

3.6 Install MH - 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	1.8230	10.4432	8.3808	0.0133		0.8252	0.8252		0.8252	0.8252		1,208.534 1	1,208.534 1	0.1635		1,211.967 0
Total	1.8230	10.4432	8.3808	0.0133		0.8252	0.8252		0.8252	0.8252		1,208.534 1	1,208.534 1	0.1635		1,211.967 0

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	0.0517	0.5016	0.6419	1.0800e-003	0.0312	8.6500e-003	0.0399	8.9000e-003	7.9600e-003	0.0169		109.3084	109.3084	8.9000e-004		109.3270
Worker	0.0616	0.0826	0.8627	1.7300e-003	0.1453	1.2800e-003	0.1466	0.0385	1.1700e-003	0.0397		150.2359	150.2359	8.6200e-003		150.4170
Total	0.1133	0.5843	1.5046	2.8100e-003	0.1766	9.9300e-003	0.1865	0.0474	9.1300e-003	0.0566		259.5444	259.5444	9.5100e-003		259.7440

3.6 Install MH - 2015**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	1.8230	10.4432	8.3808	0.0133		0.8252	0.8252		0.8252	0.8252	0.0000	1,208.534 1	1,208.534 1	0.1635		1,211.967 0
Total	1.8230	10.4432	8.3808	0.0133		0.8252	0.8252		0.8252	0.8252	0.0000	1,208.534 1	1,208.534 1	0.1635		1,211.967 0

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	0.0517	0.5016	0.6419	1.0800e-003	0.0312	8.6500e-003	0.0399	8.9000e-003	7.9600e-003	0.0169		109.3084	109.3084	8.9000e-004		109.3270
Worker	0.0616	0.0826	0.8627	1.7300e-003	0.1453	1.2800e-003	0.1466	0.0385	1.1700e-003	0.0397		150.2359	150.2359	8.6200e-003		150.4170
Total	0.1133	0.5843	1.5046	2.8100e-003	0.1766	9.9300e-003	0.1865	0.0474	9.1300e-003	0.0566		259.5444	259.5444	9.5100e-003		259.7440

3.7 Mainline SD (90") - in street R/W - 2014**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.8744	23.9995	10.6036	0.0228		0.9691	0.9691		0.8916	0.8916		2,421.8839	2,421.8839	0.7157		2,436.9135
Total	1.8744	23.9995	10.6036	0.0228		0.9691	0.9691		0.8916	0.8916		2,421.8839	2,421.8839	0.7157		2,436.9135

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	0.0339	0.1962	0.5122	3.3000e-004	7.1700e-003	2.9300e-003	0.0101	1.9500e-003	2.6900e-003	4.6500e-003		32.8585	32.8585	4.0000e-004		32.8669
Vendor	0.0601	0.5755	0.7004	1.0800e-003	0.0312	0.0113	0.0425	8.8900e-003	0.0104	0.0193		110.5402	110.5402	1.0100e-003		110.5613
Worker	0.0528	0.0708	0.7381	1.3300e-003	0.1118	1.0500e-003	0.1128	0.0296	9.6000e-004	0.0306		119.4197	119.4197	7.2400e-003		119.5719
Total	0.1469	0.8426	1.9508	2.7400e-003	0.1502	0.0153	0.1654	0.0405	0.0140	0.0545		262.8184	262.8184	8.6500e-003		263.0001

3.7 Mainline SD (90") - in street R/W - 2014**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	1.8744	23.9995	10.6036	0.0228		0.9691	0.9691		0.8916	0.8916	0.0000	2,421.8839	2,421.8839	0.7157		2,436.9135
Total	1.8744	23.9995	10.6036	0.0228		0.9691	0.9691		0.8916	0.8916	0.0000	2,421.8839	2,421.8839	0.7157		2,436.9135

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	0.0339	0.1962	0.5122	3.3000e-004	7.1700e-003	2.9300e-003	0.0101	1.9500e-003	2.6900e-003	4.6500e-003		32.8585	32.8585	4.0000e-004		32.8669
Vendor	0.0601	0.5755	0.7004	1.0800e-003	0.0312	0.0113	0.0425	8.8900e-003	0.0104	0.0193		110.5402	110.5402	1.0100e-003		110.5613
Worker	0.0528	0.0708	0.7381	1.3300e-003	0.1118	1.0500e-003	0.1128	0.0296	9.6000e-004	0.0306		119.4197	119.4197	7.2400e-003		119.5719
Total	0.1469	0.8426	1.9508	2.7400e-003	0.1502	0.0153	0.1654	0.0405	0.0140	0.0545		262.8184	262.8184	8.6500e-003		263.0001

3.7 Mainline SD (90") - in street R/W - 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	1.8580	23.2980	10.6180	0.0228		0.9435	0.9435		0.8680	0.8680		2,397.1462	2,397.1462	0.7157		2,412.1748
Total	1.8580	23.2980	10.6180	0.0228		0.9435	0.9435		0.8680	0.8680		2,397.1462	2,397.1462	0.7157		2,412.1748

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	0.0289	0.1755	0.4748	3.3000e-004	0.0515	2.2900e-003	0.0538	0.0128	2.1000e-003	0.0149		32.4569	32.4569	3.8000e-004		32.4648
Vendor	0.0517	0.5016	0.6419	1.0800e-003	0.0312	8.6500e-003	0.0399	8.9000e-003	7.9600e-003	0.0169		109.3084	109.3084	8.9000e-004		109.3270
Worker	0.0474	0.0636	0.6636	1.3300e-003	0.1118	9.8000e-004	0.1128	0.0296	9.0000e-004	0.0306		115.5661	115.5661	6.6300e-003		115.7054
Total	0.1280	0.7407	1.7803	2.7400e-003	0.1945	0.0119	0.2064	0.0514	0.0110	0.0623		257.3314	257.3314	7.9000e-003		257.4973

3.7 Mainline SD (90") - in street R/W - 2015**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	1.8580	23.2980	10.6180	0.0228		0.9435	0.9435		0.8680	0.8680	0.0000	2,397.146 2	2,397.146 2	0.7157		2,412.174 8
Total	1.8580	23.2980	10.6180	0.0228		0.9435	0.9435		0.8680	0.8680	0.0000	2,397.146 2	2,397.146 2	0.7157		2,412.174 8

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	0.0289	0.1755	0.4748	3.3000e-004	0.0515	2.2900e-003	0.0538	0.0128	2.1000e-003	0.0149		32.4569	32.4569	3.8000e-004		32.4648
Vendor	0.0517	0.5016	0.6419	1.0800e-003	0.0312	8.6500e-003	0.0399	8.9000e-003	7.9600e-003	0.0169		109.3084	109.3084	8.9000e-004		109.3270
Worker	0.0474	0.0636	0.6636	1.3300e-003	0.1118	9.8000e-004	0.1128	0.0296	9.0000e-004	0.0306		115.5661	115.5661	6.6300e-003		115.7054
Total	0.1280	0.7407	1.7803	2.7400e-003	0.1945	0.0119	0.2064	0.0514	0.0110	0.0623		257.3314	257.3314	7.9000e-003		257.4973

3.8 Install Connector Pipe - 2014**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.8587	14.5132	10.1278	0.0162		1.0208	1.0208		1.0009	1.0009		1,579.667 4	1,579.667 4	0.2945		1,585,852 7
Total	1.8587	14.5132	10.1278	0.0162		1.0208	1.0208		1.0009	1.0009		1,579.667 4	1,579.667 4	0.2945		1,585,852 7

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	0.0601	0.5755	0.7004	1.0800e-003	0.0312	0.0113	0.0425	8.8900e-003	0.0104	0.0193		110.5402	110.5402	1.0100e-003		110.5613
Worker	0.0528	0.0708	0.7381	1.3300e-003	0.1118	1.0500e-003	0.1128	0.0296	9.6000e-004	0.0306		119.4197	119.4197	7.2400e-003		119.5719
Total	0.1129	0.6463	1.4386	2.4100e-003	0.1430	0.0123	0.1553	0.0385	0.0113	0.0499		229.9599	229.9599	8.2500e-003		230.1332

3.8 Install Connector Pipe - 2014**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	1.8587	14.5132	10.1278	0.0162		1.0208	1.0208		1.0009	1.0009	0.0000	1,579.667 4	1,579.667 4	0.2945		1,585,852 7
Total	1.8587	14.5132	10.1278	0.0162		1.0208	1.0208		1.0009	1.0009	0.0000	1,579.667 4	1,579.667 4	0.2945		1,585,852 7

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	0.0601	0.5755	0.7004	1.0800e-003	0.0312	0.0113	0.0425	8.8900e-003	0.0104	0.0193		110.5402	110.5402	1.0100e-003		110.5613
Worker	0.0528	0.0708	0.7381	1.3300e-003	0.1118	1.0500e-003	0.1128	0.0296	9.6000e-004	0.0306		119.4197	119.4197	7.2400e-003		119.5719
Total	0.1129	0.6463	1.4386	2.4100e-003	0.1430	0.0123	0.1553	0.0385	0.0113	0.0499		229.9599	229.9599	8.2500e-003		230.1332

3.8 Install Connector Pipe - 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	1.7299	13.6568	10.0866	0.0162		0.9378	0.9378		0.9186	0.9186		1,574.0012	1,574.0012	0.2836		1,579.9564
Total	1.7299	13.6568	10.0866	0.0162		0.9378	0.9378		0.9186	0.9186		1,574.0012	1,574.0012	0.2836		1,579.9564

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	0.0517	0.5016	0.6419	1.0800e-003	0.0312	8.6500e-003	0.0399	8.9000e-003	7.9600e-003	0.0169		109.3084	109.3084	8.9000e-004		109.3270
Worker	0.0474	0.0636	0.6636	1.3300e-003	0.1118	9.8000e-004	0.1128	0.0296	9.0000e-004	0.0306		115.5661	115.5661	6.6300e-003		115.7054
Total	0.0991	0.5652	1.3055	2.4100e-003	0.1430	9.6300e-003	0.1527	0.0385	8.8600e-003	0.0474		224.8745	224.8745	7.5200e-003		225.0324

3.8 Install Connector Pipe - 2015**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	1.7299	13.6568	10.0866	0.0162		0.9378	0.9378		0.9186	0.9186	0.0000	1,574.0012	1,574.0012	0.2836		1,579.9564
Total	1.7299	13.6568	10.0866	0.0162		0.9378	0.9378		0.9186	0.9186	0.0000	1,574.0012	1,574.0012	0.2836		1,579.9564

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	0.0517	0.5016	0.6419	1.0800e-003	0.0312	8.6500e-003	0.0399	8.9000e-003	7.9600e-003	0.0169		109.3084	109.3084	8.9000e-004		109.3270
Worker	0.0474	0.0636	0.6636	1.3300e-003	0.1118	9.8000e-004	0.1128	0.0296	9.0000e-004	0.0306		115.5661	115.5661	6.6300e-003		115.7054
Total	0.0991	0.5652	1.3055	2.4100e-003	0.1430	9.6300e-003	0.1527	0.0385	8.8600e-003	0.0474		224.8745	224.8745	7.5200e-003		225.0324

3.9 Construct CB - 2014**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1177	9.3832	6.5057	0.0105		0.6009	0.6009		0.5810	0.5810		1,021.482 1	1,021.482 1	0.2283		1,026.275 3
Total	1.1177	9.3832	6.5057	0.0105		0.6009	0.6009		0.5810	0.5810		1,021.482 1	1,021.482 1	0.2283		1,026.275 3

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	0.0601	0.5755	0.7004	1.0800e-003	0.0312	0.0113	0.0425	8.8900e-003	0.0104	0.0193		110.5402	110.5402	1.0100e-003		110.5613
Worker	0.0528	0.0708	0.7381	1.3300e-003	0.1118	1.0500e-003	0.1128	0.0296	9.6000e-004	0.0306		119.4197	119.4197	7.2400e-003		119.5719
Total	0.1129	0.6463	1.4386	2.4100e-003	0.1430	0.0123	0.1553	0.0385	0.0113	0.0499		229.9599	229.9599	8.2500e-003		230.1332

3.9 Construct CB - 2014**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	1.1177	9.3832	6.5057	0.0105		0.6009	0.6009		0.5810	0.5810	0.0000	1,021.482 1	1,021.482 1	0.2283		1,026.275 3
Total	1.1177	9.3832	6.5057	0.0105		0.6009	0.6009		0.5810	0.5810	0.0000	1,021.482 1	1,021.482 1	0.2283		1,026.275 3

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	0.0601	0.5755	0.7004	1.0800e-003	0.0312	0.0113	0.0425	8.8900e-003	0.0104	0.0193		110.5402	110.5402	1.0100e-003		110.5613
Worker	0.0528	0.0708	0.7381	1.3300e-003	0.1118	1.0500e-003	0.1128	0.0296	9.6000e-004	0.0306		119.4197	119.4197	7.2400e-003		119.5719
Total	0.1129	0.6463	1.4386	2.4100e-003	0.1430	0.0123	0.1553	0.0385	0.0113	0.0499		229.9599	229.9599	8.2500e-003		230.1332

3.9 Construct CB - 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	1.0577	8.9137	6.4937	0.0105		0.5596	0.5596		0.5404	0.5404		1,015.8149	1,015.8149	0.2235		1,020.5094
Total	1.0577	8.9137	6.4937	0.0105		0.5596	0.5596		0.5404	0.5404		1,015.8149	1,015.8149	0.2235		1,020.5094

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	0.0517	0.5016	0.6419	1.0800e-003	0.0312	8.6500e-003	0.0399	8.9000e-003	7.9600e-003	0.0169		109.3084	109.3084	8.9000e-004		109.3270
Worker	0.0474	0.0636	0.6636	1.3300e-003	0.1118	9.8000e-004	0.1128	0.0296	9.0000e-004	0.0306		115.5661	115.5661	6.6300e-003		115.7054
Total	0.0991	0.5652	1.3055	2.4100e-003	0.1430	9.6300e-003	0.1527	0.0385	8.8600e-003	0.0474		224.8745	224.8745	7.5200e-003		225.0324

3.9 Construct CB - 2015

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	1.0577	8.9137	6.4937	0.0105		0.5596	0.5596		0.5404	0.5404	0.0000	1,015.8149	1,015.8149	0.2235		1,020.5094
Total	1.0577	8.9137	6.4937	0.0105		0.5596	0.5596		0.5404	0.5404	0.0000	1,015.8149	1,015.8149	0.2235		1,020.5094

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	0.0517	0.5016	0.6419	1.0800e-003	0.0312	8.6500e-003	0.0399	8.9000e-003	7.9600e-003	0.0169		109.3084	109.3084	8.9000e-004		109.3270
Worker	0.0474	0.0636	0.6636	1.3300e-003	0.1118	9.8000e-004	0.1128	0.0296	9.0000e-004	0.0306		115.5661	115.5661	6.6300e-003		115.7054
Total	0.0991	0.5652	1.3055	2.4100e-003	0.1430	9.6300e-003	0.1527	0.0385	8.8600e-003	0.0474		224.8745	224.8745	7.5200e-003		225.0324

3.10 Base Pave SD Trench - 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	2.0927	22.8763	15.9034	0.0160		1.1787	1.1787		1.0844	1.0844		1,683.008 3	1,683.008 3	0.5025		1,693.559 7
Paving	0.2686					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	2.3612	22.8763	15.9034	0.0160		1.1787	1.1787		1.0844	1.0844		1,683.008 3	1,683.008 3	0.5025		1,693.559 7

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	0.0517	0.5016	0.6419	1.0800e-003	0.0312	8.6500e-003	0.0399	8.9000e-003	7.9600e-003	0.0169		109.3084	109.3084	8.9000e-004		109.3270
Worker	0.0379	0.0509	0.5309	1.0600e-003	0.0894	7.9000e-004	0.0902	0.0237	7.2000e-004	0.0244		92.4529	92.4529	5.3100e-003		92.5643
Total	0.0896	0.5525	1.1728	2.1400e-003	0.1207	9.4400e-003	0.1301	0.0326	8.6800e-003	0.0413		201.7613	201.7613	6.2000e-003		201.8913

3.10 Base Pave SD Trench - 2015**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	2.0927	22.8763	15.9034	0.0160		1.1787	1.1787		1.0844	1.0844	0.0000	1,683.008 3	1,683.008 3	0.5025		1,693.559 7
Paving	0.2686					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	2.3612	22.8763	15.9034	0.0160		1.1787	1.1787		1.0844	1.0844	0.0000	1,683.008 3	1,683.008 3	0.5025		1,693.559 7

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	0.0517	0.5016	0.6419	1.0800e-003	0.0312	8.6500e-003	0.0399	8.9000e-003	7.9600e-003	0.0169		109.3084	109.3084	8.9000e-004		109.3270
Worker	0.0379	0.0509	0.5309	1.0600e-003	0.0894	7.9000e-004	0.0902	0.0237	7.2000e-004	0.0244		92.4529	92.4529	5.3100e-003		92.5643
Total	0.0896	0.5525	1.1728	2.1400e-003	0.1207	9.4400e-003	0.1301	0.0326	8.6800e-003	0.0413		201.7613	201.7613	6.2000e-003		201.8913

3.11 Final Pave, Striping - 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	0.7755	10.3479	4.9101	0.0110		0.4262	0.4262		0.3921	0.3921		1,154.319 ₉	1,154.319 ₉	0.3446		1,161.556 ₈
Paving	0.0977					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	0.8732	10.3479	4.9101	0.0110		0.4262	0.4262		0.3921	0.3921		1,154.319₉	1,154.319₉	0.3446		1,161.556₈

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	0.0517	0.5016	0.6419	1.0800e-003	0.0312	8.6500e-003	0.0399	8.9000e-003	7.9600e-003	0.0169		109.3084	109.3084	8.9000e-004		109.3270
Worker	0.0237	0.0318	0.3318	6.6000e-004	0.0559	4.9000e-004	0.0564	0.0148	4.5000e-004	0.0153		57.7831	57.7831	3.3200e-003		57.8527
Total	0.0754	0.5334	0.9737	1.7400e-003	0.0871	9.1400e-003	0.0963	0.0237	8.4100e-003	0.0321		167.0915	167.0915	4.2100e-003		167.1797

3.11 Final Pave, Striping - 2015**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	0.7755	10.3479	4.9101	0.0110		0.4262	0.4262		0.3921	0.3921	0.0000	1,154.319 ₉	1,154.319 ₉	0.3446		1,161.556 ₈
Paving	0.0977					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	0.8732	10.3479	4.9101	0.0110		0.4262	0.4262		0.3921	0.3921	0.0000	1,154.319₉	1,154.319₉	0.3446		1,161.556₈

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	0.0517	0.5016	0.6419	1.0800e-003	0.0312	8.6500e-003	0.0399	8.9000e-003	7.9600e-003	0.0169		109.3084	109.3084	8.9000e-004		109.3270
Worker	0.0237	0.0318	0.3318	6.6000e-004	0.0559	4.9000e-004	0.0564	0.0148	4.5000e-004	0.0153		57.7831	57.7831	3.3200e-003		57.8527
Total	0.0754	0.5334	0.9737	1.7400e-003	0.0871	9.1400e-003	0.0963	0.0237	8.4100e-003	0.0321		167.0915	167.0915	4.2100e-003		167.1797

3.12 Mass Grade Channel Site - 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					
Fugitive Dust					0.2148	0.0000	0.2148	0.0232	0.0000	0.0232			0.0000			0.0000
Off-Road	2.8269	26.4909	16.3715	0.0239		1.5941	1.5941		1.5068	1.5068		2,432.7068	2,432.7068	0.6109		2,445.5356
Total	2.8269	26.4909	16.3715	0.0239	0.2148	1.5941	1.8089	0.0232	1.5068	1.5300		2,432.7068	2,432.7068	0.6109		2,445.5356

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	0.0517	0.5016	0.6419	1.0800e-003	0.0312	8.6500e-003	0.0399	8.9000e-003	7.9600e-003	0.0169		109.3084	109.3084	8.9000e-004		109.3270
Worker	0.0474	0.0636	0.6636	1.3300e-003	0.1118	9.8000e-004	0.1128	0.0296	9.0000e-004	0.0306		115.5661	115.5661	6.6300e-003		115.7054
Total	0.0991	0.5652	1.3055	2.4100e-003	0.1430	9.6300e-003	0.1527	0.0385	8.8600e-003	0.0474		224.8745	224.8745	7.5200e-003		225.0324

3.12 Mass Grade Channel Site - 2015**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.2148	0.0000	0.2148	0.0232	0.0000	0.0232			0.0000			0.0000
Off-Road	2.8269	26.4909	16.3715	0.0239		1.5941	1.5941		1.5068	1.5068	0.0000	2,432.7068	2,432.7068	0.6109		2,445.5356
Total	2.8269	26.4909	16.3715	0.0239	0.2148	1.5941	1.8089	0.0232	1.5068	1.5300	0.0000	2,432.7068	2,432.7068	0.6109		2,445.5356

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	0.0517	0.5016	0.6419	1.0800e-003	0.0312	8.6500e-003	0.0399	8.9000e-003	7.9600e-003	0.0169		109.3084	109.3084	8.9000e-004		109.3270
Worker	0.0474	0.0636	0.6636	1.3300e-003	0.1118	9.8000e-004	0.1128	0.0296	9.0000e-004	0.0306		115.5661	115.5661	6.6300e-003		115.7054
Total	0.0991	0.5652	1.3055	2.4100e-003	0.1430	9.6300e-003	0.1527	0.0385	8.8600e-003	0.0474		224.8745	224.8745	7.5200e-003		225.0324

3.13 Clean up and final demobilization - 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					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.4328	3.5756	2.1272	2.5400e-003		0.3169	0.3169		0.2915	0.2915		266.6911	266.6911	0.0796		268.3631
Total	0.4328	3.5756	2.1272	2.5400e-003	0.0000	0.3169	0.3169	0.0000	0.2915	0.2915		266.6911	266.6911	0.0796		268.3631

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	0.0517	0.5016	0.6419	1.0800e-003	0.0312	8.6500e-003	0.0399	8.9000e-003	7.9600e-003	0.0169		109.3084	109.3084	8.9000e-004		109.3270
Worker	0.0142	0.0191	0.1991	4.0000e-004	0.0335	3.0000e-004	0.0338	8.8900e-003	2.7000e-004	9.1600e-003		34.6698	34.6698	1.9900e-003		34.7116
Total	0.0659	0.5207	0.8410	1.4800e-003	0.0648	8.9500e-003	0.0737	0.0178	8.2300e-003	0.0260		143.9783	143.9783	2.8800e-003		144.0387

3.13 Clean up and final demobilization - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.4328	3.5756	2.1272	2.5400e-003		0.3169	0.3169		0.2915	0.2915	0.0000	266.6911	266.6911	0.0796		268.3631
Total	0.4328	3.5756	2.1272	2.5400e-003	0.0000	0.3169	0.3169	0.0000	0.2915	0.2915	0.0000	266.6911	266.6911	0.0796		268.3631

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	0.0517	0.5016	0.6419	1.0800e-003	0.0312	8.6500e-003	0.0399	8.9000e-003	7.9600e-003	0.0169		109.3084	109.3084	8.9000e-004		109.3270
Worker	0.0142	0.0191	0.1991	4.0000e-004	0.0335	3.0000e-004	0.0338	8.8900e-003	2.7000e-004	9.1600e-003		34.6698	34.6698	1.9900e-003		34.7116
Total	0.0659	0.5207	0.8410	1.4800e-003	0.0648	8.9500e-003	0.0737	0.0178	8.2300e-003	0.0260		143.9783	143.9783	2.8800e-003		144.0387

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

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

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
User Defined Industrial	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.515683	0.060583	0.179994	0.140474	0.041721	0.006653	0.015053	0.028382	0.001919	0.002521	0.004323	0.000600	0.002094

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

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

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	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
User Defined Industrial	0	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
Total		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

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	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
User Defined Industrial	0	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
Total		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

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.3853	3.0000e-005	2.7900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		5.7100e-003	5.7100e-003	2.0000e-005		6.0700e-003
Unmitigated	0.3853	3.0000e-005	2.7900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		5.7100e-003	5.7100e-003	2.0000e-005		6.0700e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0286					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.3564					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.8000e-004	3.0000e-005	2.7900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		5.7100e-003	5.7100e-003	2.0000e-005		6.0700e-003
Total	0.3853	3.0000e-005	2.7900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		5.7100e-003	5.7100e-003	2.0000e-005		6.0700e-003

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0286					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.3564					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.8000e-004	3.0000e-005	2.7900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		5.7100e-003	5.7100e-003	2.0000e-005		6.0700e-003
Total	0.3853	3.0000e-005	2.7900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		5.7100e-003	5.7100e-003	2.0000e-005		6.0700e-003

7.0 Water Detail

7.1 Mitigation Measures Water**8.0 Waste Detail**

8.1 Mitigation Measures Waste**9.0 Operational Offroad**

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
----------------	--------	-----------	-----------	-------------	-------------	-----------

10.0 Vegetation

Attachment D

CalEEMod Modeling Results for Overall Project When Work is Occurring Within 50 Feet of the
Closest Sensitive Receptor

University Wash Stage 3
South Coast AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	8.10	User Defined Unit	7.69	0.00	0
Other Asphalt Surfaces	18.00	1000sqft	0.41	18,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	31
Climate Zone	10			Operational Year	2014
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MW hr)	641.35	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Pipeline project will disturb approximately 8.1 acres.

Construction Phase - Default durations were not used, rather durations based upon the planned construction schedule were entered.

Off-road Equipment - Project specific equipment information entered.

Off-road Equipment - Project specific equipment information entered.

Off-road Equipment - Project specific equipment information entered.

Off-road Equipment - Project specific equipment information entered.

Off-road Equipment - Project specific equipment information entered.

Off-road Equipment - Project specific equipment information entered.

Off-road Equipment - Project specific equipment information entered.

Trips and VMT - Project specific vendor distance entered.

All worker trips estimated using the default (1.25 * number of equipment * 2)

Grading - Project specific acreage information entered.

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Interior	27000	0
tblConstructionPhase	NumDays	230.00	1.00
tblConstructionPhase	NumDays	230.00	5.00
tblConstructionPhase	NumDays	230.00	4.00
tblConstructionPhase	NumDays	20.00	1.00
tblConstructionPhase	NumDays	20.00	4.00
tblConstructionPhase	PhaseEndDate	1/5/2015	1/2/2015
tblConstructionPhase	PhaseEndDate	1/9/2015	1/8/2015
tblConstructionPhase	PhaseEndDate	1/14/2015	1/8/2015
tblConstructionPhase	PhaseEndDate	1/9/2015	1/23/2015
tblConstructionPhase	PhaseEndDate	1/14/2015	1/8/2015
tblConstructionPhase	PhaseStartDate	1/3/2015	1/2/2015
tblConstructionPhase	PhaseStartDate	1/3/2015	1/2/2015
tblConstructionPhase	PhaseStartDate	1/9/2015	1/5/2015

tblConstructionPhase	PhaseStartDate	1/9/2015	1/23/2015
tblConstructionPhase	PhaseStartDate	1/9/2015	1/5/2015
tblLandUse	LotAcreage	0.00	7.69
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Install MH
tblOffRoadEquipment	PhaseName		Install Connector Pipe
tblOffRoadEquipment	PhaseName		Construct CB
tblOffRoadEquipment	PhaseName		Install MH
tblOffRoadEquipment	PhaseName		Install Connector Pipe
tblOffRoadEquipment	PhaseName		Construct CB

tblOffRoadEquipment	PhaseName		Install MH
tblOffRoadEquipment	PhaseName		Install Connector Pipe
tblOffRoadEquipment	PhaseName		Mainline SD (90") - in street R/W
tblOffRoadEquipment	PhaseName		Install Connector Pipe
tblOffRoadEquipment	PhaseName		Construct CB
tblOffRoadEquipment	PhaseName		Install MH
tblOffRoadEquipment	PhaseName		Construct CB
tblOffRoadEquipment	PhaseName		Base Pave SD Trench
tblOffRoadEquipment	PhaseName		Mainline SD (90") - in street R/W
tblOffRoadEquipment	PhaseName		Final Pave, Striping
tblOffRoadEquipment	UsageHours	8.00	2.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblTripsAndVMT	HaulingTripLength	20.00	2.60
tblTripsAndVMT	HaulingTripLength	20.00	2.60
tblTripsAndVMT	HaulingTripLength	20.00	2.60
tblTripsAndVMT	HaulingTripLength	20.00	2.60
tblTripsAndVMT	HaulingTripLength	20.00	2.60
tblTripsAndVMT	HaulingTripLength	20.00	2.60
tblTripsAndVMT	HaulingTripNumber	0.00	58.00
tblTripsAndVMT	VendorTripNumber	0.00	5.00
tblTripsAndVMT	VendorTripNumber	3.00	5.00
tblTripsAndVMT	VendorTripNumber	0.00	5.00
tblTripsAndVMT	VendorTripNumber	3.00	5.00
tblTripsAndVMT	VendorTripNumber	3.00	5.00
tblTripsAndVMT	VendorTripNumber	0.00	5.00
tblTripsAndVMT	WorkerTripNumber	8.00	13.00
tblTripsAndVMT	WorkerTripNumber	8.00	10.00
tblTripsAndVMT	WorkerTripNumber	8.00	10.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	6.3013	52.6222	42.6964	0.0665	0.5950	2.7815	3.3764	0.1609	2.6807	2.8415	0.0000	6,538.1126	6,538.1126	1.1948	0.0000	6,563.2038
Total	6.3013	52.6222	42.6964	0.0665	0.5950	2.7815	3.3764	0.1609	2.6807	2.8415	0.0000	6,538.1126	6,538.1126	1.1948	0.0000	6,563.2038

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	6.3013	52.6222	42.6964	0.0665	0.5950	2.7815	3.3764	0.1609	2.6807	2.8415	0.0000	6,538.1126	6,538.1126	1.1948	0.0000	6,563.2038
Total	6.3013	52.6222	42.6964	0.0665	0.5950	2.7815	3.3764	0.1609	2.6807	2.8415	0.0000	6,538.1126	6,538.1126	1.1948	0.0000	6,563.2038

[illegible]

2.2 Overall Operational**Unmitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.3853	3.0000e-005	2.7900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		5.7100e-003	5.7100e-003	2.0000e-005		6.0700e-003
Energy	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
Mobile	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
Total	0.3853	3.0000e-005	2.7900e-003	0.0000	0.0000	1.0000e-005	1.0000e-005	0.0000	1.0000e-005	1.0000e-005		5.7100e-003	5.7100e-003	2.0000e-005	0.0000	6.0700e-003

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.3853	3.0000e-005	2.7900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		5.7100e-003	5.7100e-003	2.0000e-005		6.0700e-003
Energy	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
Mobile	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
Total	0.3853	3.0000e-005	2.7900e-003	0.0000	0.0000	1.0000e-005	1.0000e-005	0.0000	1.0000e-005	1.0000e-005		5.7100e-003	5.7100e-003	2.0000e-005	0.0000	6.0700e-003

	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	Mainline SD (90") - in street R/W	Trenching	1/2/2015	1/2/2015	5	1	
2	Install MH	Building Construction	1/2/2015	1/2/2015	5	1	
3	Install Connector Pipe	Building Construction	1/2/2015	1/8/2015	5	5	
4	Construct CB	Building Construction	1/5/2015	1/8/2015	5	4	
5	Base Pave SD Trench	Paving	1/5/2015	1/8/2015	5	4	
6	Final Pave, Striping	Paving	1/23/2015	1/23/2015	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

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

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Install MH	Air Compressors	1	8.00	78	0.48
Install MH	Cement and Mortar Mixers	1	8.00	9	0.56
Install MH	Concrete/Industrial Saws	1	8.00	81	0.73
Install MH	Plate Compactors	1	8.00	8	0.43
Install MH	Welders	1	6.00	46	0.45
Mainline SD (90") - in street R/W	Excavators	2	8.00	162	0.38
Mainline SD (90") - in street R/W	Rubber Tired Loaders	2	8.00	199	0.36
Install Connector Pipe	Air Compressors	1	8.00	78	0.48
Install Connector Pipe	Cement and Mortar Mixers	1	8.00	9	0.56
Install Connector Pipe	Concrete/Industrial Saws	1	8.00	81	0.73
Install Connector Pipe	Excavators	1	8.00	162	0.38
Construct CB	Air Compressors	1	8.00	78	0.48
Construct CB	Cement and Mortar Mixers	1	8.00	9	0.56
Construct CB	Excavators	1	8.00	162	0.38
Construct CB	Plate Compactors	1	8.00	8	0.43
Base Pave SD Trench	Pavers	1	8.00	125	0.42
Base Pave SD Trench	Rollers	1	8.00	80	0.38
Base Pave SD Trench	Rubber Tired Dozers	1	8.00	255	0.40
Final Pave, Striping	Pavers	1	2.00	125	0.42
Final Pave, Striping	Surfacing Equipment	1	2.00	253	0.30

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
Install MH	5	13.00	5.00	0.00	14.70	6.90	2.60	LD_Mix	HDT_Mix	HHDT
Mainline SD (90") - in street P/W	4	10.00	5.00	58.00	14.70	6.90	2.60	LD_Mix	HDT_Mix	HHDT
Install Connector Pipe	4	10.00	5.00	0.00	14.70	6.90	2.60	LD_Mix	HDT_Mix	HHDT
Construct CB	4	10.00	5.00	0.00	14.70	6.90	2.60	LD_Mix	HDT_Mix	HHDT
Base Pave SD Trench	3	8.00	5.00	0.00	14.70	6.90	2.60	LD_Mix	HDT_Mix	HHDT
Final Pave, Striping	2	5.00	5.00	0.00	14.70	6.90	2.60	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Mainline SD (90") - in street R/W - 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	1.8580	23.2980	10.6180	0.0228		0.9435	0.9435		0.8680	0.8680		2,397.1462	2,397.1462	0.7157		2,412.1748
Total	1.8580	23.2980	10.6180	0.0228		0.9435	0.9435		0.8680	0.8680		2,397.1462	2,397.1462	0.7157		2,412.1748

3.2 Mainline SD (90") - in street R/W - 2015**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	0.5789	3.5096	9.4954	6.5000e-003	0.1324	0.0458	0.1782	0.0364	0.0421	0.0785		649.1377	649.1377	7.5700e-003		649.2967
Vendor	0.0517	0.5016	0.6419	1.0800e-003	0.0312	8.6500e-003	0.0399	8.9000e-003	7.9600e-003	0.0169		109.3084	109.3084	8.9000e-004		109.3270
Worker	0.0474	0.0636	0.6636	1.3300e-003	0.1118	9.8000e-004	0.1128	0.0296	9.0000e-004	0.0306		115.5661	115.5661	6.6300e-003		115.7054
Total	0.6780	4.0748	10.8009	8.9100e-003	0.2754	0.0555	0.3309	0.0749	0.0510	0.1259		874.0122	874.0122	0.0151		874.3291

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	1.8580	23.2980	10.6180	0.0228		0.9435	0.9435		0.8680	0.8680	0.0000	2,397.1462	2,397.1462	0.7157		2,412.1748
Total	1.8580	23.2980	10.6180	0.0228		0.9435	0.9435		0.8680	0.8680	0.0000	2,397.1462	2,397.1462	0.7157		2,412.1748

3.2 Mainline SD (90") - in street R/W - 2015**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	0.5789	3.5096	9.4954	6.5000e-003	0.1324	0.0458	0.1782	0.0364	0.0421	0.0785		649.1377	649.1377	7.5700e-003		649.2967
Vendor	0.0517	0.5016	0.6419	1.0800e-003	0.0312	8.6500e-003	0.0399	8.9000e-003	7.9600e-003	0.0169		109.3084	109.3084	8.9000e-004		109.3270
Worker	0.0474	0.0636	0.6636	1.3300e-003	0.1118	9.8000e-004	0.1128	0.0296	9.0000e-004	0.0306		115.5661	115.5661	6.6300e-003		115.7054
Total	0.6780	4.0748	10.8009	8.9100e-003	0.2754	0.0555	0.3309	0.0749	0.0510	0.1259		874.0122	874.0122	0.0151		874.3291

3.3 Install MH - 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	1.8230	10.4432	8.3808	0.0133		0.8252	0.8252		0.8252	0.8252		1,208.5341	1,208.5341	0.1635		1,211.9670
Total	1.8230	10.4432	8.3808	0.0133		0.8252	0.8252		0.8252	0.8252		1,208.5341	1,208.5341	0.1635		1,211.9670

3.3 Install MH - 2015**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	0.0517	0.5016	0.6419	1.0800e-003	0.0312	8.6500e-003	0.0399	8.9000e-003	7.9600e-003	0.0169		109.3084	109.3084	8.9000e-004		109.3270
Worker	0.0616	0.0826	0.8627	1.7300e-003	0.1453	1.2800e-003	0.1466	0.0385	1.1700e-003	0.0397		150.2359	150.2359	8.6200e-003		150.4170
Total	0.1133	0.5843	1.5046	2.8100e-003	0.1766	9.9300e-003	0.1865	0.0474	9.1300e-003	0.0566		259.5444	259.5444	9.5100e-003		259.7440

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	1.8230	10.4432	8.3808	0.0133		0.8252	0.8252		0.8252	0.8252	0.0000	1,208.5341	1,208.5341	0.1635		1,211.9670
Total	1.8230	10.4432	8.3808	0.0133		0.8252	0.8252		0.8252	0.8252	0.0000	1,208.5341	1,208.5341	0.1635		1,211.9670

3.3 Install MH - 2015**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	0.0517	0.5016	0.6419	1.0800e-003	0.0312	8.6500e-003	0.0399	8.9000e-003	7.9600e-003	0.0169		109.3084	109.3084	8.9000e-004		109.3270
Worker	0.0616	0.0826	0.8627	1.7300e-003	0.1453	1.2800e-003	0.1466	0.0385	1.1700e-003	0.0397		150.2359	150.2359	8.6200e-003		150.4170
Total	0.1133	0.5843	1.5046	2.8100e-003	0.1766	9.9300e-003	0.1865	0.0474	9.1300e-003	0.0566		259.5444	259.5444	9.5100e-003		259.7440

3.4 Install Connector Pipe - 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	1.7299	13.6568	10.0866	0.0162		0.9378	0.9378		0.9186	0.9186		1,574.0012	1,574.0012	0.2836		1,579.9564
Total	1.7299	13.6568	10.0866	0.0162		0.9378	0.9378		0.9186	0.9186		1,574.0012	1,574.0012	0.2836		1,579.9564

3.4 Install Connector Pipe - 2015**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	0.0517	0.5016	0.6419	1.0800e-003	0.0312	8.6500e-003	0.0399	8.9000e-003	7.9600e-003	0.0169		109.3084	109.3084	8.9000e-004		109.3270
Worker	0.0474	0.0636	0.6636	1.3300e-003	0.1118	9.8000e-004	0.1128	0.0296	9.0000e-004	0.0306		115.5661	115.5661	6.6300e-003		115.7054
Total	0.0991	0.5652	1.3055	2.4100e-003	0.1430	9.6300e-003	0.1527	0.0385	8.8600e-003	0.0474		224.8745	224.8745	7.5200e-003		225.0324

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	1.7299	13.6568	10.0866	0.0162		0.9378	0.9378		0.9186	0.9186	0.0000	1,574.0012	1,574.0012	0.2836		1,579.9564
Total	1.7299	13.6568	10.0866	0.0162		0.9378	0.9378		0.9186	0.9186	0.0000	1,574.0012	1,574.0012	0.2836		1,579.9564

3.4 Install Connector Pipe - 2015**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	0.0517	0.5016	0.6419	1.0800e-003	0.0312	8.6500e-003	0.0399	8.9000e-003	7.9600e-003	0.0169		109.3084	109.3084	8.9000e-004		109.3270
Worker	0.0474	0.0636	0.6636	1.3300e-003	0.1118	9.8000e-004	0.1128	0.0296	9.0000e-004	0.0306		115.5661	115.5661	6.6300e-003		115.7054
Total	0.0991	0.5652	1.3055	2.4100e-003	0.1430	9.6300e-003	0.1527	0.0385	8.8600e-003	0.0474		224.8745	224.8745	7.5200e-003		225.0324

3.5 Construct CB - 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	1.0577	8.9137	6.4937	0.0105		0.5596	0.5596		0.5404	0.5404		1,015.8149	1,015.8149	0.2235		1,020.5094
Total	1.0577	8.9137	6.4937	0.0105		0.5596	0.5596		0.5404	0.5404		1,015.8149	1,015.8149	0.2235		1,020.5094

3.5 Construct CB - 2015**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	0.0517	0.5016	0.6419	1.0800e-003	0.0312	8.6500e-003	0.0399	8.9000e-003	7.9600e-003	0.0169		109.3084	109.3084	8.9000e-004		109.3270
Worker	0.0474	0.0636	0.6636	1.3300e-003	0.1118	9.8000e-004	0.1128	0.0296	9.0000e-004	0.0306		115.5661	115.5661	6.6300e-003		115.7054
Total	0.0991	0.5652	1.3055	2.4100e-003	0.1430	9.6300e-003	0.1527	0.0385	8.8600e-003	0.0474		224.8745	224.8745	7.5200e-003		225.0324

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	1.0577	8.9137	6.4937	0.0105		0.5596	0.5596		0.5404	0.5404	0.0000	1,015.8149	1,015.8149	0.2235		1,020.5094
Total	1.0577	8.9137	6.4937	0.0105		0.5596	0.5596		0.5404	0.5404	0.0000	1,015.8149	1,015.8149	0.2235		1,020.5094

3.5 Construct CB - 2015**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	0.0517	0.5016	0.6419	1.0800e-003	0.0312	8.6500e-003	0.0399	8.9000e-003	7.9600e-003	0.0169		109.3084	109.3084	8.9000e-004		109.3270
Worker	0.0474	0.0636	0.6636	1.3300e-003	0.1118	9.8000e-004	0.1128	0.0296	9.0000e-004	0.0306		115.5661	115.5661	6.6300e-003		115.7054
Total	0.0991	0.5652	1.3055	2.4100e-003	0.1430	9.6300e-003	0.1527	0.0385	8.8600e-003	0.0474		224.8745	224.8745	7.5200e-003		225.0324

3.6 Base Pave SD Trench - 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	2.0927	22.8763	15.9034	0.0160		1.1787	1.1787		1.0844	1.0844		1,683.0083	1,683.0083	0.5025		1,693.5597
Paving	0.2686					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	2.3612	22.8763	15.9034	0.0160		1.1787	1.1787		1.0844	1.0844		1,683.0083	1,683.0083	0.5025		1,693.5597

3.6 Base Pave SD Trench - 2015**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	0.0517	0.5016	0.6419	1.0800e-003	0.0312	8.6500e-003	0.0399	8.9000e-003	7.9600e-003	0.0169		109.3084	109.3084	8.9000e-004		109.3270
Worker	0.0379	0.0509	0.5309	1.0600e-003	0.0894	7.9000e-004	0.0902	0.0237	7.2000e-004	0.0244		92.4529	92.4529	5.3100e-003		92.5643
Total	0.0896	0.5525	1.1728	2.1400e-003	0.1207	9.4400e-003	0.1301	0.0326	8.6800e-003	0.0413		201.7613	201.7613	6.2000e-003		201.8913

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	2.0927	22.8763	15.9034	0.0160		1.1787	1.1787		1.0844	1.0844	0.0000	1,683.0083	1,683.0083	0.5025		1,693.5597
Paving	0.2686					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	2.3612	22.8763	15.9034	0.0160		1.1787	1.1787		1.0844	1.0844	0.0000	1,683.0083	1,683.0083	0.5025		1,693.5597

3.6 Base Pave SD Trench - 2015**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	0.0517	0.5016	0.6419	1.0800e-003	0.0312	8.6500e-003	0.0399	8.9000e-003	7.9600e-003	0.0169		109.3084	109.3084	8.9000e-004		109.3270
Worker	0.0379	0.0509	0.5309	1.0600e-003	0.0894	7.9000e-004	0.0902	0.0237	7.2000e-004	0.0244		92.4529	92.4529	5.3100e-003		92.5643
Total	0.0896	0.5525	1.1728	2.1400e-003	0.1207	9.4400e-003	0.1301	0.0326	8.6800e-003	0.0413		201.7613	201.7613	6.2000e-003		201.8913

3.7 Final Pave, Striping - 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	0.1939	2.5870	1.2275	2.7500e-003		0.1065	0.1065		0.0980	0.0980		288.5800	288.5800	0.0862		290.3892
Paving	1.0742					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	1.2681	2.5870	1.2275	2.7500e-003		0.1065	0.1065		0.0980	0.0980		288.5800	288.5800	0.0862		290.3892

3.7 Final Pave, Striping - 2015**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	0.0517	0.5016	0.6419	1.0800e-003	0.0312	8.6500e-003	0.0399	8.9000e-003	7.9600e-003	0.0169		109.3084	109.3084	8.9000e-004		109.3270
Worker	0.0237	0.0318	0.3318	6.6000e-004	0.0559	4.9000e-004	0.0564	0.0148	4.5000e-004	0.0153		57.7831	57.7831	3.3200e-003		57.8527
Total	0.0754	0.5334	0.9737	1.7400e-003	0.0871	9.1400e-003	0.0963	0.0237	8.4100e-003	0.0321		167.0915	167.0915	4.2100e-003		167.1797

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	0.1939	2.5870	1.2275	2.7500e-003		0.1065	0.1065		0.0980	0.0980	0.0000	288.5800	288.5800	0.0862		290.3892
Paving	1.0742					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	1.2681	2.5870	1.2275	2.7500e-003		0.1065	0.1065		0.0980	0.0980	0.0000	288.5800	288.5800	0.0862		290.3892

3.7 Final Pave, Striping - 2015

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	0.0517	0.5016	0.6419	1.0800e-003	0.0312	8.6500e-003	0.0399	8.9000e-003	7.9600e-003	0.0169		109.3084	109.3084	8.9000e-004		109.3270
Worker	0.0237	0.0318	0.3318	6.6000e-004	0.0559	4.9000e-004	0.0564	0.0148	4.5000e-004	0.0153		57.7831	57.7831	3.3200e-003		57.8527
Total	0.0754	0.5334	0.9737	1.7400e-003	0.0871	9.1400e-003	0.0963	0.0237	8.4100e-003	0.0321		167.0915	167.0915	4.2100e-003		167.1797

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

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

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
User Defined Industrial	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.515683	0.060583	0.179994	0.140474	0.041721	0.006653	0.015053	0.028382	0.001919	0.002521	0.004323	0.000600	0.002094

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

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

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	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
User Defined Industrial	0	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
Total		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

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	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
User Defined Industrial	0	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
Total		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

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.3853	3.0000e-005	2.7900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		5.7100e-003	5.7100e-003	2.0000e-005		6.0700e-003
Unmitigated	0.3853	3.0000e-005	2.7900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		5.7100e-003	5.7100e-003	2.0000e-005		6.0700e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0286					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.3564					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.8000e-004	3.0000e-005	2.7900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		5.7100e-003	5.7100e-003	2.0000e-005		6.0700e-003
Total	0.3853	3.0000e-005	2.7900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		5.7100e-003	5.7100e-003	2.0000e-005		6.0700e-003

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0286					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.3564					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.8000e-004	3.0000e-005	2.7900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		5.7100e-003	5.7100e-003	2.0000e-005		6.0700e-003
Total	0.3853	3.0000e-005	2.7900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		5.7100e-003	5.7100e-003	2.0000e-005		6.0700e-003

7.0 Water Detail

7.1 Mitigation Measures Water**8.0 Waste Detail**

8.1 Mitigation Measures Waste**9.0 Operational Offroad**

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
----------------	--------	-----------	-----------	-------------	-------------	-----------

10.0 Vegetation

Appendix D
Biological Resources Assessment

Biological Resources Assessment

Riverside County Flood Control and Water Conservation District

University Wash Channel Stage 3 Project

Riverside, California

USGS Riverside East Quadrangle

December 2013

Prepared for:

**Riverside County Flood Control and
Water Conservation District
1995 Market Street
Riverside, CA 92501**

Prepared by:



**TRC Solutions, Inc.
123 Technology Drive West
Irvine, CA 92618**

TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
1.0 INTRODUCTION	1
2.0 SITE LOCATION AND DESCRIPTION	1
3.0 REGULATORY BACKGROUND	2
3.1 Federal Regulations.....	2
3.2 State Regulations	3
3.3 Local Regulations	6
4.0 METHODS	9
4.1 Literature Review.....	9
4.2 Field Surveys	10
5.0 RESULTS	10
5.1 Soils.....	10
5.2 Habitat Types and Land Uses	10
5.3 Drainages and Other Water Features	13
5.4 Special-Status Species and Sensitive Habitats	15
6.0 CONCLUSIONS.....	17
6.1 Nesting Bird Surveys	17
6.2 Potential Project Impacts to Jurisdictional Features	18
6.3 MSHCP Consistency Determination	19
7.0 REFERENCES	21

Figures:

Figure 1	Vicinity and Site Location
Figure 2	MSHCP Cells and Survey Areas
Figure 3	Soils Map
Figure 4	Habitat Types and Land Uses Map
Figure 5	ACOE Delineation Map
Figure 6	CDFW Delineation Map

Appendices:

Appendix A	CNDDDB Maps and CNPS List
Appendix B	CNDDDB and MSHCP Special-Status Species Table
Appendix C	Plants and Wildlife Observed on the Site
Appendix D	Representative Site Photographs

Acronyms List

ACOE	United States Army Corps of Engineers
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFG	California Fish and Game
CNDDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CRPR	California Rare Plant Ranks
CS	Covered Species
CWA	Clean Water Act
DBESP	Determination of Biologically Equivalent or Superior Preservation
District	Riverside County Flood Control and Water Conservation District
FESA	Federal Endangered Species Act
FP	Fully Protected
FT	Federally Threatened
GIS	Geographic Information System
GPS	Geographic Positioning System
HANS	Habitat Acquisition and Negotiation Strategy
HCP	Habitat Conservation Plan
JPR	Joint Project Review
LSAA	Lake and Streambed Alteration Agreement
MBTA	Migratory Bird Treaty Act
MSHCP	<i>Western Riverside County Multiple Species Habitat Conservation Plan</i>
msl	Mean sea level
NCCP	Natural Community Conservation Plan
NMFS	National Marine Fisheries Service
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
OHW	Ordinary high water mark
Project	University Wash Channel Stage 3 Project
RCHCA	Riverside County Habitat Conservation Agency
RWQCB	Regional Water Quality Control Board
Site	8.13-acre University Wash Channel Site
SKR	Stephen's Kangaroo Rat
SSC	Species of Special Concern
TRC	TRC Solutions, Inc.
USDA	United States Department of Agriculture
U.S. EPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WUS	Waters of the United States

1.0 INTRODUCTION

On behalf of the Riverside County Flood Control and Water Conservation District (District), a biological resources assessment was conducted by TRC Solutions, Inc. (TRC) for the 8.13-acre University Wash Channel Site (Site), located in Riverside, California (see Figure 1, Vicinity and Site Location). This document describes the current conditions on the Site, documents the existing vegetation communities and land uses supported by the Site, assesses the suitability of the Site to support special-status species and sensitive habitats such as wetlands, and discusses regulatory permitting for project activities. This report utilizes information collected during the biological resources assessment and jurisdictional delineation conducted by TRC in December 2011 as part of the Project's Preliminary Environmental Assessment Report, along with subsequent literature reviews and a field survey in November 2013.

The Site represents the proposed footprint of the proposed District University Wash Channel Stage 3 Project (Project), which involves the upgrade of the existing University Wash Channel to accommodate 10-year flows. The Project consists of the construction of approximately 2,500 linear feet of underground 90-inch-diameter reinforced concrete storm drain pipe, catch basins, and associated manholes, street paving and grading.

This assessment included a review of existing databases including the California Department of Fish and Wildlife's (CDFW) California Natural Diversity Database (CNDDB), the California Native Plant Society (CNPS) species lists, the United States Fish and Wildlife Service's (USFWS) critical habitat maps, and the *Western Riverside County Multiple Species Habitat Conservation Plan* (MSHCP), as well as the 2011 and 2013 field surveys mentioned above.

2.0 SITE LOCATION AND DESCRIPTION

The 8.13-acre Site is located south of the intersection of State Highway 91 and State Highway 60, and generally bound by Spruce Street to the north, Chicago Avenue to the east, Massachusetts Avenue to the south, and Kansas Avenue to the west (see Figure 1). The Site occurs in Section 24, Township 2 South, and Range 5 West of the U.S. Geological Survey (USGS) 7.5-minute *Riverside East, California* quadrangle. The Site is surrounded by industrial and commercial land uses and other disturbed land. Elevations on the Site range from approximately 880 feet to 920 feet (265 to 280 meters) above mean sea level (msl).

The Site is irregularly shaped and encompasses a variety of land uses and vegetation communities such as paved roads, disturbed/developed land, ruderal (weedy) and ornamental vegetation, and the existing University Wash Channel, which supports its own assortment of upland and wetland vegetation.

3.0 REGULATORY BACKGROUND

3.1 FEDERAL REGULATIONS

3.1.1 Federal Endangered Species Act

The United States Congress passed the Federal Endangered Species Act (FESA) in 1973. FESA protects plants and wildlife that are listed as Endangered or Threatened by the USFWS and the National Marine Fisheries Service (NMFS). It also requires the evaluation of effects to Proposed and Candidate species. Section 9 of FESA prohibits the take of endangered wildlife, where take is defined as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in such conduct” (50 CFR Section 17.3). For plants, this statute governs removing, possessing, maliciously damaging, or destroying any endangered plant on federal land and removing, cutting, digging-up, damaging, or destroying any endangered plant on non-federal land, in knowing violation of state law (16 USC 1538). Under Section 7 of FESA, federal agencies are required to consult with the USFWS and/or NMFS if their actions, including permit approvals or funding, could adversely affect an endangered plant or wildlife species or its habitat, or could adversely affect designated critical habitat. Through consultation and the issuance of a biological opinion, the USFWS and/or NMFS may issue an “incidental take statement” allowing take of the species, provided the action will not jeopardize the continued existence of any federally-listed species or result in the destruction or adverse modification of habitat of such species. Section 10 of FESA provides for issuance of incidental take permits to private parties without a federal nexus provided a Habitat Conservation Plan (HCP) is developed.

3.1.2 Federal Clean Water Act

The purpose of the Clean Water Act (CWA) is to “restore and maintain the chemical, physical, and biological integrity of the nation’s waters.” Section 404 of the CWA prohibits the discharge of dredged or fill material into waters of the United States (WUS) without a permit from the United States Army Corps of Engineers (ACOE). In addition, Section 401 of the CWA (33 USC 1341) requires any applicant for a federal license or permit to conduct any activity that may result in a discharge of a pollutant into WUS to obtain a certification that the discharge will comply with the applicable effluent limitations and water quality standards. A Water Quality Certification or waiver pursuant to Section 401 is required for Section 404 permit actions and is issued by the Regional Water Quality Control Board (RWQCB). Boundaries between jurisdictional waters and uplands are determined in a variety of ways depending on which type of water is present. Methods for delineating wetlands and non-tidal waters are described in the sections below.

3.1.3 Migratory Bird Treaty Act

The federal Migratory Bird Treaty Act (MBTA), first enacted in 1916, prohibits any person, unless permitted by regulation, to

...pursue, hunt, take, capture, kill, attempt to take, capture or kill, possess, offer for sale, sell, offer to purchase, purchase, deliver for shipment, ship, cause to be shipped, deliver for transportation, transport, cause to be transported, carry, or

cause to be carried by any means whatsoever, receive for shipment, transportation or carriage, or export, at any time, or in any manner, any migratory bird, included in the terms of this Convention . . . for the protection of migratory birds . . . or any part, nest, or egg of any such bird. (16 USC 703)

As authorized by the MBTA, the USFWS issues permits to qualified applicants for the following types of activities: falconry, raptor propagation, scientific collecting, special purposes (rehabilitation, education, migratory game bird propagation, and salvage), take of depredating birds, taxidermy, and waterfowl sale and disposal.

The list of migratory birds includes nearly all bird species native to the United States. The Migratory Bird Treaty Reform Act of 2004 further defined species protected under the act and excluded all non-native species. The statute was extended in 1974 to include parts of birds, as well as eggs and nests. Thus, it is illegal under the MBTA to directly kill, or destroy a nest of, nearly any bird species, not just endangered species. Activities that result in removal or destruction of an active nest (a nest with eggs or young being attended by one or more adults) would violate the MBTA.

3.2 STATE REGULATIONS

3.2.1 California Environmental Quality Act Significance Criteria

Section 15064.7 of the *CEQA Guidelines* encourages local agencies to develop and publish thresholds that the agency uses in determining the significance of environmental effects caused by projects under its review. However, agencies may also rely upon the guidance provided by the Initial Study checklist contained in Appendix G of the *CEQA Guidelines*. Appendix G provides examples of impacts that would normally be considered significant. Based on these examples, impacts to biological resources would normally be considered significant if the project would result in any of the following:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS;
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by CDFW or USFWS;
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, coastal wetlands, etc.) through direct removal, filling, hydrological interruption, or other means;
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or

- Conflict with the provisions of an adopted HCP, Natural Community Conservation Plan (NCCP), or other approved local, regional or state HCP.

An evaluation of whether or not an impact on biological resources would be substantial must consider both the resource itself and how that resource fits into a regional or local context. Substantial impacts would be those that would diminish, or result in the loss of, an important biological resource, or those that would obviously conflict with local, state, or federal resource conservation plans, goals, or regulations. Impacts are sometimes locally important but not significant according to CEQA. This is necessary because although the impacts would result in an adverse alteration of existing conditions, they would not substantially diminish, or result in the permanent loss of an important resource on a population-wide or region-wide basis.

3.2.2 California Endangered Species Act

The State of California enacted the California Endangered Species Act (CESA) in 1984. CESA directs agencies to consult with CDFW on projects or actions that could affect listed species, directs CDFW to determine whether jeopardy would occur, and allows CDFW to identify “reasonable and prudent alternatives” to the project consistent with conserving the species. CESA generally parallels the main provisions of FESA, but unlike its federal counterpart, CESA applies the “take” prohibitions to species proposed for listing (called candidates by the state). “Take” is defined in Section 86 of the California Fish and Game (CFG) Code as to “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.” Section 2080 of the CFG Code prohibits the taking, possession, purchase, sale, and import or export of endangered, threatened, or candidate species, unless otherwise authorized by permit or in the regulations. Under CFG Code Section 2081 CESA allows CDFW to authorize exceptions to the state’s prohibition against “take” of a listed species (except for designated “fully protected species”) if the “take” of a listed species is incidental to carrying out an otherwise lawful project that has been approved under CEQA. Section 2080.1 of the CFG Code allows for “take” once an applicant obtains a Federal Incidental Take Statement, submits it to the CDFW Director in writing, and receives a confirmed determination that the federal statement is “consistent” with CESA (a Consistency Determination letter). There is a 30-day window for issuance of a Consistency Determination letter. If, however, the Federal Incidental Take Statement is not determined to be consistent with CESA, then a State Incidental Take Permit under Section 2081(b) of the CFG Code must be applied for. Both Sections 2081 and 2080.1 require that take be minimized and fully mitigated.

3.2.3 California Fully Protected Species

The State of California first began to designate “fully protected” (FP) species prior to the creation of CESA and FESA. Lists of FP species were initially developed to provide protection to those animals that were rare or faced possible extinction, and included fish, amphibians and reptiles, birds, and mammals. Most FP species have since been listed as threatened or endangered under CESA and/or FESA. The regulations that implement the Fully Protected Species Statute (CFG Code Section 4700) state that FP species may not be taken or possessed at any time. Furthermore, CDFW prohibits any state agency from issuing incidental take permits for fully protected species, except for necessary scientific research.

In September 2011, the California Legislature sent the Governor legislation authorizing CDFW to permit the incidental take of 36 fully protected species pursuant to an NCCP approved by CDFW (Senate Bill 618 (Wolk)). The legislation gives FP species the same level of protection as is provided under the NCCP Act for endangered and threatened species (CFG Code § 2835.). The NCCP Act, enacted in the 1990s, authorizes the incidental take of species “whose conservation and management” is provided for in a conservation plan approved by CDFW.

3.2.4 California Species of Special Concern

In addition to formal listing under FESA and CESA, species receive additional consideration by CDFW and lead agencies during the CEQA process. Species that may be considered for review are included on a list of “Species of Special Concern” (SSC) developed by CDFW. The list tracks species in California whose numbers, reproductive success, or habitat, may be in decline.

3.2.5 Birds of Prey

Section 3503.5 of the CFG Code states that it is “unlawful to take, possess, or destroy any birds in the order Falconiformes or Strigiformes (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto.” Disturbance activities that result in abandonment of an active bird-of-prey nest in areas adjacent to the disturbance may also be considered a violation of the CFG Code.

3.2.6 California Native Plant Protection Act and California Native Plant Society

The California Native Plant Protection Act of 1977 (CFG Code Sections 1900-1913) affords the CFG Commission the authority to designate native plants as endangered or rare and protects such endangered or rare plants from take. In addition, plants that are not state-listed, but meet the standards for listing, are also protected under CEQA (*CEQA Guidelines*, Section 15380). The CNPS maintains a list of plant species native to California with low population numbers, limited distribution, or that are otherwise threatened with extinction. Potential impacts to populations of CNPS-listed plants receive consideration under CEQA review. The definitions for each of the CNPS categories, known as California Rare Plant Ranks (CRPR), are below.

- CRPR 1A: Plants presumed Extinct in California
- CRPR 1B: Plants Rare, Threatened, or Endangered in California and elsewhere
- CRPR 2A: Plants Presumed Extirpated in California, but more common elsewhere
- CRPR 2B: Plants Rare, Threatened, or Endangered in California, but more common elsewhere
- CRPR 3: Plants about which we need more information — A Review List
- CRPR 4: Plants of limited distribution — A Watch List

3.2.7 California Lake and Streambed Alteration Program

Sections 1600 through 1616 of the CFG Code require that a Lake and Streambed Alteration Program Notification Package be submitted to CDFW for “any activity that may substantially

divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake.” CDFW reviews the proposed actions and, if necessary, provides the applicant with a proposal for measures to protect affected fish and wildlife resources. The final proposal on which CDFW and the applicant agree is the Lake and Streambed Alteration Agreement (LSAA).

CDFW defines a "stream" (including creeks and rivers) as "a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having surface or subsurface flow that supports or has supported riparian vegetation." CDFW's definition of "lake" includes "natural lakes or man-made reservoirs."

CDFW jurisdiction within altered or artificial waterways is based upon the value of those waterways to fish and wildlife. CDFW Legal Advisor has prepared the following opinion:

- Natural waterways that have been subsequently modified and which have the potential to contain fish, aquatic insects and riparian vegetation will be treated like natural waterways...
- Artificial waterways that have acquired the physical attributes of natural stream courses and which have been viewed by the community as natural stream courses, should be treated by [CDFW] as natural waterways...
- Artificial waterways without the attributes of natural waterways should generally not be subject to Fish and Game Code provisions...

Thus, the types of water features that CDFW asserts jurisdiction on closely mirror those of the ACOE. Often, projects that require a LSAA also require a permit from the ACOE under Section 404 of the CWA. In these instances, the conditions of the Section 404 permit and the LSAA may overlap. Exceptions are CDFW's exclusion of isolated wetlands (those not associated with a river, stream, or lake), the addition of artificial stock ponds and irrigation ditches constructed on uplands, and the addition of riparian habitat supported by a river, stream, or lake regardless of the riparian area's federal wetland status. However, the limits of jurisdiction can differ between the ACOE and CDFW in non-tidal waters depending on the physical characteristics. While the ACOE asserts jurisdiction over the OHWM, which is typically limited to the bed and lower banks of a drainage feature, CDFW asserts jurisdiction over the bed and bank and any associated vegetation. This includes up to the top of bank and extends to the drip line of any associated riparian vegetation.

3.3 LOCAL REGULATIONS

3.3.1 Western Riverside County MSHCP

The MSHCP is a comprehensive, long-term HCP developed to provide conservation for multiple species and the preservation of natural vegetation communities in western Riverside County (MSHCP, 2003; Dudek and Associates, Inc., 2004). The MSHCP serves as a HCP pursuant to Section 10(a)(1)(B) of the FESA of 1973, as well as a NCCP under the NCCP Act of 2001. The MSHCP Plan Area encompasses approximately 1.26 million acres (1,966 square miles), including all of unincorporated Riverside County land west of the crest of the San Jacinto

Mountains to the Orange County line, as well as the jurisdictional areas of the cities of Banning, Beaumont, Calimesa, Canyon Lake, Corona, Eastvale, Hemet, Jurupa Valley, Lake Elsinore, Menifee, Moreno Valley, Murrieta, Norco, Perris, Riverside, San Jacinto, Temecula, Wildomar, and unincorporated areas of the County of Riverside.

The MSHCP allows the participating jurisdictions to authorize “take” of plant and wildlife species identified within the MSHCP Plan Area subject to a development fee for the project. The USFWS and CDFW, herein referred to as the Wildlife Agencies, have authority to regulate the “take” of threatened, endangered, and rare species. Under the MSHCP, the Wildlife Agencies grant “Take Authorization” for otherwise lawful actions, such as public and private development, that may incidentally take or harm individual species or their habitat outside of the MSHCP Conservation Area, in exchange for the assembly and management of a coordinated MSHCP Conservation Area. The MSHCP requires compliance with guidelines intended to address indirect effects associated with locating development in proximity to MSHCP Conservation Areas, where applicable (MSHCP Section 6.1.4). These guidelines pertain to drainage, toxics, lighting, noise, invasive plant species, barriers, and grading/land development.

The MSHCP is divided into Area Plans with target conservation acreages and cores and linkages, which are further divided into Sub Units. The Sub Units identify specific target planning species, and biological issues and considerations. These Sub Units are further divided into Cell Groups and individual Criteria Cells that identify MSHCP Conservation Areas. Cells that are identified for conservation are required to complete the Joint Project Review (JPR) process, and land is acquired through the Habitat Assessment and Negotiation Strategy (HANS) process.

The MSHCP covers 146 species (Covered Species [CS]), of which many are adequately conserved with no additional surveys or conservation required, including many locally common and special-status species. Some CS have conditional survey requirements that are outlined under the Riparian/Riverine and Vernal Pools section of the MSHCP (MSHCP Section 6.1.2) and in survey overlays for Narrow Endemic Plants (MSHCP Section 6.1.2), Criteria Area Plants, Amphibians, Burrowing Owl, and Mammals (MSHCP Section 6.3.2). Focused surveys are required for certain species if a project falls within the survey overlay, or supports riparian, riverine or vernal pool habitat, and species specific habitat conditions are present. If a species is determined present based on the focused surveys, a determination of whether the site has long-term conservation value for the species is made. If the site has long term conservation value, an analysis of the feasibility of avoidance of 90 percent (100 percent for two riparian bird species) of those portions of the property that provide for long-term conservation value for the species is made through a Determination of Biologically Equivalent or Superior Preservation (DBESP). The DBESP is reviewed by the participating jurisdictions and Wildlife Agencies. A DBESP is also required if impacts to riparian, riverine or vernal pool habitats cannot be avoided.

The Site is within the MSHCP and is subject only to a Riparian/Riverine Areas and Vernal Pools assessment (MSHCP Section 6.1.2). The site is immediately adjacent to a mapped burrowing owl survey area (refer to Figure 2, MSHCP Cells and Survey Areas); however, based on Google Earth aerial photographs, that parcel has been completely developed for more than a decade and no longer represents potential burrowing owl habitat. The Site is not within any Criteria Cells, Narrow Endemic Plant Species Survey Areas, or proposed Conservation Areas; therefore it is not

subject to the focused species surveys associated with those areas. A summary of the riparian/riverine survey requirements are outlined in the section below.

3.3.1.1 Riparian/Riverine and Vernal Pool Survey Requirements

The Site is subject to the survey requirements for riparian/riverine areas and vernal pools as outlined in Section 6.1.2 of the MSHCP. The survey requires an assessment of the presence and potential impacts to riparian/riverine areas and vernal pools, including mapping of these resources, if present.

The MSHCP defines riparian/riverine as lands that 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.

The MSHCP defines vernal pools as seasonal wetlands that occur in depression areas that have wetland indicators of all three parameters (soils, vegetation and hydrology) during the wetter portion of the growing season but normally lack wetland indicators of hydrology and/or vegetation during the drier portion of the growing season. Obligate hydrophytes and facultative wetland plant species are normally dominant during the wetter portion of the growing season, while upland species (annuals) may be dominant during the drier portion of the growing season.

The MSHCP also identifies the following six species that have the potential for occurring in riparian/riverine areas and vernal pools that may require additional surveys:

- least Bell's vireo (*Vireo bellii pusillus*)
- southwestern willow flycatcher (*Empidonax traillii extimus*)
- western yellow-billed cuckoo (*Coccyzus americanus occidentalis*)
- Riverside fairy shrimp (*Streptocephalus woottoni*)
- Santa Rosa Plateau fairy shrimp (*Linderiella santarosae*)
- vernal pool fairy shrimp (*Branchinecta lynchi*)

If suitable habitat is identified for any of these species, and the proposed project design does not incorporate avoidance of the identified habitat, focused surveys are required in addition to avoidance and minimization measures implemented in accordance with the species-specific objectives for those species outlined in Section 9.0 of the MSHCP. As discussed in Section 5.4.2.1 of this document, focused surveys for these species are not required due to the lack of suitable habitat on the Site.

3.3.2 Stephen's Kangaroo Rat HCP

The Riverside County Habitat Conservation Agency (RCHCA) Long-term HCP for the Stevens' Kangaroo Rat (*Dipodomys stephensi*) (SKR) provides "take" authorization for SKR within its boundaries through participation in the HCP, which involves payment of an impact and mitigation fee for projects located anywhere within the HCP regardless if suitable habitat or the

species is present. The Site is within the boundaries of the SKR HCP. However, SKR is a CS in the MSHCP, therefore payment of the SKR HCP fee is not required if a project participates in the MSHCP

4.0 METHODS

4.1 LITERATURE REVIEW

4.1.1 Special-Status Species

Prior to performing the biological field surveys, documentation relevant to the Site and surrounding area was reviewed and a special-status species list was prepared for the Site. The special-status species list includes species identified from record searches for the USGS 7.5-minute *Riverside East, California* quadrangle. Special-status species include all federally and state-listed endangered and threatened species, candidates for listing, species proposed for listing, FP species, state SSC, species ranked by CNPS, and CS that are identified in the MSHCP as potentially requiring additional surveys for the Site. A sensitive species was considered a potential inhabitant of the Site if its known geographical distribution either encompassed part of the Site or was within the vicinity of the Site (within approximately 3 miles), or its general habitat requirements (e.g., roosting, nesting, or foraging habitat, specific soil type, permanent water source) were present on the Site. The USFWS Critical Habitat database was also reviewed to determine if critical habitats overlap the site. All references reviewed for this assessment are listed in the References section of this document.

Sources of information that were used to compile the species list included the CNDDDB (CDFW, 2013), the CNPS online inventory (CNPS, 2013), and the MSHCP, including the CS list (MSHCP Table 2-2) and Sections 6.1.2, 6.1.3 and 6.3.2 (MSHCP, 2003). Appendix A provides the CNDDDB maps and the CNPS special-status plant species list generated for the Site. The special-status species table in Appendix B lists the regulatory status, habitat requirements, and the potential for occurrence on the Site for the species with CNDDDB occurrences within 3 miles of the Site and those MSHCP species associated with riparian/riverine areas and vernal pools.

4.1.2 Drainages and Other Water Features

The potential presence of drainages and other water resources was assessed by reviewing the *Riverside East, California* quadrangle map to identify any blue-line streams, searching the USFWS National Wetlands Inventory (NWI) (USFWS, 2013), and by reviewing recent aerial images of the Site (Google Earth, 2013).

4.1.3 Soils

The United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) online 2005 Soil Survey of the Western Riverside Area (NRCS, 2013) was reviewed to identify mapped soils on the Site. The soils mapped within Site boundaries are depicted on Figure 3, Soils Map.

4.2 FIELD SURVEYS

The initial biological survey for the Site was conducted by TRC biologists Travis Kegel and Karyn Sernka on December 16, 2011. The most recent biological survey was conducted by TRC biologist Mike Farmer on November 4, 2013. During both survey dates, the Site was systematically surveyed on foot to identify all sensitive habitats (including riparian/riverine features and vernal pools) and to determine the potential for the Site to support each special-status species identified from the record searches based on the presence or absence of each species' general habitat requirements (nesting or foraging habitat, specific soil type, permanent water source, etc.).

During the field surveys, all biological communities and land uses were characterized and the observed plant and wildlife species were recorded. The vegetation communities were mapped based upon descriptions provided by Sawyer and Keeler-Wolf (1995 and 2009) and Holland (1986). Resources were mapped using a Trimble Global Positioning System (GPS) hand-held unit or hand-drawn onto aerial photographs of the site and digitized using GIS software.

As part of both field surveys, a formal wetland delineation was performed to delineate potential jurisdictional waters of the U.S. A standalone wetland delineation report has been prepared and is provided under separate cover; however, the findings of the delineation are summarized in this report.

5.0 RESULTS

5.1 SOILS

The USDA NRCS Soil Survey identifies two soil series within the Site: Arlington fine sandy loam, deep, 2-8 percent slopes and Hanford coarse sandy loam, 2-8 percent slopes (see Figure 3). Neither soil is mapped as being hydric. A summary of each soil series is provided below. Native soils on most of the Site have been graded over and surfaced.

5.1.1 Arlington fine sandy loam

The Arlington fine sandy loam series are well drained and composed of sandy loam and fine sandy loam. Parent materials consist of weakly cemented alluvium derived from granite. These soils occur on alluvial fans at 400 to 2,000 feet above msl.

5.1.2 Hanford coarse sandy loam

The Hanford coarse sandy loam series are well drained and composed of stratified coarse sandy loam and fine sandy loam. The parent material is composed of alluvium derived from granite. These soils occur on alluvial fans at 150 to 900 feet above msl.

5.2 HABITAT TYPES AND LAND USES

The 8.13-acre site is comprised of five habitat types and one land use designation (see Figure 4, Habitat Types and Land Uses). Table 1 lists the acreage for each category followed by a description of each habitat type and land use. A list of all plant species observed on the Site during the field surveys is provided in Appendix C, Plants and Wildlife Observed on the Site, of

this report. Site photographs are included as Appendix D, Representative Site Photographs, of this report.

Table 1
Summary of Habitat Types and Land Uses

Habitat/Land Use	Acres
Bare/Disturbed	2.43
Developed	3.74
Disturbed Riverine	0.72
Open Water	0.03
Ornamental	0.14
Ruderal	1.34
Total	8.40*

***Total acreage exceeds the acreage of the site because of overlapping habitats**

5.2.1 Bare/Disturbed (Holland 11300)

Bare/disturbed areas typically develop on sites with heavily compacted soils, following intense levels of disturbance, such as grading or other ground disturbances. These areas are composed entirely, or predominately, of unvegetated ground and/or disturbed weedy vegetation and may support isolated individuals of native species. Scattered weedy plants within this vegetation group on the Site include Russian thistle (*Salsola kali*), short-pod mustard (*Hirschfeldia incana*), tumbling pigweed (*Amaranthus alubs*), and spotted spurge (*Euphorbia maculata*).

A total of 2.43 acres of bare/disturbed area is located on the Site, east and west of the University Wash Channel. The area east of the channel is currently used for the storage of wrecked and dismantled automobiles. The area west of the channel is comprised of a small strip of mostly bare ground comprised all or mostly of fill with evidence of periodic ground disturbances and vegetation removal.

5.2.2 Developed (Holland 12000)

A total of 3.74 acres of developed land are located on the Site and comprised almost entirely of paved roads.

5.2.3 Disturbed Riverine

Disturbed riverine is found along the bed and banks of disturbed rivers, streams, or other linear drainages and is often found in watercourses that have been modified by human activity. This habitat is commonly found in areas that receive artificially consistent water from urban run-off

along with significant water volumes and velocities during storm events. The typical hydrologic regime in these habitats provides sufficient amounts of water to support the hydrophytic (water dependent) plant species that can quickly colonize within the banks of these riverine features.

The University Wash Channel represents a total of 0.72 acre of disturbed riverine habitat. The feature flows from south to north through the Site. Storm water flows into the channel from surface runoff and from a ±48-inch-diameter concrete pipe and flows under Spruce Street and off the Site through a ±96-inch-square box culvert. The banks of the channel are lined with various forms of concrete such as building blocks and broken slabs. During the November 2013 survey, a small amount of stagnant to slow-moving water was present in the channel.

The bed of the channel was fairly well vegetated with species such as Bermuda grass (*Cynodon dactylon*), common cattail (*Typha latifolia*), umbrella sedge (*Cyperus alternifolius*), and willow smartweed (*Polygonum lapathifolium*). The banks of the channel supported sparse to moderate amounts of vegetation including castor bean (*Ricinus communis*), Johnson grass (*Sorghum halepense*), and wild grape (*Vitis girdiana*) growing between the pieces of concrete. Evidence of vegetation trimming was apparent during the most recent field survey. Tree species in proximity to the channel are limited to a cluster of mature eucalyptus trees (*Eucalyptus* sp.) around the southern end of the channel along with an individual mature eucalyptus tree and small cluster of mature Mexican fan palms (*Washingtonia robusta*) along the northern half of the channel. The 2013 field inspection revealed that several palm trees and eucalyptus trees were removed sometime between the 2011 and 2013 site inspections.

The University Wash Channel meets the MSHCP definition of a riparian/riverine feature only because it receives fresh water flow during all or a portion of the year. The channel lacks any semblance of riparian vegetation structure typically provided by riparian tree species such as cottonwoods (*Populus* sp.), valley oak (*Quercus lobata*), sycamore (*Platanus racemosa*), and willows (*Salix* spp.).

5.2.4 Open Water

Open water habitat consists of large areas with standing water that are primarily unvegetated, but may support a few hydrophytic species and filamentous algae. The perimeter of open water habitat may be vegetated with wetland or riparian plant species.

A total of 0.03 acre of open water habitat occurs at the southern end (upstream end) of the University Wash Channel where the bed of the channel has been deeply scoured by large volumes of water flowing out of the culvert at high rates of speed.

5.2.5 Ornamental

Ornamental habitats are generally composed of residential landscaped areas or undeveloped land that has been colonized by non-native ornamental species by the natural dispersal of seeds. These areas can include a variety of species, including occasional native trees and shrubs, or monocultures of one non-native invasive species. Ornamental occurs most commonly within and adjacent to residential and commercial land uses.

A total of 0.14 acre of ornamental habitat is located throughout the Site and is generally comprised of individual or clusters of non-native tree species widely scattered throughout the Site. The mapped ornamental areas within the Site are in locations that historically have received the least amount of disturbance such as areas along the University Wash Channel, fence lines, and the land immediately adjacent to buildings and other structures. Dominant ornamental species identified on the Site include eucalyptus, Mexican fan palm, tree of heaven (*Ailanthus altissima*), and Peruvian peppertree (*Schinus molle*).

5.2.6 Ruderal

Ruderal habitat is dominated by non-native weedy species in areas that have been significantly disturbed by agriculture, construction, or other land-clearing activities. Ruderal communities generally occupy waste areas, often on vacant lots and roadsides with heavily compacted soils and little available oxygen.

A total of 1.34 acres of ruderal habitat are located within the central portion of the Site. During the 2013 field survey, the land showed evidence of disking and minor grading. Dominant species observed in this area during the surveys include horseweed (*Conyza canadensis*), non-native brome grasses (*Bromus* spp.), red-stem filaree (*Erodium cicutarium*), sacred datura (*Datura wrightii*), common sunflower (*Helianthus annuus*), puncture vine (*Tribulus terrestris*), and tree tobacco (*Nicotiana glauca*).

5.3 DRAINAGES AND OTHER WATER FEATURES

One potential ACOE and CDFW jurisdictional area was identified during the field surveys, namely the intermittent drainage known as the University Wash Channel. The location and limits of the ACOE jurisdiction are depicted on Figure 5, ACOE Delineation Map, and CDFW jurisdictional areas are depicted on Figure 6, CDFW Delineation Map.

As discussed above, the University Wash Channel flows from south to north through the northwestern portion of the Site. After flowing off the Site under Spruce Street, water flows through a series of concrete-lined channels and underground pipes before flowing into Lake Evans and eventually the Santa Ana River.

An ordinary high water mark (OHWM) was identified using drift deposits (plant matter or debris entangled in fixed objects) and sediment deposits throughout the length of the channel. Based on the field surveys, the OHWM remains below the midpoint of the bank heights. A description of the ACOE and CDFW jurisdiction, along with the MSHCP areas pursuant to Section 6.1.2, is provided below.

5.3.1 ACOE Jurisdiction

Potential ACOE jurisdiction associated with the University Wash Channel amounts to 0.25 acre and is based on the extent of the OHWM (see Figure 5). No wetlands or vernal pools were identified adjacent to the channel or in other portions of the Site. The acreage of all potential ACOE jurisdiction mapped during the field surveys is summarized in Table 2.

Table 2
Summary of Potential ACOE Jurisdiction

Drainage Name	ACOE Jurisdictional Waters (Acres)	Linear Feet
University Wash Channel	0.25	825

5.3.2 CDFW Jurisdiction

The total CDFW jurisdiction within the Site amounts to 0.72 acre and is based on the distance between the top of each bank. Due to the lack of riparian or wetland habitat beyond the banks, CDFW jurisdiction terminates at the top of each bank (see Figure 6). The acreage of all CDFW jurisdiction mapped during the field surveys is summarized in Table 3.

Table 3
Summary of CDFW Jurisdiction

Drainage Name	CDFW Jurisdictional Streambed (Acres)	Linear Feet
University Wash Channel	0.72	825

5.3.3 Riparian/Riverine Areas and Vernal Pools (MSHCP Section 6.1.2)

As previously discussed, the University Wash Channel meets the MSHCP definition of a riparian/riverine feature only because it receives fresh water flow during all or a portion of the year. Trees species associated with the channel are limited to a cluster of mature eucalyptus trees around the southern end of the channel along with an individual mature eucalyptus tree and small cluster of mature Mexican fan palms along the northern half of the channel. The channel lacks a true riparian vegetation component typically provided by riparian tree species such as cottonwoods, valley oak, sycamore, and willows. No additional riparian/riverine areas or vernal pools were identified on the Site during the field surveys.

5.4 SPECIAL-STATUS SPECIES AND SENSITIVE HABITATS

5.4.1 Observed Wildlife

The wildlife species observed on the Site during the field surveys are provided below and listed in Appendix C, Plants and Wildlife Observed on the Site, of this report.

- Avifauna observed included red-tailed hawk (*Buteo jamaicensis*), lesser goldfinch (*Carduelis psaltria*), house finch (*Carpodacus mexicanus*), common raven (*Corvus corax*), yellow-rumped warbler (*Dendroica coronata*), Brewer's blackbird (*Euphagus cyanocephalus*), western gull (*Larus occidentalis*), black phoebe (*Sayornis nigricans*), and western bluebird (*Sialia mexicana*).
- Reptiles observed were limited to western fence lizard (*Sceloporus occidentalis*).
- Mammals observed, or deduced through diagnostic sign, included domestic dog (*Canis lupus familiaris*) and feral cat (*Felis catus*).

5.4.2 Sensitive Habitats and Special-Status Species

5.4.2.1 Sensitive Habitats

Sensitive habitats are vegetation communities that are considered rare within the region, support special-status plant and/or wildlife species, or are important in providing connections for wildlife movement. One sensitive habitat occurs on the Site, specifically the disturbed riverine habitat associated with the University Wash Channel. Approximately 0.72 acre of disturbed riverine habitat was mapped on the Site (refer to Figure 4). Portions of the habitat are considered jurisdictional pursuant to Section 401 and 404 of the CWA (RWQCB and ACOE, respectively), and the entire habitat is considered jurisdictional under Section 1602 of the CFG Code (CDFW). The habitat also meets the MSHCP definition of riparian/riverine areas and requires a habitat assessment for the riparian/riverine wildlife listed in Section 6.1.2 of the MSHCP.

During the field surveys, a habitat assessment was conducted for the required MSHCP riparian/riverine wildlife species. As mentioned above, the channel lacks a riparian vegetation component and does not support suitable habitat for least Bell's vireo, southwestern willow flycatcher, or western yellow-billed cuckoo. Due to the absence of suitable habitat, no focused surveys are required for these avian species. Additionally, the Site does not support vernal pool or other seasonal wetland habitats. Therefore focused surveys for Riverside fairy shrimp, Santa Rosa Plateau fairy shrimp, and vernal pool fairy shrimp also are not required. No further habitat assessments or species surveys are required for the Site pursuant to Section 6.1.2 of the MSHCP.

5.4.2.2 Special-Status Plants

Based on the review of CNDDDB, CNPS, and MSHCP species lists, several special-status plant species are known or have the potential to occur in the vicinity of the Site. Based on the results of the field surveys, the potential for occurrence was determined for each plant species and is included as Appendix B of this report. Due to the lack of suitable habitat and the highly

disturbed nature of the Site, including periodic vegetation disturbance activities within the University Wash Channel, no special-status plant species are expected to occur on the Site.

5.4.2.2 Special-Status Wildlife

Based on the review of the CNDDDB and the MSHCP, several special-status wildlife species are known or have the potential to occur in the vicinity of the Site. The special-status species table in Appendix B lists the regulatory status, habitat requirements, and the potential for occurrence on the Site for the species with CNDDDB occurrences within 3 miles of the Site and those MSHCP species associated with riparian/riverine areas and vernal pools. The CDFW *A Guide to Wildlife Habitats in California* (published under the agency's previous name of California Department of Fish and Game) was referenced in determining suitable habitats (CDFG, 1988). Of the wildlife species in Appendix B, the following two species were determined to have a low potential of occurring on the Site:

- Santa Ana sucker (*Catostomus santaanae*, FT, SSC, CS);
- western burrowing owl (*Athene cunicularia*; SSC, CS)

In addition to these species, suitable nesting habitat for a number of common and special-status birds protected by the MBTA was observed both on the Site and adjacent to the Site.

5.4.2.3.1 Special-Status Wildlife with Low Potential of Occurrence

Santa Ana sucker (*Catostomus santaanae*, FT, SSC, CS)

The Santa Ana sucker is a small fresh water fish found in only a handful of watersheds in Southern California. It is limited to the watersheds of the Los Angeles, San Gabriel, Santa Ana, and Santa Clara rivers. Santa Ana suckers are primarily found in small to medium sized streams that flow year-round and may vary in depth from several centimeters to over one meter deep. They favor cool (<22°C) flowing water where gravel, rubble, and boulder substrates are present. Spawning occurs in gravelly riffles from mid-March until early June.

While low-quality habitat within the Santa Ana River watershed is present on the Site in the University Wash Channel, the habitat is isolated from other suitable habitats by the underground storm water system and concrete-lined channels. For this reason, there is very low potential for Santa Ana sucker to occur on the Site. The Santa Ana sucker is a MSHCP CS that requires no additional surveys.

Western burrowing owl (*Athene cunicularia*; SSC, CS)

Burrowing owls are crepuscular small ground-dwelling owls with a round head. They can be distinguished from other owls by having no ear tufts, yellow eyes, white eyebrows, and long slender legs. Typical habitat for this species includes open, dry grasslands, agricultural fields, sparse shrub lands, as well as developed areas with sufficient food sources. Common burrowing mammals that are associated with burrowing owls are ground squirrels, prairie dogs and badgers (Bent, 1938). Typically this species occupies more than one burrow at a time; a main burrow and at least one "satellite" burrow located nearby. The breeding season for burrowing owls begins in March and ends in August, peaking in April and May (Zeiner *et al.*, 1990). This species is

tolerant of edge effects, small habitat patches, low shrub volume, and short-term habitat disturbance (Bent, 1938).

No burrowing owls were observed during either survey date; however, the Site contains low-quality nesting and foraging habitat within the ruderal habitat near the central portion of the Site. Periodic disking and grading within this habitat reduces the height and density of the vegetation and provides suitable foraging habitat for burrowing owls. Although the Site lacks suitable burrows, the small debris piles along the north edge of the field provide marginal cover and nesting opportunities for the species. Due to the limited habitat on the Site and the extensive amount of developed land in the project area, the potential for burrowing owl to utilize the Site is low. Although no owls were observed on the Site and only low-quality habitat exists, the Project will be subject to the 30-day pre-construction survey requirement.

5.4.2.4 Wildlife Corridors

The Site is surrounded by existing developments and roads that would prevent the movement of wildlife through the Site. Although a portion of the University Wash Channel on the Site is vegetated, the upstream portion is underground and the downstream portion is concrete-lined. Therefore no wildlife corridors occur on the Site.

5.4.2.5 Critical Habitat

Based on the USFWS Critical Habitat portal, the Site does not fall within any USFWS designated critical habitat for listed species. The nearest critical habitats are for the Santa Ana sucker in the Santa Ana River and coastal California gnatcatcher (*Polioptila californica californica*) roughly 2 miles west and southeast of the Site, respectively.

6.0 CONCLUSIONS

Based on TRC's literature reviews and field surveys described in this report, and assuming participation in the MSHCP, the Site would be subject to compliance with the MBTA, jurisdictional water permitting, and MSHCP compliance, as described below.

6.1 NESTING BIRD SURVEYS

6.1.1 Burrowing Owl

Although burrowing owls were not observed during the field surveys, the site contains limited nesting and foraging habitat for burrowing owl. For this reason, it is recommended that a burrowing owl survey be conducted no more than 30 days prior to the onset of project-related disturbance activities. Burrowing owls can be present during all times of the year in California, so this survey is recommended regardless of the time grading activities occur. If active owl burrows are located during the pre-activity survey, it is recommended that a 250-foot buffer zone be established around each burrow with an active nest until the young have fledged and are able to exit the burrow. In the case of occupied burrows without active nesting, active burrows after the young have fledged, or if disturbances commence after the breeding season (typically February 1-August 31), passive relocation of the birds should be performed. Passive relocation

involves installing a one-way door at the burrow entrance, which encourages the owls to move from the occupied burrow. The Wildlife Agencies should be consulted for current guidelines and methods for passive relocation of any owls found on the site and mitigation for their relocation.

6.1.2 Tree-Nesting Raptors

As discussed earlier, a red-tailed hawk was observed on the site during the surveys. Although no active raptor nests were observed on the site during the surveys, the mature trees provide suitable nesting habitat and the ruderal field provides potential foraging habitat for a variety of raptor species. Active raptor nests are protected by the CFG Code Section 3503.5 and the MBTA. For this reason, if construction is expected to occur during the typical raptor nesting season (February 1- August 31), a pre-disturbance raptor survey is recommended to determine if active raptor nests are present on the site. The survey should be conducted by a qualified biologist no more than 30 days prior to the onset of construction activities. If active nests are found on or within 250 feet of the site, the Project should coordinate with the Wildlife Agencies regarding appropriate construction buffers. All construction activities should remain outside the buffer until the young have fledged or until the Project biologist has determined that the nest is no longer active. In the event initial disturbance activities occur during the non-breeding season (September 1-January 31), a survey is not required and no further studies are necessary.

6.1.3 Other Bird Species Protected by the MBTA

The trees, shrubs, ruderal vegetation, dismantled automobiles and other structures on the site provide suitable nesting habitat for a number of common and special-status birds protected solely by the MBTA. As discussed, the MBTA prohibits the killing of migratory birds. Therefore, if any vegetation removal occurs during the typical avian nesting season (February 1-August 31), a pre-disturbance survey is recommended to determine if active nests are present on the site. The survey should be conducted by a qualified biologist no more than two weeks prior to the onset of vegetation removal. If active nests are found on the site, disturbance or removal of the nest should be avoided until the young have fledged and the nest is no longer active. Extensive buffers, such as those recommended for nesting raptors, are generally not necessary for nesting avian species protected solely by the MBTA. However, depending on the species, site conditions, and the proposed construction activities near the active nest, a small buffer may be prescribed, as determined through coordination with the Wildlife Agencies. Alternatively, vegetation removal could be scheduled to avoid all potential impacts. Vegetation removal conducted between September 1 and January 31 would not require a pre-disturbance nesting bird survey and will prevent impacts to nesting birds or unfledged young.

6.2 POTENTIAL PROJECT IMPACTS TO JURISDICTIONAL FEATURES

Since the entire University Wash Channel is proposed to be impacted by the Project, permits will likely be required from the regulatory agencies (ACOE, RWQCB, and CDFW). The jurisdictional limits of the University Wash Channel identified in this report are subject to verification by the regulatory agencies. As previously mentioned, a formal wetland delineation has been prepared for the Site and is provided under separate cover. Prior to any project-related

disturbance activities, the Project should obtain a 404 permit from the ACOE by submitting the wetland delineation, pre-construction notification, and other supporting documentation for processing. As part of the 404 permit process, water quality certification from the RWQCB pursuant to Section 401 of the CWA must also be obtained. A Streambed Alteration Agreement will likely also be required by CDFW pursuant to Section 1602 of the CFG Code.

Impacts to the University Wash Channel will likely require replacement or rehabilitation on a “no-net-loss” basis in accordance with the Corps and RWQCB’s mitigation guidelines. Habitat restoration, rehabilitation, and/or replacement should be at a location and by methods agreeable to the agencies.

6.3 MSHCP CONSISTENCY DETERMINATION

This report’s MSHCP Consistency Determination for Riparian/Riverine, Vernal Pool, and Fairy Shrimp Requirements (MSHCP Section 6.1.2); Species Survey Requirements (MSHCP Sections 6.1.3 and 6.3.2); Urban/Wildlife Interface Guidelines (MSHCP Section 6.1.4); and Reserve Assembly Requirements (MSHCP Section 3) are provided below.

6.3.1 Riparian/Riverine Areas

The 0.72-acre University Wash Channel receives fresh water flow during all or a portion of the year and meets the definition of a riparian/riverine area. The channel is proposed to be completely impacted by the Project. Avoidance of channel is not feasible given the Project’s goal of upgrading the drainage capacity to accommodate 10-year flows. In accordance with the requirements of Section 6.1.2 of the MSHCP, a DBESP was prepared by TRC and is provided under separate cover.

Impacts to the channel will be mitigated by payment of in-lieu wetland mitigation fees, which will be used to fund future wetland mitigation and species conservation projects in the region. As concluded in the DBESP, the future wetland mitigation project for which the Project’s in-lieu mitigation fee payment will help fund will be biologically equivalent or superior to the University Wash Channel.

6.3.2 Vernal Pool and Fairy Shrimp Requirements

There are no vernal pools on the Site; therefore, focused surveys for Riverside fairy shrimp, Santa Rosa Plateau fairy shrimp, or vernal pool fairy shrimp are not required.

6.3.3 Species Surveys Requirements

The Site is not within any Criteria Cells, Narrow Endemic Plant Species Survey Areas, or proposed Conservation Areas; therefore, it is not subject to the focused species surveys associated with those areas.

6.3.4 Urban/Wildlife Interface Requirement

The guidelines related to the urban/wildlife interface address the indirect effects of locating development in the vicinity of the MSHCP Conservation Area. The Project is surrounded by

developed and disturbed land and not located near the MSHCP Conservation Area. Therefore, the Project will not result in edge effects that will adversely affect biological resources within the area proposed for the MSHCP conservation area.

6.3.5 Reserve Assembly Requirements

Projects located within Criteria Cells are required to comply with the Reserve Assembly requirement. Since the Site is not located within a Criteria Cell, the Project is not subject to this requirement.

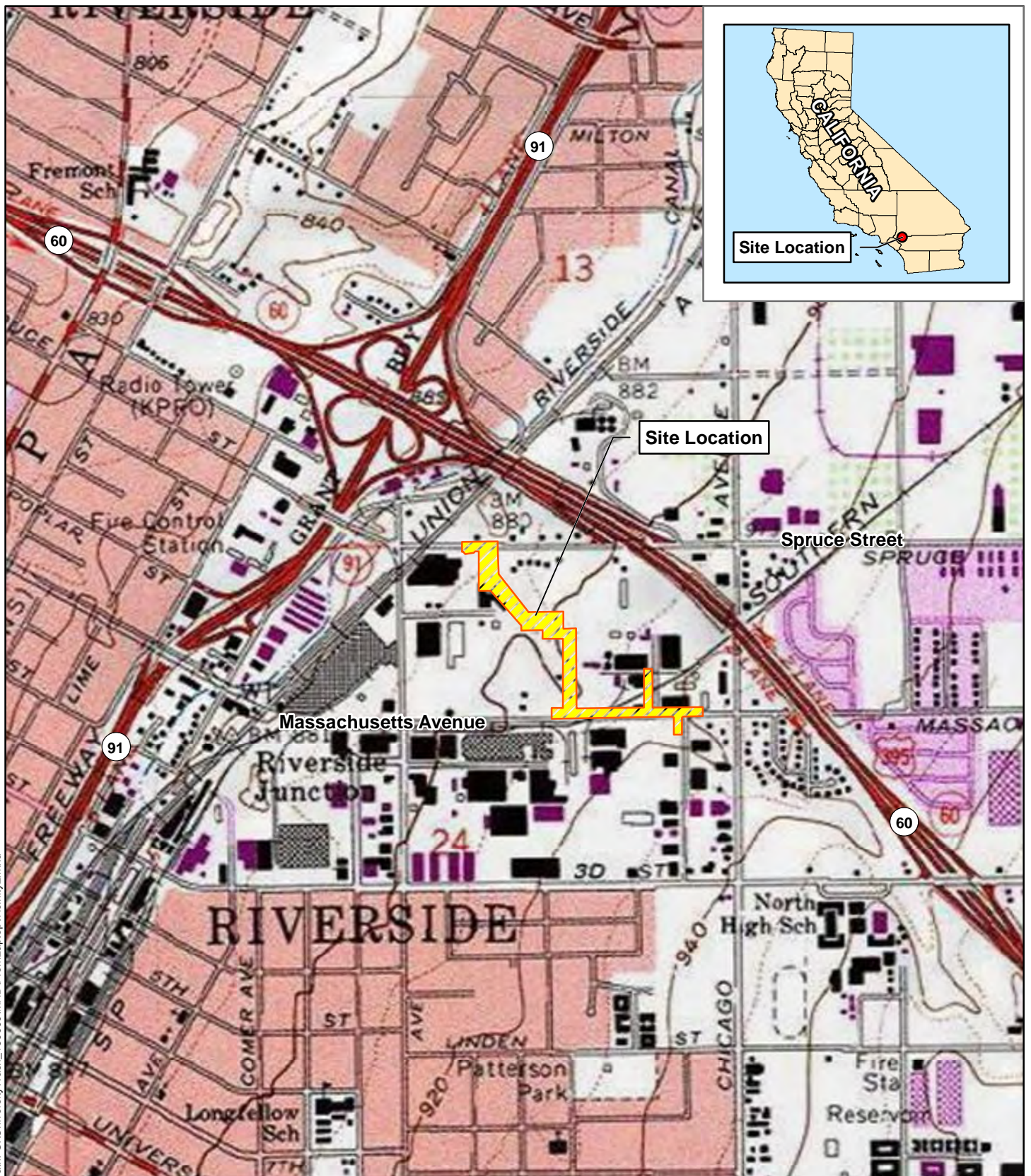
7.0 REFERENCES

- Bent, A. C. 1938. *Life Histories of North American Birds of Prey*. Part 2. U.S. Natl. Mus. Bull. 170. 482pp.
- CDFG (California Department of Fish and Game). 1988. *A Guide to Wildlife Habitats of California*. Online: version http://www.dfg.ca.gov/biogeodata/cwhr/wildlife_habitats.asp. Accessed January 2011.
- CDFW (California Department of Fish and Wildlife). 2013. *California Natural Diversity Data Base*. Sacramento, California.
- CNPS (California Native Plant Society). 2013. *Inventory of Rare and Endangered Plants of California* (online version <http://cnps.web.aplus.net/cgi-bin/inv/inventory.cgi>).
- Dixon, M. 1997. *The Thrill of Discovery*. *Bats*, 15(2):5.
- Dudek & Associates, Inc. 2004. *Errata to MSHCP*. Dated August 9, 2004.
- Google, 2013. Aerials available at www.earth.google.com.
- Holland, R.F. 1986. *Preliminary Descriptions of the Terrestrial Natural Communities of California*. State of California, The Resources Agency.
- Lichvar, R.W. 2013. *The National Wetland Plant List: 2013 wetland ratings*. Phytoneuron 2013-49: 1-241. Available online at http://wetland_plants.usace.army.mil
- MSHCP (Multiple Species Habitat Conservation Plan). 2003. *Western Riverside County MSHCP, Final MSHCP, Volume I: The Plan*. Dudek & Associates, Inc. June 17, 2003.
- NRCS (Natural Resources Conservation Service). 2013. *Web Soil Survey*. Online. <http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>
- Sawyer, J. O., and T. Keeler-Wolf. 1995. *A Manual of California Vegetation*. California Native Plant Society. Sacramento, California
- Sawyer, J. O., and T. Keeler-Wolf. 2009. *A Manual of California Vegetation*. Second Edition. California Native Plant Society. Sacramento, California.
- USDA (United States Department of Agriculture). 1971. *Soil Survey, Western Riverside Area, California*. Soil Conservation Service, Washington, D.C. November.
- USGS (United States Geological Survey). 1967. *East Riverside, California 7.5-minute series topographic quadrangle*. United States Department of Interior.
- USFWS (United States Fish and Wildlife Service). 2013. *USFWS Critical Habitat for Threatened & Endangered Species*. Available at <http://criticalhabitat.fws.gov/>. Accessed November 2013.

USFWS (United States Fish and Wildlife Service). 2013. National Wetlands Inventory Mapper Application. Available at <http://www.fws.gov/wetlands/>. Accessed November 2013.

Zeiner, D.C., W.R. Laudenslayer Jr., K.E. Mayer, and M. White, eds. 1990. *California's Wildlife Volume II: Birds*. State of California: The Resource Agency, Department of Fish and Game, Sacramento, California.

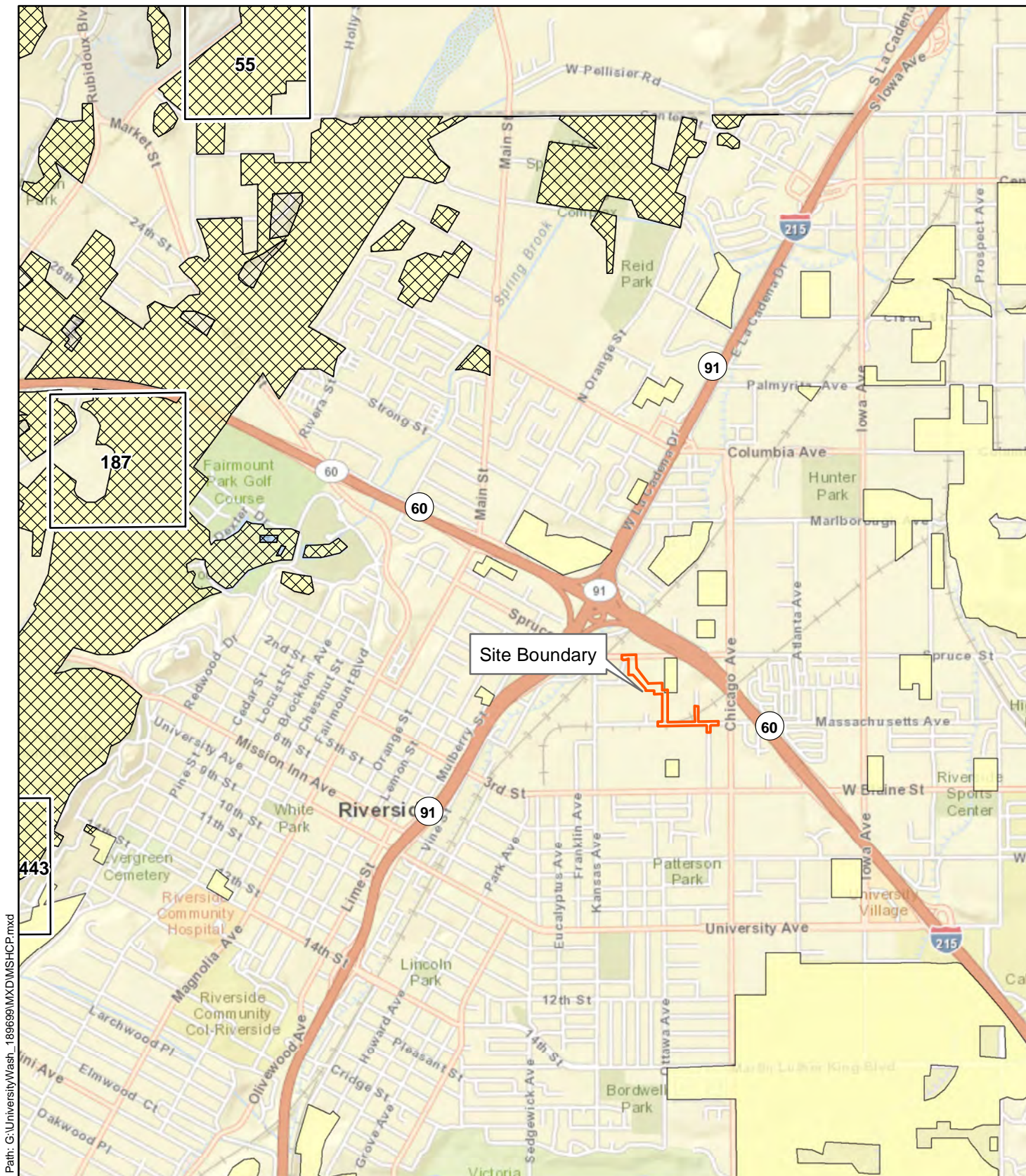
Path: G:\UniversityWash_189699\MXD\FromLaptop\Vicinity2.mxd



University Wash Channel Stage 3 Project
Vicinity and Site Location
Figure 1

 Project Boundary





Path: G:\UniversityWash_189699\MXD\MSHCP.mxd

University Wash Channel Stage 3 Project

MSHCP Cells and Survey Areas

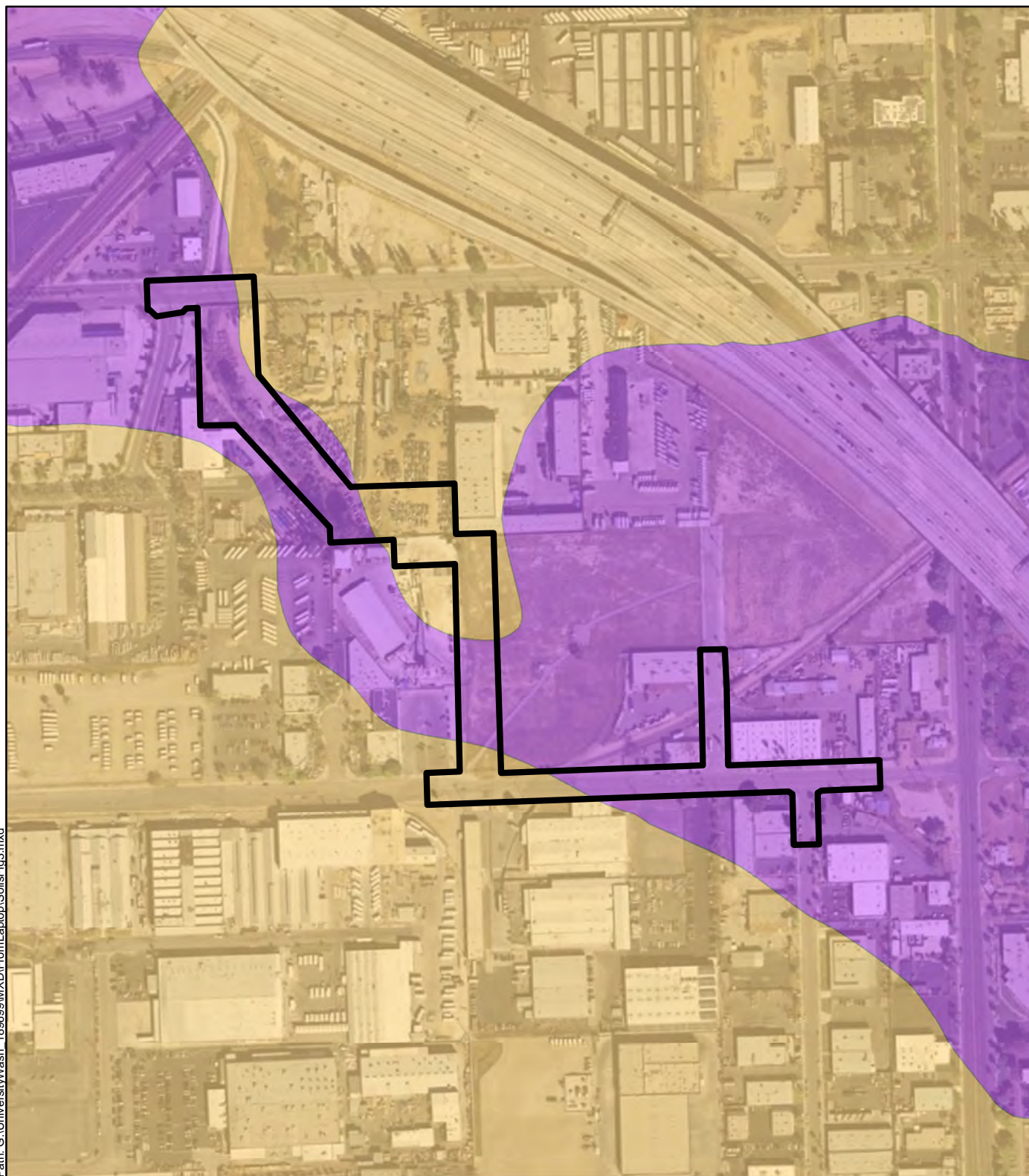
Figure 2

- Site Boundary
- MSHCP Criteria Cell
- Narrow Endemic Plant Survey Area
- Burrowing Owl Survey Area




0 2,000 4,000 6,000 Feet



Path: G:\UniversityWash_189699\W\XD\From Laptop\Soils\Fig3.mxd



Project Site Soils

-  Arlington fine sandy loam, deep, 2-8 percent slopes
-  Hanford coarse sandy loam, 2-8 percent slopes
-  Project Boundary

University Wash Channel Stage 3 Project

Soils Map

Figure 3

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

0 300 600 900 Feet










Path: G:\University\Wash_189699\WXD\From_aerial\Vegetation.mxd



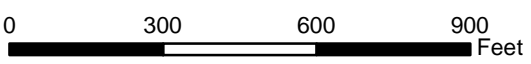
University Wash Channel Stage 3 Project

Habitat Types and Land Uses Map

Figure 4

- | | |
|--|--|
|  Site Boundary |  Open Water (0.03 acre) |
|  Bare/Disturbed (2.43 acres) |  Ornamental (0.14 acre) |
|  Developed (3.74 acres) |  Ruderal (1.34 acres) |
|  Disturbed Riverine (0.72 acre) | |

TRC, 2013; Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community





Path: G:\UniversityWash_189699\MXD\FromLaptop\ACOE.mxd

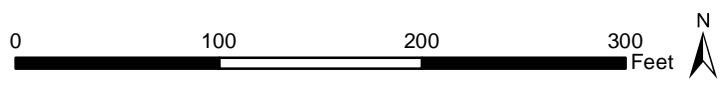
- Site Boundary
- ACOE Jurisdiction (0.25 acre)

University Wash Channel Stage 3 Project

ACOE Delineation Map

Figure 5

TRC, 2013; Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, iPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2013, Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community





Path: G:\UniversityWash_189699MXD\FromLaptop\CDFW.mxd

University Wash Channel Stage 3 Project

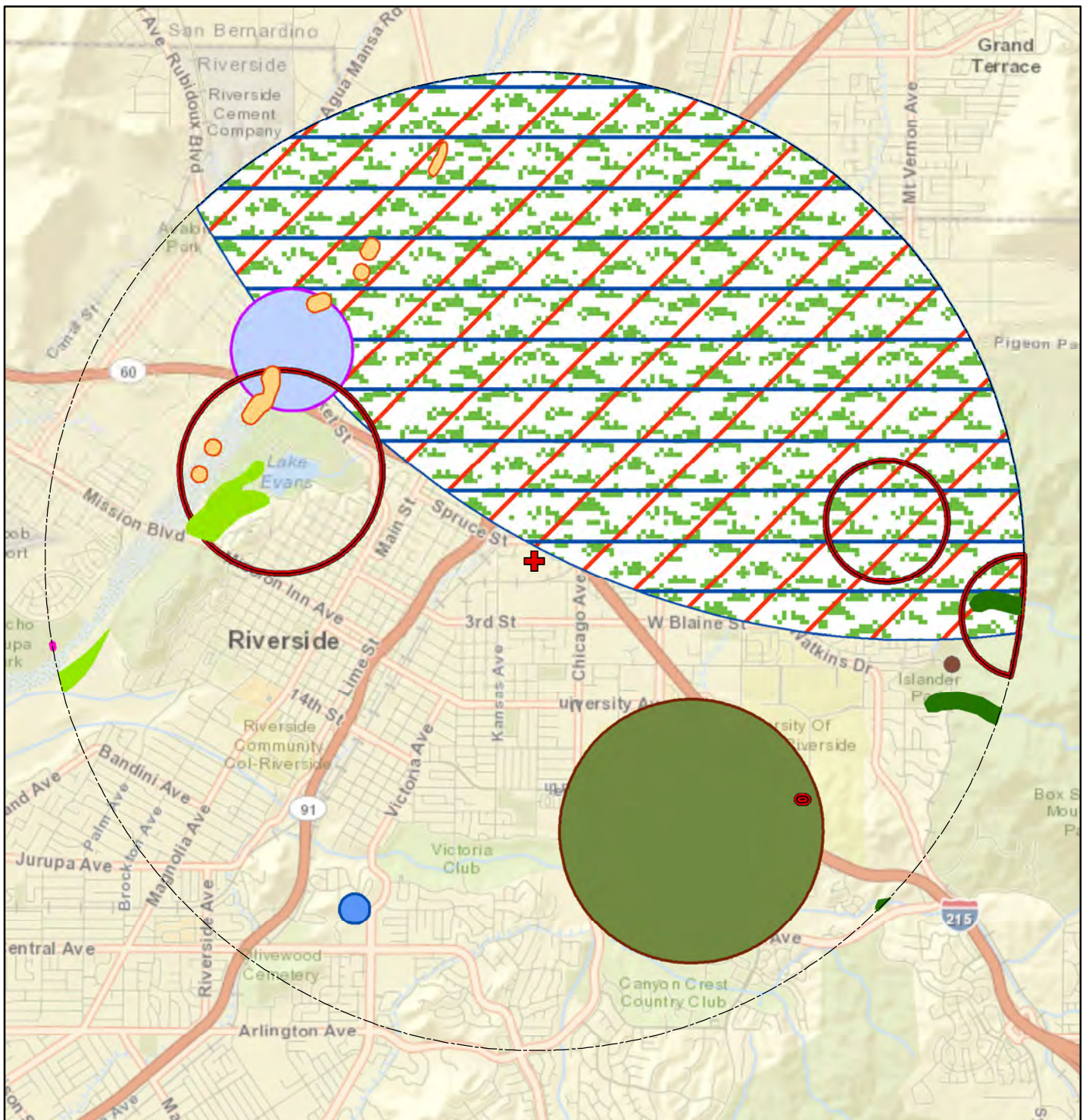
CDFW Delineation Map

Figure 6

- Site Boundary
- CDFW Jurisdiction (0.72 acre)



Appendix A
CNDDB Maps and CNPS List



Path: G:\UniversityWash_189699\MXD\CNDDDB_Flora.mxd

University Wash Channel Stage 3 Project

CNDDDB Plants Map

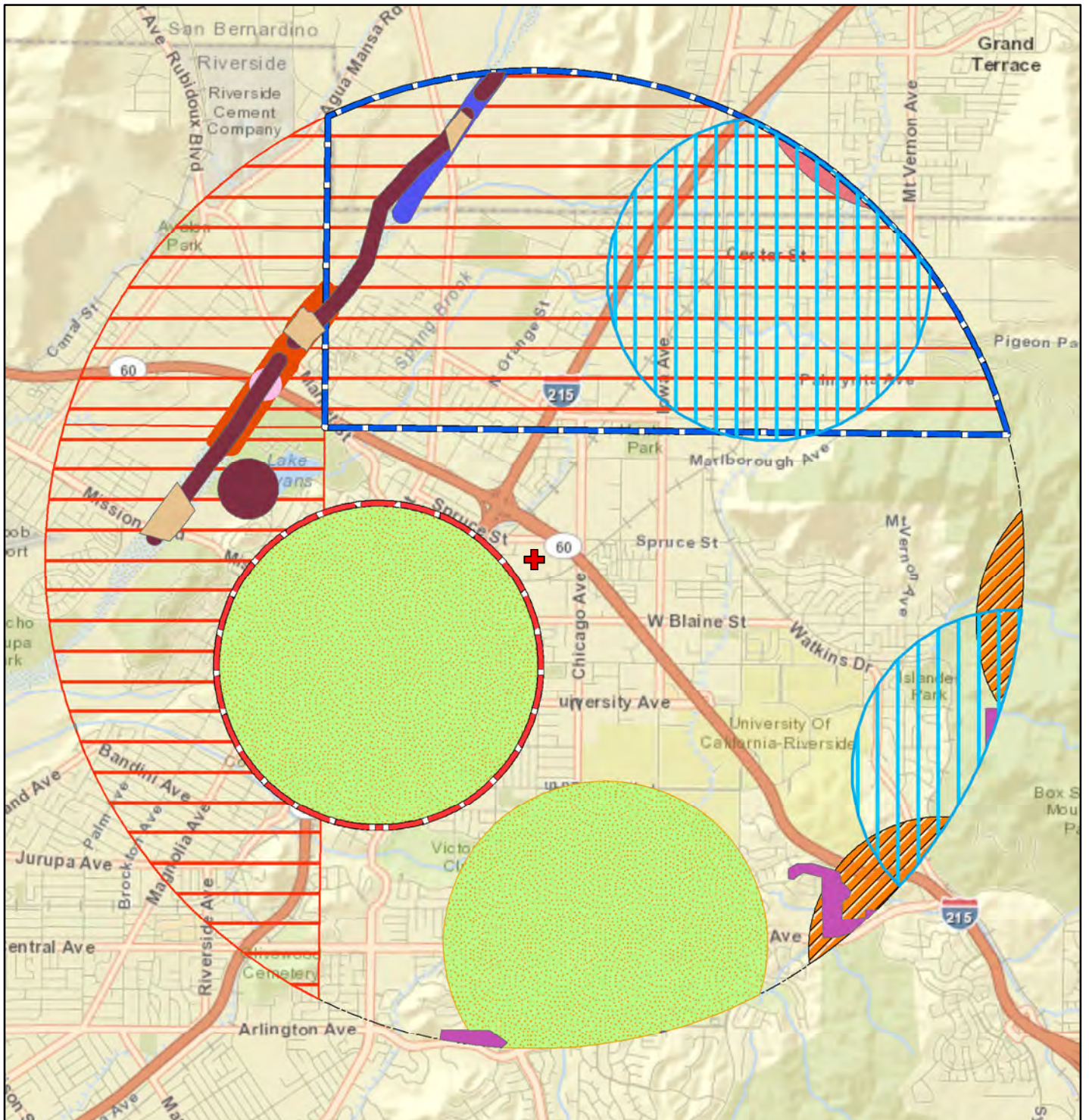


- | | |
|----------------------------|--|
| Brand's star phacelia | marsh sandwort |
| Nevin's barberry | prairie wedge grass |
| Parry's spineflower | salt marsh bird's-beak |
| Plummer's mariposa-lily | slender-horned spineflower |
| Robinson's pepper-grass | Southern Cottonwood Willow Riparian Forest |
| Santa Ana River woollystar | Southern Sycamore Alder Riparian Woodland |

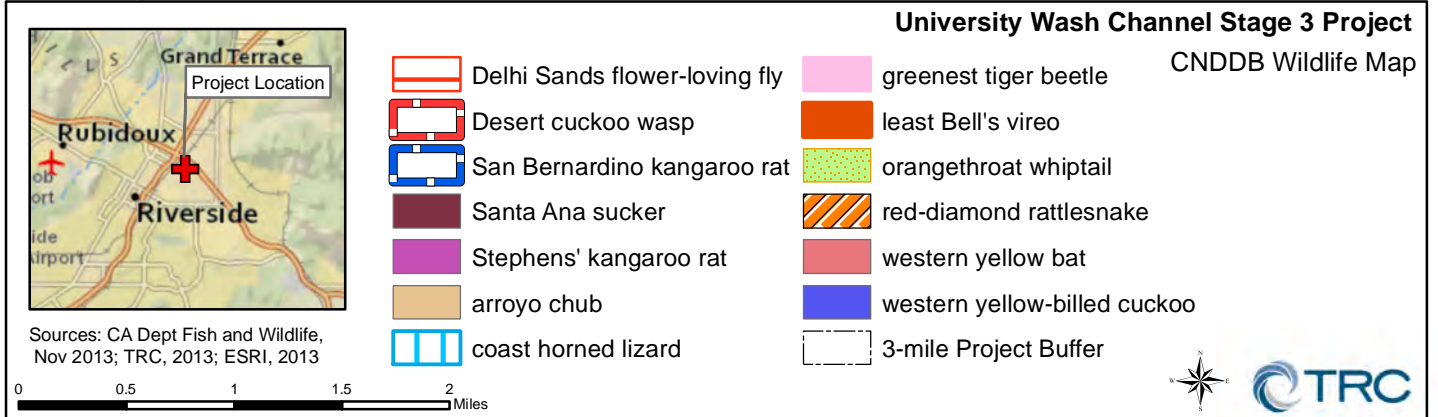
Sources: CA Dept Fish and Wildlife,
Nov 2013; TRC, 2013; ESRI, 2013

0 0.5 1 1.5 2 Miles





Path: G:\UniversityWash_189699\MXD\CNDDDB_Fauna.mxd





Inventory of Rare and Endangered Plants - 7th edition

interface

v7-13nov 11-7-13

Status: search results - Tue, Nov. 12, 2013 10:46 ET c

Tip: Terms prefixed by "+" are required, and by "-" excluded. [\[all tips and help.\]](#) [\[search history\]](#)

Your Quad Selection: **Riverside East (086A) 3311783**

Hits 1 to 6 of 6

Requests that specify topo quads will return only Lists 1-3.

To save selected records for later study, click the ADD button.

Selections will appear in a new window.

open	save	hits	scientific	common	family	CNPS
	<input type="checkbox"/>	1	<u>Abronia villosa</u> var. <u>aurita</u>	chaparral sand-verbena	Nyctaginaceae	List 1B.1
	<input type="checkbox"/>	1	<u>Berberis nevinii</u>	Nevin's barberry	Berberidaceae	List 1B.1
	<input type="checkbox"/>	1	<u>Centromadia pungens</u> ssp. <u>laevis</u>	smooth tarplant	Asteraceae	List 1B.1
	<input type="checkbox"/>	1	<u>Chorizanthe parryi</u> var. <u>parryi</u>	Parry's spineflower	Polygonaceae	List 1B.1
	<input type="checkbox"/>	1	<u>Cylindropuntia californica</u> var. <u>californica</u>	snake cholla	Cactaceae	List 1B.1
	<input type="checkbox"/>	1	<u>Myosurus minimus</u> ssp. <u>apus</u>	little mouseltail	Ranunculaceae	List 3.1

No more hits.



Appendix B
CNDDB and MSHCP Special-Status Species Table

COMMON NAME	SCIENTIFIC NAME	LISTING STATUS	HABITAT REQUIREMENTS	GROWTH FORM	FLOWERING/ PHENOLOGY	POTENTIAL FOR OCCURRENCE
Plants						
Brand's phacelia	<i>Phacelia stellaris</i>	Federal: FC State: None CNPS: 1B.1 MSHCP: CS*	Sandy washes and/or benches in alluvial flood plains.	Annual herb	March through June	None ; no suitable habitat is present on-site.
Chaparral sand-verbena	<i>Abronia villosa</i> var. <i>aurita</i>	Federal: None State: None CNPS: 1B.1 MSHCP: None	Chaparral, coastal scrub, and desert dunes/sandy.	Annual herb	January through September	None ; no suitable habitat is present on-site.
Little mouseltail	<i>Myosurus minimus</i>	Federal: None State: None CNPS: 3.1 MSHCP: CS*	Vernal pools and within the alkali vernal pools and alkali annual grassland components of alkali vernal plains.	Annual herb	April through May	None ; no suitable habitat is present on-site.
Marsh sandwort	<i>Arenaria paludicola</i>	Federal: FE State: SE CNPS: 1B.1 MSHCP: None	Marshes and swamps (freshwater or brackish waters). Prefers sand substrates and openings. Occurs between 3 and 170 meters.	Perennial stoloniferous herb	May to August	None ; no suitable habitat is present on-site and site elevation (265-280 meters) is outside of the species' know elevation range.
Nevin's barberry	<i>Berberis nevinii</i>	Federal: FE State: SE CNPS: 1B.1 MSHCP: CS*	Chaparral, cismontane woodland, coastal scrub, valley and foothill grassland. Prefers sandy or rocky soils. Occurs between 295 and 825 meters.	Perennial evergreen shrub	March to June	None ; no suitable habitat is present on-site and site elevation (265-280 meters) is outside of the species' know elevation range.
Parry's spineflower	<i>Chorizanthe parryi</i>	Federal: None State: None CNPS: 1B.1 MSHCP: CS	Chaparral, cismontane woodland, coastal scrub, valley and foothill grassland. Prefers sandy or rocky, openings. Occurs between 275 and 1,220 meters.	Annual herb	April to June	None ; no suitable habitat is present on-site.

COMMON NAME	SCIENTIFIC NAME	LISTING STATUS	HABITAT REQUIREMENTS	GROWTH FORM	FLOWERING/ PHENOLOGY	POTENTIAL FOR OCCURRENCE
Plummer's mariposa lily	<i>Calochortus plummerae</i>	Federal: None State: None CNPS: 1B.2 MSHCP: CS	Chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, valley and foothill grassland. Prefers granitic or rocky substrate. Occurs between 100 and 1,700 meters.	Perennial bulbiferous herb	May to July	None ; no suitable habitat is present on-site.
Prairie wedge grass	<i>Sphenopholis obtusata</i>	Federal: None State: None CNPS: 2.2 MSHCP: None	Cismontane woodland, meadows and seeps. Prefers mesic substrate. Occurs between 300 to 400 meters.	Perennial herb	May to June	None ; no suitable habitat is present on-site and site elevation (265-280 meters) is outside of the species' know elevation range.
Robinson's pepper-grass	<i>Lepidium virginicum</i> var. <i>robinsonii</i>	Federal :None State: None CNPS: 1B.2 MSHCP: None	Chaparral and coastal scrub. Occurs between 1 and 885 meters.	Annual herb	January to July	None ; no suitable habitat is present on-site.
Santa Ana River woollystar	<i>Eriastrum densifolium</i> ssp. <i>sanctorum</i>	Federal: FE State: SE CNPS: 1B.1 MSHCP: CS	Chaparral to coastal scrub (alluvial fan). Prefers sandy or gravelly substrate. Occurs between 91 and 610 meters.	Perennial herb	May to September	None ; no suitable habitat is present on-site.
Salt marsh bird's-beak	<i>Chloropyron maritimum</i> ssp. <i>maritimum</i>	Federal :FE State: SE CNPS: 1B.2 MSHCP: None	Coastal dunes, marshes and swamps (coastal salt). Occurs between 0 to 30 meters.	Annual herb (hemiparasitic)	May to October	None ; no suitable habitat is present on-site and site elevation (265-280 meters) is outside of the species' know elevation range.
Slender-horned spineflower	<i>Dodecahema leptoceras</i>	Federal: FE State: SE CNPS: 1B.1 MSHCP: CS*	Chaparral, cismontane woodland, coastal scrub (alluvial fan). Prefers sandy soil. Occurs between 200 and 760 meters.	Annual herb	April to May (uncommonly in March)	None ; no suitable habitat is present on-site.

COMMON NAME	SCIENTIFIC NAME	LISTING STATUS	HABITAT REQUIREMENTS	GROWTH FORM	FLOWERING/ PHENOLOGY	POTENTIAL FOR OCCURRENCE
Smooth tarplant	<i>Centromadia pungens</i>	Federal: None State: None CNPS: 1B.1 MSHCP: CS*	Chenopod scrub, meadows and seeps, playas, riparian woodland and valley and foothill grassland. Prefers alkaline soils. Occurs between 0 and 640 meters.	Annual herb	April through November	None ; no suitable habitat is present on-site.
Snake cholla	<i>Cylindropuntia californica</i> var. <i>californica</i>	Federal: None State: None CNPS: 1B.1 MSHCP: None	Chaparral and coastal scrub between 30 and 150 meters.	Stem succulent	April through May	None ; no suitable habitat is present on-site.
Invertebrates						
Delhi Sands flower-loving fly	<i>Rhaphiomidas terminatus abdominalis</i>	Federal: FE State: None MSHCP: CS	Dunes and coastal scrub with Delhi sands soil type.			None ; no habitat or required soil type found on-site.
Riverside fairy shrimp	<i>Streptocephalus woottoni</i>	Federal: FE State: None MSCP: CS*	Coastal scrub, valley and foothill grassland, vernal pool, wetland.			None ; no suitable habitat is present on-site.
Santa Rosa Plateau fairy shrimp	<i>Linderiella santarosae</i>	Federal: None State: None MSCP: CS*	Coastal scrub, valley and foothill grassland, vernal pool, wetland.			None ; no suitable habitat is present on-site.
Vernal pool fairy shrimp	<i>Branchinecta lynchi</i>	Federal: FT State: None MSCP: CS*	Vernal pools			None ; no suitable habitat is present on-site.
Fish						
Arroyo chub	<i>Gila orcuttii</i>	Federal: None State: SSC MSHCP: CS	Found in slow-moving or backwater sections of southern California coastal streams with muddy or sandy substrates.			None ; no suitable habitat is present on-site.

COMMON NAME	SCIENTIFIC NAME	LISTING STATUS	HABITAT REQUIREMENTS	GROWTH FORM	FLOWERING/ PHENOLOGY	POTENTIAL FOR OCCURRENCE
Santa Ana sucker	<i>Catostomus santaanae</i>	Federal: FT State: SSC MSHCP: CS	Inhabits small to medium sized streams that flow year-round and may vary in depth from several centimeters to over 1 m deep. They favor cool (<22°Celsius) flowing water where gravel, rubble, and boulder substrates are present.			Low ; low-quality habitat is present on-site and isolated from other suitable habitats by underground and concrete channels.
Reptiles/ Amphibians						
Coast horned lizard	<i>Phrynosoma blainvillii</i>	Federal: None State: SSC MSHCP: CS	Coastal sage scrub and chaparral in arid and semi-arid climate conditions. Prefers friable, rocky, or shallow sandy soils.			None ; no suitable habitat is present on-site.
Coastal whiptail	<i>Aspidoscelis tigris stejnegeri</i>	Federal: None State: None MSHCP: CS	Occurs in deserts and semiarid areas with sparse vegetation and open areas. Also found in woodland and riparian areas.			None ; no suitable habitat is present on-site.
Orangethroat whiptail	<i>Aspidoscelis hyperythra</i>	Federal: None State: SSC MSHCP: CS	Coastal sage scrub, chaparral, and valley-foothill hardwood habitats. Prefers sandy areas with patches of brush and rocks.			None ; no suitable habitat is present on-site.

COMMON NAME	SCIENTIFIC NAME	LISTING STATUS	HABITAT REQUIREMENTS	GROWTH FORM	FLOWERING/ PHENOLOGY	POTENTIAL FOR OCCURRENCE
Red diamond rattlesnake	<i>Crotalus ruber</i>	Federal: None State: SSC MSHCP: CS	Chaparral, woodland, grassland, and desert areas from coastal San Diego County to the eastern slopes of the mountains. Prefers rocky areas and dense vegetation and requires rodent burrows, cracks in rocks or other surface cover objects.			None ; no suitable habitat is present on-site.
Birds						
Least Bell's vireo	<i>Vireo bellii pusillus</i>	Federal: FE State: SE MSHCP: CS*	Typically found foraging and nesting in low riparian areas in the vicinity of water or in dry river bottoms. Nests often found in willow, baccharis or mesquite. Occurs below 610 meters elevation.			None ; no suitable habitat is present on-site.
Southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	Federal: FE State: SE MSHCP: CS*	Cottonwood-willow and tamarisk riparian forest.			None ; no suitable habitat is present on-site.
Western yellow-billed cuckoo	<i>Coccyzus americanus occidentalis</i>	Federal: FC, BCC State: SE MSHCP: CS*	Inhabits willow cottonwood riparian forests along the broad lower flood bottoms of larger river systems.			None ; no suitable habitat is present on-site.

COMMON NAME	SCIENTIFIC NAME	LISTING STATUS	HABITAT REQUIREMENTS	GROWTH FORM	FLOWERING/ PHENOLOGY	POTENTIAL FOR OCCURRENCE
Western burrowing owl	<i>Athene cunicularia</i>	Federal: BCC State: SSC MSHCP: CS*	Habitat includes arid and semi-arid environments with mammal burrows and low vegetation, such as grasslands, pasturelands, scrublands, and agricultural fields.			Low ; no owls were observed during the surveys. The site contains low-quality nesting and foraging habitat within the ruderal habitat near the central portion of the site. Although the site lacks suitable burrows, the small debris piles along the north edge of the field provide marginal cover and nesting.
Mammals						
Northwestern San Diego pocket mouse	<i>Chaetodipus fallax fallax</i>	Federal: None State: SSC MSHCP: CS	Inhabits arid coastal and desert border areas with sandy herbaceous areas, usually in association with rocks or coarse gravel.			None ; no suitable habitat is present on-site.
San Bernardino kangaroo rat	<i>Dipodomys merriami parvus</i>	Federal: FE State: SSC MSHCP: CS*	Inhabits alluvial scrub/coastal sage scrub habitats on gravelly and sandy soils adjoining river and stream terraces, and on alluvial fans; and rarely occur in dense vegetation or rocky washes.			None ; no suitable habitat is present on-site.
San Diego black-tailed jackrabbit	<i>Lepus californicus bennettii</i>	Federal: None State: SSC MSHCP: CS	Inhabits herbaceous and desert-shrub areas and open, early stages of forest and chaparral habitats.			None ; no suitable habitat is present on-site.
Stephens' kangaroo rat	<i>Dipodomys stephensi</i>	Federal: FE State: ST MSHCP: CS	Inhabits annual and perennial grassland habitats, but may occur in coastal scrub or sagebrush with sparse canopy cover, or in disturbed areas.			None ; no suitable habitat is present on-site.

COMMON NAME	SCIENTIFIC NAME	LISTING STATUS	HABITAT REQUIREMENTS	GROWTH FORM	FLOWERING/ PHENOLOGY	POTENTIAL FOR OCCURRENCE
Western yellow bat	<i>Lasiurus xanthinus</i>	Federal: None State: SSC MSHCP: None	Inhabits valley foothill riparian, desert riparian, desert wash, and palm oasis habitats below 600 meters.			None ; no suitable habitat is present on-site.

Legend***Federal (U.S. Fish and Wildlife Service)***

- FE Federally listed, endangered: species in danger of extinction throughout a significant portion of its range
- FT Federally listed, threatened: species likely to become endangered within the foreseeable future
- FC Federal Candidate for endangered species program
- BCC Fish and Wildlife Service: Birds of Conservation Concern. Migratory and nonmigratory bird species (beyond those already designated as Federally threatened or endangered) that represent the highest conservation priorities and draw attention to species in need of conservation action.

State (California Department of Fish and Game)

- SE State listed, endangered
- ST State listed, threatened
- SSC California Species of Special Concern: administrative designation for vertebrate species that appear vulnerable to extinction because of declining populations, limited ranges, and/or continuing threats

CNPS (California Native Plant Society)

- 1B Rare, threatened, or endangered in California and elsewhere
- 2 Rare, Threatened, or Endangered in California, But More Common Elsewhere
- .1 Seriously threatened in California
- .2 Fairly threatened in California

Western Riverside County MSHCP

- CS Covered Species, no additional surveys required
- CS* Covered Species, additional surveys may be required (if suitable habitat present)

Appendix C
Plants and Wildlife Observed on the Site