003		3.3800e-003	3.3800e-003	0.0000	5.2790	5.2790	1.5000e-003	0.0000	5.3105
Paving	3.9000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>6.3600e-003</b>	<b>0.0580</b>	<b>0.0394</b>	<b>6.0000e-005</b>		<b>3.6600e-003</b>	<b>3.6600e-003</b>		<b>3.3800e-003</b>	<b>3.3800e-003</b>	<b>0.0000</b>	<b>5.2790</b>	<b>5.2790</b>	<b>1.5000e-003</b>	<b>0.0000</b>	<b>5.3105</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	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	1.6000e-004	1.7500e-003	2.0500e-003	0.0000	1.2000e-004	3.0000e-005	1.6000e-004	4.0000e-005	3.0000e-005	7.0000e-005	0.0000	0.3820	0.3820	0.0000	0.0000	0.3820
Worker	5.2000e-004	7.5000e-004	7.6000e-003	2.0000e-005	1.6500e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.3986	1.3986	7.0000e-005	0.0000	1.4000
<b>Total</b>	<b>6.8000e-004</b>	<b>2.5000e-003</b>	<b>9.6500e-003</b>	<b>2.0000e-005</b>	<b>1.7700e-003</b>	<b>4.0000e-005</b>	<b>1.8200e-003</b>	<b>4.8000e-004</b>	<b>4.0000e-005</b>	<b>5.2000e-004</b>	<b>0.0000</b>	<b>1.7806</b>	<b>1.7806</b>	<b>7.0000e-005</b>	<b>0.0000</b>	<b>1.7820</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	5.9700e-003	0.0580	0.0394	6.0000e-005		3.6600e-003	3.6600e-003		3.3800e-003	3.3800e-003	0.0000	5.2789	5.2789	1.5000e-003	0.0000	5.3105
Paving	3.9000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>6.3600e-003</b>	<b>0.0580</b>	<b>0.0394</b>	<b>6.0000e-005</b>		<b>3.6600e-003</b>	<b>3.6600e-003</b>		<b>3.3800e-003</b>	<b>3.3800e-003</b>	<b>0.0000</b>	<b>5.2789</b>	<b>5.2789</b>	<b>1.5000e-003</b>	<b>0.0000</b>	<b>5.3105</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	1.6000e-004	1.7500e-003	2.0500e-003	0.0000	1.2000e-004	3.0000e-005	1.6000e-004	4.0000e-005	3.0000e-005	7.0000e-005	0.0000	0.3820	0.3820	0.0000	0.0000	0.3820
Worker	5.2000e-004	7.5000e-004	7.6000e-003	2.0000e-005	1.6500e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.3986	1.3986	7.0000e-005	0.0000	1.4000
<b>Total</b>	<b>6.8000e-004</b>	<b>2.5000e-003</b>	<b>9.6500e-003</b>	<b>2.0000e-005</b>	<b>1.7700e-003</b>	<b>4.0000e-005</b>	<b>1.8200e-003</b>	<b>4.8000e-004</b>	<b>4.0000e-005</b>	<b>5.2000e-004</b>	<b>0.0000</b>	<b>1.7806</b>	<b>1.7806</b>	<b>7.0000e-005</b>	<b>0.0000</b>	<b>1.7820</b>

**RCFCD North Norco Channel Project - Phase 1 Utility Relocation**  
**Riverside-South Coast County, Annual**

**1.0 Project Characteristics**

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**1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	307.00	User Defined Unit	0.10	307.00	0

**1.2 Other Project Characteristics**

<b>Urbanization</b>	Urban	<b>Wind Speed (m/s)</b>	2.4	<b>Precipitation Freq (Days)</b>	28
<b>Climate Zone</b>	10			<b>Operational Year</b>	2016
<b>Utility Company</b>	Southern California Edison				
<b>CO2 Intensity (lb/MWhr)</b>	630.89	<b>CH4 Intensity (lb/MWhr)</b>	0.029	<b>N2O Intensity (lb/MWhr)</b>	0.006

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

Land Use - Estimated total utility length: 307 feet

## 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					
2015	3.5000e-003	0.0326	0.0262	4.0000e-005	5.8000e-004	2.3400e-003	2.9300e-003	1.6000e-004	2.1600e-003	2.3100e-003	0.0000	3.5011	3.5011	7.7000e-004	0.0000	3.5173
<b>Total</b>	<b>3.5000e-003</b>	<b>0.0326</b>	<b>0.0262</b>	<b>4.0000e-005</b>	<b>5.8000e-004</b>	<b>2.3400e-003</b>	<b>2.9300e-003</b>	<b>1.6000e-004</b>	<b>2.1600e-003</b>	<b>2.3100e-003</b>	<b>0.0000</b>	<b>3.5011</b>	<b>3.5011</b>	<b>7.7000e-004</b>	<b>0.0000</b>	<b>3.5173</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					
2015	3.5000e-003	0.0326	0.0262	4.0000e-005	5.8000e-004	2.3400e-003	2.9300e-003	1.6000e-004	2.1600e-003	2.3100e-003	0.0000	3.5011	3.5011	7.7000e-004	0.0000	3.5173
<b>Total</b>	<b>3.5000e-003</b>	<b>0.0326</b>	<b>0.0262</b>	<b>4.0000e-005</b>	<b>5.8000e-004</b>	<b>2.3400e-003</b>	<b>2.9300e-003</b>	<b>1.6000e-004</b>	<b>2.1600e-003</b>	<b>2.3100e-003</b>	<b>0.0000</b>	<b>3.5011</b>	<b>3.5011</b>	<b>7.7000e-004</b>	<b>0.0000</b>	<b>3.5173</b>

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

### 3.0 Construction Detail

#### Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Trenching	Trenching	8/1/2015	8/25/2015	5	17	

#### OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Trenching	Tractors/Loaders/Backhoes	1	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
Trenching	1	4.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

### 3.1 Mitigation Measures Construction

Water Exposed Area

### 3.2 Trenching - 2015

#### 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	3.0500e-003	0.0291	0.0205	3.0000e-005		2.2700e-003	2.2700e-003		2.0900e-003	2.0900e-003	0.0000	2.5150	2.5150	7.5000e-004	0.0000	2.5308
<b>Total</b>	<b>3.0500e-003</b>	<b>0.0291</b>	<b>0.0205</b>	<b>3.0000e-005</b>		<b>2.2700e-003</b>	<b>2.2700e-003</b>		<b>2.0900e-003</b>	<b>2.0900e-003</b>	<b>0.0000</b>	<b>2.5150</b>	<b>2.5150</b>	<b>7.5000e-004</b>	<b>0.0000</b>	<b>2.5308</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	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	3.1000e-004	3.3900e-003	3.7100e-003	1.0000e-005	2.1000e-004	7.0000e-005	2.8000e-004	6.0000e-005	6.0000e-005	1.2000e-004	0.0000	0.6570	0.6570	0.0000	0.0000	0.6571
Worker	1.3000e-004	1.9000e-004	1.9200e-003	0.0000	3.7000e-004	0.0000	3.8000e-004	1.0000e-004	0.0000	1.0000e-004	0.0000	0.3290	0.3290	2.0000e-005	0.0000	0.3294
<b>Total</b>	<b>4.4000e-004</b>	<b>3.5800e-003</b>	<b>5.6300e-003</b>	<b>1.0000e-005</b>	<b>5.8000e-004</b>	<b>7.0000e-005</b>	<b>6.6000e-004</b>	<b>1.6000e-004</b>	<b>6.0000e-005</b>	<b>2.2000e-004</b>	<b>0.0000</b>	<b>0.9860</b>	<b>0.9860</b>	<b>2.0000e-005</b>	<b>0.0000</b>	<b>0.9865</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	3.0500e-003	0.0291	0.0205	3.0000e-005		2.2700e-003	2.2700e-003		2.0900e-003	2.0900e-003	0.0000	2.5150	2.5150	7.5000e-004	0.0000	2.5308
<b>Total</b>	<b>3.0500e-003</b>	<b>0.0291</b>	<b>0.0205</b>	<b>3.0000e-005</b>		<b>2.2700e-003</b>	<b>2.2700e-003</b>		<b>2.0900e-003</b>	<b>2.0900e-003</b>	<b>0.0000</b>	<b>2.5150</b>	<b>2.5150</b>	<b>7.5000e-004</b>	<b>0.0000</b>	<b>2.5308</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	3.1000e-004	3.3900e-003	3.7100e-003	1.0000e-005	2.1000e-004	7.0000e-005	2.8000e-004	6.0000e-005	6.0000e-005	1.2000e-004	0.0000	0.6570	0.6570	0.0000	0.0000	0.6571
Worker	1.3000e-004	1.9000e-004	1.9200e-003	0.0000	3.7000e-004	0.0000	3.8000e-004	1.0000e-004	0.0000	1.0000e-004	0.0000	0.3290	0.3290	2.0000e-005	0.0000	0.3294
<b>Total</b>	<b>4.4000e-004</b>	<b>3.5800e-003</b>	<b>5.6300e-003</b>	<b>1.0000e-005</b>	<b>5.8000e-004</b>	<b>7.0000e-005</b>	<b>6.6000e-004</b>	<b>1.6000e-004</b>	<b>6.0000e-005</b>	<b>2.2000e-004</b>	<b>0.0000</b>	<b>0.9860</b>	<b>0.9860</b>	<b>2.0000e-005</b>	<b>0.0000</b>	<b>0.9865</b>

**RCFCD North Norco Channel Project - Line N-2, Line NC, and Lateral NC-1  
Riverside-South Coast County, Annual**

**1.0 Project Characteristics**

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**1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	109.50	User Defined Unit	4.37	109,500.00	0
Other Asphalt Surfaces	1.65	Acre	1.65	71,874.00	0

**1.2 Other Project Characteristics**

<b>Urbanization</b>	Urban	<b>Wind Speed (m/s)</b>	2.4	<b>Precipitation Freq (Days)</b>	28
<b>Climate Zone</b>	10	<b>Operational Year</b>	2017		
<b>Utility Company</b>	Southern California Edison				
<b>CO2 Intensity (lb/MW hr)</b>	630.89	<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 -  
Land Use - 2,175 linear feet. 4.37 acres.

## 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	0.0443	0.4839	0.3466	7.3000e-004	0.0191	0.0211	0.0401	4.8200e-003	0.0194	0.0243	0.0000	65.1243	65.1243	0.0128	0.0000	65.3939
2017	0.0790	0.8161	0.6249	1.3200e-003	0.0290	0.0363	0.0653	7.5300e-003	0.0335	0.0410	0.0000	116.0577	116.0577	0.0234	0.0000	116.5488
<b>Total</b>	<b>0.1232</b>	<b>1.3000</b>	<b>0.9715</b>	<b>2.0500e-003</b>	<b>0.0481</b>	<b>0.0574</b>	<b>0.1054</b>	<b>0.0124</b>	<b>0.0529</b>	<b>0.0653</b>	<b>0.0000</b>	<b>181.1820</b>	<b>181.1820</b>	<b>0.0362</b>	<b>0.0000</b>	<b>181.9427</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	0.0443	0.4839	0.3466	7.3000e-004	0.0182	0.0211	0.0392	4.7100e-003	0.0194	0.0242	0.0000	65.1243	65.1243	0.0128	0.0000	65.3939
2017	0.0790	0.8161	0.6249	1.3200e-003	0.0281	0.0363	0.0644	7.4200e-003	0.0335	0.0409	0.0000	116.0576	116.0576	0.0234	0.0000	116.5487
<b>Total</b>	<b>0.1232</b>	<b>1.3000</b>	<b>0.9715</b>	<b>2.0500e-003</b>	<b>0.0463</b>	<b>0.0574</b>	<b>0.1036</b>	<b>0.0121</b>	<b>0.0529</b>	<b>0.0651</b>	<b>0.0000</b>	<b>181.1819</b>	<b>181.1819</b>	<b>0.0362</b>	<b>0.0000</b>	<b>181.9426</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>3.77</b>	<b>0.00</b>	<b>1.71</b>	<b>1.78</b>	<b>0.00</b>	<b>0.34</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 and Construction	Grading	11/1/2016	4/14/2017	5	119	
2	Paving	Paving	4/15/2017	4/28/2017	5	10	

#### OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading and Construction	Excavators	2	8.00	162	0.38
Grading and Construction	Rubber Tired Loaders	1	8.00	199	0.36
Grading and Construction	Signal Boards	2	8.00	6	0.82
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Paving	Signal Boards	2	8.00	6	0.82
Grading and Construction	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Paving	Pavers	1	8.00	125	0.42
Paving	Rollers	1	8.00	80	0.38

#### Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading and Construction	6	40.00	8.00	938.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	30.00	6.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

### 3.1 Mitigation Measures Construction

Water Exposed Area

### 3.2 Grading and 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					
Fugitive Dust					1.4800e-003	0.0000	1.4800e-003	1.8000e-004	0.0000	1.8000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0371	0.4156	0.2509	4.6000e-004		0.0199	0.0199		0.0183	0.0183	0.0000	42.2723	42.2723	0.0124	0.0000	42.5319
<b>Total</b>	<b>0.0371</b>	<b>0.4156</b>	<b>0.2509</b>	<b>4.6000e-004</b>	<b>1.4800e-003</b>	<b>0.0199</b>	<b>0.0214</b>	<b>1.8000e-004</b>	<b>0.0183</b>	<b>0.0185</b>	<b>0.0000</b>	<b>42.2723</b>	<b>42.2723</b>	<b>0.0124</b>	<b>0.0000</b>	<b>42.5319</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	2.7000e-003	0.0485	0.0331	1.2000e-004	6.8100e-003	8.4000e-004	7.6600e-003	1.7600e-003	7.7000e-004	2.5300e-003	0.0000	11.2857	11.2857	7.0000e-005	0.0000	11.2872
Vendor	1.4400e-003	0.0154	0.0181	4.0000e-005	1.0900e-003	2.9000e-004	1.3800e-003	3.1000e-004	2.6000e-004	5.8000e-004	0.0000	3.3611	3.3611	2.0000e-005	0.0000	3.3616
Worker	3.0200e-003	4.4200e-003	0.0446	1.1000e-004	9.6700e-003	6.0000e-005	9.7300e-003	2.5700e-003	6.0000e-005	2.6200e-003	0.0000	8.2053	8.2053	3.8000e-004	0.0000	8.2133
<b>Total</b>	<b>7.1600e-003</b>	<b>0.0683</b>	<b>0.0957</b>	<b>2.7000e-004</b>	<b>0.0176</b>	<b>1.1900e-003</b>	<b>0.0188</b>	<b>4.6400e-003</b>	<b>1.0900e-003</b>	<b>5.7300e-003</b>	<b>0.0000</b>	<b>22.8521</b>	<b>22.8521</b>	<b>4.7000e-004</b>	<b>0.0000</b>	<b>22.8621</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					5.8000e-004	0.0000	5.8000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0371	0.4156	0.2509	4.6000e-004		0.0199	0.0199		0.0183	0.0183	0.0000	42.2722	42.2722	0.0124	0.0000	42.5318
<b>Total</b>	<b>0.0371</b>	<b>0.4156</b>	<b>0.2509</b>	<b>4.6000e-004</b>	<b>5.8000e-004</b>	<b>0.0199</b>	<b>0.0205</b>	<b>7.0000e-005</b>	<b>0.0183</b>	<b>0.0184</b>	<b>0.0000</b>	<b>42.2722</b>	<b>42.2722</b>	<b>0.0124</b>	<b>0.0000</b>	<b>42.5318</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	2.7000e-003	0.0485	0.0331	1.2000e-004	6.8100e-003	8.4000e-004	7.6600e-003	1.7600e-003	7.7000e-004	2.5300e-003	0.0000	11.2857	11.2857	7.0000e-005	0.0000	11.2872
Vendor	1.4400e-003	0.0154	0.0181	4.0000e-005	1.0900e-003	2.9000e-004	1.3800e-003	3.1000e-004	2.6000e-004	5.8000e-004	0.0000	3.3611	3.3611	2.0000e-005	0.0000	3.3616
Worker	3.0200e-003	4.4200e-003	0.0446	1.1000e-004	9.6700e-003	6.0000e-005	9.7300e-003	2.5700e-003	6.0000e-005	2.6200e-003	0.0000	8.2053	8.2053	3.8000e-004	0.0000	8.2133
<b>Total</b>	<b>7.1600e-003</b>	<b>0.0683</b>	<b>0.0957</b>	<b>2.7000e-004</b>	<b>0.0176</b>	<b>1.1900e-003</b>	<b>0.0188</b>	<b>4.6400e-003</b>	<b>1.0900e-003</b>	<b>5.7300e-003</b>	<b>0.0000</b>	<b>22.8521</b>	<b>22.8521</b>	<b>4.7000e-004</b>	<b>0.0000</b>	<b>22.8621</b>

## 3.2 Grading and Construction - 2017

### 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					1.4800e-003	0.0000	1.4800e-003	1.8000e-004	0.0000	1.8000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0595	0.6534	0.4249	7.8000e-004		0.0311	0.0311		0.0287	0.0287	0.0000	70.9738	70.9738	0.0211	0.0000	71.4162
<b>Total</b>	<b>0.0595</b>	<b>0.6534</b>	<b>0.4249</b>	<b>7.8000e-004</b>	<b>1.4800e-003</b>	<b>0.0311</b>	<b>0.0325</b>	<b>1.8000e-004</b>	<b>0.0287</b>	<b>0.0288</b>	<b>0.0000</b>	<b>70.9738</b>	<b>70.9738</b>	<b>0.0211</b>	<b>0.0000</b>	<b>71.4162</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	4.2600e-003	0.0756	0.0542	2.1000e-004	7.3300e-003	1.3200e-003	8.6500e-003	1.9500e-003	1.2100e-003	3.1600e-003	0.0000	18.9109	18.9109	1.2000e-004	0.0000	18.9134
Vendor	2.2200e-003	0.0239	0.0291	6.0000e-005	1.8600e-003	4.4000e-004	2.3000e-003	5.3000e-004	4.0000e-004	9.4000e-004	0.0000	5.6324	5.6324	4.0000e-005	0.0000	5.6332
Worker	4.6000e-003	6.7600e-003	0.0680	1.9000e-004	0.0165	1.0000e-004	0.0166	4.3800e-003	9.0000e-005	4.4700e-003	0.0000	13.4312	13.4312	6.0000e-004	0.0000	13.4438
<b>Total</b>	<b>0.0111</b>	<b>0.1062</b>	<b>0.1512</b>	<b>4.6000e-004</b>	<b>0.0257</b>	<b>1.8600e-003</b>	<b>0.0275</b>	<b>6.8600e-003</b>	<b>1.7000e-003</b>	<b>8.5700e-003</b>	<b>0.0000</b>	<b>37.9745</b>	<b>37.9745</b>	<b>7.6000e-004</b>	<b>0.0000</b>	<b>37.9903</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					5.8000e-004	0.0000	5.8000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0595	0.6534	0.4249	7.8000e-004		0.0311	0.0311		0.0287	0.0287	0.0000	70.9737	70.9737	0.0211	0.0000	71.4161
<b>Total</b>	<b>0.0595</b>	<b>0.6534</b>	<b>0.4249</b>	<b>7.8000e-004</b>	<b>5.8000e-004</b>	<b>0.0311</b>	<b>0.0316</b>	<b>7.0000e-005</b>	<b>0.0287</b>	<b>0.0287</b>	<b>0.0000</b>	<b>70.9737</b>	<b>70.9737</b>	<b>0.0211</b>	<b>0.0000</b>	<b>71.4161</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	4.2600e-003	0.0756	0.0542	2.1000e-004	7.3300e-003	1.3200e-003	8.6500e-003	1.9500e-003	1.2100e-003	3.1600e-003	0.0000	18.9109	18.9109	1.2000e-004	0.0000	18.9134
Vendor	2.2200e-003	0.0239	0.0291	6.0000e-005	1.8600e-003	4.4000e-004	2.3000e-003	5.3000e-004	4.0000e-004	9.4000e-004	0.0000	5.6324	5.6324	4.0000e-005	0.0000	5.6332
Worker	4.6000e-003	6.7600e-003	0.0680	1.9000e-004	0.0165	1.0000e-004	0.0166	4.3800e-003	9.0000e-005	4.4700e-003	0.0000	13.4312	13.4312	6.0000e-004	0.0000	13.4438
<b>Total</b>	<b>0.0111</b>	<b>0.1062</b>	<b>0.1512</b>	<b>4.6000e-004</b>	<b>0.0257</b>	<b>1.8600e-003</b>	<b>0.0275</b>	<b>6.8600e-003</b>	<b>1.7000e-003</b>	<b>8.5700e-003</b>	<b>0.0000</b>	<b>37.9745</b>	<b>37.9745</b>	<b>7.6000e-004</b>	<b>0.0000</b>	<b>37.9903</b>

### 3.3 Paving - 2017

#### 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	5.5100e-003	0.0535	0.0391	6.0000e-005		3.3300e-003	3.3300e-003		3.0700e-003	3.0700e-003	0.0000	5.2030	5.2030	1.5000e-003	0.0000	5.2346
Paving	2.1600e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>7.6700e-003</b>	<b>0.0535</b>	<b>0.0391</b>	<b>6.0000e-005</b>		<b>3.3300e-003</b>	<b>3.3300e-003</b>		<b>3.0700e-003</b>	<b>3.0700e-003</b>	<b>0.0000</b>	<b>5.2030</b>	<b>5.2030</b>	<b>1.5000e-003</b>	<b>0.0000</b>	<b>5.2346</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	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	2.2000e-004	2.3900e-003	2.9100e-003	1.0000e-005	1.9000e-004	4.0000e-005	2.3000e-004	5.0000e-005	4.0000e-005	9.0000e-005	0.0000	0.5632	0.5632	0.0000	0.0000	0.5633
Worker	4.6000e-004	6.8000e-004	6.8000e-003	2.0000e-005	1.6500e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.3431	1.3431	6.0000e-005	0.0000	1.3444
<b>Total</b>	<b>6.8000e-004</b>	<b>3.0700e-003</b>	<b>9.7100e-003</b>	<b>3.0000e-005</b>	<b>1.8400e-003</b>	<b>5.0000e-005</b>	<b>1.8900e-003</b>	<b>4.9000e-004</b>	<b>5.0000e-005</b>	<b>5.4000e-004</b>	<b>0.0000</b>	<b>1.9064</b>	<b>1.9064</b>	<b>6.0000e-005</b>	<b>0.0000</b>	<b>1.9077</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	5.5100e-003	0.0535	0.0391	6.0000e-005		3.3300e-003	3.3300e-003		3.0700e-003	3.0700e-003	0.0000	5.2030	5.2030	1.5000e-003	0.0000	5.2346
Paving	2.1600e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>7.6700e-003</b>	<b>0.0535</b>	<b>0.0391</b>	<b>6.0000e-005</b>		<b>3.3300e-003</b>	<b>3.3300e-003</b>		<b>3.0700e-003</b>	<b>3.0700e-003</b>	<b>0.0000</b>	<b>5.2030</b>	<b>5.2030</b>	<b>1.5000e-003</b>	<b>0.0000</b>	<b>5.2346</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	2.2000e-004	2.3900e-003	2.9100e-003	1.0000e-005	1.9000e-004	4.0000e-005	2.3000e-004	5.0000e-005	4.0000e-005	9.0000e-005	0.0000	0.5632	0.5632	0.0000	0.0000	0.5633
Worker	4.6000e-004	6.8000e-004	6.8000e-003	2.0000e-005	1.6500e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.3431	1.3431	6.0000e-005	0.0000	1.3444
<b>Total</b>	<b>6.8000e-004</b>	<b>3.0700e-003</b>	<b>9.7100e-003</b>	<b>3.0000e-005</b>	<b>1.8400e-003</b>	<b>5.0000e-005</b>	<b>1.8900e-003</b>	<b>4.9000e-004</b>	<b>5.0000e-005</b>	<b>5.4000e-004</b>	<b>0.0000</b>	<b>1.9064</b>	<b>1.9064</b>	<b>6.0000e-005</b>	<b>0.0000</b>	<b>1.9077</b>

**RCFCD North Norco Channel Project - Phase 2 Utility Relocation**  
**Riverside-South Coast County, Annual**

**1.0 Project Characteristics**

---

**1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	544.00	User Defined Unit	0.10	544.00	0

**1.2 Other Project Characteristics**

<b>Urbanization</b>	Urban	<b>Wind Speed (m/s)</b>	2.4	<b>Precipitation Freq (Days)</b>	28
<b>Climate Zone</b>	10			<b>Operational Year</b>	2016
<b>Utility Company</b>	Southern California Edison				
<b>CO2 Intensity (lb/MW hr)</b>	630.89	<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**

Land Use - Estimated total utility length: 544 feet

## 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	6.0000e-003	0.0562	0.0469	7.0000e-005	1.0700e-003	3.9900e-003	5.0600e-003	2.9000e-004	3.6700e-003	3.9600e-003	0.0000	6.3135	6.3135	1.4100e-003	0.0000	6.3430
<b>Total</b>	<b>6.0000e-003</b>	<b>0.0562</b>	<b>0.0469</b>	<b>7.0000e-005</b>	<b>1.0700e-003</b>	<b>3.9900e-003</b>	<b>5.0600e-003</b>	<b>2.9000e-004</b>	<b>3.6700e-003</b>	<b>3.9600e-003</b>	<b>0.0000</b>	<b>6.3135</b>	<b>6.3135</b>	<b>1.4100e-003</b>	<b>0.0000</b>	<b>6.3430</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	6.0000e-003	0.0562	0.0469	7.0000e-005	1.0700e-003	3.9900e-003	5.0600e-003	2.9000e-004	3.6700e-003	3.9600e-003	0.0000	6.3135	6.3135	1.4100e-003	0.0000	6.3430
<b>Total</b>	<b>6.0000e-003</b>	<b>0.0562</b>	<b>0.0469</b>	<b>7.0000e-005</b>	<b>1.0700e-003</b>	<b>3.9900e-003</b>	<b>5.0600e-003</b>	<b>2.9000e-004</b>	<b>3.6700e-003</b>	<b>3.9600e-003</b>	<b>0.0000</b>	<b>6.3135</b>	<b>6.3135</b>	<b>1.4100e-003</b>	<b>0.0000</b>	<b>6.3430</b>

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



### 3.0 Construction Detail

#### Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Trenching	Trenching	9/16/2016	10/28/2016	5	31	

#### OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Trenching	Tractors/Loaders/Backhoes	1	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
Trenching	1	4.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

### 3.1 Mitigation Measures Construction

Water Exposed Area

### 3.2 Trenching - 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	5.2800e-003	0.0505	0.0374	5.0000e-005		3.8800e-003	3.8800e-003		3.5700e-003	3.5700e-003	0.0000	4.5513	4.5513	1.3700e-003	0.0000	4.5802
<b>Total</b>	<b>5.2800e-003</b>	<b>0.0505</b>	<b>0.0374</b>	<b>5.0000e-005</b>		<b>3.8800e-003</b>	<b>3.8800e-003</b>		<b>3.5700e-003</b>	<b>3.5700e-003</b>	<b>0.0000</b>	<b>4.5513</b>	<b>4.5513</b>	<b>1.3700e-003</b>	<b>0.0000</b>	<b>4.5802</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	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	5.1000e-004	5.4400e-003	6.3600e-003	1.0000e-005	3.8000e-004	1.0000e-004	4.9000e-004	1.1000e-004	9.0000e-005	2.0000e-004	0.0000	1.1840	1.1840	1.0000e-005	0.0000	1.1842
Worker	2.1000e-004	3.1000e-004	3.1400e-003	1.0000e-005	6.8000e-004	0.0000	6.9000e-004	1.8000e-004	0.0000	1.8000e-004	0.0000	0.5781	0.5781	3.0000e-005	0.0000	0.5787
<b>Total</b>	<b>7.2000e-004</b>	<b>5.7500e-003</b>	<b>9.5000e-003</b>	<b>2.0000e-005</b>	<b>1.0600e-003</b>	<b>1.0000e-004</b>	<b>1.1800e-003</b>	<b>2.9000e-004</b>	<b>9.0000e-005</b>	<b>3.8000e-004</b>	<b>0.0000</b>	<b>1.7621</b>	<b>1.7621</b>	<b>4.0000e-005</b>	<b>0.0000</b>	<b>1.7629</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	5.2800e-003	0.0505	0.0374	5.0000e-005		3.8800e-003	3.8800e-003		3.5700e-003	3.5700e-003	0.0000	4.5513	4.5513	1.3700e-003	0.0000	4.5802
<b>Total</b>	<b>5.2800e-003</b>	<b>0.0505</b>	<b>0.0374</b>	<b>5.0000e-005</b>		<b>3.8800e-003</b>	<b>3.8800e-003</b>		<b>3.5700e-003</b>	<b>3.5700e-003</b>	<b>0.0000</b>	<b>4.5513</b>	<b>4.5513</b>	<b>1.3700e-003</b>	<b>0.0000</b>	<b>4.5802</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	5.1000e-004	5.4400e-003	6.3600e-003	1.0000e-005	3.8000e-004	1.0000e-004	4.9000e-004	1.1000e-004	9.0000e-005	2.0000e-004	0.0000	1.1840	1.1840	1.0000e-005	0.0000	1.1842
Worker	2.1000e-004	3.1000e-004	3.1400e-003	1.0000e-005	6.8000e-004	0.0000	6.9000e-004	1.8000e-004	0.0000	1.8000e-004	0.0000	0.5781	0.5781	3.0000e-005	0.0000	0.5787
<b>Total</b>	<b>7.2000e-004</b>	<b>5.7500e-003</b>	<b>9.5000e-003</b>	<b>2.0000e-005</b>	<b>1.0600e-003</b>	<b>1.0000e-004</b>	<b>1.1800e-003</b>	<b>2.9000e-004</b>	<b>9.0000e-005</b>	<b>3.8000e-004</b>	<b>0.0000</b>	<b>1.7621</b>	<b>1.7621</b>	<b>4.0000e-005</b>	<b>0.0000</b>	<b>1.7629</b>

# **APPENDIX B**



# **APPENDIX B-1**

*Biological Technical Report and MSHCP  
Consistency Analysis*



**BIOLOGICAL RESOURCES TECHNICAL REPORT  
and  
MULTIPLE SPECIES HABITAT CONSERVATION  
PLAN (MSHCP) CONSISTENCY ANALYSIS  
for the  
NORTH NORCO CHANNEL STAGE II PROJECT**

*Prepared for:*

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Water Conservation District**  
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**OCTOBER 2014**





# Biological Resources Technical Report and MSHCP Consistency Analysis for the North Norco Channel Stage 11 Project

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# Biological Resources Technical Report and MSHCP Consistency Analysis for the North Norco Channel Stage 11 Project

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**Biological Resources Technical Report and MSHCP Consistency  
Analysis for the North Norco Channel Stage 11 Project**

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**Biological Resources Technical Report and MSHCP Consistency  
Analysis for the North Norco Channel Stage 11 Project**

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# Biological Resources Technical Report and MSHCP Consistency Analysis for the North Norco Channel Stage 11 Project

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## 1. INTRODUCTION

Riverside County Flood Control and Water Conservation District (District) proposes improvements within the District's North Norco Master Drainage Plan (unapproved) to reduce flood risk in the project area by constructing, operating and maintaining facilities that could convey the 100-year peak discharge and provide safe access across the road crossings at 6th Street, Valley View Avenue and Corona Avenue. The project includes drainage improvements to approximately 5,912 linear feet of the North Norco Channel Stage 11 (mainline) as well as construction of three laterals: Line N-2 in Sixth Street, Line NC in Valley View Avenue, and Line NC-1 in Detroit Street, collectively referred to as the North Norco Channel, Stage 11 Project (Project).

This Biological Resources Technical Report and Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) Consistency Analysis summarizes the results of biological studies conducted to describe the existing conditions of the biological resources on the Project site, including on-site vegetation, flora, wildlife, existing and potential special-status wildlife and plant species, and wildlife movement. A delineation of jurisdictional waters is provided under separate cover. This report also describes the consistency of the Project with the requirements of the MSHCP administered by the Regional Conservation Authority (RCA). The biological significance of these resources and potential project impacts are evaluated, and measures are recommended to avoid, minimize, or mitigate potential impacts to less-than-significant levels.

### 1.1 Project Area

The Project is located in western Riverside County, California in the City of Norco (Figure 1). The northern terminus of the Project is at the end of Rose Court, southwest of the intersection of 7th Street and Temescal Avenue. The Project alignment follows the existing interim North Norco Channel downstream in a southwest direction crossing Corona Avenue, Valley View Avenue, and 6th Street. The southern terminus of the Project is north of 5th Street and approximately 250 feet east of Sierra Avenue. The Project area is contained within the U.S. Geological Survey (USGS) 7.5-minute Corona North quadrangle, in Section 6 of Township 2 South Range 7 West (Figure 2). The approximate center point latitude is 33°56'22"N and the longitude is 117°32'55"W.

### 1.2 Regional Planning Context

The Project is within the boundaries of the MSHCP, a comprehensive, multi-jurisdictional habitat conservation plan focusing on conservation of species and their associated habitats in Western Riverside County. This plan is one of several large, multi-jurisdictional habitat-planning efforts in Southern California with the overall goal of maintaining biological and ecological diversity within a rapidly urbanizing region. The MSHCP allows Riverside County and its cities

# Biological Resources Technical Report and MSHCP Consistency Analysis for the North Norco Channel Stage 11 Project

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to better control local land-use decisions and maintain a strong economic climate in the region while addressing the requirements of the California Endangered Species Act (CESA) and federal Endangered Species Acts (FESA).

The MSHCP serves as a habitat conservation plan pursuant to Section 10(a)(1)(B) of the federal Endangered Species Act of 1973, as well as a Natural Communities Conservation Plan (NCCP) under the NCCP Act of 2001. The MSHCP allows the participating jurisdictions to authorize “take” of plant and wildlife species identified within the plan area. The U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW) have authority to regulate the take of threatened, endangered, and rare species. Under the MSHCP, the wildlife agencies have granted “take authorization” of covered species for otherwise lawful actions, such as public and private development that may incidentally take or harm individual species, in exchange for the assembly and management of a coordinated MSHCP conservation area.

The MSHCP is a “criteria-based plan” and does not rely on a hardline preserve map. Instead, the MSHCP reserve is assembled over time from a smaller subset of the Plan Area referred to as the Criteria Area. The Criteria Area consists of Criteria Cells (Cells) or Cell Groupings, and flexible guidelines (Criteria) for the assembly of conservation within the Cells or Cell Groupings. Cells and Cell Groupings also may be included within larger units known as Cores, Linkages, or Non-Contiguous Habitat Blocks.

A Geographic Information System (GIS) overlay of MSHCP Criteria Cells with the Project area boundary shows that the Project lies outside of any Criteria Area (Figure 3). The Project is south of Existing Core A, which consists of Prado Basin and the Santa Ana River, and south and east of Criteria Cells associated with Core A.

## 1.3 Project Description

The District proposes improvements to their facilities in accordance with the North Norco Master Drainage Plan in order to reduce flood risk in the Project area. Improvements would occur to the North Norco Channel Stage 11 mainline (referred to in this report as the main channel), Line N-2 Stage 1 in 6th Street, Line NC Stage 1 in Valley View Avenue, and Line NC-1 Stage 1 in Detroit Street. After consideration of 10 different alternatives, the District has selected an alternative that includes a concrete rectangular channel with a 24-foot base width and 8-foot depth west of Valley View Avenue and a trapezoidal channel with an earthen bottom and concrete side-slopes with 6 to 7 foot depth east of Valley View Avenue. The Project includes a slab bridge at 6th Street and double reinforced concrete box (RCB) culverts at both Valley View Avenue and Corona Avenue (Figure 4).

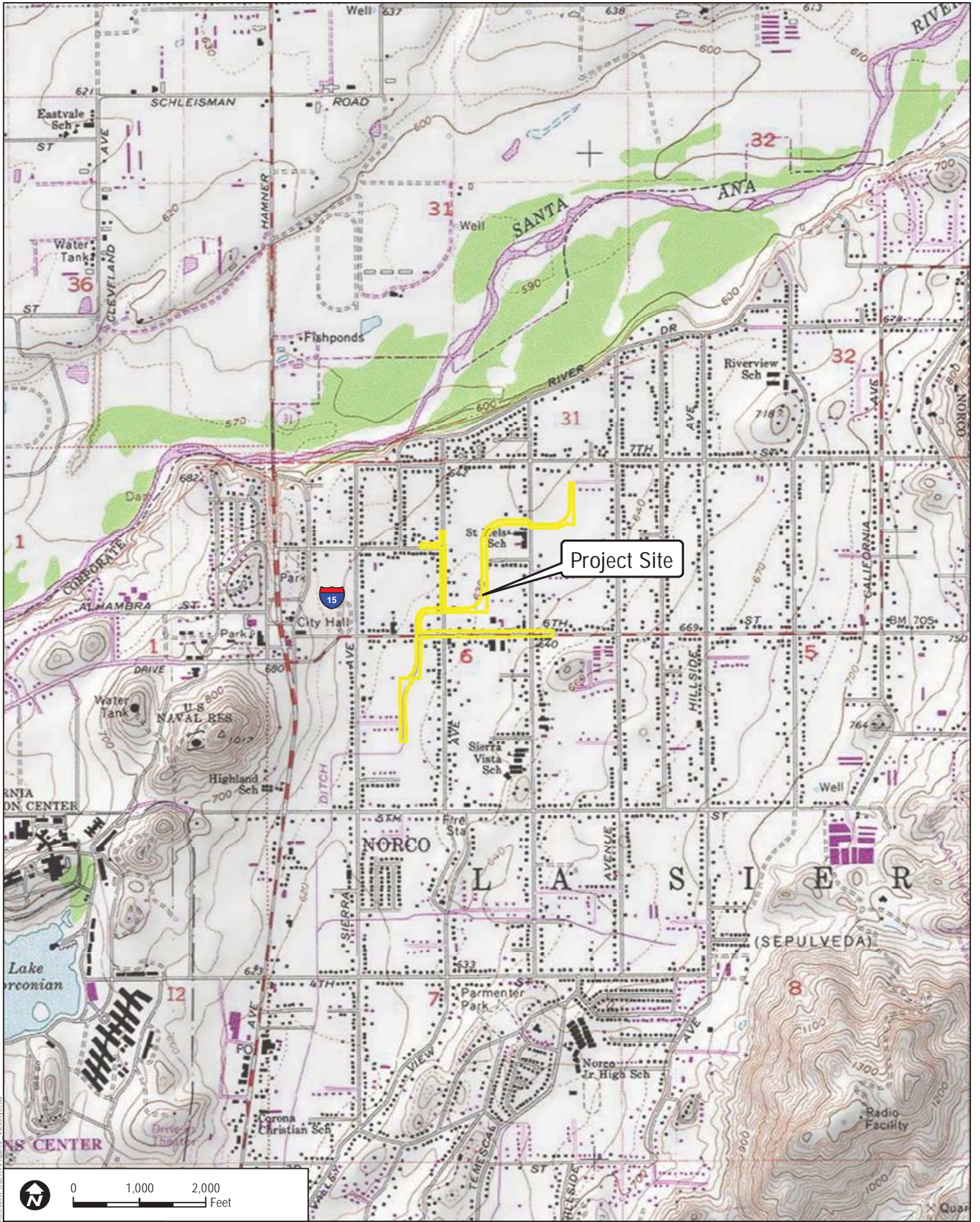


**Biological Resources Technical Report and MSHCP Consistency  
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SOURCE: USGS 7.5-Minute Series Quadrangle (Romoland, Murrieta)

**FIGURE 2**  
**Vicinity Map**

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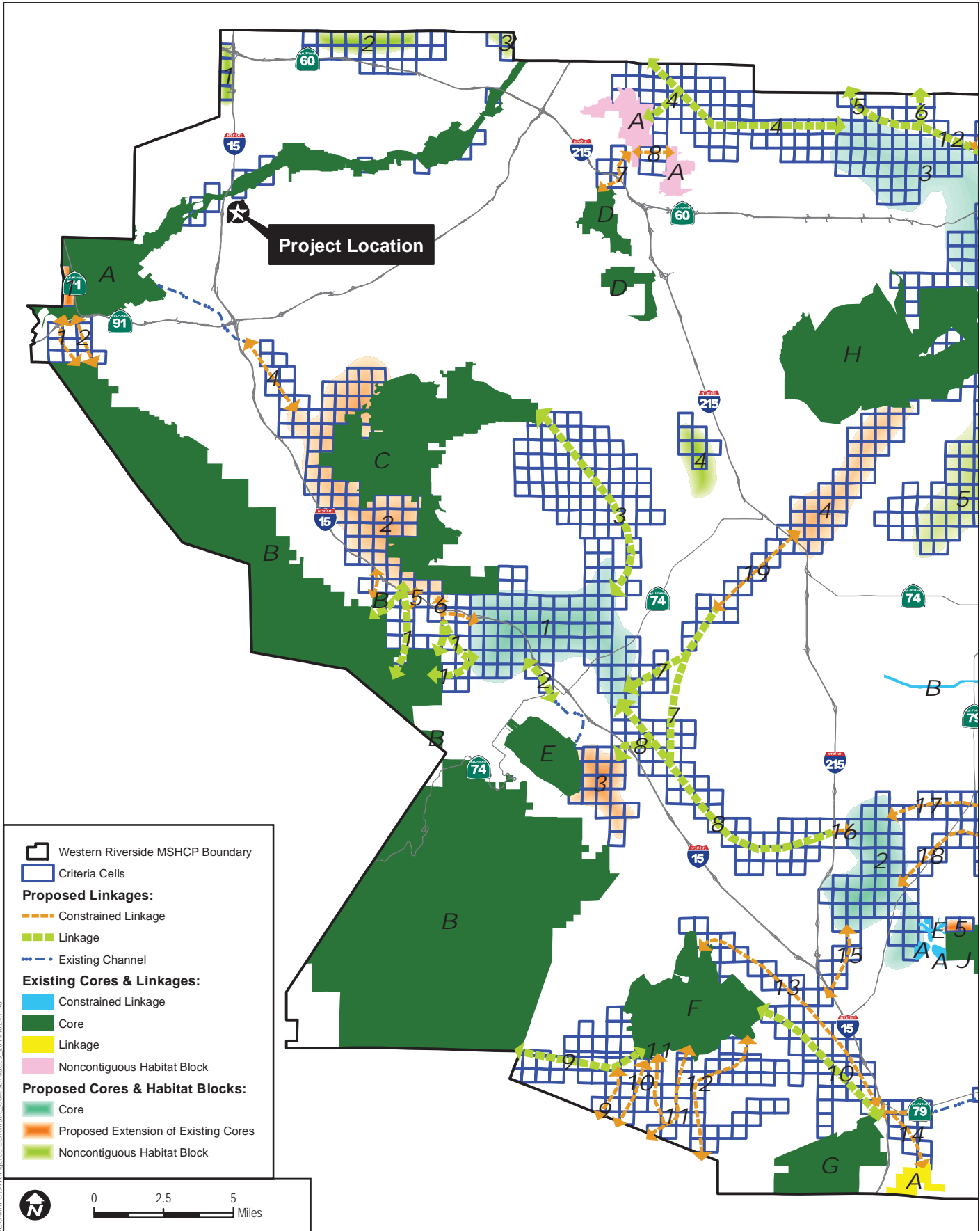
NORTH NORCO CHANNEL STAGE 11 PROJECT NO. 2-0-00140-11 BIOLOGICAL RESOURCES TECHNICAL REPORT AND MSHCP CONSISTENCY ANALYSIS

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SOURCE: County of Riverside MSHCP 2003

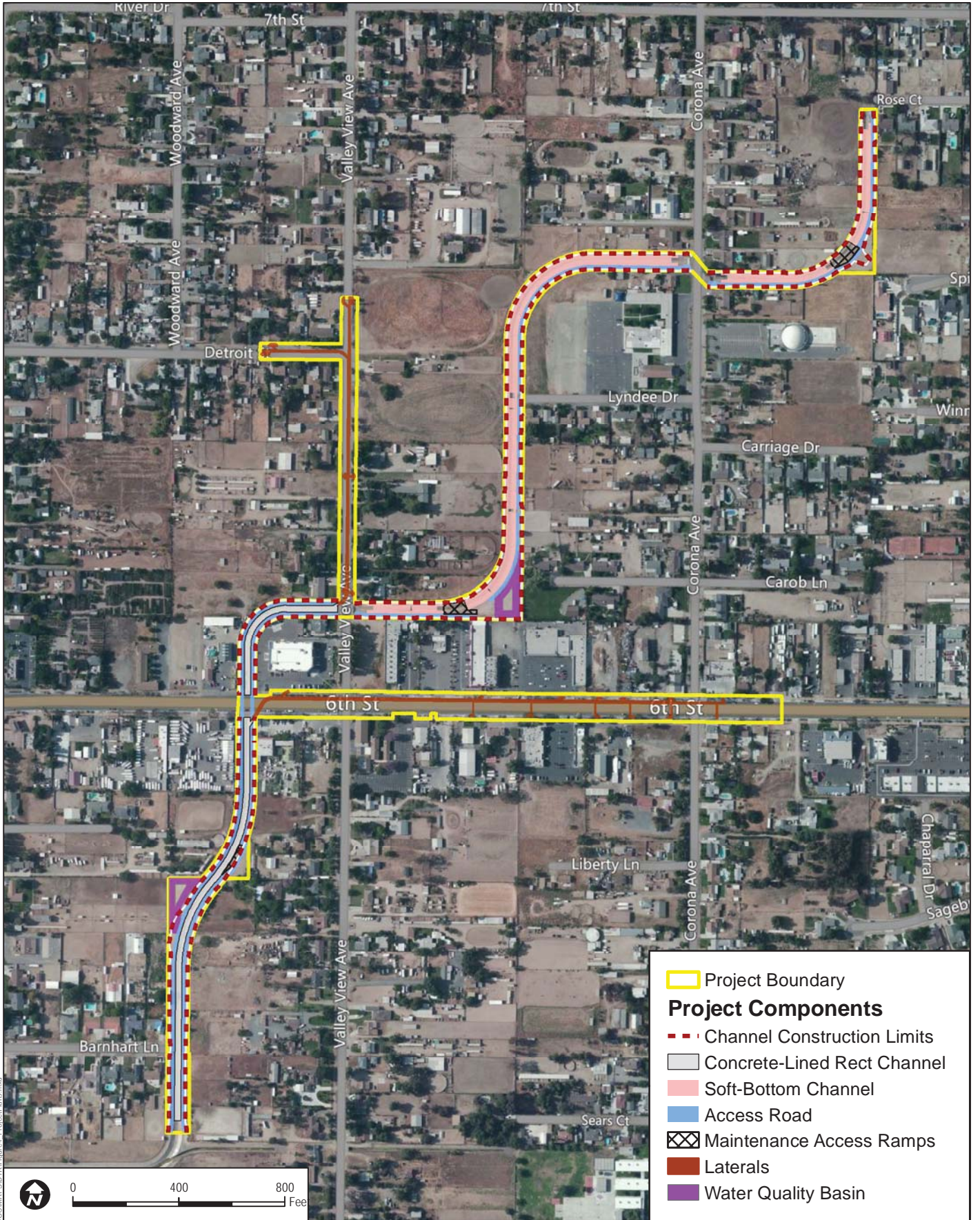
**FIGURE 3**  
**Vicinity Map with MSHCP Schematic Cores and Linkages**

NORTH NORCO CHANNEL STAGE 11 PROJECT NO. 2-0-00140-11 BIOLOGICAL RESOURCES TECHNICAL REPORT AND MSHCP CONSISTENCY ANALYSIS

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SOURCE: Bing 2013

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NORTH NORCO CHANNEL STAGE 11 PROJECT NO. 2-0-00140-11 BIOLOGICAL RESOURCES TECHNICAL REPORT AND MSHCP CONSISTENCY ANALYSIS

**FIGURE 4  
Project Plans**

**Biological Resources Technical Report and MSHCP Consistency  
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# Biological Resources Technical Report and MSHCP Consistency Analysis for the North Norco Channel Stage 11 Project

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## 2 REGULATORY SETTING

This section outlines the local, state, and federal regulations pertinent to the biological resources located in the proposed Project area.

### 2.1 Federal

#### 2.1.1 Federal Endangered Species Act

The FESA of 1973 (16 U.S.C. 1531 et seq.), as amended, is administered by the USFWS for most plant and animal species, and by the National Oceanic and Atmospheric Administration National Marine Fisheries Service for certain marine species. This legislation is intended to provide a means to conserve the ecosystems upon which endangered and threatened species depend and provide programs for the conservation of those species, thus preventing extinction of plants and wildlife. The FESA defines an endangered species as “any species that is in danger of extinction throughout all or a significant portion of its range.” A threatened species is defined as “any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.” Under FESA, it is unlawful to “take” any listed species, and “take” is defined as, “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.”

FESA allows for the issuance of incidental take permits for listed species under Section 7, which is generally available for projects that also require other federal agency permits or other approvals, and under Section 10, which provides for the approval of habitat conservation plans on private property without any other federal agency involvement.

#### 2.1.2 The Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (BGEPA) prohibits take, which is defined as to “pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, destroy, molest, disturb, or otherwise harm eagles, their nests, or their eggs.” Under the BGEPA, “disturb” means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available: (1) injury to an eagle; (2) decrease in its productivity by substantially interfering with normal breeding, feeding, or sheltering behavior; or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior. On September 11, 2009, the USFWS set in place rules (50 CFR parts 13 and 22) establishing two new permit types: (1) take of bald and golden eagles that is associated with, but is not the purpose of, the activity; and (2) purposeful take of eagle nests that pose a threat to human or eagle safety. Specifically, the BGEPA authorizes intentional take of eagle nests where: necessary to alleviate a safety hazard to people or eagles; necessary to ensure public health and safety; the

# Biological Resources Technical Report and MSHCP Consistency Analysis for the North Norco Channel Stage 11 Project

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nest prevents the use of a human-engineered structure; and/or the activity, or mitigation for the activity, will provide a net benefit to eagles; and allows inactive nests to be taken only in the case of safety emergencies.

## 2.1.3 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) was originally passed in 1918 as four bilateral treaties, or conventions, for the protection of a shared migratory bird resource. The primary motivation for the international negotiations was to stop the “indiscriminate slaughter” of migratory birds by market hunters and others. The MBTA protects over 800 species of birds (including their parts, eggs, and nests) from killing, hunting, pursuing, capturing, selling, and shipping unless expressly authorized or permitted.

## 2.2 State

### 2.2.1 State of California Endangered Species Act

The CESA (California Fish and Game Code, Section 2050 et seq.) provides protection and prohibits the take of plant, fish, and wildlife species listed by the State of California. Unlike FESA, state-listed plants have the same degree of protection as wildlife, but insects and other invertebrates may not be listed. Take is defined similarly to FESA and is prohibited for both listed and candidate species. Take authorization may be obtained by the project applicant from the CDFW under the CESA Section 2081, which allows take of a listed species for educational, scientific, or management purposes. In this case, applicants consult with CDFW to develop a set of measures and standards for managing the listed species, including full mitigation for impacts, funding of implementation, and monitoring of mitigation measures.

### Other Sections of the California Fish and Game Code

Sections 3511, 4700, 5050, and 5515 of the Fish and Game Code outline protection for fully protected species of mammals, birds, reptiles, amphibians, and fish. Species that are fully protected by these sections may not be taken or possessed at any time. CDFW cannot issue permits or licenses that authorize the “take” of any fully protected species, except under certain circumstances such as scientific research and live capture and relocation of such species pursuant to a permit for the protection of livestock. Furthermore, it is the responsibility of the CDFW to maintain viable populations of all native species. To that end, the CDFW has designated certain vertebrate species as Species of Special Concern because declining population levels, limited ranges, and/or continuing threats have made them vulnerable to extinction.



# Biological Resources Technical Report and MSHCP Consistency Analysis for the North Norco Channel Stage 11 Project

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## 2.2.2 California Native Plant Protection Act

The Native Plant Protection Act of 1977 directed the CDFW to carry out the Legislature's intent to “preserve, protect and enhance rare and endangered plants in this State.” The Native Plant Protection Act gave the California Fish and Game Commission the power to designate native plants as “endangered” or “rare” and protect endangered and rare plants from take. The CESA expanded on the original Native Plant Protection Act and enhanced legal protection for plants, but the Native Plant Protection Act remains part of the Fish and Game Code. To align with federal regulations, the CESA created the categories of “threatened” and “endangered” species. It converted all “rare” animals into the act as threatened species, but did not do so for rare plants. Thus, there are three listing categories for plants in California: rare, threatened, and endangered. The Native Plant Protection Act prohibits take of rare native plants, but includes some exceptions for agricultural and nursery operations; emergencies; and after properly notifying CDFW for vegetation removal from canals, roads, and other sites.

## 2.2.3 California Environmental Quality Act

The California Environmental Quality Act (CEQA) requires that lead agencies identify a project's potentially significant impacts on biological resources and provide alternatives that will avoid, minimize, or mitigate potential impacts. The act also provides guidelines and thresholds for use by lead agencies for evaluating the significance of proposed impacts.

CEQA Guidelines Section 15380(b)(1) defines endangered animals or plants as species or subspecies whose “survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, disease, or other factors.” A rare animal or plant is defined in Section 15380(b)(2) as a species that, although not presently threatened with extinction, exists “in such small numbers throughout all or a significant portion of its range that it may become endangered if its environment worsens; or ... [t]he species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range and may be considered ‘threatened’ as that term is used in the federal Endangered Species Act.” Additionally, an animal or plant may be presumed to be endangered, rare, or threatened if it meets the criteria for listing, as defined further in CEQA Guidelines Section 15380(c).

CDFW has developed a list of “Special Species” as “a general term that refers to all of the taxa the California Natural Diversity Database (CNDDDB) is interested in tracking, regardless of their legal or protection status.” This is a broader list than those species that are protected under the FESA, CESA, and other Fish and Game Code provisions, and includes lists developed by other organizations, including for example the Audubon Watch List Species. Guidance documents

## **Biological Resources Technical Report and MSHCP Consistency Analysis for the North Norco Channel Stage 11 Project**

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prepared by other agencies, including the Bureau of Land Management (BLM) Sensitive Species and USFWS Birds of Special Concern, are also included on this CDFW Special Species list. Additionally, CDFW has concluded that plant species included on the California Native Plant Society's (CNPS's) California Rare Plant Rank (CRPR) List 1 and 2, and potentially some List 3 plants, are covered by CEQA Guidelines Section 15380.

Section IV, Appendix G (Environmental Checklist Form), of the CEQA Guidelines requires an evaluation of impacts to “any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or the U.S. Fish and Wildlife Service.”

# Biological Resources Technical Report and MSHCP Consistency Analysis for the North Norco Channel Stage 11 Project

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## **3 METHODS**

### **3.1 Special-Status Species**

Special-status wildlife include species federally and/or state-listed as endangered or threatened; USFWS Birds of Conservation Concern, Migratory Nongame Birds of Management Concern, and the American Bird Conservancy: United States Watch List of Birds of Conservation; having state designations such as California Species of Special Concern, Watch List species, Special Animals List species, and Fully Protected species; and other designations such as Western Bat Working Group species, and Western Riverside County MSHCP Covered Species.

Special-status plants include those federally and/or state-listed as endangered or threatened, plants listed as state rare, and those with a California Rare Plant Rank of 1 or 2.

Special-status vegetation communities are those designated as sensitive by CDFW or those that provide habitat for special-status species.

### **3.2 Literature Review**

Prior to field surveys, special-status biological resources present or potentially present in the Project area were identified through an existing database review using the following sources: CNDDDB (CDFW 2013) and CNPS (2013). General information regarding wildlife species present in the Project area and region was obtained from Garrett and Dunn (1981) for birds, Hall (1981) for mammals, and Stebbins (2003) for reptiles and amphibians.

### **3.3 Field Surveys**

A general biological and wildlife reconnaissance-level survey of the Project area was conducted by Dudek biologist Paul Lemons on October 17, 2013. Vegetation mapping and a delineation of jurisdictional waters within the Project area was conducted by Dudek biologists Heather Moine and Linda Archer on October 17, 2013 (Table 1). Methods and results for delineation of jurisdictional waters are provided under separate cover. Wildlife species and plant species detected during the surveys were recorded and are included in Appendix A and Appendix B.

# Biological Resources Technical Report and MSHCP Consistency Analysis for the North Norco Channel Stage 11 Project

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**Table 1**  
**Field Survey Dates and Parameters**

Date	Time	Staff	Environmental Conditions	Survey Type
10/17/2013	0700–1100	PML	0% cloud cover; wind 0–3 miles per hour (mph); 60–74° Fahrenheit (F)	General wildlife
10/17/2013	0940–1500	HLM, LMA	0% cloud cover; wind 1–8 mph; 61–83oF	Jurisdictional delineation, Vegetation mapping

**Staff Key:** HLM: Heather Moine, LMA: Linda Archer, PML: Paul Lemons

### 3.3.1 Habitat Assessment

A habitat assessment was conducted for special-status species that may potentially occur in the Project vicinity. In particular, a habitat assessment was conducted to identify suitable habitat for burrowing owl (*Athene cunicularia*) and was conducted in accordance with the *Burrowing Owl Survey Instructions for the Western Riverside Multiple Species Habitat Conservation Plan Area* (March 29, 2006). All burrows suitable for burrowing owl were mapped using a Global Positioning System (GPS). Occupied burrows previously documented in 2010 were visited and inspected for burrowing owl sign.

Wildlife species observed or detected during field surveys by sight, calls, tracks, scat, or other signs were recorded. Common and scientific names used for wildlife have been established as follows: Crother (2008) for reptiles and amphibians, American Ornithologists’ Union (AOU) (2012) for birds, Wilson and Reeder (2005) for mammals, North American Butterfly Association (NABA) (2001) or San Diego Natural History Museum (SDNHM) (2002) for butterflies, and Moyle (2002) for fish. In addition to species actually observed, expected wildlife usage of the site was determined according to known habitat preferences of regional wildlife species and knowledge of their relative distributions in the area. No trapping or focused surveys for special-status or nocturnal species was conducted.

### 3.3.2 Vegetation Communities and Land Covers

Vegetation communities and land covers were mapped in the field directly onto 100-scale (1 inch = 100 feet) topographic or aerial photographic base and later digitized into a GIS format using ArcGIS. Vegetation communities used in this report follow the MSHCP uncollapsed vegetation community classifications (County of Riverside 2003). This classification was used, in lieu of other accepted classification systems in order to maintain consistency and allow for easy comparison with the MSHCP.

All plant species encountered during the field surveys were identified and recorded. Those species that could not be identified immediately were brought into the laboratory for further

# Biological Resources Technical Report and MSHCP Consistency Analysis for the North Norco Channel Stage 11 Project

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investigation. Latin and common names for plant species with a CRPR (formerly CNPS List) follow the CNPS *On-Line Inventory of Rare, Threatened, and Endangered Plants of California* (CNPS 2013). For plant species without a CRPR, Latin names follow the *Jepson Interchange List of Currently Accepted Names of Native and Naturalized Plants of California* (Jepson Flora Project 2014), and common names follow the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service Plants Database (USDA and NRCS 2013).

### 3.3.3 Riparian/Riverine/Vernal Pools and Fairy Shrimp Habitat Methods

MSHCP Section 6.1.2, Protection of Species Associated with Riparian/Riverine Areas and Vernal Pools, describes the process through which protection of riparian/riverine areas, vernal pools, and fairy shrimp species will occur within the MSHCP Area. Protection of these resources is important for a number of MSHCP conservation objectives. An assessment of a project's potentially significant effects on riparian/riverine areas, vernal pools, and fairy shrimp habitat is required. Guidelines for determining whether or not these resources exist on site are described as follows:

- **Riparian/Riverine Areas** include “lands which contain habitat dominated by trees, shrubs, persistent emergents, or emergent mosses and lichens which occur close to or which depend upon soil moisture from a nearby fresh water source or areas with fresh water flow during all or a portion of the year.” Riparian/riverine areas under the MSHCP also include drainage areas that are vegetated or have upland (non-riparian/riverine) vegetation and that drain directly into an area that is described for conservation under the MSHCP (or areas already conserved). The main channel and laterals were assessed for areas meeting this definition.
- **Vernal Pools** are described by the MSHCP as “seasonal wetlands that occur in depression areas that have wetlands indicators of all three parameters (soils, vegetation, and hydrology) during the wetter portion of the growing season but normally lack wetlands indicators of hydrology and/or vegetation during the drier portion of the growing season.” The main channel and laterals were assessed for areas meeting this definition.
- **Listed Fairy Shrimp Habitat**, as described under MSHCP Section 6.1.2, is habitat for Riverside fairy shrimp (*Streptocephalus woottoni*), vernal pool fairy shrimp (*Branchinecta lynchi*), or Santa Rosa Plateau fairy shrimp (*Lindleriella santarosae*), and includes ephemeral pools, artificially created habitat, such as tire ruts and stock ponds, and/or other features determined appropriate by a qualified biologist. The main channel and laterals were assessed for areas meeting this definition.

**Biological Resources Technical Report and MSHCP Consistency  
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# Biological Resources Technical Report and MSHCP Consistency Analysis for the North Norco Channel Stage 11 Project

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## 4 PHYSICAL CHARACTERISTICS

### 4.1 Land Use

The Project area is located in the City of Norco just east of Interstate 15. Land uses in the Project vicinity include a mixture of rural and low density residential development, some commercial/retail, and equestrian use.

### 4.2 Topography

The Project site is a relatively flat area in western Chino Valley in northwest Riverside County. The Project vicinity is bound by the Santa Ana River to the north, La Sierra Hills to the east, Prado Basin to the west, and the Santa Ana Mountains to the west and south. The Project site is almost flat, gently sloping to the southwest. The main channel ranges from a high of 640 feet above mean sea level near the northeast corner to approximately 627 feet above mean sea level in the southwest corner. Lateral Line NC-1 Stage 1 in Detroit Street is approximately 635 to 639 feet above mean sea level. Lateral in 6th Street (Line N-2 Stage 1) and Valley View Avenue (Line NC Stage 1) have slightly higher elevation 631 to 653 feet above mean sea level and 631 to 648 feet above mean sea level, respectively.

There are no streams depicted on the USGS topographic quadrangle within or adjacent to the Project area. The main channel is shown on the USGS topographic map as a ditch. The Santa Ana River is approximately 0.6 mile to the north of the Project site. Surface water features in the vicinity flow from northeast to southwest to the Prado Basin approximately 4 miles southwest of the Project site.

### 4.3 Soils

According to the Soil Survey of the Western Riverside Area, California [U.S. Department of Agriculture (USDA) (1971)], the soils within the project vicinity include the following: Buchenau loam (BhA, BhC), Buchenau silt loam (BkC2), Cieneba sandy loam (ChC), Greenfield sandy loam (GyA), Placentia fine sandy loam (PIB, PID), Ramona sandy loam (RaB3), and Ramona very fine sandy loam (ReC2). None of these is a MSHCP sensitive soil series<sup>1</sup> (County of Riverside 2003). The nearest MSHCP sensitive soil series, Porterville clay (PtB), is approximately 0.4 mile south of the Project area (Figure 5). Brief descriptions of the surface soils present within the Project site are provided below.

- ***Buchenau soils*** occur on small alluvial fans formed from metasedimentary rocks. They occur at elevations of less than 300 feet to 1,500 feet in a subhumid mesothermal climate with mean annual rainfall of 12 to 15 inches with hot dry summers and cool winters. Mean annual temperature is 62°F.

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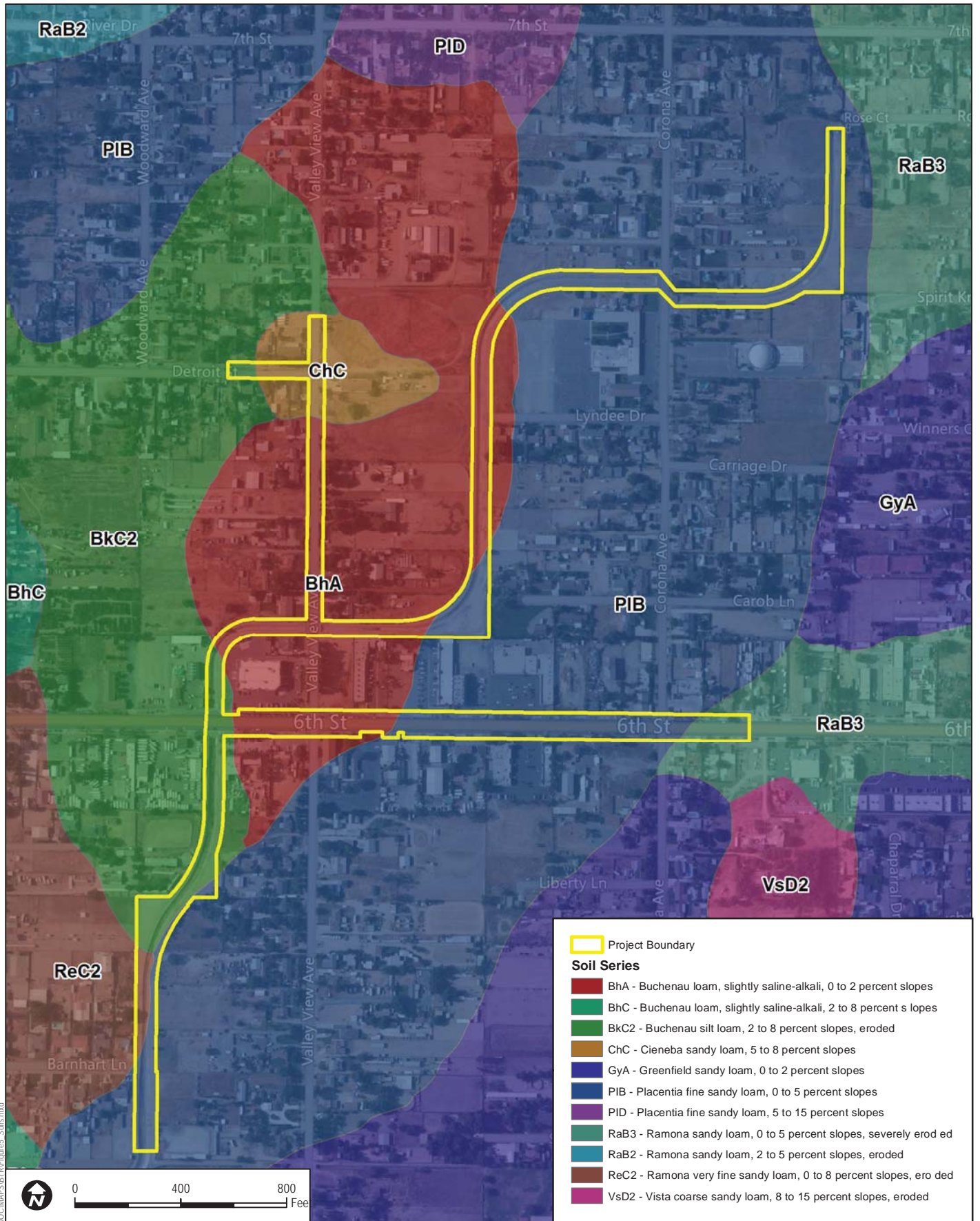
<sup>1</sup> Soil types known to be associated with listed and sensitive plant species, including clay soils and Traver-Domino-Willows association soils (County of Riverside 2003).

## Biological Resources Technical Report and MSHCP Consistency Analysis for the North Norco Channel Stage 11 Project

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- ***Cieneba soils*** formed from material weathered from granite and other rocks of similar texture and composition. Gradients are 9–85%. The soils are at elevations of 500 to 4,000 feet. The climate is dry subhumid mesothermal with warm dry summers and cool moist winters. Mean annual precipitation is 12 to 35 inches. Mean annual temperature is 57 to 65°F.
- ***Greenfield soils*** are on fans and terraces at elevations of 100 to 3,500 feet. Slopes range from 0 to 30%. The soils formed in moderately coarse and coarse textured alluvium or some wind deposited material derived from granitic and mixed sources. The climate is dry subhumid mesothermal with hot, dry summers and cool, moist winters. The mean annual precipitation is 9 to 20 inches. The mean annual temperature is 60 to 64°F.
- ***Placentia soils*** are nearly level to moderately sloping and are on fans and terraces at elevations of 50 to 2,500 feet. They formed in alluvium from granite and other rocks of similar composition and texture. The climate is dry subhumid mesothermal with long dry warm summers and cool moist winters. The mean annual precipitation is about 12 to 18 inches. The average annual temperature is 58 to 65°F.
- ***Ramona soils*** are nearly level to moderately steep. They are on terraces and fans at elevations of 250 to 3,500 feet. They formed in alluvium derived mostly from granitic and related rock sources. The climate is dry subhumid mesothermal with warm dry summers and cool moist winters. Mean annual precipitation is 10 to 20 inches. Average annual temperature is 60 to 66°F.





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SOURCE: Bing 2013, SSURGO

NORTH NORCO CHANNEL STAGE 11 PROJECT NO. 2-0-00140-11 BIOLOGICAL RESOURCES TECHNICAL REPORT AND MSHCP CONSISTENCY ANALYSIS

**FIGURE 5  
Soils Map**

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# Biological Resources Technical Report and MSHCP Consistency Analysis for the North Norco Channel Stage 11 Project

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## 5 RESULTS

The results of the surveys are discussed in the following order: vegetation communities and land covers (Section 5.1), general botanical and wildlife observations (Section 5.2), wildlife corridors/habitat linkages (Section 5.3), and special-status biological resources (Section 5.4). A list of wildlife and plant species observed on site is provided in Appendix A and B, respectively, and site photographs are provided in Appendix C.

### 5.1 Vegetation Communities and Land Covers

The Project site is composed of the Residential/Urban/Exotic (Figure 6) land cover. Residential/Urban/Exotic is an MSHCP uncollapsed vegetation community included in the Developed/Disturbed Land MSHCP collapsed vegetation community classification. Developed or disturbed lands consist of areas that have been disked, cleared, or otherwise altered. Developed lands may include roadways, existing buildings, and structures (County of Riverside 2003).

The entire main channel consists of disturbed land. The channel is manufactured, regularly maintained and is mostly devoid of vegetation. Portions of the channel had emergent vegetation including prickly Russian thistle (*Salsola tragus*), turkey-mullein (*Croton setiger*), prostrate knotweed (*Polygonum aviculare*), tree of heaven (*Ailanthus altissima*), tree tobacco (*Nicotiana glauca*), and Mexican sprangletop (*Leptochloa fusca* ssp. *uninervia*). In addition, the access on either side of the channel is also manufactured, regularly maintained, and is devoid of vegetation. Typically, disturbed land has little biological value but it may provide habitat for rodents, rabbits, raptor foraging habitat, and foraging and nesting habitat for burrowing owls.

Outside of the main channel, the Project site consists of developed areas including paved roads associated with the laterals and residential areas adjacent to the laterals. Vegetation in these areas is limited to ornamental trees including Peruvian peppertree (*Schinus molle*), olive (*Olea europaea*), and tree of heaven (*Ailanthus altissima*). Developed areas may provide habitat for nesting birds.

### 5.2 Wildlife and Plants Observed

#### 5.2.1 Wildlife

The site supports limited habitat diversity since it occurs in disturbed and developed land. Consequently, the wildlife diversity and richness in the Project site is also limited. No special-status species were detected. A full list of wildlife species by taxonomic group observed in the Project area is provided here as well as in Appendix A.

# Biological Resources Technical Report and MSHCP Consistency Analysis for the North Norco Channel Stage 11 Project

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## Birds

Most of birds observed during the surveys are very common in the habitats present in the Project area. The bird species observed included: Cooper's hawk (*Accipiter cooperii*), red-tailed hawk (*Buteo jamaicensis*), American kestrel (*Falco sparverius*), rock dove (*Columba livia*), mourning dove (*Zenaida macroura*), Anna's hummingbird (*Calypte anna*), black phoebe (*Sayornis nigricans*), American crow (*Corvus brachyrhynchos*), common raven (*Corvus corax*), bushtit (*Psaltriparus minimus*), northern mockingbird (*Mimus polyglottos*), yellow-rumped warbler (*Setophaga coronata*), lesser goldfinch (*Spinus psaltria*), house sparrow (*Passer domesticus*), house finch (*Carpodacus mexicanus*), killdeer (*Charadrius vociferus*), European starling (*Sturnus vulgaris*), and black-throated gray warbler (*Setophaga nigrescens*).

## Reptiles and Amphibians

No reptiles or amphibians were detected during the survey.

## Insects

One insect species was directly observed during the survey: painted lady (*Vanessa cardui*).

## Mammals

Two mammal species were directly observed in the Project area during the survey: Botta's pocket gopher (*Thomomys bottae*) and California ground squirrel (*Spermophilus [Otospermophilus] beecheyi*).

### 5.2.2 Plants

As a maintained flood control channel, the site supports limited habitat diversity. Consequently, the plant diversity and richness in the Project site is also limited. The majority of the site was unvegetated and the majority of plant species observed were non-native. A total of 33 vascular plant species, consisting of 9 native species (27%) and 24 non-native species (73%), were recorded on site during surveys. A full list of plant species observed is provided in Appendix B.

## 5.3 Wildlife Corridors/Habitat Linkages

The site is not located within an MSHCP core or linkage. Set in a largely urban setting, the site is surrounded by residential, commercial, and agricultural development. Although some adjacent areas, including open fields and agricultural areas, may allow wildlife movement in the area, the entire main channel is fenced with chain-link fencing, thereby limiting movement of medium and large wildlife through the region.



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SOURCE: Bing 2013

NORTH NORCO CHANNEL STAGE 11 PROJECT NO. 2-0-00140-11 BIOLOGICAL RESOURCES TECHNICAL REPORT AND MSHCP CONSISTENCY ANALYSIS

**FIGURE 6**  
**Biological Resources**

**Biological Resources Technical Report and MSHCP Consistency  
Analysis for the North Norco Channel Stage 11 Project**

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## 5.4 Special-Status Biological Resources

Appendix D provides a table of all special-status species whose geographic ranges fall within the general Project vicinity. Species potentially occurring based on habitat relationships are identified as having moderate or high potential to occur based on habitat conditions, and species for which there is little or no suitable habitat are identified as not expected to occur or having low potential to occur.

### 5.4.1 Special-Status Wildlife

No special-status wildlife species were observed during surveys. The majority of special-status wildlife species documented in the vicinity have no or little potential to occur within the project area given the lack of native vegetation, high level of disturbance, and developed surroundings (see Appendix D). The only species with a moderate or high potential to occur is burrowing owl.

During Dudek surveys in December 2009, two burrowing owl burrows and three burrowing owl (*Athene cunicularia*) individuals were observed on site (Figure 6) (Dudek 2010). No burrowing owls were observed during Dudek's survey in October 2013. The channel was surveyed for suitable burrowing owl burrows and none were observed. The location of the previous occupied burrows was reviewed in the field. There were three burrows observed in the main channel sidewall in the vicinity of the previous burrowing owl sightings. However, two of the burrows were collapsed, and the third burrow was not of sufficient size for an adult burrowing owl and had spider webs in the entrance. Photographs of the burrows are provided in Appendix D. Burrowing owl do not currently occur within the channel but have the potential to occupy the channel in the future.

### 5.4.2 Special-Status Plants

No special-status plant species were observed during surveys. Most special-status plant species documented in the vicinity are not expected to occur within the project site due to either lack of suitable soils or vegetation communities (see Appendix D). Only one species has a low potential to occur, smooth tarplant (*Centromadia pungens* ssp. *laevis*), a CNPS CRPR 1B.1. Smooth tarplant is a Narrow Endemic Plant Species covered under the MSHCP. The Project site is not within an MSHCP-designated Narrow Endemic Species Survey Area or Criteria Area Species Survey Area (see Section 5.2); therefore, focused surveys are not required for this species.

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## 6 MSHCP CONSISTENCY ANALYSIS

This section addresses the consistency of the Project with the requirements of the MSHCP. The Project is located within the Cities of Riverside and Norco Area Plan, which has two conservation areas: a portion of Proposed Constrained Linkage 7 and a portion of Existing Core A. The project is not within either of these conservation areas and does not overlap any criteria cells; therefore, there are no MSHCP conservation requirements for the Project.

Chapter 6 of the MSHCP outlines additional implementation measures with which permittees must comply. The relevant section of the MSHCP, requirements, and Project's consistency with the requirement are outlined below.

- MSHCP Section 6.1.2, Riparian/Riverine and Vernal Pools Guidelines: Compliance is discussed in Section 6.1 of this report.
- MSHCP Section 6.1.3, Narrow Endemic Plant Species: The project is not within a Narrow Endemic Plant Species Survey Area; therefore, no additional actions are required for compliance with Section 6.1.3.
- MSHCP Section 6.1.4, Urban Wildlands/Interface Guidelines: Compliance is discussed in Section 6.2 of this report.
- MSHCP Section 6.3.2, Additional Survey Requirements: This section of the MSHCP outlines survey requirements for Criteria Area Plant Species, Burrowing Owl, Mammals, and Amphibians. The project is not within an additional survey area; therefore, no additional actions are required for compliance with Section 6.3.2.

### 6.1 Riparian/Riverine Habitat

The MSHCP defines riparian/riverine areas as “lands which contain habitat dominated by trees, shrubs, persistent emergents, or emergent mosses and lichens, which occur close to or depend upon soil moisture from a nearby fresh water source; or areas with fresh water flow during all or a portion of the year.” In addition, riverine areas (streams) include areas that “do not contain riparian vegetation, but that have water flow for all or a portion of the year, and contain biological functions and values that contribute to downstream habitat values for covered species inside the MSHCP Conservation Area.”

#### 6.1.1 Riparian Habitat

There is no riparian habitat within the Project site. The only vegetation observed includes one 10-foot by 10-foot area of vegetation supporting cattail, red willow, and Gooding's willow (*Salix gooddingii*) approximately 170 feet east of Valley View Avenue. This patch of vegetation is

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surrounded by disturbed/maintained channel, residential and retail development, and agricultural uses. The relatively small size and lack of adjacent riparian habitats does not provide suitable habitat for riparian species listed in Section 6.1.2 of the MSHCP. No further actions are required for riparian habitat per the MSHCP.

### **6.1.2 Riverine Habitat**

The channel is an ephemeral feature with water flowing after storm events and nuisance flows present at other times (as observed during the survey). The channel continues to the southwest for approximately 3.25 miles where it outlets into Prado Basin. Prado Basin is part of the MSHCP Existing Core A and supports habitat for covered species. Since the channel supports surface flows that drain directly into an area that is described for conservation under the MSHCP supporting habitat for covered species, it meets the definition of riverine habitat under the MSHCP.

The MSHCP stipulates that projects be designed to avoid riparian/riverine resources. Further, Section 6.1.2 of the MSHCP states that if an avoidance alternative is not feasible, a practicable alternative that minimizes direct and indirect effects to riparian/riverine areas and associated functions and values to the greatest extent possible shall be selected. Those impacts that are unavoidable shall be mitigated such that the lost functions and values as they relate to Covered Species are replaced as set forth through preparation of a Determination of Biologically Equivalent or Superior Preservation (DBESP).

Because the goal of the project is to improve a flood control facility, an avoidance alternative is not feasible. The District reviewed several (10) alternatives and selected an alternative which met the needs of the project while minimizing potential impacts to resources. In compliance with Section 6.1.2 of the MSHCP, an assessment of the functions and values of the riverine habitat and potential impacts to functions and values as they relate to MSHCP covered species is provided in Section 7.5 of this report.

### **6.1.3 Vernal Pools and Fairy Shrimp Habitat**

There are no soils associated with vernal pools within the Project site, including clay soils or soils of the Willows/Travers/Domino series. No stock ponds, ephemeral pools, or other similar features were observed during surveys within the Project site. Fairy shrimp habitat is not expected to occur within the channel as it largely dry and when flows do occur following storm events they would be flashy in nature, scouring any habitat. The right-of-way around the channel is compacted and would not result in ruts, ditches, or depressions associated with fairy shrimp habitat. Therefore, there is no potential vernal pool or fairy shrimp habitat within the Project site.

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## 6.2 Urban/Wildlands Interface Guidelines

The Project site is approximately 0.1 mile south of a criteria cell and 0.3 mile east of another criteria cell and would not be considered to be in proximity to the MSHCP conservation area per Section 6.1.4 of the MSHCP (County of Riverside 2003). The Project would not result in long-term adverse edge effects, such as drainage, toxics, lighting, noise, or invasive species that would affect biological resources within areas proposed for MSHCP conservation. The project would not facilitate unauthorized public access, domestic animal predation, illegal trespass, or dumping into the MSHCP Conservation Areas. In addition, the Project would not include manufactured slopes that might extend into the MSHCP Conservation Area. Therefore, the Project is consistent with the MSHCP Urban/Wildlands Interface Guidelines.

## 6.3 Local Permittee Mitigation Responsibilities

As a Local Permittee, the District has mitigation responsibilities to fulfill in accordance with the MSHCP. Section 8.1.2 of this report includes applicable measures that address compliance with the Best Management Practices from MSHCP Appendix C. Implementation of these measures will ensure compliance with this requirement of the MSHCP.

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