

APPENDIX C

EIS/EIR Technical Information

Appendix C1

Air Quality Modeling Assumptions and Results

Multiple-Phase Development Timeline Calculator

Applicant Name:	
Project Name:	
Project Location:	
ISR Project Number:	

This calculator is to be used to estimate the timeline of construction phases for a multiple-phase project, where site grading will be completed for the entire project area before any building construction begins. Please enter the site grading start date and the total site grading time length in the first set of yellow boxes below. Take the information from the resulting output in the green boxes, and enter the construction phases, start, and end dates in the construction window of URBEMIS2007. Similarly, for each phase of the project, enter the building development start date and the building development time length in the yellow boxes. Take the information from the resulting output in the green boxes, and enter the construction phases, start, and end dates in the construction window of URBEMIS2007. If the project consists of more than 3 phases, then continue on the second sheet.

Demolition and Site Grading Input

Development Start Date (MM/DD/YYYY):	1/1/2012
Total Development Length (months):	10
Will this project require demolition?	No

SITE

Demolition and Site Grading Output

Phase	Length (months)	Start Date	End Date
Demolition			
Site Grading	10.00	1/1/2012	10/31/2012

GRADING

Building Development Input

Development Start Date (MM/DD/YYYY):	11/1/2012
Total Development Length (months):	14

Building Development Output

Phase	Length (months)	Start Date	End Date
Paving	0.70	11/1/2012	11/22/2012
Building Construction	14.00	11/1/2012	1/1/2014
Architectural Coating	1.40	11/19/2013	1/1/2014

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Building Development Input

Development Start Date (MM/DD/YYYY):	1/1/2009
Total Development Length (months):	0

Building Development Output

Phase	Length (months)	Start Date	End Date
Paving	0.00	1/1/2009	1/1/2009
Building Construction	0.00	1/1/2009	1/1/2009
Architectural Coating	0.00	1/1/2009	1/1/2009

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Note: This calculator is a rough estimate only, and is not meant to be precise. The applicant is always welcome to provide precise construction timelines if they are known.

Multiple-Phase Development Timeline Calculator

Building Development Input

Development Start Date (MM/DD/YYYY):	1/1/2009
Total Development Length (months):	0

Building Development Output

Phase	Length (months)	Start Date	End Date
Paving	0.00	1/1/2009	1/1/2009
Building Construction	0.00	1/1/2009	1/1/2009
Architectural Coating	0.00	1/1/2009	1/1/2009

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Building Development Input

Development Start Date (MM/DD/YYYY):	1/1/2009
Total Development Length (months):	0

Building Development Output

Phase	Length (months)	Start Date	End Date
Paving	0.00	1/1/2009	1/1/2009
Building Construction	0.00	1/1/2009	1/1/2009
Architectural Coating	0.00	1/1/2009	1/1/2009

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Building Development Input

Development Start Date (MM/DD/YYYY):	1/1/2009
Total Development Length (months):	0

Building Development Output

Phase	Length (months)	Start Date	End Date
Paving	0.00	1/1/2009	1/1/2009
Building Construction	0.00	1/1/2009	1/1/2009
Architectural Coating	0.00	1/1/2009	1/1/2009

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Building Development Input

Development Start Date (MM/DD/YYYY):	1/1/2009
Total Development Length (months):	0

Building Development Output

Phase	Length (months)	Start Date	End Date
Paving	0.00	1/1/2009	1/1/2009
Building Construction	0.00	1/1/2009	1/1/2009
Architectural Coating	0.00	1/1/2009	1/1/2009

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Note: This calculator is a rough estimate only, and is not meant to be precise. The applicant is always welcome to provide precise construction timelines if they are known.

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Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: L:\~Practice Group Related\AQ\1 Projects\JOC\03 AQ\1 Analysis\JOC 1-24-11.urb924

Project Name: JOC

Project Location: Sacramento County AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

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Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>	<u>CO2</u>
2012 TOTALS (lbs/day unmitigated)	7.11	34.38	35.57	0.02	90.00	2.59	91.08	18.80	2.38	19.79	5,306.33
2013 TOTALS (lbs/day unmitigated)	135.26	15.37	22.84	0.02	0.08	1.00	1.08	0.03	0.92	0.95	3,475.95

AREA SOURCE EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (lbs/day, unmitigated)	1.33	1.28	2.61	0.00	0.01	0.01	1,515.53

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (lbs/day, unmitigated)	13.08	12.39	147.78	0.18	28.89	5.52	18,167.06

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (lbs/day, unmitigated)	14.41	13.67	150.39	0.18	28.90	5.53	19,682.59

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>	<u>CO2</u>
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Time Slice 1/2/2012-6/29/2012	2.72	21.98	12.42	0.00	<u>90.00</u>	1.07	<u>91.08</u>	<u>18.80</u>	0.99	<u>19.79</u>	2,359.11
Active Days: 130											
Fine Grading 01/01/2012-06/30/2012	2.72	21.98	12.42	0.00	90.00	1.07	91.08	18.80	0.99	19.79	2,359.11
Fine Grading Dust	0.00	0.00	0.00	0.00	90.00	0.00	90.00	18.80	0.00	18.80	0.00
Fine Grading Off Road Diesel	2.69	21.95	11.51	0.00	0.00	1.07	1.07	0.00	0.99	0.99	2,247.32
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.02	0.04	0.91	0.00	0.00	0.00	0.01	0.00	0.00	0.00	111.79
Time Slice 7/2/2012-10/31/2012	1.83	15.28	8.92	0.00	0.00	0.73	0.74	0.00	0.68	0.68	1,826.43
Active Days: 88											
Trenching 07/01/2012-10/31/2012	1.83	15.28	8.92	0.00	0.00	0.73	0.74	0.00	0.68	0.68	1,826.43
Trenching Off Road Diesel	1.80	15.24	8.01	0.00	0.00	0.73	0.73	0.00	0.67	0.67	1,714.64
Trenching Worker Trips	0.02	0.04	0.91	0.00	0.00	0.00	0.01	0.00	0.00	0.00	111.79
Time Slice 11/1/2012-11/22/2012	<u>7.11</u>	<u>34.38</u>	<u>35.57</u>	<u>0.02</u>	0.10	<u>2.59</u>	2.68	0.03	<u>2.38</u>	2.41	<u>5,306.33</u>
Active Days: 16											
Asphalt 11/01/2012-11/22/2012	3.56	17.98	12.71	0.01	0.02	1.48	1.50	0.01	1.36	1.37	2,003.36
Paving Off-Gas	0.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.65	16.20	10.06	0.00	0.00	1.41	1.41	0.00	1.29	1.29	1,418.44
Paving On Road Diesel	0.12	1.69	0.61	0.00	0.01	0.07	0.08	0.00	0.06	0.06	333.39
Paving Worker Trips	0.06	0.09	2.04	0.00	0.01	0.01	0.02	0.00	0.00	0.01	251.52
Building 11/01/2012-12/31/2013	3.54	16.40	22.86	0.02	0.07	1.11	1.18	0.03	1.02	1.04	3,302.97
Building Off Road Diesel	3.14	14.81	10.52	0.00	0.00	1.04	1.04	0.00	0.95	0.95	1,621.20
Building Vendor Trips	0.10	1.12	1.24	0.00	0.01	0.05	0.06	0.00	0.04	0.05	315.28
Building Worker Trips	0.30	0.47	11.10	0.01	0.06	0.03	0.09	0.02	0.02	0.04	1,366.49

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Time Slice 11/23/2012-12/31/2012	3.54	16.40	22.86	0.02	0.07	1.11	1.18	0.03	1.02	1.04	3,302.97
Active Days: 27											
Building 11/01/2012-12/31/2013	3.54	16.40	22.86	0.02	0.07	1.11	1.18	0.03	1.02	1.04	3,302.97
Building Off Road Diesel	3.14	14.81	10.52	0.00	0.00	1.04	1.04	0.00	0.95	0.95	1,621.20
Building Vendor Trips	0.10	1.12	1.24	0.00	0.01	0.05	0.06	0.00	0.04	0.05	315.28
Building Worker Trips	0.30	0.47	11.10	0.01	0.06	0.03	0.09	0.02	0.02	0.04	1,366.49
Time Slice 1/1/2013-11/18/2013	3.24	15.32	21.55	0.02	0.07	1.00	1.07	0.03	0.92	0.94	3,303.68
Active Days: 230											
Building 11/01/2012-12/31/2013	3.24	15.32	21.55	0.02	0.07	1.00	1.07	0.03	0.92	0.94	3,303.68
Building Off Road Diesel	2.88	13.91	10.20	0.00	0.00	0.93	0.93	0.00	0.86	0.86	1,621.20
Building Vendor Trips	0.09	0.98	1.15	0.00	0.01	0.04	0.05	0.00	0.04	0.04	315.34
Building Worker Trips	0.27	0.43	10.20	0.01	0.06	0.03	0.09	0.02	0.02	0.04	1,367.14
Time Slice 11/19/2013-12/31/2013	<u>135.26</u>	<u>15.37</u>	<u>22.84</u>	<u>0.02</u>	<u>0.08</u>	<u>1.00</u>	<u>1.08</u>	<u>0.03</u>	<u>0.92</u>	<u>0.95</u>	<u>3,475.95</u>
Active Days: 31											
Building 11/01/2012-12/31/2013	3.24	15.32	21.55	0.02	0.07	1.00	1.07	0.03	0.92	0.94	3,303.68
Building Off Road Diesel	2.88	13.91	10.20	0.00	0.00	0.93	0.93	0.00	0.86	0.86	1,621.20
Building Vendor Trips	0.09	0.98	1.15	0.00	0.01	0.04	0.05	0.00	0.04	0.04	315.34
Building Worker Trips	0.27	0.43	10.20	0.01	0.06	0.03	0.09	0.02	0.02	0.04	1,367.14
Coating 11/19/2013-12/31/2013	132.02	0.05	1.28	0.00	0.01	0.00	0.01	0.00	0.00	0.01	172.27
Architectural Coating	131.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.03	0.05	1.28	0.00	0.01	0.00	0.01	0.00	0.00	0.01	172.27

Phase Assumptions

Phase: Fine Grading 1/1/2012 - 6/30/2012 - Fine Site Grading

Total Acres Disturbed: 18

Maximum Daily Acreage Disturbed: 4.5

Fugitive Dust Level of Detail: Default

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20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

- 1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day
- 1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
- 1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
- 1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 7/1/2012 - 10/31/2012 - Type Your Description Here

Off-Road Equipment:

- 2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
- 1 Other General Industrial Equipment (238 hp) operating at a 0.51 load factor for 8 hours per day
- 1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 0 hours per day

Phase: Paving 11/1/2012 - 11/22/2012 - Paving

Acres to be Paved: 4.5

Off-Road Equipment:

- 4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day
- 1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day
- 2 Paving Equipment (104 hp) operating at a 0.53 load factor for 6 hours per day
- 1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day
- 1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

Phase: Building Construction 11/1/2012 - 12/31/2013 - Building Construction

Off-Road Equipment:

- 1 Cranes (399 hp) operating at a 0.43 load factor for 6 hours per day
- 2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day
- 1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day
- 1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day
- 3 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

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Phase: Architectural Coating 11/19/2013 - 12/31/2013 - Architectural Coating
Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250
Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250
Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250
Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	0.09	1.26	1.06	0.00	0.00	0.00	1,512.72
Hearth							
Landscape	0.12	0.02	1.55	0.00	0.01	0.01	2.81
Consumer Products	0.00						
Architectural Coatings	1.12						
TOTALS (lbs/day, unmitigated)	1.33	1.28	2.61	0.00	0.01	0.01	1,515.53

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Government office building	13.08	12.39	147.78	0.18	28.89	5.52	18,167.06
TOTALS (lbs/day, unmitigated)	13.08	12.39	147.78	0.18	28.89	5.52	18,167.06

Operational Settings:

Does not include correction for passby trips
Does not include double counting adjustment for internal trips
Analysis Year: 2015 Temperature (F): 95 Season: Summer
Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses						
Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Goverment office building		11.50	1000 sq ft	191.00	2,196.50	16,803.23
					2,196.50	16,803.23

Vehicle Fleet Mix				
Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	47.5	0.2	99.6	0.2
Light Truck < 3750 lbs	10.0	1.0	94.0	5.0
Light Truck 3751-5750 lbs	22.7	0.4	99.6	0.0
Med Truck 5751-8500 lbs	10.2	1.0	99.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	2.1	0.0	76.2	23.8
Lite-Heavy Truck 10,001-14,000 lbs	0.9	0.0	55.6	44.4
Med-Heavy Truck 14,001-33,000 lbs	1.6	0.0	18.8	81.2
Heavy-Heavy Truck 33,001-60,000 lbs	0.5	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.0	0.0	0.0	0.0
Motorcycle	3.5	51.4	48.6	0.0

<u>Vehicle Fleet Mix</u>						
Vehicle Type	Percent Type		Non-Catalyst		Catalyst	Diesel
School Bus	0.1		0.0		0.0	100.0
Motor Home	0.8		0.0		87.5	12.5
<u>Travel Conditions</u>						
	Residential				Commercial	
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	10.8	7.3	7.3
Rural Trip Length (miles)	15.0	10.0	10.0	15.0	10.0	10.0
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Goverment office building				10.0	5.0	85.0

Appendix C2

Climate Change and Greenhouse Gas Emission Modeling Assumptions and Results

Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: C:\Documents and Settings\paukovitsj\My Documents\JOC\04 CC\1 Analysis\JOC - Existing GHG 2-8-11 - Revised Square Footage.urb924

Project Name: JOC - Existing

Project Location: Sacramento County AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

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Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>	<u>CO2</u>
2012 TOTALS (tons/year unmitigated)	0.35	2.56	1.68	0.00	1.81	0.14	1.94	0.38	0.12	0.50	304.29
2013 TOTALS (tons/year unmitigated)	1.70	1.93	2.28	0.00	0.01	0.13	0.13	0.00	0.12	0.12	352.59

AREA SOURCE EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (tons/year, unmitigated)	0.15	0.15	0.26	0.00	0.00	0.00	175.43

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (tons/year, unmitigated)	2.99	3.83	36.03	0.03	5.28	1.02	3,095.71

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (tons/year, unmitigated)	3.14	3.98	36.29	0.03	5.28	1.02	3,271.14

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>	<u>CO2</u>
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2013	1.70	1.93	2.28	0.00	0.01	0.13	0.13	0.00	0.12	0.12	352.59
Building 11/01/2012-12/31/2013	0.41	1.93	2.27	0.00	0.01	0.13	0.13	0.00	0.12	0.12	350.89
Building Off Road Diesel	0.38	1.81	1.33	0.00	0.00	0.12	0.12	0.00	0.11	0.11	211.57
Building Vendor Trips	0.01	0.08	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.11
Building Worker Trips	0.02	0.04	0.84	0.00	0.01	0.00	0.01	0.00	0.00	0.00	113.21
Coating 11/19/2013-12/31/2013	1.30	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.69
Architectural Coating	1.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.69

Phase Assumptions

Phase: Fine Grading 1/1/2012 - 6/30/2012 - Fine Site Grading

Total Acres Disturbed: 5.56

Maximum Daily Acreage Disturbed: 1.39

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 7/1/2012 - 10/31/2012 - Type Your Description Here

Off-Road Equipment:

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

1 Other General Industrial Equipment (238 hp) operating at a 0.51 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 0 hours per day

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Phase: Paving 11/1/2012 - 11/22/2012 - Paving

Acres to be Paved: 1.39

Off-Road Equipment:

4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day

1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day

1 Paving Equipment (104 hp) operating at a 0.53 load factor for 8 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

Phase: Building Construction 11/1/2012 - 12/31/2013 - Building Construction

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 6 hours per day

2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day

1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

3 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Phase: Architectural Coating 11/19/2013 - 12/31/2013 - Architectural Coating

Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

2/8/2011 8:55:02 AM

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

<u>Source</u>	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
Natural Gas	0.01	0.15	0.12	0.00	0.00	0.00	175.18
Hearth							
Landscape	0.01	0.00	0.14	0.00	0.00	0.00	0.25
Consumer Products	0.00						
Architectural Coatings	0.13						
TOTALS (tons/year, unmitigated)	0.15	0.15	0.26	0.00	0.00	0.00	175.43

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

<u>Source</u>	<u>ROG</u>	<u>NOX</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM25</u>	<u>CO2</u>
Goverment office building	2.99	3.83	36.03	0.03	5.28	1.02	3,095.71
TOTALS (tons/year, unmitigated)	2.99	3.83	36.03	0.03	5.28	1.02	3,095.71

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2011 Season: Annual

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses						
Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Goverment office building		18.12	1000 sq ft	121.20	2,196.14	16,800.50
					2,196.14	16,800.50
Vehicle Fleet Mix						
Vehicle Type	Percent Type		Non-Catalyst		Catalyst	Diesel
Light Auto	47.6		1.1		98.7	0.2
Light Truck < 3750 lbs	10.0		2.0		92.0	6.0
Light Truck 3751-5750 lbs	22.5		0.9		98.7	0.4
Med Truck 5751-8500 lbs	10.2		1.0		99.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	2.1		0.0		76.2	23.8
Lite-Heavy Truck 10,001-14,000 lbs	0.9		0.0		55.6	44.4
Med-Heavy Truck 14,001-33,000 lbs	1.6		0.0		18.8	81.2
Heavy-Heavy Truck 33,001-60,000 lbs	0.5		0.0		0.0	100.0
Other Bus	0.1		0.0		0.0	100.0
Urban Bus	0.0		0.0		0.0	0.0
Motorcycle	3.5		62.9		37.1	0.0
School Bus	0.1		0.0		0.0	100.0
Motor Home	0.9		0.0		88.9	11.1
Travel Conditions						
	Residential			Commute	Commercial	
	Home-Work	Home-Shop	Home-Other		Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	10.8	7.3	7.3

	<u>Travel Conditions</u>					
	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Rural Trip Length (miles)	15.0	10.0	10.0	15.0	10.0	10.0
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Goverment office building				10.0	5.0	85.0

Transportation

Baseline is Currently: OFF

Unmitigated Transportation	Target Year:		Project-Baseline
	2011	2011	
	Project	Baseline	
Operational Emissions from URBEMIS (CO2 tons/year)	3,096.22	0.00	
Metric Ton Adjustment (CO2 metric tons/year)	2,809.64	0.00	
Pavley Regulation Adjustment (CO2 metric tons/year):	2,773.74	0.00	
US EPA Adjustment (CO2e metric tons/year):	2,919.72	0.00	
Low Carbon Fuels Rule Adjustment (CO2e metric tons/year)	2,914.47	0.00	
Total (CO2e metric tons/year):			2,914.47

Mitigated Transportation	Target Year:		Project-Baseline
	2011	2011	
	Project	Baseline	
Operational Vehicles from URBEMIS (CO2 tons/year):	3,096.22	0.00	
Metric Ton Adjustment (CO2 metric tons/year):	2,809.64	0.00	
Pavley Regulation Adjustment (CO2 metric tons/year):	2,773.74	0.00	
US EPA Adjustment (CO2e metric tons/year):	2,919.72	0.00	
Low Carbon Fuels Adjustment (CO2e metric tons/year):	2,914.47	0.00	
Total (CO2e metric tons/year):			2,914.47

The BGM User's Manual describes in detail each step used to convert URBEMIS's transportation CO2 emissions to total CO2e. These steps include converting from English to Metric units, adjusting for the Pavley Rule, converting CO2 to CO2e, and adjusting for the Low Carbon Fuels Rule.

Reference

U.S. EPA assumption that GHG emissions from other pollutants - CH4, N2O, and hydrofluorocarbons (HFCs) from leaking air conditioners account for 5 percent of emissions from vehicles, after accounting for global warming potential of each GHG.

Jump to the Following Transportation Related Tabs:

[Transportation Detail for Operational Mitigation](#)

[Land Use Detail](#)

	Don't Need to Adjust this amt	Unadjusted Amount Affected by Pavley	Adjusted	Adusted	Adusted	Adusted	Adjusted
	Not Affected by Pavley	LDA/ LDT1/ LDT2/ MDV	LDA	LDT1	LDT2	MDV	4 totaled
Pavley Calculations - Project Unmitigated	470.09	2,339.54	1,154.58	344.98	540.73	263.35	2,303.64
Pavley Calculations - Baseline Unmitigated	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pavley Calculations - Project Mitigated	470.09	2,339.54	1,154.58	344.98	540.73	263.35	2,303.64
Pavley Calculations - Baseline Mitigated	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Pavley Adjustment

Year	% LDA CO2 Emissions	% LDT1 CO2 Emissions	% LDT2 CO2 Emissions	% MDV CO2 Emissions	% LDA/LDT1/L DT2/MDV	% everything else	% CO2 Reduction - LDA	% CO2 Reduction - LDT1	% CO2 Reduction - LDT2	% CO2 Reduction MDV
2009	41.59%	12.33%	19.61%	9.71%	83.26%	16.74%	0.00%	0.00%	0.07%	0.08%
2010	41.72%	12.39%	19.54%	9.61%	83.26%	16.74%	0.35%	0.25%	0.45%	0.48%
2011	41.83%	12.45%	19.50%	9.50%	83.27%	16.73%	1.75%	1.34%	1.31%	1.29%
2012	41.89%	12.50%	19.47%	9.40%	83.27%	16.73%	4.07%	3.27%	2.60%	2.44%
2013	41.94%	12.56%	19.46%	9.32%	83.28%	16.72%	6.31%	5.26%	3.88%	3.61%
2014	41.98%	12.62%	19.46%	9.27%	83.33%	16.67%	8.48%	7.26%	5.17%	4.83%
2015	42.00%	12.67%	19.47%	9.24%	83.38%	16.62%	10.74%	9.38%	6.54%	6.17%
2016	42.05%	12.76%	19.50%	9.23%	83.54%	16.46%	12.96%	11.56%	7.94%	7.54%
2017	42.02%	12.81%	19.51%	9.21%	83.55%	16.45%	15.03%	13.58%	9.27%	8.88%
2018	41.98%	12.84%	19.52%	9.21%	83.55%	16.45%	16.94%	15.43%	10.54%	10.16%
2019	41.95%	12.87%	19.53%	9.21%	83.57%	16.43%	18.72%	17.13%	11.74%	11.40%
2020	41.92%	12.89%	19.55%	9.22%	83.59%	16.41%	20.37%	18.69%	12.89%	12.59%
2025	41.92%	12.96%	19.67%	9.28%	83.82%	16.18%	26.87%	24.86%	17.60%	17.42%
2030	42.15%	13.03%	19.76%	9.32%	84.26%	15.74%	30.60%	28.71%	20.63%	20.47%
2035	42.21%	13.11%	19.80%	9.35%	84.47%	15.53%	32.38%	31.17%	22.43%	22.29%
2040	42.24%	13.14%	19.90%	9.44%	84.72%	15.28%	33.27%	32.61%	23.60%	23.53%

Low Carbon Fuels Standards

Year	% Reduction Gasoline and Diesel Fuel	% Reduction Tank to Wheels
2010	0.00	0.00
2011	0.25	0.18
2012	0.50	0.36
2013	1.00	0.72
2014	1.50	1.08
2015	2.50	1.80
2016	3.50	2.52
2017	5.00	3.60
2018	6.50	4.68
2019	8.00	5.76
2020	10.00	7.20
2021	10.00	7.20
2022	10.00	7.20
2023	10.00	7.20
2024	10.00	7.20
2025	10.00	7.20
2026	10.00	7.20
2027	10.00	7.20
2028	10.00	7.20
2029	10.00	7.20
2030	10.00	7.20
2031	10.00	7.20
2032	10.00	7.20
2033	10.00	7.20
2034	10.00	7.20
2035	10.00	7.20
2036	10.00	7.20
2037	10.00	7.20
2038	10.00	7.20
2039	10.00	7.20
2040	10.00	7.20

Source:
Final Regulation Order
Subchapter 10. Climate Change
Article 4. Regulations to Achieve Greenhouse Gas Reductions
Subarticle 7. Low Carbon Fuel Standard
Section 95482. Average Carbon Intensity Requirements for Gasoline and Diesel

Area Source

Baseline is currently: OFF

Unmitigated Area Source			Project-Baseline
	Project	Baseline	
Landscaping Emissions from URBEMIS (CO2 metric tons/year):	0.227	0.000	
Hearth Emissions from URBEMIS (CO2 metric tons/year):	0.000	0.000	
Wood Burning Fireplaces (N2O metric tons/year):	0.000	0.000	
Natural Gas Fireplaces (N2O metric tons/year):	0.000	0.000	
Wood Burning Stoves (CH4 metric tons/year):	0.000	0.000	
Natural Gas Fireplaces (CH4 metric tons/year):	0.000	0.000	
Total (CO2e metric tons/year):	0.227	0.000	
Total (CO2e metric tons/year):			0.227

Mitigated Area Source			Project-Baseline
	Project	Baseline	
Landscaping Emissions from URBEMIS (CO2 metric tons/year):	0.227	0.000	
Hearth Emissions from URBEMIS (CO2 metric tons/year):	0.000	0.000	
Wood Burning Fireplaces (N2O metric tons/year):	0.000	0.000	
Natural Gas Fireplaces (N2O metric tons/year):	0.000	0.000	
Wood Burning Stoves (CH4 metric tons/year):	0.000	0.000	
Natural Gas Fireplaces (CH4 metric tons/year):	0.000	0.000	
Total (CO2e metric tons/year):	0.227	0.000	
Total (CO2e metric tons/year):			0.227

The URBEMIS area source calculations include five separate categories: 1) natural gas fuel combustion, 2) hearth fuel combustion, 3) landscape maintenance equipment, 4) consumer products, and 5) architectural coatings. This Area Source tab imports CO2 emissions calculated by URBEMIS for hearths and landscape maintenance equipment only. BGM then calculates N2O and CH4 emissions for woodstoves and fireplaces and uses the resulting emissions to calculate CO2e. The consumer products and architectural coatings categories within URBEMIS do not generate GHG emissions and, consequently, are not used by BGM. Also, URBEMIS’ estimate of CO2 from natural gas fuel combustion is not used by BGM. Instead, BGM calculates natural gas use and the resulting CO2 emissions in the Electricity and Natural Gas tab.

Electricity and Natural Gas

Baseline is currently: OFF

Unmitigated Electricity			
	Project	Baseline	Project-Baseline
CO2 metric tons/year CO2:	1,292.228	0.000	
CH4 metric tons/year CH4:	0.011	0.000	
N2O metric tons/year:	0.006	0.000	
CO2e metric tons/year:	1,294.297	0.000	
CO2e metric tons/year:			1,294.30

Unmitigated Natural Gas			
	Project	Baseline	Project-Baseline
CO2 metric tons/year:	266.93	0.000	
CH4 metric tons/year:	0.03	0.000	
N2O metric tons/year:	0.00	0.000	
CO2e metric tons/year:	267.61	0.000	
CO2e metric tons/year:			267.61

Mitigated Electricity			
	Project	Baseline	Project-Baseline
CO2 metric tons/year CO2:	1,292.228	0.000	
CH4 metric tons/year CH4:	0.011	0.000	
N2O metric tons/year:	0.006	0.000	
CO2e metric tons/year:	1,294.297	0.000	
CO2e metric tons/year:			1,294.30

Mitigated Natural Gas			
	Project	Baseline	Project-Baseline
CO2 metric tons/year:	266.930	0.000	
CH4 metric tons/year:	0.025	0.000	
N2O metric tons/year:	0.001	0.000	
CO2e metric tons/year:	267.615	0.000	
CO2e metric tons/year:			267.61

Project Climate Zone Location: ☒ Zone 4 ☐ Zone 5

*** Select Mitigation Measures on the Mitigation Tab ==>

[Mitigation](#)

Clear All User Overrides

PROJECT Residential:

	Number of units (from URBEMIS)	Estimated Electricity Use/Year (kwh/ residence)	Total Residential Electricity Use (mwh /year)	User Override of Residential Electricity Use (mwh/year)	CO2 (metric tons/year)	CH4 (metric tons/yr)	N2O (metric tons/yr)	Estimated Natural Gas Use (MMBtu/residence/year)
Single Family Residential	0.000	7,415.000	0.000		0.000	0.0000	0.0000	49.600
Multi Family Residential	0.000	4,434.000	0.000		0.000	0.0000	0.0000	22.500

PROJECT Nonresidential:

Land Use Type	Square Footage (1,000) from URBEMIS	Estimated Electricity Use/Year (Megawatt-hours)	User Override of Electricity Use/Year (Megawatt-hours)	CO2 (metric tons/yr)	CH4 (metric tons/yr)	N2O (metric tons/yr)	Estimated Natural Gas Use/Year (MM Btu)	User Override of Natural Gas Use (MM Btu/Year)
Day-Care Center	0.00	0.00		0.00	0.0000	0.0000	0.00	
Elementary School	0.00	0.00		0.00	0.0000	0.0000	0.00	
Junior High School	0.00	0.00		0.00	0.0000	0.0000	0.00	
High School	0.00	0.00		0.00	0.0000	0.0000	0.00	
Junior College	0.00	0.00		0.00	0.0000	0.0000	0.00	
University/College	0.00	0.00		0.00	0.0000	0.0000	0.00	
Library	0.00	0.00		0.00	0.0000	0.0000	0.00	
Place of Worship	0.00	0.00		0.00	0.0000	0.0000	0.00	
City Park	0.00	0.00		0.00	0.0000	0.0000	0.00	
Racquet Club	0.00	0.00		0.00	0.0000	0.0000	0.00	
Racquetball/Health	0.00	0.00		0.00	0.0000	0.0000	0.00	
Quality Restaurant	0.00	0.00		0.00	0.0000	0.0000	0.00	
High Turnover/Sit-Down Restaurant	0.00	0.00		0.00	0.0000	0.0000	0.00	
Fast Food w/Drive Through	0.00	0.00		0.00	0.0000	0.0000	0.00	
Fast Food w/o Drive Through	0.00	0.00		0.00	0.0000	0.0000	0.00	
Hotel	0.00	0.00		0.00	0.0000	0.0000	0.00	
Motel	0.00	0.00		0.00	0.0000	0.0000	0.00	
Free-Standing Discount Store	0.00	0.00		0.00	0.0000	0.0000	0.00	
Free-Standing Discount Superstore	0.00	0.00		0.00	0.0000	0.0000	0.00	
Discount Club	0.00	0.00		0.00	0.0000	0.0000	0.00	
Regional Shopping Center	0.00	0.00		0.00	0.0000	0.0000	0.00	
Electronic Superstore	0.00	0.00		0.00	0.0000	0.0000	0.00	
Home Improvement Superstore	0.00	0.00		0.00	0.0000	0.0000	0.00	
Strip Mall	0.00	0.00		0.00	0.0000	0.0000	0.00	
Hardware/Paint Store	0.00	0.00		0.00	0.0000	0.0000	0.00	
Supermarket	0.00	0.00		0.00	0.0000	0.0000	0.00	
Convenience Market	0.00	0.00		0.00	0.0000	0.0000	0.00	
Convenience Market w/gas pumps	0.00	0.00		0.00	0.0000	0.0000	0.00	
Gasoline Service Station	0.00	0.00		0.00	0.0000	0.0000	0.00	
Bank w/Drive Through	0.00	0.00		0.00	0.0000	0.0000	0.00	
General Office Building	0.00	0.00		0.00	0.0000	0.0000	0.00	
Office Park	0.00	0.00		0.00	0.0000	0.0000	0.00	
Government Office Building	191.00	4,490.90	3,540.00	1,292.23	0.0108	0.0059	5,039.88	
Government Civic Center	0.00	0.00		0.00	0.0000	0.0000	0.00	
Pharmacy w/Drive Through	0.00	0.00		0.00	0.0000	0.0000	0.00	
Pharmacy w/o Drive Through	0.00	0.00		0.00	0.0000	0.0000	0.00	
Medical Office Building	0.00	0.00		0.00	0.0000	0.0000	0.00	
Hospital	0.00	0.00		0.00	0.0000	0.0000	0.00	
Warehouse	0.00	0.00		0.00	0.0000	0.0000	0.00	
General Light Industry	0.00	0.00		0.00	0.0000	0.0000	0.00	
General Heavy Industry	0.00	0.00		0.00	0.0000	0.0000	0.00	
Industrial Park	0.00	0.00		0.00	0.0000	0.0000	0.00	
Manufacturing	0.00	0.00		0.00	0.0000	0.0000	0.00	

BASELINE Residential:

	Number of units (from URBEMIS)	Estimated Electricity Use/Year (kwh/ residence)	Total Residential Electricity Use (mwh /year)	User Override of Residential Electricity Use (mwh/year)	CO2 (metric tons/year)	CH4 (metric tons/yr)	N2O (metric tons/yr)	Estimated Natural Gas Use (MMBtu/residence/year)
Single Family Residential	0.000	7,415.000	0.000		0.000	0.0000	0.0000	49.600
Multi Family Residential	0.000	4,434.000	0.000		0.000	0.0000	0.0000	22.500

BASELINE Nonresidential:

Land Use Type	Square Footage (1,000) from URBEMIS	Estimated Electricity Use/Year (Megawatt-hours)	User Override of Electricity Use/Year (Megawatt-hours)	CO2 (metric tons/yr)	CH4 (metric tons/yr)	N2O (metric tons/yr)	Estimated Natural Gas Use/Year (MM Btu)	User Override of Natural Gas Use (MM Btu/Year)
Day-Care Center	0.00	0.00		0.00	0.0000	0.0000	0.00	
Elementary School	0.00	0.00		0.00	0.0000	0.0000	0.00	
Junior High School	0.00	0.00		0.00	0.0000	0.0000	0.00	
High School	0.00	0.00		0.00	0.0000	0.0000	0.00	
Junior College	0.00	0.00		0.00	0.0000	0.0000	0.00	
University/College	0.00	0.00		0.00	0.0000	0.0000	0.00	
Library	0.00	0.00		0.00	0.0000	0.0000	0.00	
Place of Worship	0.00	0.00		0.00	0.0000	0.0000	0.00	
City Park	0.00	0.00		0.00	0.0000	0.0000	0.00	
Racquet Club	0.00	0.00		0.00	0.0000	0.0000	0.00	
Racquetball/Health	0.00	0.00		0.00	0.0000	0.0000	0.00	
Quality Restaurant	0.00	0.00		0.00	0.0000	0.0000	0.00	
High Turnover/Sit-Down Restaurant	0.00	0.00		0.00	0.0000	0.0000	0.00	
Fast Food w/Drive Through	0.00	0.00		0.00	0.0000	0.0000	0.00	
Fast Food w/o Drive Through	0.00	0.00		0.00	0.0000	0.0000	0.00	
Hotel	0.00	0.00		0.00	0.0000	0.0000	0.00	
Motel	0.00	0.00		0.00	0.0000	0.0000	0.00	
Free-Standing Discount Store	0.00	0.00		0.00	0.0000	0.0000	0.00	
Free-Standing Discount Superstore	0.00	0.00		0.00	0.0000	0.0000	0.00	
Discount Club	0.00	0.00		0.00	0.0000	0.0000	0.00	
Regional Shopping Center	0.00	0.00		0.00	0.0000	0.0000	0.00	
Electronic Superstore	0.00	0.00		0.00	0.0000	0.0000	0.00	
Home Improvement Superstore	0.00	0.00		0.00	0.0000	0.0000	0.00	
Strip Mall	0.00	0.00		0.00	0.0000	0.0000	0.00	
Hardware/Paint Store	0.00	0.00		0.00	0.0000	0.0000	0.00	
Supermarket	0.00	0.00		0.00	0.0000	0.0000	0.00	
Convenience Market	0.00	0.00		0.00	0.0000	0.0000	0.00	
Convenience Market w/gas pumps	0.00	0.00		0.00	0.0000	0.0000	0.00	
Gasoline Service Station	0.00	0.00		0.00	0.0000	0.0000	0.00	
Bank w/Drive Through	0.00	0.00		0.00	0.0000	0.0000	0.00	
General Office Building	0.00	0.00		0.00	0.0000	0.0000	0.00	
Office Park	0.00	0.00		0.00	0.0000	0.0000	0.00	
Government Office Building	0.00	0.00		0.00	0.0000	0.0000	0.00	
Government Civic Center	0.00	0.00		0.00	0.0000	0.0000	0.00	
Pharmacy w/Drive Through	0.00	0.00		0.00	0.0000	0.0000	0.00	
Pharmacy w/o Drive Through	0.00	0.00		0.00	0.0000	0.0000	0.00	
Medical Office Building	0.00	0.00		0.00	0.0000	0.0000	0.00	
Hospital	0.00	0.00		0.00	0.0000	0.0000	0.00	
Warehouse	0.00	0.00		0.00	0.0000	0.0000	0.00	
General Light Industry	0.00	0.00		0.00	0.0000	0.0000	0.00	
General Heavy Industry	0.00	0.00		0.00	0.0000	0.0000	0.00	
Industrial Park	0.00	0.00		0.00	0.0000	0.0000	0.00	
Manufacturing	0.00	0.00		0.00	0.0000	0.0000	0.00	

Greenhouse Gas Emission Factors

	CO2	CH4	N2O
Electricity	804.54	0.0067	0.0037
Units	lbs CO2/mwh	lbs CH4/mwh	lbs N2O/MWH
Natural Gas	53.06	0.005	0.0001
Units	CO2 (kg CO2/MMBtu)	CH4 (kg/MMBtu)	N2O(kg/MMBtu)

Source: Climate Action Registry General Reporting Protocol, Version 3.1, January, 2009.

Source: Climate Action Registry General Reporting Protocol, Version 3.1, January, 2009.

Summary	Climate Zone 4 Summary		Climate Zone 5 Summary	
	Electric (kwh/sf)	Natural Gas (MM Btu/sf)	Electric (kwh/sf)	Natural Gas (MM Btu/sf)
All Commercial	13.64	0.02949	13.19	0.03169
Small Office (<30,000 sf)	17.37	0.00975	14.49	0.02999
Large Office (>= 30,000 sf)	23.51	0.02639	15.25	0.02328
Restaurant	35.97	0.21255	31.41	0.17108
Retail	12.82	0.00301	12.65	0.00551
Food Store	44.34	0.02577	40.26	0.04135
Refrigerated Warehouse	10.12	0.00388	24.86	0.01869
Unrefrigerated Warehouse	4.26	0.00440	4.56	0.00169
School	6.65	0.02271	5.51	0.01958
College	9.75	0.02754	12.70	0.04185
Health	23.03	0.11871	18.40	0.11073
Lodging	9.33	0.04695	10.03	0.03915
Miscellaneous	9.81	0.02965	8.98	0.02724
All Offices	21.35	0.02052	15.14	0.02426
All Warehouses	5.82	0.00426	7.71	0.00433

Water and Wastewater

Baseline is currently: OFF

Unmitigated Water and Wastewater			
	Project	Baseline	Project-Baseline
CO2 metric tons/year:	25.6304	0.0000	
CH4 metric tons/year:	0.0002	0.0000	
N20 metric tons/year:	0.0001	0.0000	
CO2e metric tons/year:	25.6715	0.0000	
CO2e metric tons/year:			25.67

Clear All User Overrides

	User Override of Model Estimates (af/yr)	Model Estimate (af/yr)	Total Gallons/year	Indoor Gallons/Year	Outdoor Gallons/year	Mitigated Indoor Gallons/Year	Mitigated Outdoor Gallons/year	Total Mitigated kwh/year
Baseline Water Demand		0.00	0	0.00	0.00	0.00	0.00	
Project Water Demand		45.81	14,928,626	9,399,886.49	5,528,739.37	9,399,886.49	5,528,739.37	
Net Increase in Water Demand		45.81	14,928,626	9,399,886.49	5,528,739.37	9,399,886.49	5,528,739.37	
						50862.79	19350.59	70,213.37

Houshold Size	
Single Family	Multi-family
2.94	2.65

Land Use Type	Square feet per employee
1 Warehouse	1,700.00
2 Public Assembly	1,300.00
3 Lodging	1,300.00
4 Food Sales	1,000.00
5 Retail and Service	900.00
6 Education	766.00
7 Public Order and Safety	750.00
8 Food Service	600.00
9 Other	550.00
10 Health Care	500.00
11 Office	400.00

Energy Information Administration Special Top
<http://www.eia.doe.gov/emeu/consumptionbi>

PROJECT	
% indoor water use	0.630
% outdoor water use	0.370
Total	1.00

Project Water Demand - Indoor	50862.79	kwh/year
Project Water Demand - Outdoor	19350.59	kwh/year
Total	70213.37	kwh/year

BASELINE	
% indoor water use	0.000
% outdoor water use	0.000
Total	0.00

Baseline Demand - Indoor	0.00	kwh/year
Baseline Demand - Outdoor	0.00	kwh/year
Total	0.00	kwh/year

Greenhouse Gas Emission Factors	CO2	CH4	N2O
Electricity	804.54	0.0067	0.0037
Units	#/mwh	#/mwh	#/mwh

from California Climate Action Registry, 2009

Table ES-1. Recommended revised water-energy proxies

	Indoor Uses		Outdoor Uses	
	Northern California kWh/MG	Southern California kWh/MG	Northern California kWh/MG	Southern California kWh/MG
Water Supply and Conveyance	2,117	9,727	2,117	9,727
Water Treatment	111	111	111	111
Water Distribution	1,272	1,272	1,272	1,272
Wastewater Treatment	1,911	1,911	0	0
Regional Total	5,411	13,022	3,500	11,111

from Navigant, 2006

Gallons Per Acre Foot:	325,900.00
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Indoor vs. Outdoor Water Use				From URBEMIS: Project Data		
	Indoor	Outdoor	Total		Units	Projected Water Use (gallons/yr)
2001	0.64	0.36	1.00		Land Use Residential	0.00
2002	0.64	0.36	1.00		Single Family Residential	0.00
					Multi-family Residential	0.00
2003	0.64	0.36	1.00	LU Type	Land Use Nonresidential	Projected Water Use (gallons/yr)
2004	0.64	0.36	1.00	6	Day-Care Center	0.00
2005	0.64	0.36	1.00	6	Elementary School	0.00
2006	0.63	0.37	1.00	6	Junior High School	0.00
2007	0.63	0.37	1.00	6	High School	0.00
2008	0.63	0.37	1.00	6	Junior College	0.00
2009	0.63	0.37	1.00	6	University/College	0.00
2010	0.63	0.37	1.00	6	Library	0.00
2011	0.63	0.37	1.00	9	Place of Worship	0.00
2012	0.63	0.37	1.00	2	City Park	0.00
2013	0.63	0.37	1.00	5	Racquet Club	0.00
2014	0.63	0.37	1.00	5	Racquetball/Health	0.00
2015	0.63	0.37	1.00	8	Quality Restaurant	0.00
2016	0.62	0.38	1.00	8	High Turnover/Sit-Down Restaurant	0.00
2017	0.62	0.38	1.00	8	Fast Food w/Drive Through	0.00
2018	0.62	0.38	1.00	8	Fast Food w/o Drive Through	0.00
2019	0.62	0.38	1.00	3	Hotel	0.00
2020	0.62	0.38	1.00	3	Motel	0.00
2021	0.62	0.38	1.00	5	Free-Standing Discount Store	0.00
2022	0.62	0.38	1.00	5	Free-Standing Discount Superstore	0.00
2023	0.62	0.38	1.00	5	Discount Club	0.00
2024	0.62	0.38	1.00	5	Regional Shopping Center	0.00
2025	0.62	0.38	1.00	5	Electronic Superstore	0.00
2026	0.61	0.39	1.00	5	Home Improvement Superstore	0.00
2027	0.61	0.39	1.00	5	Strip Mall	0.00
2028	0.61	0.39	1.00	5	Hardware/Paint Store	0.00
2029	0.61	0.39	1.00	4	Supermarket	0.00
2030	0.61	0.39	1.00	4	Convenience Market	0.00
				4	Convenience Market w/gas pumps	0.00
				9	Gasoline Service Station	0.00

	Water Use			5 Bank w/Drive Through	0.00	0.00
Year	Single Family (gallons a day/ capita)	Multi-family (gallons a day/ capita)	Non-Res (gallons a day/ employee)	11 General Office Building	0.00	0.00
2001	108.00	75.00	86.00	11 Office Park	0.00	0.00
2002	107.79	74.72	85.97	11 Government Office Building	191.00	14,928,625.86
2003	107.59	74.45	85.93	11 Government Civic Center	0.00	0.00
2004	107.38	74.17	85.90	5 Pharmacy w/Drive Through	0.00	0.00
2005	107.17	73.90	85.86	5 Pharmacy w/o Drive Through	0.00	0.00
2006	106.97	73.62	85.83	10 Medical Office Building	0.00	0.00
2007	106.76	73.34	85.79	10 Hospital	0.00	0.00
2008	106.55	73.07	85.76	1 Warehouse	0.00	0.00
2009	106.34	72.79	85.72	1 General Light Industry	0.00	0.00
2010	106.14	72.52	85.69	1 General Heavy Industry	0.00	0.00
2011	105.93	72.24	85.66	1 Industrial Park	0.00	0.00
2012	105.72	71.97	85.62	1 Manufacturing	0.00	0.00
2013	105.52	71.69	85.59			14,928,625.86
2014	105.31	71.41	85.55			
2015	105.10	71.14	85.52	From URBEMIS: Baseline Data		
2016	104.90	70.86	85.48	Land Use Residential	Units	Projected Water use (gallons/yr)
2017	104.69	70.59	85.45	Single Family Residential	0.00	0.00
2018	104.48	70.31	85.41	Multi-family Residential	0.00	0.00
2019	104.28	70.03	85.38	LU Type Land Use Nonresidential	Square Feet	Projected Water use (gallons/yr)
2020	104.07	69.76	85.34	6 Day-Care Center	0.00	0.00
2021	103.86	69.48	85.31	6 Elementary School	0.00	0.00
2022	103.66	69.21	85.28	6 Junior High School	0.00	0.00
2023	103.45	68.93	85.24	6 High School	0.00	0.00
2024	103.24	68.66	85.21	6 Junior College	0.00	0.00
2025	103.03	68.38	85.17	6 University/College	0.00	0.00
2026	102.83	68.10	85.14	6 Library	0.00	0.00
2027	102.62	67.83	85.10	9 Place of Worship	0.00	0.00
2028	102.41	67.55	85.07	2 City Park	0.00	0.00
2029	102.21	67.28	85.03	5 Racquet Club	0.00	0.00
2030	102.00	67.00	85.00	5 Racquetball/Health	0.00	0.00
				8 Quality Restaurant	0.00	0.00
				8 High Turnover/Sit-Down Restaurant	0.00	0.00
				8 Fast Food w/Drive Through	0.00	0.00
				8 Fast Food w/o Drive Through	0.00	0.00
				3 Hotel	0.00	0.00
				3 Motel	0.00	0.00
				5 Free-Standing Discount Store	0.00	0.00
				5 Free-Standing Discount Superstore	0.00	0.00
				5 Discount Club	0.00	0.00
				5 Regional Shopping Center	0.00	0.00
				5 Electronic Superstore	0.00	0.00
				5 Home Improvement Superstore	0.00	0.00
				5 Strip Mall	0.00	0.00
				5 Hardware/Paint Store	0.00	0.00
				4 Supermarket	0.00	0.00
				4 Convenience Market	0.00	0.00
				4 Convenience Market w/gas pumps	0.00	0.00
				9 Gasoline Service Station	0.00	0.00
				5 Bank w/Drive Through	0.00	0.00
				11 General Office Building	0.00	0.00
				11 Office Park	0.00	0.00
				11 Government Office Building	0.00	0.00
				11 Government Civic Center	0.00	0.00
				5 Pharmacy w/Drive Through	0.00	0.00
				5 Pharmacy w/o Drive Through	0.00	0.00
				10 Medical Office Building	0.00	0.00
				10 Hospital	0.00	0.00
				1 Warehouse	0.00	0.00
				1 General Light Industry	0.00	0.00
				1 General Heavy Industry	0.00	0.00
				1 Industrial Park	0.00	0.00
				1 Manufacturing	0.00	0.00
						0.00

Source:

San Francisco PUC Wholesale Customer Water Demand Projections Technical Report,
Prepared by URS Corporation and Maddaus Water Management, November 2004.
Tables 3-2 and 5-2

Solid Waste

Baseline is currently: OFF

Unmitigated Solid Waste			
	Project	Baseline	Project - Baseline
Truck Haul CO2 (metric tons/year):	2.82	0.00	
Truck Haul CH4 (metric tons/year):	0.0001	0.0000	
Truck Haul CO2e (metric tons/year):	2.83	0.00	
Landfill Offgasing (CO2e metric tons/year):	384.00	0.00	
Total Solid Waste (CO2e metric tons/year):	386.83	0.00	
Total Solid Waste (CO2e metric tons/year):			386.83

Truck Haul CO2 (metric tons/year):
Truck Haul CH4 (metric tons/year):
Truck Haul CO2e (metric tons/year):
Landfill Offgasing (CO2e metric tons/year):
Total Solid Waste (CO2e metric tons/year):
Total Solid Waste (CO2e metric tons/year):

*** Select Mitigation Measures on the Mitigation 1

Project Landfill disposal option:

Select 1 of 3 options

- ☐ Landfilling only ☒ Landfilling with Flaring to Burn Methane
☐ Landfilling with Energy Recovery

Clear All User Overrides

Project	Defaults	User Override
Average Round Trip Truck Haul Distance (miles):	40.00	
Solid Waste Truck Capacity (tons):	15.00	
Round Trips/Year:	40.00	
Miles per Year:	1,600.00	

Baseline	Defaults
Avg Round Trip Truck Haul Distance (miles):	40.00
Solid Waste Truck Capacity (tons):	15.00
Round Trips/Year:	0.00
Miles per Year:	0.00

Baseline Landfill disposal option:

Select 1 of 3 options

- ☐ Landfilling only ☒ Landfilling with Flaring to Burn Methane
☐ Landfilling with Energy Recovery

		Estimated Solid Waste Generation Rate (tons/residence/yr)	Estimated Solid Waste Generation/Year (tons)	User Override of Solid Waste Generated/Year (tons)	CO2e (metric tons/year)	Solid Waste Generated/Year (tons)
PROJECT Residential Land Use (From URBEMIS)	Units					
Single Family Residential	0.00	2.23	0.00		0.00	0.00
Multi-Family Residential	0.00	1.17	0.00		0.00	0.00

PROJECT Nonresidential Land Use (From URBEMIS)	Square Footage (1,000) from URBEMIS	Estimated Solid Waste Generation Rate (tons/sf/yr)	Estimated Solid Waste Generation/Year (tons)	User Override of Solid Waste Generated/Year (tons)	CO2 (metric tons/yr)	
Day-Care Center	0.00	0.0013	0.00		0.00	0.00
Elementary School	0.00	0.0013	0.00		0.00	0.00
Junior High School	0.00	0.0013	0.00		0.00	0.00
High School	0.00	0.0013	0.00		0.00	0.00
Junior College	0.00	0.0013	0.00		0.00	0.00
University/College	0.00	0.0013	0.00		0.00	0.00
Library	0.00	0.0013	0.00		0.00	0.00
Place of Worship	0.00	0.0013	0.00		0.00	0.00
City Park	0.00	0.0000	0.00		0.00	0.00
Racquet Club	0.00	0.0057	0.00		0.00	0.00
Racquetball/Health	0.00	0.0057	0.00		0.00	0.00
Quality Restaurant	0.00	0.0009	0.00		0.00	0.00
High Turnover/Sit-Down Restaurant	0.00	0.0009	0.00		0.00	0.00
Fast Food w/Drive Through	0.00	0.0009	0.00		0.00	0.00
Fast Food w/o Drive Through	0.00	0.0009	0.00		0.00	0.00
Hotel	0.00	0.0108	0.00		0.00	0.00
Motel	0.00	0.0108	0.00		0.00	0.00
Free-Standing Discount Store	0.00	0.0046	0.00		0.00	0.00
Free-Standing Discount Superstore	0.00	0.0046	0.00		0.00	0.00
Discount Club	0.00	0.0046	0.00		0.00	0.00
Regional Shopping Center	0.00	0.0046	0.00		0.00	0.00
Electronic Superstore	0.00	0.0046	0.00		0.00	0.00
Home Improvement Superstore	0.00	0.0046	0.00		0.00	0.00
Strip Mall	0.00	0.0024	0.00		0.00	0.00
Hardware/Paint Store	0.00	0.0024	0.00		0.00	0.00
Supermarket	0.00	0.0057	0.00		0.00	0.00
Convenience Market	0.00	0.0024	0.00		0.00	0.00
Convenience Market w/gas pumps	0.00	0.0024	0.00		0.00	0.00
Gasoline Service Station	0.00	0.0024	0.00		0.00	0.00
Bank w/Drive Through	0.00	0.0108	0.00		0.00	0.00
General Office Building	0.00	0.0108	0.00		0.00	0.00
Office Park	0.00	0.0108	0.00		0.00	0.00
Government Office Building	191.00	0.0108	2,062.80	600.00	384.00	600.00
Government Civic Center	0.00	0.0108	0.00		0.00	0.00
Pharmacy w/Drive Through	0.00	0.0024	0.00		0.00	0.00
Pharmacy w/o Drive Through	0.00	0.0024	0.00		0.00	0.00
Medical Office Building	0.00	0.0108	0.00		0.00	0.00
Hospital	0.00	0.0108	0.00		0.00	0.00
Warehouse	0.00	0.0026	0.00		0.00	0.00
General Light Industry	0.00	0.0011	0.00		0.00	0.00
General Heavy Industry	0.00	0.0011	0.00		0.00	0.00
Industrial Park	0.00	0.0011	0.00		0.00	0.00
Manufacturing	0.00	0.0026	0.00		0.00	0.00
			2,062.80		384.00	600.00

		Estimated Solid Waste Generation Rate (tons/residence/yr)	Estimated Solid Waste Generation/Year (tons)	User Override of Solid Waste Generated/Year (tons)		
BASELINE Residential Land Use (From URBEMIS)	Units				CO2e (metric tons/year)	Solid Waste Generated/Year (tons)
Single Family Residential	0.00	2.23	0.00		0.00	0.00
Multi-Family Residential	0.00	1.17	0.00		0.00	0.00
BASELINE Nonresidential Land Use (From URBEMIS)	Square Footage (1,000) from URBEMIS	Estimated Solid Waste Generation Rate (tons/sf/yr)	Estimated Solid Waste Generation/Year (tons)	User Override of Solid Waste Generated/Year (tons)	CO2 (metric tons/yr)	
Day-Care Center	0.00	0.0013	0.00		0.00	0.00
Elementary School	0.00	0.0013	0.00		0.00	0.00
Junior High School	0.00	0.0013	0.00		0.00	0.00
High School	0.00	0.0013	0.00		0.00	0.00
Junior College	0.00	0.0013	0.00		0.00	0.00
University/College	0.00	0.0013	0.00		0.00	0.00
Library	0.00	0.0013	0.00		0.00	0.00
Place of Worship	0.00	0.0013	0.00		0.00	0.00
City Park	0.00	0.0000	0.00		0.00	0.00
Racquet Club	0.00	0.0057	0.00		0.00	0.00
Racquetball/Health	0.00	0.0057	0.00		0.00	0.00
Quality Restaurant	0.00	0.0009	0.00		0.00	0.00
High Turnover/Sit-Down Restaurant	0.00	0.0009	0.00		0.00	0.00
Fast Food w/Drive Through	0.00	0.0009	0.00		0.00	0.00
Fast Food w/o Drive Through	0.00	0.0009	0.00		0.00	0.00
Hotel	0.00	0.0108	0.00		0.00	0.00
Motel	0.00	0.0108	0.00		0.00	0.00
Free-Standing Discount Store	0.00	0.0046	0.00		0.00	0.00
Free-Standing Discount Superstore	0.00	0.0046	0.00		0.00	0.00
Discount Club	0.00	0.0046	0.00		0.00	0.00
Regional Shopping Center	0.00	0.0046	0.00		0.00	0.00
Electronic Superstore	0.00	0.0046	0.00		0.00	0.00
Home Improvement Superstore	0.00	0.0046	0.00		0.00	0.00
Strip Mall	0.00	0.0024	0.00		0.00	0.00
Hardware/Paint Store	0.00	0.0024	0.00		0.00	0.00
Supermarket	0.00	0.0057	0.00		0.00	0.00
Convenience Market	0.00	0.0024	0.00		0.00	0.00
Convenience Market w/gas pumps	0.00	0.0024	0.00		0.00	0.00
Gasoline Service Station	0.00	0.0024	0.00		0.00	0.00
Bank w/Drive Through	0.00	0.0108	0.00		0.00	0.00
General Office Building	0.00	0.0108	0.00		0.00	0.00
Office Park	0.00	0.0108	0.00		0.00	0.00
Government Office Building	0.00	0.0108	0.00		0.00	0.00
Government Civic Center	0.00	0.0108	0.00		0.00	0.00
Pharmacy w/Drive Through	0.00	0.0024	0.00		0.00	0.00
Pharmacy w/o Drive Through	0.00	0.0024	0.00		0.00	0.00
Medical Office Building	0.00	0.0108	0.00		0.00	0.00
Hospital	0.00	0.0108	0.00		0.00	0.00
Warehouse	0.00	0.0026	0.00		0.00	0.00
General Light Industry	0.00	0.0011	0.00		0.00	0.00
General Heavy Industry	0.00	0.0011	0.00		0.00	0.00
Industrial Park	0.00	0.0011	0.00		0.00	0.00
Manufacturing	0.00	0.0026	0.00		0.00	0.00
					0.00	0.00

WARM Emission Factors			
	Landfilling, No Recovery	Landfilling w/Flaring	Landfilling w/Energy Recovery
Mixed Solid Waste	3.10	0.64	0.30
Emissions (from EMFAC2007, 35 mph for Heavy-Heavy Duty Trucks)			
Year	CO2 (grams/mile)	CH4 (grams/mile)	
2005	1,723.50	0.06	
2006	1,733.00	0.06	
2007	1,740.80	0.06	
2008	1,748.40	0.05	
2009	1,755.80	0.05	
2010	1,763.00	0.05	
2011	1,769.30	0.04	
2012	1,775.00	0.04	
2013	1,780.40	0.04	
2014	1,785.10	0.03	
2015	1,789.20	0.03	
2016	1,792.90	0.03	
2017	1,796.20	0.03	
2018	1,799.00	0.02	
2019	1,801.60	0.02	
2020	1,803.60	0.02	
2025	1,809.70	0.02	
2030	1,812.10	0.01	
2035	1,813.40	0.01	
2040	1,813.80	0.01	

Low Carbon Fuels Standards		
Year	% Reduction Gasoline and Diesel Fuel	% Reduction Tank to Wheels
2010	0.00	0.00
2011	0.25	0.18
2012	0.50	0.36
2013	1.00	0.72
2014	1.50	1.08
2015	2.50	1.80
2016	3.50	2.52
2017	5.00	3.60
2018	6.50	4.68
2019	8.00	5.76
2020	10.00	7.20
2021	10.00	7.20
2022	10.00	7.20
2023	10.00	7.20
2024	10.00	7.20
2025	10.00	7.20
2026	10.00	7.20
2027	10.00	7.20
2028	10.00	7.20
2029	10.00	7.20
2030	10.00	7.20
2031	10.00	7.20
2032	10.00	7.20
2033	10.00	7.20
2034	10.00	7.20
2035	10.00	7.20
2036	10.00	7.20
2037	10.00	7.20
2038	10.00	7.20
2039	10.00	7.20
2040	10.00	7.20

Source:

Final Regulation Order

Subchapter 10. Climate Change

Article 4. Regulations to Achieve Greenhouse Gas Reductions

Subarticle 7. Low Carbon Fuel Standard

Section 95482. Average Carbon Intensity Requirements for Gasoline and Diesel

Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: C:\Documents and Settings\paukovitsj\My Documents\JOC\04 CC\1 Analysis\JOC - GHG 1-25-11.urb924

Project Name: JOC

Project Location: Sacramento County AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>	<u>CO2</u>
2012 TOTALS (tons/year unmitigated)	0.36	2.60	1.79	0.00	5.85	0.14	5.99	1.22	0.13	1.35	320.75
2013 TOTALS (tons/year unmitigated)	2.47	2.00	2.83	0.00	0.01	0.13	0.14	0.00	0.12	0.12	433.80

AREA SOURCE EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (tons/year, unmitigated)	0.23	0.23	0.33	0.00	0.00	0.00	276.32

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (tons/year, unmitigated)	1.70	1.68	17.56	0.03	5.26	1.00	3,090.11

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (tons/year, unmitigated)	1.93	1.91	17.89	0.03	5.26	1.00	3,366.43

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>	<u>CO2</u>
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2013	2.47	2.00	2.83	0.00	0.01	0.13	0.14	0.00	0.12	0.12	433.80
Building 11/01/2012-12/31/2013	0.42	2.00	2.81	0.00	0.01	0.13	0.14	0.00	0.12	0.12	431.13
Building Off Road Diesel	0.38	1.81	1.33	0.00	0.00	0.12	0.12	0.00	0.11	0.11	211.57
Building Vendor Trips	0.01	0.13	0.15	0.00	0.00	0.01	0.01	0.00	0.00	0.01	41.15
Building Worker Trips	0.04	0.06	1.33	0.00	0.01	0.00	0.01	0.00	0.00	0.01	178.41
Coating 11/19/2013-12/31/2013	2.05	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.67
Architectural Coating	2.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.67

Phase Assumptions

Phase: Fine Grading 1/1/2012 - 6/30/2012 - Fine Site Grading

Total Acres Disturbed: 18

Maximum Daily Acreage Disturbed: 4.5

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 7/1/2012 - 10/31/2012 - Type Your Description Here

Off-Road Equipment:

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

1 Other General Industrial Equipment (238 hp) operating at a 0.51 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 0 hours per day

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Phase: Paving 11/1/2012 - 11/22/2012 - Paving

Acres to be Paved: 4.5

Off-Road Equipment:

4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day

1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day

2 Paving Equipment (104 hp) operating at a 0.53 load factor for 6 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

Phase: Building Construction 11/1/2012 - 12/31/2013 - Building Construction

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 6 hours per day

2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day

1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

3 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Phase: Architectural Coating 11/19/2013 - 12/31/2013 - Architectural Coating

Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

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Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

<u>Source</u>	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
Natural Gas	0.02	0.23	0.19	0.00	0.00	0.00	276.07
Hearth							
Landscape	0.01	0.00	0.14	0.00	0.00	0.00	0.25
Consumer Products	0.00						
Architectural Coatings	0.20						
TOTALS (tons/year, unmitigated)	0.23	0.23	0.33	0.00	0.00	0.00	276.32

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

<u>Source</u>	ROG	NOX	CO	SO2	PM10	PM25	CO2
Government office building	1.70	1.68	17.56	0.03	5.26	1.00	3,090.11
TOTALS (tons/year, unmitigated)	1.70	1.68	17.56	0.03	5.26	1.00	3,090.11

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2020 Season: Annual

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses						
Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Goverment office building		11.50	1000 sq ft	191.00	2,196.50	16,803.23
					2,196.50	16,803.23
Vehicle Fleet Mix						
Vehicle Type	Percent Type		Non-Catalyst		Catalyst	Diesel
Light Auto	47.5		0.0		100.0	0.0
Light Truck < 3750 lbs	10.0		0.0		97.0	3.0
Light Truck 3751-5750 lbs	22.8		0.0		100.0	0.0
Med Truck 5751-8500 lbs	10.2		0.0		100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	2.1		0.0		76.2	23.8
Lite-Heavy Truck 10,001-14,000 lbs	0.9		0.0		55.6	44.4
Med-Heavy Truck 14,001-33,000 lbs	1.6		0.0		18.8	81.2
Heavy-Heavy Truck 33,001-60,000 lbs	0.4		0.0		0.0	100.0
Other Bus	0.1		0.0		0.0	100.0
Urban Bus	0.0		0.0		0.0	0.0
Motorcycle	3.5		40.0		60.0	0.0
School Bus	0.1		0.0		0.0	100.0
Motor Home	0.8		0.0		87.5	12.5
Travel Conditions						
	Residential			Commute	Commercial	
	Home-Work	Home-Shop	Home-Other		Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	10.8	7.3	7.3

	<u>Travel Conditions</u>					
	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Rural Trip Length (miles)	15.0	10.0	10.0	15.0	10.0	10.0
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Goverment office building				10.0	5.0	85.0

Pavley Adjustment

Year	% LDA CO2 Emissions	% LDT1 CO2 Emissions	% LDT2 CO2 Emissions	% MDV CO2 Emissions	% LDA/LDT1/LDT2/MDV	% everything else	% CO2 Reduction - LDA	% CO2 Reduction - LDT1	% CO2 Reduction - LDT2
2009	41.59%	12.33%	19.61%	9.71%	83.26%	16.74%	0.00%	0.00%	0.07%
2010	41.72%	12.39%	19.54%	9.61%	83.26%	16.74%	0.35%	0.25%	0.45%
2011	41.83%	12.45%	19.50%	9.50%	83.27%	16.73%	1.75%	1.34%	1.31%
2012	41.89%	12.50%	19.47%	9.40%	83.27%	16.73%	4.07%	3.27%	2.60%
2013	41.94%	12.56%	19.46%	9.32%	83.28%	16.72%	6.31%	5.26%	3.88%
2014	41.98%	12.62%	19.46%	9.27%	83.33%	16.67%	8.48%	7.26%	5.17%
2015	42.00%	12.67%	19.47%	9.24%	83.38%	16.62%	10.74%	9.38%	6.54%
2016	42.05%	12.76%	19.50%	9.23%	83.54%	16.46%	12.96%	11.56%	7.94%
2017	42.02%	12.81%	19.51%	9.21%	83.55%	16.45%	15.03%	13.58%	9.27%
2018	41.98%	12.84%	19.52%	9.21%	83.55%	16.45%	16.94%	15.43%	10.54%
2019	41.95%	12.87%	19.53%	9.21%	83.57%	16.43%	18.72%	17.13%	11.74%
2020	41.92%	12.89%	19.55%	9.22%	83.59%	16.41%	20.37%	18.69%	12.89%
2025	41.92%	12.96%	19.67%	9.28%	83.82%	16.18%	26.87%	24.86%	17.60%
2030	42.15%	13.03%	19.76%	9.32%	84.26%	15.74%	30.60%	28.71%	20.63%
2035	42.21%	13.11%	19.80%	9.35%	84.47%	15.53%	32.38%	31.17%	22.43%
2040	42.24%	13.14%	19.90%	9.44%	84.72%	15.28%	33.27%	32.61%	23.60%

Low Carbon Fuels Standards

Year	% Reduction Gasoline and Diesel Fuel	% Reduction Tank to Wheels
2010	0.00	0.00
2011	0.25	0.18
2012	0.50	0.36
2013	1.00	0.72
2014	1.50	1.08
2015	2.50	1.80
2016	3.50	2.52
2017	5.00	3.60
2018	6.50	4.68
2019	8.00	5.76
2020	10.00	7.20
2021	10.00	7.20
2022	10.00	7.20
2023	10.00	7.20
2024	10.00	7.20
2025	10.00	7.20
2026	10.00	7.20
2027	10.00	7.20
2028	10.00	7.20
2029	10.00	7.20
2030	10.00	7.20
2031	10.00	7.20
2032	10.00	7.20
2033	10.00	7.20
2034	10.00	7.20
2035	10.00	7.20
2036	10.00	7.20
2037	10.00	7.20
2038	10.00	7.20
2039	10.00	7.20
2040	10.00	7.20

Source:
Final Regulation Order
Subchapter 10. Climate Change
Article 4. Regulations to Achieve Greenhouse Gas Reductions
Subarticle 7. Low Carbon Fuel Standard
Section 95482. Average Carbon Intensity Requirements for Gasoline and Diesel

Area Source

Baseline is currently: OFF

Unmitigated Area Source			Project-Baseline
	Project	Baseline	
Landscaping Emissions from URBEMIS (CO2 metric tons/year):	0.227	0.000	
Hearth Emissions from URBEMIS (CO2 metric tons/year):	0.000	0.000	
Wood Burning Fireplaces (N2O metric tons/year):	0.000	0.000	
Natural Gas Fireplaces (N2O metric tons/year):	0.000	0.000	
Wood Burning Stoves (CH4 metric tons/year):	0.000	0.000	
Natural Gas Fireplaces (CH4 metric tons/year):	0.000	0.000	
Total (CO2e metric tons/year):	0.227	0.000	0.227
Total (CO2e metric tons/year):			

Mitigated Area Source			Project-Baseline
	Project	Baseline	
Landscaping Emissions from URBEMIS (CO2 metric tons/year):	0.227	0.000	
Hearth Emissions from URBEMIS (CO2 metric tons/year):	0.000	0.000	
Wood Burning Fireplaces (N2O metric tons/year):	0.000	0.000	
Natural Gas Fireplaces (N2O metric tons/year):	0.000	0.000	
Wood Burning Stoves (CH4 metric tons/year):	0.000	0.000	
Natural Gas Fireplaces (CH4 metric tons/year):	0.000	0.000	
Total (CO2e metric tons/year):	0.227	0.000	0.227
Total (CO2e metric tons/year):			

The URBEMIS area source calculations include five separate categories: 1) natural gas fuel combustion, 2) hearth fuel combustion, 3) landscape maintenance equipment, 4) consumer products, and 5) architectural coatings. This Area Source tab imports CO2 emissions calculated by URBEMIS for hearths and landscape maintenance equipment only. BGM then calculates N2O and CH4 emissions for woodstoves and fireplaces and uses the resulting emissions to calculate CO2e. The consumer products and architectural coatings categories within URBEMIS do not generate GHG emissions and, consequently, are not used by BGM. Also, URBEMIS' estimate of CO2 from natural gas fuel combustion is not used by BGM. Instead, BGM calculates natural gas use and the resulting CO2 emissions in the Electricity and Natural Gas tab.

Electricity and Natural Gas

Baseline is currently: OFF

Unmitigated Electricity			
	Project	Baseline	Project-Baseline
CO2 metric tons/year CO2:	1,639.343	0.000	
CH4 metric tons/year CH4:	0.014	0.000	
N2O metric tons/year:	0.008	0.000	
CO2e metric tons/year:	1,641.967	0.000	
CO2e metric tons/year:			1,641.97

Unmitigated Natural Gas			
	Project	Baseline	Project-Baseline
CO2 metric tons/year:	266.93	0.000	
CH4 metric tons/year:	0.03	0.000	
N2O metric tons/year:	0.00	0.000	
CO2e metric tons/year:	267.61	0.000	
CO2e metric tons/year:			267.61

Mitigated Electricity			
	Project	Baseline	Project-Baseline
CO2 metric tons/year CO2:	1,639.343	0.000	
CH4 metric tons/year CH4:	0.014	0.000	
N2O metric tons/year:	0.008	0.000	
CO2e metric tons/year:	1,641.967	0.000	
CO2e metric tons/year:			1,641.97

Mitigated Natural Gas			
	Project	Baseline	Project-Baseline
CO2 metric tons/year:	266.930	0.000	
CH4 metric tons/year:	0.025	0.000	
N2O metric tons/year:	0.001	0.000	
CO2e metric tons/year:	267.615	0.000	
CO2e metric tons/year:			267.61

Project Climate Zone Location:

☒ Zone 4 ☐ Zone 5

*** Select Mitigation Measures on the Mitigation Tab ==>

[Mitigation](#)

Clear All User Overrides

PROJECT Residential:

	Number of units (from URBEMIS)	Estimated Electricity Use/Year (kwh/ residence)	Total Residential Electricity Use (mwh /year)	User Override of Residential Electricity Use (mwh/year)	CO2 (metric tons/year)	CH4 (metric tons/yr)	N2O (metric tons/yr)	Estimated Natural Gas Use (MMBtu/residence/year)
Single Family Residential	0.000	7,415.000	0.000		0.000	0.0000	0.0000	49.600
Multi Family Residential	0.000	4,434.000	0.000		0.000	0.0000	0.0000	22.500

PROJECT Nonresidential:

Land Use Type	Square Footage (1,000) from URBEMIS	Estimated Electricity Use/Year (Megawatt-hours)	User Override of Electricity Use/Year (Megawatt-hours)	CO2 (metric tons/yr)	CH4 (metric tons/yr)	N2O (metric tons/yr)	Estimated Natural Gas Use/Year (MM Btu)	User Override of Natural Gas Use (MM Btu/Year)
Day-Care Center	0.00	0.00		0.00	0.0000	0.0000	0.00	
Elementary School	0.00	0.00		0.00	0.0000	0.0000	0.00	
Junior High School	0.00	0.00		0.00	0.0000	0.0000	0.00	
High School	0.00	0.00		0.00	0.0000	0.0000	0.00	
Junior College	0.00	0.00		0.00	0.0000	0.0000	0.00	
University/College	0.00	0.00		0.00	0.0000	0.0000	0.00	
Library	0.00	0.00		0.00	0.0000	0.0000	0.00	
Place of Worship	0.00	0.00		0.00	0.0000	0.0000	0.00	
City Park	0.00	0.00		0.00	0.0000	0.0000	0.00	
Racquet Club	0.00	0.00		0.00	0.0000	0.0000	0.00	
Racquetball/Health	0.00	0.00		0.00	0.0000	0.0000	0.00	
Quality Restaurant	0.00	0.00		0.00	0.0000	0.0000	0.00	
High Turnover/Sit-Down Restaurant	0.00	0.00		0.00	0.0000	0.0000	0.00	
Fast Food w/Drive Through	0.00	0.00		0.00	0.0000	0.0000	0.00	
Fast Food w/o Drive Through	0.00	0.00		0.00	0.0000	0.0000	0.00	
Hotel	0.00	0.00		0.00	0.0000	0.0000	0.00	
Motel	0.00	0.00		0.00	0.0000	0.0000	0.00	
Free-Standing Discount Store	0.00	0.00		0.00	0.0000	0.0000	0.00	
Free-Standing Discount Superstore	0.00	0.00		0.00	0.0000	0.0000	0.00	
Discount Club	0.00	0.00		0.00	0.0000	0.0000	0.00	
Regional Shopping Center	0.00	0.00		0.00	0.0000	0.0000	0.00	
Electronic Superstore	0.00	0.00		0.00	0.0000	0.0000	0.00	
Home Improvement Superstore	0.00	0.00		0.00	0.0000	0.0000	0.00	
Strip Mall	0.00	0.00		0.00	0.0000	0.0000	0.00	
Hardware/Paint Store	0.00	0.00		0.00	0.0000	0.0000	0.00	
Supermarket	0.00	0.00		0.00	0.0000	0.0000	0.00	
Convenience Market	0.00	0.00		0.00	0.0000	0.0000	0.00	
Convenience Market w/gas pumps	0.00	0.00		0.00	0.0000	0.0000	0.00	
Gasoline Service Station	0.00	0.00		0.00	0.0000	0.0000	0.00	
Bank w/Drive Through	0.00	0.00		0.00	0.0000	0.0000	0.00	
General Office Building	0.00	0.00		0.00	0.0000	0.0000	0.00	
Office Park	0.00	0.00		0.00	0.0000	0.0000	0.00	
Government Office Building	191.00	4,490.90		1,639.34	0.0137	0.0075	5,039.88	
Government Civic Center	0.00	0.00		0.00	0.0000	0.0000	0.00	
Pharmacy w/Drive Through	0.00	0.00		0.00	0.0000	0.0000	0.00	
Pharmacy w/o Drive Through	0.00	0.00		0.00	0.0000	0.0000	0.00	
Medical Office Building	0.00	0.00		0.00	0.0000	0.0000	0.00	
Hospital	0.00	0.00		0.00	0.0000	0.0000	0.00	
Warehouse	0.00	0.00		0.00	0.0000	0.0000	0.00	
General Light Industry	0.00	0.00		0.00	0.0000	0.0000	0.00	
General Heavy Industry	0.00	0.00		0.00	0.0000	0.0000	0.00	
Industrial Park	0.00	0.00		0.00	0.0000	0.0000	0.00	
Manufacturing	0.00	0.00		0.00	0.0000	0.0000	0.00	

Water and Wastewater

Baseline is currently: OFF

Unmitigated Water and Wastewater			
	Project	Baseline	Project-Baseline
CO2 metric tons/year:	25.4410	0.0000	
CH4 metric tons/year:	0.0002	0.0000	
N2O metric tons/year:	0.0001	0.0000	
CO2e metric tons/year:	25.4817	0.0000	
CO2e metric tons/year:			25.48

Clear All User Overrides

	User Override of Model Estimates (af/yr)	Model Estimate (af/yr)	Total Gallons/year	Indoor Gallons/Year	Outdoor Gallons/year	Mitigated Indoor Gallons/Year	Mitigated Outdoor Gallons/year	Total Mitigated kwh/year
Baseline Water Demand		0.00	0	0.00	0.00	0.00	0.00	
Project Water Demand		45.64	14,874,537	9,227,341.87	5,647,194.77	9,227,341.87	5,647,194.77	
Net Increase in Water Demand		45.64	14,874,537	9,227,341.87	5,647,194.77	9,227,341.87	5,647,194.77	
						49929.15	19765.18	69,694.33

Houshold Size	
Single Family	Multi-family
2.94	2.65

Land Use Type	Square feet per employee	
1 Warehouse		1,700.00
2 Public Assembly		1,300.00
3 Lodging		1,300.00
4 Food Sales		1,000.00
5 Retail and Service		900.00
6 Education		766.00
7 Public Order and Safety		750.00
8 Food Service		600.00
9 Other		550.00
10 Health Care		500.00
11 Office		400.00

Energy Information Administration Special To
<http://www.eia.doe.gov/emeu/consumption/>

PROJECT	
% indoor water use	0.620
% outdoor water use	0.380
Total	1.00

Project Water Demand - Indoor	49929.15	kwh/year
Project Water Demand - Outdoor	19765.18	kwh/year
Total	69694.33	kwh/year

Mitigated Water and Wastewater			
	Project	Baseline	Project-Baseline
CO2 metric tons/year:	25.4410	0.0000	
CH4 metric tons/year:	0.0002	0.0000	
N2O metric tons/year:	0.0001	0.0000	
CO2e metric tons/year:	25.4817	0.0000	
CO2e metric tons/year:			25.48

*** Select Mitigation Measures on the Mitigation Tab ==> [Mitigation](#)

BASELINE	
% indoor water use	0.000
% outdoor water use	0.000
Total	0.00

Baseline Demand - Indoor	0.00	kwh/year
Baseline Demand - Outdoor	0.00	kwh/year
Total	0.00	kwh/year

Greenhouse Gas Emission Factors	CO2	CH4	N2O
Electricity	804.54	0.0067	0.0037
Units	#/mwh	#/mwh	#/mwh

from California Climate Action Registry, 2009

Table ES-1. Recommended revised water-energy proxies

	Indoor Uses		Outdoor Uses	
	Northern California kWh/MG	Southern California kWh/MG	Northern California kWh/MG	Southern California kWh/MG
Water Supply and Conveyance	2,117	9,727	2,117	9,727
Water Treatment	111	111	111	111
Water Distribution	1,272	1,272	1,272	1,272
Wastewater Treatment	1,911	1,911	0	0
Regional Total	5,411	13,022	3,500	11,111

from Navigant, 2006

Gallons Per Acre Foot:	325,900.00
------------------------	------------

Indoor vs. Outdoor Water Use				From URBEMIS: Project Data		
	Indoor	Outdoor	Total		Units	Projected Water Use (gallons/yr)
2001	0.64	0.36	1.00		Land Use Residential	
2002	0.64	0.36	1.00		Single Family Residential	0.00
					Multi-family Residential	0.00
2003	0.64	0.36	1.00	LU Type	Land Use Nonresidential	Projected Water Use (gallons/yr)
2004	0.64	0.36	1.00	6	Day-Care Center	0.00
2005	0.64	0.36	1.00	6	Elementary School	0.00
2006	0.63	0.37	1.00	6	Junior High School	0.00
2007	0.63	0.37	1.00	6	High School	0.00
2008	0.63	0.37	1.00	6	Junior College	0.00
2009	0.63	0.37	1.00	6	University/College	0.00
2010	0.63	0.37	1.00	6	Library	0.00
2011	0.63	0.37	1.00	9	Place of Worship	0.00
2012	0.63	0.37	1.00	2	City Park	0.00
2013	0.63	0.37	1.00	5	Racquet Club	0.00
2014	0.63	0.37	1.00	5	Racquetball/Health	0.00
2015	0.63	0.37	1.00	8	Quality Restaurant	0.00
2016	0.62	0.38	1.00	8	High Turnover/Sit-Down Restaurant	0.00
2017	0.62	0.38	1.00	8	Fast Food w/Drive Through	0.00
2018	0.62	0.38	1.00	8	Fast Food w/o Drive Through	0.00
2019	0.62	0.38	1.00	3	Hotel	0.00
2020	0.62	0.38	1.00	3	Motel	0.00
2021	0.62	0.38	1.00	5	Free-Standing Discount Store	0.00
2022	0.62	0.38	1.00	5	Free-Standing Discount Superstore	0.00
2023	0.62	0.38	1.00	5	Discount Club	0.00
2024	0.62	0.38	1.00	5	Regional Shopping Center	0.00
2025	0.62	0.38	1.00	5	Electronic Superstore	0.00
2026	0.61	0.39	1.00	5	Home Improvement Superstore	0.00
2027	0.61	0.39	1.00	5	Strip Mall	0.00
2028	0.61	0.39	1.00	5	Hardware/Paint Store	0.00
2029	0.61	0.39	1.00	4	Supermarket	0.00
2030	0.61	0.39	1.00	4	Convenience Market	0.00
				4	Convenience Market w/gas pumps	0.00

				9	Gasoline Service Station	0.00	0.00
				5	Bank w/Drive Through	0.00	0.00
Year	Water Use						
	Single Family (gallons a day/ capita)	Multi-family (gallons a day/ capita)	Non-Res (gallons a day/ employee)				
2001	108.00	75.00	86.00	11	General Office Building	0.00	0.00
2002	107.79	74.72	85.97	11	Office Park	0.00	0.00
2003	107.59	74.45	85.93	11	Government Office Building	191.00	14,874,536.64
2004	107.38	74.17	85.90	11	Government Civic Center	0.00	0.00
2005	107.17	73.90	85.86	5	Pharmacy w/Drive Through	0.00	0.00
2006	106.97	73.62	85.83	5	Pharmacy w/o Drive Through	0.00	0.00
2007	106.76	73.34	85.79	10	Medical Office Building	0.00	0.00
2008	106.55	73.07	85.76	10	Hospital	0.00	0.00
2009	106.34	72.79	85.72	1	Warehouse	0.00	0.00
2010	106.14	72.52	85.69	1	General Light Industry	0.00	0.00
2011	105.93	72.24	85.66	1	General Heavy Industry	0.00	0.00
2012	105.72	71.97	85.62	1	Industrial Park	0.00	0.00
2013	105.52	71.69	85.59	1	Manufacturing	0.00	0.00

2014	105.31	71.41	85.55
2015	105.10	71.14	85.52
2016	104.90	70.86	85.48
2017	104.69	70.59	85.45
2018	104.48	70.31	85.41
2019	104.28	70.03	85.38
2020	104.07	69.76	85.34
2021	103.86	69.48	85.31
2022	103.66	69.21	85.28
2023	103.45	68.93	85.24
2024	103.24	68.66	85.21
2025	103.03	68.38	85.17
2026	102.83	68.10	85.14
2027	102.62	67.83	85.10
2028	102.41	67.55	85.07
2029	102.21	67.28	85.03
2030	102.00	67.00	85.00

Source:

San Francisco PUC Wholesale Customer Water Demand Projections Technical Report,
Prepared by URS Corporation and Maddaeus Water Management, November 2004.
Tables 3-2 and 5-2

	From URBEMIS: Baseline Data		Projected Water use (gallons/yr)
	Land Use Residential	Units	
	Single Family Residential	0.00	0.00
	Multi-family Residential	0.00	0.00
LU Type	Land Use Nonresidential	Square Feet	Projected Water use (gallons/yr)
6	Day-Care Center	0.00	0.00
6	Elementary School	0.00	0.00
6	Junior High School	0.00	0.00
6	High School	0.00	0.00
6	Junior College	0.00	0.00
6	University/College	0.00	0.00
6	Library	0.00	0.00
9	Place of Worship	0.00	0.00
2	City Park	0.00	0.00
5	Racquet Club	0.00	0.00
5	Racquetball/Health	0.00	0.00
8	Quality Restaurant	0.00	0.00
8	High Turnover/Sit-Down Restaurant	0.00	0.00
8	Fast Food w/Drive Through	0.00	0.00
8	Fast Food w/o Drive Through	0.00	0.00
3	Hotel	0.00	0.00
3	Motel	0.00	0.00
5	Free-Standing Discount Store	0.00	0.00
5	Free-Standing Discount Superstore	0.00	0.00
5	Discount Club	0.00	0.00
5	Regional Shopping Center	0.00	0.00
5	Electronic Superstore	0.00	0.00
5	Home Improvement Superstore	0.00	0.00
5	Strip Mall	0.00	0.00
5	Hardware/Paint Store	0.00	0.00
4	Supermarket	0.00	0.00
4	Convenience Market	0.00	0.00
4	Convenience Market w/gas pumps	0.00	0.00
9	Gasoline Service Station	0.00	0.00
5	Bank w/Drive Through	0.00	0.00
11	General Office Building	0.00	0.00
11	Office Park	0.00	0.00
11	Government Office Building	0.00	0.00
11	Government Civic Center	0.00	0.00
5	Pharmacy w/Drive Through	0.00	0.00
5	Pharmacy w/o Drive Through	0.00	0.00
10	Medical Office Building	0.00	0.00
10	Hospital	0.00	0.00
1	Warehouse	0.00	0.00
1	General Light Industry	0.00	0.00
1	General Heavy Industry	0.00	0.00
1	Industrial Park	0.00	0.00
1	Manufacturing	0.00	0.00
			0.00

Solid Waste

Baseline is currently: OFF

Unmitigated Solid Waste		
	Project	Project - Baseline
Truck Haul CO2 (metric tons/year):	2.68	0.00
Truck Haul CH4 (metric tons/year):	0.0000	0.0000
Truck Haul CO2e (metric tons/year):	2.68	0.00
Landfill Offgasing (CO2e metric tons/year):	384.00	0.00
Total Solid Waste (CO2e metric tons/year):	386.68	0.00
Total Solid Waste (CO2e metric tons/year):		386.68

Project Landfill disposal option:

Select 1 of 3 options

☐ Landfilling only ☒ Landfilling with Flaring to Burn Methane ☐ Landfilling with Energy Recovery

Clear All User Overrides

Project	Defaults	User Override
Average Round Trip Truck Haul Distance (miles):	40.00	
Solid Waste Truck Capacity (tons):	15.00	
Round Trips/Year:	40.00	
Miles per Year:	1,600.00	

Baseline	Defaults	User Override
Avg Round Trip Truck Haul Distance (miles):	40.00	
Solid Waste Truck Capacity (tons):	15.00	
Round Trips/Year:	0.00	
Miles per Year:	0.00	

		Estimated Solid Waste Generation Rate (tons/residence/yr)	Estimated Solid Waste Generation/Year (tons)	User Override of Solid Waste Generated/Year (tons)		Solid Waste Generated/Year (tons)
PROJECT Residential Land Use (From URBEMIS)	Units				CO2e (metric tons/year)	
Single Family Residential	0.00	2.23	0.00		0.00	0.00
Multi-Family Residential	0.00	1.17	0.00		0.00	0.00
	Square Footage (1,000) from URBEMIS	Estimated Solid Waste Generation Rate (tons/sf/yr)	Estimated Solid Waste Generation/Year (tons)	User Override of Solid Waste Generated/Year (tons)		
PROJECT Nonresidential Land Use (From URBEMIS)					CO2 (metric tons/yr)	
Day-Care Center	0.00	0.0013	0.00		0.00	0.00
Elementary School	0.00	0.0013	0.00		0.00	0.00
Junior High School	0.00	0.0013	0.00		0.00	0.00
High School	0.00	0.0013	0.00		0.00	0.00
Junior College	0.00	0.0013	0.00		0.00	0.00
University/College	0.00	0.0013	0.00		0.00	0.00
Library	0.00	0.0013	0.00		0.00	0.00
Place of Worship	0.00	0.0013	0.00		0.00	0.00
City Park	0.00	0.0000	0.00		0.00	0.00
Racquet Club	0.00	0.0057	0.00		0.00	0.00
Racquetball/Health	0.00	0.0057	0.00		0.00	0.00
Quality Restaurant	0.00	0.0009	0.00		0.00	0.00
High Turnover/Sit-Down Restaurant	0.00	0.0009	0.00		0.00	0.00
Fast Food w/Drive Through	0.00	0.0009	0.00		0.00	0.00
Fast Food w/o Drive Through	0.00	0.0009	0.00		0.00	0.00
Hotel	0.00	0.0108	0.00		0.00	0.00
Motel	0.00	0.0108	0.00		0.00	0.00
Free-Standing Discount Store	0.00	0.0046	0.00		0.00	0.00
Free-Standing Discount Superstore	0.00	0.0046	0.00		0.00	0.00
Discount Club	0.00	0.0046	0.00		0.00	0.00
Regional Shopping Center	0.00	0.0046	0.00		0.00	0.00
Electronic Superstore	0.00	0.0046	0.00		0.00	0.00
Home Improvement Superstore	0.00	0.0046	0.00		0.00	0.00
Strip Mall	0.00	0.0024	0.00		0.00	0.00
Hardware/Paint Store	0.00	0.0024	0.00		0.00	0.00
Supermarket	0.00	0.0057	0.00		0.00	0.00
Convenience Market	0.00	0.0024	0.00		0.00	0.00
Convenience Market w/gas pumps	0.00	0.0024	0.00		0.00	0.00
Gasoline Service Station	0.00	0.0024	0.00		0.00	0.00
Bank w/Drive Through	0.00	0.0108	0.00		0.00	0.00
General Office Building	0.00	0.0108	0.00		0.00	0.00
Office Park	0.00	0.0108	0.00		0.00	0.00
Government Office Building	191.00	0.0108	2,062.80	600.00	384.00	600.00
Government Civic Center	0.00	0.0108	0.00		0.00	0.00
Pharmacy w/Drive Through	0.00	0.0024	0.00		0.00	0.00
Pharmacy w/o Drive Through	0.00	0.0024	0.00		0.00	0.00
Medical Office Building	0.00	0.0108	0.00		0.00	0.00
Hospital	0.00	0.0108	0.00		0.00	0.00
Warehouse	0.00	0.0026	0.00		0.00	0.00
General Light Industry	0.00	0.0011	0.00		0.00	0.00
General Heavy Industry	0.00	0.0011	0.00		0.00	0.00
Industrial Park	0.00	0.0011	0.00		0.00	0.00
Manufacturing	0.00	0.0026	0.00		0.00	0.00
			2,062.80		384.00	600.00

Mitigated Solid Waste		
	Project	Baseline
	Project - Baseline	
Truck Haul CO2 (metric tons/year):	2.68	0.00
Truck Haul CH4 (metric tons/year):	0.0000	0.0000
Truck Haul CO2e (metric tons/year):	2.68	0.00
Landfill Offgassing (CO2e metric tons/year):	384.00	0.00
Total Solid Waste (CO2e metric tons/year):	386.68	0.00
Total Solid Waste (CO2e metric tons/year):		386.68

*** Select Mitigation Measures on the Mitigation Tab ==>

Mitigation

Baseline Landfill disposal option:

Select 1 of 3 options

☐ Landfilling only

☒ Landfilling with Flaring to Burn Methane

☐ Landfilling with Energy Recovery

[illegible]

WARM Emission Factors			
	Landfilling, No Recovery	Landfilling w/Flaring	Landfilling w/Energy Recovery
Mixed Solid Waste	3.10	0.64	0.30
Emissions (from EMFAC2007, 35 mph for Heavy-Heavy Duty Trucks)			
Year	CO2 (grams/mile)	CH4 (grams/mile)	
2005	1,723.50	0.06	
2006	1,733.00	0.06	
2007	1,740.80	0.06	
2008	1,748.40	0.05	
2009	1,755.80	0.05	
2010	1,763.00	0.05	
2011	1,769.30	0.04	
2012	1,775.00	0.04	
2013	1,780.40	0.04	
2014	1,785.10	0.03	
2015	1,789.20	0.03	
2016	1,792.90	0.03	
2017	1,796.20	0.03	
2018	1,799.00	0.02	
2019	1,801.60	0.02	
2020	1,803.60	0.02	
2025	1,809.70	0.02	
2030	1,812.10	0.01	
2035	1,813.40	0.01	
2040	1,813.80	0.01	

Appendix C3

Plant and Wildlife Species List for Proposed and Alternative 1 Sites

Common and Scientific Names of Plant and Wildlife Species Noted in the EIS/EIR

Plant Species	
Scientific Name	Common Name
<i>Avena fatua</i>	Wild oats
<i>Baccharis pilularis</i>	Coyote brush
<i>Bolboschoenus robustus</i>	Seacoast bulrush
<i>Bromus diandrus</i>	Ripgut brome
<i>Bromus hordeaceus</i>	Soft chess
<i>Carduus pycnocephalus</i>	Italian thistle
<i>Centaurea solstitialis</i>	Yellow star-thistle
<i>Clarkia biloba</i> ssp. <i>brandegeae</i>	Brandegee's clarkia
<i>Claytonia perfoliata</i>	Miner's lettuce
<i>Conium maculatum</i>	Poison hemlock
<i>Conzya canadensis</i>	Horseweed
<i>Cynodon dactylon</i>	Bermuda grass
<i>Cyperus eragrostis</i>	Tall flatsedge
<i>Erodium botrys</i>	Long beaked filaree
<i>Eschscholzia californica</i>	California poppy
<i>Fritillaria agrestis</i>	Sinkbells
<i>Geranium dissectum</i>	Cut leaved geranium
<i>Gratiola heterosepala</i>	Boggs Lake hedge-hyssop
<i>Hemizonia fitchii</i>	Fitch's tarweed
<i>Hordeum murinum</i> ssp. <i>leporinum</i>	Foxtail barley
<i>Hordeum</i> sp.	Barley
<i>Juncus mexicanus</i>	Mexican rush
<i>Juncus leiospermus</i> var. <i>ahartii</i>	Ahart's dwarf rush
<i>Lactuca serriola</i>	Prickly lettuce
<i>Legenere limosa</i>	Legenere
<i>Lolium multiflorum</i>	Ryegrass

Plant Species	
Scientific Name	Common Name
<i>Mimulus aurantiacus</i>	Bush monkeyflower
<i>Navarretia myersii</i> ssp. <i>myersii</i>	Pincushion navarretia
<i>Nicotiana glauca</i>	Tree tobacco
<i>Orcuttia tenuis</i>	Slender Orcutt grass
<i>Orcuttia viscida</i>	Sacramento Orcutt grass
<i>Pinus sabiniana</i>	Foothill pine
<i>Populus fremontii</i>	Fremont cottonwood
<i>Polypogon</i> sp.	Beard grass
<i>Quercus lobata</i>	Valley oak
<i>Quercus wislizenii</i>	Interior live oak
<i>Sagittaria sanfordii</i>	Sanford's arrowhead
<i>Salix laevigata</i>	Red willow
<i>Salix lasiolepis</i>	Arroyo willow
<i>Sambucus mexicana</i>	Blue elderberry
<i>Schoenoplectus acutus</i>	Common tule
<i>Silybum marianum</i>	Blessed milk thistle
<i>Toxicodendron diversilobum</i>	Poison oak
<i>Typha angustifolia</i>	Narrow-leaved cattail
<i>Vicia</i> sp.	Vetch
Source: Data compiled by AECOM in 2010	

Wildlife Species	
Common Name	Scientific Name
Invertebrates	
Valley elderberry longhorn beetle	<i>Desmocerus californicus dimorphus</i>
Amphibians and Reptiles	
California tiger salamander	<i>Ambystoma californiense</i>
California red-legged frog	<i>Rana aurora draytonii</i>
Western fence lizard	<i>Sceloporus occidentalis</i>
Western pond turtle	<i>Clemmys marmorata</i>
Birds	
American crow	<i>Corvus brachyrhynchos</i>
American kestrel	<i>Falco sparverius</i>
Bald eagle	<i>Haliaeetus leucocephalus</i>
Black phoebe	<i>Sayornis nigricans</i>
Burrowing owl	<i>Athene cunicularia</i>
Cooper's hawk	<i>Accipiter cooperii</i>
Golden eagle	<i>Aquila chrysaetos</i>
Mourning dove	<i>Zenaida macroura</i>
Northern flicker	<i>Colaptes auratus</i>
Oak titmouse	<i>Baeolophus inornatus</i>
Red-shouldered hawk	<i>Buteo lineatus</i>
Red-tailed hawk	<i>Buteo jamaicensis</i>
Swainson's hawk	<i>Buteo swainsoni</i>
Tricolored blackbird	<i>Agelaius tricolor</i>
Western bluebird	<i>Sialia mexicana</i>
Western scrub-jay	<i>Aphelocoma californica</i>
White-tailed kite	<i>Elanus leucurus</i>
Mammals	
Black-tailed jackrabbit	<i>Lepus californicus</i>
California ground squirrel	<i>Spermophilus beecheyi</i>
Coyote	<i>Canis latrans</i>
Gopher snake	<i>Pituophis catenifer</i>
Pallid bat	<i>Anthrozous pallidus</i>
Western fence lizard	<i>Sceloporus occidentalis</i>
Western mastiff bat	<i>Eumops perotis californicus</i>
Western red bat	<i>Lasiurus blossevilli</i>
Source: Data compiled by AECOM in 2010	

Appendix C4a
Traffic Impact Technical Report

Traffic Impact Technical Report

**Draft Environmental Impact Statement/
Environmental Impact Report
Joint Operations Center Relocation Project, California**

Prepared for:

**Lead Agencies
U.S. Department of the Interior,
Bureau of Reclamation, Mid-Pacific Region
and the
California Department of Water Resources**



Prepared by:

AECOM

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Attachments

Attachment A Traffic Volumes

Attachment B Intersection Levels of Service Calculation Worksheets

Attachment C Roadway Segment Analysis Worksheets

Attachment D Ramp Merge/Diverge Analysis Worksheets

Attachment E 95th Percentile Queue Analysis Worksheets

Attachment F Signal Warrant Worksheets

Acronyms and Abbreviations

ADA	Americans with Disabilities Act
ADT	Average Daily Traffic
Ave	Avenue
Bicycle, Pedestrian, and Trails Master Plan	<i>Sacramento Regional Bicycle, Pedestrian, and Trails Master Plan</i>
Bikeway Master Plan	<i>2010 Sacramento City/County Bikeway Master Plan</i>
Blvd	Boulevard
BRT	Bus Rapid Transit
Caltrans	California Department of Transportation
CIP	Capital Improvement Plan
City	City of Rancho Cordova
City General Plan	<i>Rancho Cordova General Plan</i>
County	Sacramento County
County Guidelines	<i>County of Sacramento Traffic Impact Analysis Guidelines</i>
CSMP	Caltrans' <i>U.S. 50 Corridor System Management Plan</i>
DFG	California Department of Fish and Game
Dr	Drive
DWR	California Department of Water Resources
EB	eastbound
EBLR	eastbound left/right
EBR	eastbound right
FHWA	Federal Highway Administration
GPS	Global Positioning System
gsf	gross square feet
HCM	<i>2000 Highway Capacity Manual</i>
HOV	high-occupancy vehicle
I-	Interstate
ITE	Institute of Transportation Engineer
JOC	Joint Operations Center
LOS	level of service
LRT	light rail transit
Mobility Study	<i>Mobility Strategies for County Corridors</i>
MTP	<i>Metropolitan Transportation Plan 2035</i>
MUTCD	Manual on Uniform Traffic Control Devices
NB	northbound
NEPA	National Environmental Policy Act
NWS	National Weather Service
OWSC	one-way stop control
pc/mi/ln	passenger cars per mile per lane
PeMS	Performance Monitoring System

Joint Operations Center Relocation Project

Reclamation	Bureau of Reclamation
SACMET	Sacramento Metropolitan Travel Demand Model
SACOG	Sacramento Area Council of Governments
SacRT	Sacramento Regional Transit
SB	southbound
sec/veh	seconds per vehicle
sq. ft.	square foot, square feet
SR	State Route
TCCR	Transportation Corridor Concept Report
TIA	Traffic Impact Analysis
TRB	Transportation Research Board
TWSC	two-way stop control
U.S. 50	U.S. Highway 50
v/c	volume-to-capacity
WB	westbound
WBL	westbound left
WBR	westbound right
WBTR	westbound through/right

1 Affected Environment

Environmental Setting

This analysis has been conducted to assess the potential transportation impacts associated with the relocation of the California Department of Water Resources (DWR) Interim Joint Operations Center (JOC) on El Camino Avenue, herein referred to as the “project.” In September 2007, the Bureau of Reclamation (Reclamation), DWR, and the National Oceanic and Atmospheric Administration’s National Weather Service (NWS) completed a site criteria/ranking process to determine which sites in the Sacramento area were available at that time and could be considered for further evaluation. Two alternatives, the Proposed Action and Alternative 1, have been selected for further review and will be analyzed in this traffic impact analysis (TIA).

The following transportation topics were addressed for each site:

- ▶ traffic conditions,
- ▶ transit conditions,
- ▶ pedestrian conditions,
- ▶ bicycle conditions,
- ▶ site access and circulation, and
- ▶ construction conditions.

Project Location

The two alternative sites under consideration are the Proposed Site and the Alternative 1 Site.

The Proposed Site consists of a 19-acre parcel and a 6.5-acre portion of Nimbus Road, for a total of 25.5 acres. The parcel is owned by Reclamation and located adjacent to the California Department of Fish and Game (DFG) Nimbus Fish Hatchery, near the Nimbus Dam on the American River. The Proposed Site is adjacent to the Upper Sunrise Area of the American River Parkway. Nimbus Fish Hatchery and DFG Regional Office are located north of the Proposed Site. Homes are located along the Proposed Site’s southeast boundary and overlooking the Proposed Site to the north, across from the American River. The Jedediah Smith Memorial Trail is parallel to Nimbus Road, the paved access road to the north of the Proposed Site. Access to the Proposed Site is from U.S. Highway 50 (U.S. 50) via Hazel Avenue and Gold Country Boulevard.

The Alternative 1 Site is a 23.1-acre parcel that is privately owned and located northeast of the intersection of Kilgore Road and Crawford Drive. The Alternative 1 Site is relatively flat and is surrounded by commercial/office park land uses. The Folsom South

Canal extends along the Alternative 1 Site's eastern boundary. Access to the Alternative 1 Site is from U.S. 50 via Sunrise Boulevard, White Rock Road, and Kilgore Road or via Zinfandel Drive, White Rock Road, and Kilgore Road.

The two project sites under consideration are illustrated in **Exhibit C4-1**.

Project Description Summary

Reclamation and DWR propose to construct a new JOC in the Sacramento area to be occupied by June 2015. The new JOC would provide typical office and special needs/essential services space for combined occupancy by Reclamation and DWR to replace the Interim JOC. Special needs are defined as two control centers, backup power supplies, primary and backup communication systems, intense computer infrastructure, and physical and cyber security systems. The transportation and circulation-related criteria used by Reclamation, DWR, NWS, and the California Department of General Services to establish a new JOC require that the site:

- ▶ collocate Federal and State operations and partnering agencies from the current Interim JOC to a reasonably accessible facility large enough to accommodate up to 600 staff and technical and specialized equipment (at least 200,000 square feet); obtain or locate a facility outside the 200-year floodplain within 25 miles of downtown Sacramento;
- ▶ provide sufficient parking for all occupants; and
- ▶ if possible, be located near restaurants and alternative modes of transportation. As currently defined, the project consists of approximately 200,000 square feet of office space and would house approximately 600 employees.

For the Proposed Action, two site plans are currently under review. Under the campus-style (two-story) layout option, the JOC facility would be composed of two two-story office structures and a third structure to accommodate the Flood Operations Center and be used for essential service needs. Under the three-story layout option, the JOC facility would be composed of one three-story office structure and a second structure to accommodate the Flood Operations Center. Results of the traffic impact analysis would be the same for both of the alternative site plans under consideration for the Proposed Action, although parking supply differs between the two layouts. The alternative site plans for the Proposed Action are illustrated in **Exhibit C4-2** and **Exhibit C4-3**.

For Alternative 1, the JOC facility would be similar to the campus-style layout option described at the Proposed Site. The facility would be composed of two two-story office structures and the one-story Flood Operations Center that would be used for essential service needs. Parking supply for Alternative 1 would be the same as the campus-style layout for the Proposed Action. The site plan for Alternative 1 is illustrated in **Exhibit C4-4**.

Study Scope and Approach

The following scenarios were evaluated to identify the potential transportation impacts of the project:

- ▶ Existing Conditions,
- ▶ Existing plus Project Conditions,
- ▶ Cumulative 2035 Without Project Conditions, and
- ▶ Cumulative 2035 plus Project Conditions.

Existing Conditions reflect conditions in 2010. The term “cumulative” herein refers to year 2035 conditions, including all reasonably foreseeable improvements to existing conditions.

Traffic Evaluation

Intersection Operations

For the Proposed Site, the following five intersections were selected for analysis in coordination with Sacramento County (County) staff:

- ▶ Non-California Department of Transportation (Caltrans) intersections:
 1. Nimbus Road/Gold Country Boulevard (*one-way stop-controlled*)
 2. Hazel Avenue/Gold Country Boulevard (*signalized*)
 3. Hazel Avenue/Folsom Boulevard (*signalized*)
- ▶ Caltrans intersections⁽¹⁾:
 1. Hazel Avenue/U.S. 50 Eastbound (EB) Ramps (*signalized*)
 2. Hazel Avenue/U.S. 50 Westbound (WB) Off-Ramp/Tributary Point Drive (*signalized*)

Intersection operating conditions were analyzed at the five key intersections near the Proposed Site for the peak hour of the weekday a.m. and p.m. peak periods (7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m.).

As a result of the Hazel Avenue Widening Project construction, intersection turning movement counts could not be conducted at any of the five study intersections. Existing Conditions (2006) traffic volumes were obtained from the *Rio del Oro Specific Plan Project Draft EIR/EIS* (2006). Growth rates obtained from the study were applied to year 2006 intersection volumes to calculate the existing year (2010) and future year (2035) volumes used in this analysis. Existing Conditions lane configuration and signal timing

⁽¹⁾ Facilities owned and operated by Caltrans.

information were observed and recorded during the weekday a.m. and weekday p.m. peak hours on December 8, 2010.

Traffic volumes and lane configurations reflect existing conditions without completion of the Hazel Avenue Widening Project, which is currently underway. Discussion of potential impacts during the construction period is included in Section 3.0, "Cumulative Effects." The construction schedule for the Hazel Avenue Widening Project (updated March 2011) is as follows:

- ▶ Roadway Phase 1 (U.S. 50/Hazel Avenue Interchange to Curragh Downs Drive): Anticipated completion date – July 2011;
- ▶ Roadway Phase 2 (Curragh Downs Drive to Sunset Avenue): Anticipated groundbreaking – May 2014; Anticipated completion date – December 2015; and
- ▶ Roadway Phase 3 (Sunset Avenue to Madison Avenue): Anticipated groundbreaking – 2016.

For the Alternative 1 Site, the following eight intersections were selected for analysis in coordination with the City of Rancho Cordova (City) and County staff:

- ▶ Non-Caltrans intersections:
 1. Kilgore Road/Crawford Drive (*one-way stop-controlled*)
 2. Kilgore Road/White Rock Road (*signalized*)
 3. Sunrise Boulevard/White Rock Road (*signalized*)
 4. Zinfandel Drive/White Rock Road (*signalized*)
- ▶ Caltrans intersections:
 1. Sunrise Boulevard/U.S. 50 EB Ramps (*signalized*)
 2. Sunrise Boulevard/U.S. 50 WB Ramps (*signalized*)
 3. Zinfandel Drive/U.S. 50 WB Off-Ramp (*signalized*)
 4. Zinfandel Drive/U.S. 50 EB Ramps/Gold Center Drive (*signalized*)

Intersection operating conditions were analyzed at the eight key intersections near the Alternative 1 Site for the peak hour of the weekday a.m. and p.m. peak periods (7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m.).

Intersection turning movement counts at the intersections of Kilgore Road/Crawford Drive, Kilgore Road/White Rock Road, Sunrise Boulevard/White Rock Road, Sunrise Boulevard/U.S. 50 EB Ramps, and Sunrise Boulevard/U.S. 50 WB Ramps were conducted on December 7, 2010. Intersection turning movement counts at the intersections of Zinfandel Drive/White Rock Road, Zinfandel Drive/U.S. 50 WB Off-Ramp, and Zinfandel Drive/U.S. 50 EB Ramps/Gold Center Drive were conducted on May 4, 2011. Existing Conditions lane configuration and signal timing information were observed and recorded during the weekday a.m. and weekday p.m. peak hours on December 8, 2010 for intersections counted on December 7, 2010. Signal timing information for the weekday a.m. and weekday p.m. peak hours was obtained from the County for intersections counted on May 4, 2011. Growth rates obtained from the *Rio del*

Oro Specific Plan Project Draft EIR/EIS (2006) were applied to the existing year volumes to obtain future year (2035) volumes used in this analysis.

The operations of the study intersections were evaluated using the level of service (LOS) methodology. This methodology qualitatively characterizes traffic conditions associated with varying levels of vehicular traffic, ranging from LOS A (indicating free-flow traffic conditions with little or no delay) to LOS F (indicating congested conditions where traffic flows exceed design capacity and result in queuing and delay). Intersection LOS for the non-Caltrans unsignalized and Caltrans signalized study intersections were calculated using Trafficware's Synchro 7 (Build 773) software package. Intersection LOS for the non-Caltrans signalized intersections was calculated using the Traffix 8.0 software package with Circular 212 methodology.

Methodology

Signalized Intersections

Non-Caltrans, County-owned and -operated signalized study intersections were analyzed using the *Interim Materials on Highway Capacity* (TRB 1980) prepared by the Transportation Research Board, Circular 212 methodology, consistent with the County Guidelines. Use of this methodology ties project impacts to limited lane capacities at the study locations and is consistent with current study requirements in Sacramento County and other jurisdictions within the State. This methodology determines LOS by comparing the sum of critical-lane volumes by signal phasing at the signalized intersection to the thresholds summarized in **Table C4-1**.

Table C4-1				
Intersection Level of Service Definitions—Circular 212 Methodology				
LOS	v/c Ratio	Sum of Critical Lane Volumes by Signal Phasing (vehicles/critical lane/hour)		
		2-Phase	3-Phase	4 or more Phase
A	< 0.60	0–990	0–930	0–900
B	0.60–0.69	991–1,155	931–1,085	901–1,050
C	0.70–0.79	1,156–1,320	1,086–1,240	1,051–1,200
D	0.80–0.89	1,321–1,485	1,241–1,395	1,201–1,350
E	0.90–0.99	1,486–1,650	1,396–1,550	1,351–1,500
F	> 1.00	> 1,650	> 1,550	> 1,500
Notes: LOS = level of service, v/c ratio = volume-to-capacity ratio				
Source: Sacramento County 2004				

Caltrans-owned and -operated signalized study intersections were analyzed using the HCM operations methodology. The operations analysis uses various intersection characteristics (e.g., traffic volumes, lane geometry, and signal phasing/timing) to estimate the average control delay experienced by motorists at an intersection. The HCM operations methodology for signalized and unsignalized intersections is summarized in **Table C4-2**.

Unsignalized Intersections

At unsignalized (one-way, two-way, and all-way stop-controlled) study intersections, traffic conditions were evaluated using the HCM operations methodology. With this methodology, LOS is related to the total delay per vehicle for the intersection as a whole (for all-way stop-controlled intersections) or for the worst stop-controlled approach (for one- and two-way stop-controlled intersections). Total delay is defined as the total elapsed time from when a vehicle stops at the end of the queue until the vehicle departs from the queue. This time includes the time required for a vehicle to travel from the last-in-queue position to the first-in-queue position. The HCM operations methodology for signalized and unsignalized intersections is summarized in **Table C4-2**.

Table C4-2			
Intersection Level of Service Definitions—HCM Methodology			
LOS	Description	Average Delay (sec/veh)	
		Signalized Intersections	Unsignalized Intersections
A	Little or no delay	< 10.0	< 10.0
B	Short traffic delay	> 10.0 and < 20.0	> 10.0 and < 15.0
C	Average traffic delay	> 20.0 and < 35.0	> 15.0 and < 25.0
D	Long traffic delay	> 35.0 and < 55.0	> 25.0 and < 35.0
E	Very long traffic delay	> 55.0 and < 80.0	> 35.0 and < 50.0
F	Extreme traffic delay	> 80.0	> 50.0

Notes: HCM = 2000 *Highway Capacity Manual*, sec/veh = seconds per vehicle
 For signalized intersections, average delay represents the average of all approaches.
 For unsignalized intersections, average delay represents the average of all approaches (all-way stop control) or the worst approach (one- or two-way stop control).
 Source: TRB 2000

Because of limitations in the HCM methodology, delay values over 80.0 seconds are typically considered unreliable. In these cases, the delay is presented simply as “greater than 80.0” (> 80.0), with the understanding that the intersection is operating poorly. For unsignalized intersections, delay values over 50.0 seconds are considered unreliable, and delay is presented as “greater than 50.0” (> 50.0).

Roadway Segment Operations

Based on preliminary trip generation estimates, the project is expected to generate more than 100 trips during both the weekday a.m. and p.m. peak hours, and thus roadway segment analyses are required. The following roadway segments near the Proposed Site were selected for analyses:

- ▶ Non-Caltrans roadway segments:
 1. Hazel Avenue—South of Gold Country Boulevard
- ▶ Caltrans roadway segments⁽²⁾:
 2. EB U.S. 50—West of Hazel Avenue Off-Ramp
 3. EB U.S. 50—East of Hazel Avenue On-Ramp

⁽²⁾ Facilities owned and operated by Caltrans.

4. WB U.S. 50—West of Hazel Avenue On-Ramp
5. WB U.S. 50—East of Hazel Avenue Off-Ramp

The location of the five study intersections and roadway segments surrounding the Proposed Action are illustrated in **Exhibit C4-5**. If travel forecasting predicts the LOS would drop below minimum levels identified in its Transportation Corridor Concept Reports (TCCRs), Caltrans District 3 will design improvements to maintain acceptable highway conditions. Caltrans's *U.S. 50 Corridor System Management Plan* (CSMP) (Caltrans 2009) serves as the TCCR for U.S. 50 from its origin at Interstate (I-) 80 in West Sacramento to the Cedar Grove Exit. The following roadway segments near the Alternative 1 Site were selected for analyses:

- ▶ Non-Caltrans roadway segments:
 1. Sunrise Boulevard—North of White Rock Road
- ▶ Caltrans roadway segments:
 2. EB U.S. 50—West of Zinfandel Drive Off-Ramp
 3. EB U.S. 50—East of Sunrise Boulevard On-Ramp
 4. WB U.S. 50—East of Sunrise Boulevard On-Ramp
 5. WB U.S. 50—West of Zinfandel Drive Off-Ramp

The location of the five study intersections and roadway segments surrounding the Alternative 1 Site are illustrated in **Exhibit C4-6**.

The operations of non-Caltrans roadway segments were evaluated using the Sacramento County Guidelines methodology (Sacramento County 2004). Average daily traffic (ADT) volume was compared with daily volume thresholds by various facility types, as summarized in **Table C4-3**.

Table C4-3						
Roadway Segment Level of Service Definitions—Sacramento County						
Facility Type	Number of Lanes	Daily Volume Thresholds (LOS)				
		LOS A	LOS B	LOS C	LOS D	LOS E
Residential	2	600	1,200	2,000	3,000	4,500
Residential Collector, with frontage	2	1,600	3,200	4,800	6,400	8,000
Residential Collector, without frontage	2	6,000	7,000	8,000	9,000	10,000
Arterial, low access control	2	9,000	10,000	12,000	13,500	15,000
	4	18,000	21,000	24,000	27,000	30,000
	6	27,000	31,500	36,000	40,500	45,000
Arterial, moderate access control	2	10,800	12,600	14,400	16,200	18,000
	4	21,600	25,200	28,800	32,400	36,000
	6	32,400	37,800	43,200	48,600	54,000
Arterial, high access control	2	12,000	14,000	16,000	18,000	20,000
	4	24,000	28,000	32,000	36,000	40,000
	6	36,000	42,000	48,000	54,000	60,000
Notes: LOS = level of service						
Source: Sacramento County 2004						

Caltrans facilities were evaluated using the HCM methodology. HCM capacity analysis provides a roadway LOS methodology, similar to intersection LOS, based on the volume-to-capacity (v/c) ratio of the roadway. The assumed capacities are 2,200 vehicles per hour per lane for typical freeway segments. LOS A, B, C, and D are generally considered acceptable and LOS E and F are considered unacceptable. As indicated in the Caltrans' CSMP, the segment of U.S. 50 from Sunrise Boulevard to Folsom Boulevard operates with a current concept LOS E and would operate with a concept LOS F in all future scenarios. Concept LOS defines the minimum acceptable LOS established by Caltrans as the owner and operator of the facility. The HCM methodology for roadway segments is summarized in **Table C4-4**.

Table C4-4 Roadway Segment Level of Service Definitions—HCM Methodology		
LOS	Description	v/c Ratio
A	Vehicles travel at free-flow speeds and can maneuver almost freely within the traffic stream.	≤ 0.30
B	Vehicles travel at free-flow speeds and movement within the traffic stream is only slightly restricted.	> 0.30 and ≤ 0.50
C	Vehicles travel at or near free-flow speed and movement is somewhat restricted. Incidents can cause local queuing.	> 0.50 and ≤ 0.71
D	Vehicle speed declines as density increases, and maneuverability within the traffic stream is noticeably limited.	> 0.71 and ≤ 0.89
E	Roadway is operating at or near capacity, with vehicles closely spaced.	> 0.89 and ≤ 1.00
F	Roadway operates beyond capacity, with significant queuing at bottlenecks such as key intersections or lane drops.	> 1.00
Notes: HCM = 2000 Highway Capacity Manual, v/c ratio = volume-to-capacity ratio Source: TRB 2000		

Ramp Merge/Diverge Analysis

Ramp merge/diverge analyses were conducted at the following locations in the vicinity of the Proposed Site:

1. EB U.S. 50—Off-Ramp to Hazel Avenue (*diverge*)
2. EB U.S. 50—On-Ramp from SB Hazel Avenue (*merge*)
3. WB U.S. 50—Off-Ramp to Hazel Avenue (*diverge*)
4. WB U.S. 50—On-Ramp from SB Hazel Avenue (*merge*)

The location of the study intersections, study roadway segments, and study ramp merge/diverge areas surrounding the Proposed Site are illustrated in **Exhibit C4-5**.

The following ramp merge/diverge areas near the Alternative 1 Site were selected for analyses:

1. WB U.S. 50—Off-Ramp to Sunrise Boulevard (*diverge*)
2. EB U.S. 50—On-Ramp from NB Sunrise Boulevard (*merge*)
3. EB U.S. 50—Off-Ramp to Zinfandel Drive (*diverge*)
4. WB U.S. 50—On-Ramp from NB Zinfandel Drive (*merge*)

The location of the study intersections, study roadway segments, and study ramp merge/diverge areas surrounding the Alternative 1 Site are illustrated in **Exhibit C4-6**.

Ramp merge/diverge analyses were conducted using the HCS2000 Software package and the 2000 HCM methodology. Ramp and ramp junction analysis procedures calculate a density of vehicles per mile per lane (pc/mi/ln) and assign a LOS based upon the calculated density. The 2000 HCM methodology for ramp merge/diverge areas is summarized in **Table C4-5**.

Table C4-5 Ramp Merge/Diverge Level of Service Definitions—HCM Methodology		
LOS	Description	Maximum Density (pc/mi/ln)
A	Vehicles travel at free-flow speeds and can maneuver almost freely within the traffic stream.	≤ 10.0
B	Vehicles travel at free-flow speeds and movement within the traffic stream is only slightly restricted.	> 10.0 and ≤ 20.0
C	Vehicles travel at or near free-flow speed and movement is somewhat restricted. Incidents can cause local queuing.	> 20.0 and ≤ 28.0
D	Vehicle speed declines as density increases, and maneuverability within the traffic stream is noticeably limited.	> 28.0 and ≤ 35.0
E	Roadway is operating at or near capacity, with vehicles closely spaced, merge/diverge maneuvers are difficult.	> 35.0
F	Ramp failure, indicated by stop and go vehicular flow, often results in long vehicular queues that may block adjacent intersections.	Demand exceeds capacity
Notes: HCM = <i>Highway Capacity Manual</i> , pc/mi/ln = passenger cars per mile per lane Source: TRB 2000		

As shown in **Table C4-5**, each LOS is defined by a range of densities. A density of more than 35 vehicles per mile per lane results in a “failure” of the ramp.

95th Percentile Queue Analysis

95th percentile queue analysis was conducted on the freeway off-ramps at the following Caltrans intersections surrounding the Proposed Site:

4. Hazel Avenue/U.S. 50 EB Ramps; and
5. Hazel Avenue/U.S. 50 WB Off-Ramp/Tributary Point Drive.

95th percentile queue analysis were conducted on the freeway off-ramps at the following Caltrans intersections surrounding the Alternative 1 Site:

6. Sunrise Boulevard/U.S. 50 WB Ramps; and
8. Zinfandel Drive/U.S. 50 EB Ramps/Gold Center Drive.

The 95th percentile queue is defined to be the queue length that has only a 5% probability of being exceeded during the analysis time period. The storage capacity is taken as the distance to the nearest intersection, major driveway, pedestrian crossing, or freeway mainline. The 95th percentile queue analysis was conducted using intersection LOS analysis output to compare the 95th percentile queues to the available storage lengths at

off-ramp terminal intersections, to determine if the project would result in, or contribute to, queue spillback on the U.S. 50 mainline.

Existing Conditions

This section provides a description of the existing transportation conditions near the Proposed and Alternative 1 Sites. Included in this section are descriptions of the existing roadway, transit, pedestrian, and bikeway networks and documentation of the existing traffic, transit, pedestrian, bicycle, and site access and circulation.

Roadway Network

A brief description of the regional and local roadway network serving the Proposed and Alternative 1 Sites is provided below.

U.S. 50 extends eastward in the Sacramento region through downtown Sacramento into El Dorado County. Immediately west of Hazel Avenue, U.S. 50 is a six-lane facility with additional median high-occupancy vehicle (HOV) lanes in each direction. Immediately east of Hazel Avenue, U.S. 50 is a four-lane facility with additional median HOV lanes in each direction. U.S. 50 is part of the Interregional Transportation Strategy Plan and is classified as a “High Emphasis Route,” one of Caltrans’s highest priority route designations for interregional routes. High Emphasis Routes are intended to have priority for programming and construction to minimum facility standards to better assure that a statewide trunk system is in place and able to handle higher volume interregional trip movements between urbanized areas. U.S. 50 is identified by the California Department of Transportation (Caltrans) in the *Highway 50 Corridor System Management Plan* (CSMP) (Caltrans 2009) as operating at LOS E with existing conditions, as discussed in “Traffic Conditions” below. Improvements are proposed to result in a six-lane facility with two HOV lanes and auxiliary lanes from Sunrise Boulevard to Hazel Avenue. The proposed ultimate facility is an eight-lane facility with two HOV lanes and auxiliary lanes. U.S. 50 provides freeway access to both the Proposed Action and Alternative 1 Sites.

Hazel Avenue is a four-lane north-south secondary road through Sacramento County and into Placer County, where it becomes Sierra College Boulevard. The Hazel Avenue Widening Project is currently under construction (since April 2009), with an expected July 2011 completion date for Phase 1. Construction of Phase 2 (Curragh Downs to Sunset Boulevard) is anticipated to begin in May 2014 with an anticipated completion date in December 2015. Construction of Phase 3 (Sunset Boulevard to Madison Avenue) is anticipated to begin in 2016. After completion, Hazel Avenue will be widened from a four-lane facility to a six-lane facility from Madison Avenue to U.S. 50. The Hazel Avenue Widening Project would modify the Hazel Avenue Bridge that crosses the American River near the Proposed Site and improve access to the American River Parkway, adding bike paths or stairways in all four quadrants of the bridge. The U.S. 50/Hazel Avenue interchange is an L-9 configuration with loop on-ramps in the northeast and southwest quadrants and diagonal ramps in all four quadrants.

Gold Country Boulevard is a two- or four-lane east-west roadway that intersects Hazel Avenue at a signalized intersection. Gold Country Boulevard extends west from Hazel Avenue through the Gold River area to Sunrise Boulevard. East of Hazel Avenue, the roadway provides access to Nimbus Dam, Lake Natoma, and the Sacramento State Aquatic Center on the American River. Access to the Proposed Site is from U.S. 50 via Hazel Avenue and Gold Country Boulevard.

Tributary Point Drive, Tributary Crossing, and Gold Pointe Lane are two-lane roads that provide access to the residential development south of the Proposed Site.

Sunrise Boulevard is a six-lane north-south roadway that intersects White Rock Road at a signalized intersection. North of U.S. 50, Sunrise Boulevard extends north into Citrus Heights, where it becomes Sunrise Avenue. South of White Rock Road, Sunrise Boulevard continues through Rancho Cordova into unincorporated areas of Sacramento County.

Zinfandel Drive is a six-lane north-south roadway that intersects White Rock Road at a signalized intersection. Zinfandel Drive extends northeast into Kirkwood Place, where it intersects Sunrise Boulevard.

White Rock Road is a four-lane east-west roadway through Rancho Cordova and into Springfield Meadows, where it becomes Silva Valley Parkway.

Kilgore Road is a four-lane north-south roadway that intersects White Rock Road at a signalized intersection. Access to the Alternative 1 Site is from Kilgore Road.

Crawford Drive is a two-lane east-west roadway that intersects Kilgore Road at an unsignalized one-way stop-controlled intersection. Crawford Drive provides access to the Alternative 1 Site and to Delta Dental from Kilgore Road.

International Drive is a two-lane east-west roadway that has recently been extended from east of the Folsom South Canal by means of a bridge crossing and now intersects Kilgore Road south of Crawford Drive. The International Drive extension opened for traffic in late January 2011.

Proposed Action

Traffic Conditions

To establish Existing Conditions (year 2010), year 2006 traffic volumes were obtained from the *Rio del Oro Specific Plan Project Draft EIR/EIS* (2006). Traffic signal timing data were collected in the field during the weekday a.m. and weekday p.m. peak hours on Wednesday, December 8, 2010. Existing Conditions intersection geometries are shown in **Exhibit C4-7**. Existing Conditions traffic volumes are shown in **Exhibit C4-8**. Existing Conditions intersection LOS is summarized in **Table C4-6**.

The following study intersection operates at an unacceptable LOS (LOS F) under Existing Conditions according to Caltrans standards:

► Caltrans intersection:

5. Hazel Avenue/U.S. 50 WB Off-Ramp/Tributary Point Drive (weekday a.m. peak hour)

Table C4-6					
Intersection Level of Service—Existing Conditions					
#	Intersection	Control Type	Peak Hour	Existing Conditions	
				LOS	Delay ¹ v/c Ratio ²
Non-Caltrans Intersections					
	Nimbus Road/Gold Country Blvd.	OWSC	a.m.	A	0.0 -
			p.m.	A	0.0 -
2	Hazel Ave. / Gold Country Blvd.	Signal	a.m.	A	- 0.48
			p.m.	E	- 0.96
3	Hazel Ave. / Folsom Blvd.	Signal	a.m.	A	- 0.25
			p.m.	E	- 0.96
Caltrans Intersections					
4	Hazel Ave. / U.S. 50 EB Ramps	Signal	a.m.	A	7.8 -
			p.m.	B	14.6 -
5	Hazel Ave. / U.S. 50 WB Off-Ramp/ Tributary Point Dr.	Signal	a.m.	F	> 80.0 1.23
			p.m.	E	79.2 -
Notes: LOS = level of service, v/c ratio = volume-to-capacity ratio, OWSC = one-way stop control					
Bold indicates intersection operates at LOS F					
‘-’ indicates not applicable to scenario					
¹ Seconds of delay presented for Caltrans intersections and non-Caltrans unsignalized intersections.					
² Volume-to-capacity ratio presented for non-Caltrans signalized intersections, and Caltrans intersections operating at LOS F					

Existing Conditions roadway segment volumes were obtained from the Freeway Performance Measurement System (PeMS). Roadway segment volumes were obtained for the weekday a.m. and weekday p.m. peak hours on Wednesday, April 13, 2011. The freeway mainline segment volumes were balanced using study ramp intersection traffic volumes. Existing Conditions LOS for the selected study roadway segments is summarized in **Table C4-7**.

In the Sacramento County General Plan, the Hazel Avenue—South of Gold Country Boulevard, is designated as an arterial, high-access control facility, with only LOS F considered unacceptable conditions, and the Hazel Avenue Widening Project is underway to construct improvements on this segment. The type of facility and number of lanes have corresponding daily volume thresholds for LOS, as presented in Table C4-3. Under Existing Conditions, the study roadway segment is a four-lane facility. All study roadway segments operate at acceptable LOS under Existing Conditions. In addition, according to the CSMP (Caltrans 2009), the entire segment of U.S. 50 from Sunrise Boulevard to Folsom Boulevard operates with a current concept LOS E and would operate with a concept LOS F in all future scenarios.

Existing Conditions ramp merge/diverge LOS for the selected study ramps is summarized in **Table C4-8**. At locations where long acceleration and deceleration lanes exist, ramp density calculations can report densities below zero. As a result, for all LOS A locations the density is presented simply as “less than 10.0 passenger cars per mile per lane” (<10.0 pc/mi/ln), as values within this range are below the meaningful range of the analysis.

Table C4-7			
Roadway Segment Level of Service Near Proposed Site—Existing Conditions			
#	Roadway Segment	Peak Hour	Existing Conditions
			LOS v/c Ratio
Non-Caltrans Roadway Segment ¹			
1	Hazel Avenue South of Gold Country Blvd.	--	<i>E</i> 0.89
Caltrans Roadway Segment ²			
2	EB U.S. 50 West of Hazel Ave. Off-Ramp	a.m.	C 0.58
		p.m.	D 0.76
3	EB U.S. 50 East of Hazel Ave. On-Ramp	a.m.	C 0.56
		p.m.	C 0.67
4	WB U.S. 50 West of Hazel Ave. On-Ramp	a.m.	D 0.80
		p.m.	D 0.71
5	WB U.S. 50 East of Hazel Ave. Off-Ramp	a.m.	C 0.57
		p.m.	C 0.51
Notes: LOS = level of service, v/c ratio = volume-to-capacity ratio, EB = eastbound, WB = westbound			
Bold indicates intersection operates at LOS F			
Italic indicates that roadway segment improvements are in process.			
¹ Non-Caltrans roadway segments are evaluated using Sacramento County Guidelines methodology (Sacramento County 2004) for average daily traffic.			
² Caltrans roadway segments are evaluated using 2000 Highway Capacity Manual methodology (TRB 2000) for peak hour.			
Source: Freeway Performance Measurement System 2010			

All of the study ramp merge/diverge areas operate at acceptable LOS under Existing Conditions.

Existing Conditions 95th percentile queue lengths for the selected intersections are summarized in **Table C4-9a**.

95th percentile queue length do not exceed available storage capacity at any of the study intersections under Existing Conditions.

Transit Conditions

Sacramento Regional Transit (SacRT) operates bus and light rail transit (LRT) services in Sacramento County. An online Trip Planning application (<http://www.infoweb.sacrt.com>) is available to assist transit users. Park-and-ride lots are located at the Hazel Avenue/Folsom Boulevard (432 spaces and 33 spaces) and Sunrise Boulevard/Folsom Boulevard SacRT Gold Line Station (487 spaces). According to Caltrans transit performance measures and SacRT ridership data, transit near the Proposed Site operates

Table C4-8 Ramp Merge/Diverge Level of Service—Existing Conditions					
#	Ramp	Type	Peak Hour	Existing Conditions	
				LOS	Density (pc/mi/ln)
1	EB U.S. 50 Off-Ramp to Hazel Avenue	Diverge	a.m.	A	< 10.0
			p.m.	A	< 10.0
2	EB U.S. 50 On-Ramp from SB Hazel Avenue	Merge	a.m.	B	13.7
			p.m.	B	15.7
3	WB U.S. 50 Off-Ramp to Hazel Avenue	Diverge	a.m.	A	< 10.0
			p.m.	A	< 10.0
4	WB U.S. 50 On-Ramp from SB Hazel Avenue	Merge	a.m.	B	18.6
			p.m.	B	17.5
Notes: LOS = level of service, pc/mi/ln = passenger cars per mile per lane, LOS A reported as < 10.0 pc/mi/ln, EB = eastbound, WB = westbound					
Bold indicates intersection operates at LOS E or LOS F					
LOS A reported as < 10.0 pc/mi/ln					
Source: Freeway Performance Measurement System 2010.					

Table C4-9a 95th Percentile Queues—Existing Conditions					
#	Intersection	Lane Group	Storage Capacity (ft.)	Peak Hour	Queue Length (ft.)
4	Hazel Avenue/ U.S. 50 EB Ramps	EBLR	1,350	a.m.	275
				p.m.	625
		EBR	750	a.m.	75
				p.m.	50
5	Hazel Avenue/ U.S. 50 WB Off-Ramp/ Tributary Point Drive	WBL	325	a.m.	200
				p.m.	175
		WBTR	2,200	a.m.	575
				p.m.	825
		WBR	2,200	a.m.	325
				p.m.	775
Notes: Storage capacities and queue lengths rounded to the nearest 25 feet. EBLR = ,eastbound left/right; EBR = eastbound right; WBL = westbound left; WBR = westbound right; WBTR = westbound through/right Bold indicates that queue length exceeds storage capacity					

under capacity (i.e., space is available for additional riders). Existing transit services near the Proposed Site are described below and shown in **Exhibit C4-9**.

Route 109 (Hazel Express) provides service along U.S. 50 during weekday peak commuter periods only. Route 109 is an express bus route between Orangevale and downtown Sacramento with a daily ridership of 46% and peak-hour ridership of 79% (Caltrans 2009). During the morning commute period, the route operates between 6:00 a.m. and 8:00 a.m. on approximately 30-minute headways in the westbound direction only. During the evening commute period, the route operates between 4:35 p.m. and 6:20

p.m. on approximately 45-minute headways in the eastbound direction only. The nearest stop is at the Hazel Avenue/Gold Country Boulevard intersection, approximately 1 mile from the Proposed Site.

Gold Line LRT service is provided from downtown Sacramento along the U.S. 50 corridor to Folsom, including a stop at the Sunrise Gold Line Station. The Gold Line runs between Folsom and downtown Sacramento and connects to Route 74 at the Sunrise Gold Line Station. The Gold Line operates between 5:00 a.m. and 10:30 p.m. in the eastbound direction and between 4:00 a.m. and 9:00 p.m. in the westbound direction. The headway on weekdays is approximately 15 minutes throughout the day, except in the early morning and late evening when the headway increases to approximately 30 minutes. The headway on weekends is approximately 30 minutes throughout the day. The closest station is located approximately 0.5 mile from the Proposed Site, at the Folsom Boulevard/Hazel Avenue intersection.

The Proposed Site can be accessed from downtown Sacramento (DWR headquarters) during weekdays through Route 109, Gold Line LRT, and Route 38. The total travel time via transit from downtown Sacramento to the Proposed Site is from 40 minutes to 1 hour 20 minutes.

Pedestrian Conditions

Sidewalks are currently provided near the residential area on both sides of Gold Country Boulevard near the Proposed Site. A discontinuous sidewalk is provided along Hazel Avenue. Crosswalks are provided at most signalized intersections near the Proposed Site. A push-button activated signalized crosswalk 10 feet in width is provided on all legs of the Hazel Avenue/Gold Country Boulevard and Gold Pointe Lane/Gold Country Boulevard intersections. No sidewalks are provided on the project access road. Existing transit services near the Proposed Site are described below and shown in Appendix C4a, “Traffic Impact Technical Report,” Exhibit C4-9.

As indicated in the Bicycle, Pedestrian, and Trails Master Plan (SACOG 2009), pedestrian improvements on Hazel Avenue are planned as part of the Hazel Avenue Widening Project. Planned improvements include separated sidewalks on both sides of the street, planter strips, shade trees, improved intersection crossings, and midblock crossings from the U.S. 50/Hazel Avenue intersection to the Madison Avenue/Hazel Avenue intersection.

Bicycle Conditions

Bikeways are typically classified as Class I, Class II, and Class III. The existing bicycle facilities near the Proposed Site are illustrated in **Exhibit C4-10**.

- ▶ **Class I** is also known as a bicycle path. This is a dedicated path for bicyclists and pedestrians that does not permit motorized travel. Bicycle paths create a relaxed environment for non-motorized travel and reduce the risk of potential conflict between vehicles and bicyclists. Often these facilities are located in parks or greenway areas, areas connecting two dead-end streets, or atop railroad right-of-way that is no longer in use. The American River Bike Trail, a Class I off-street bicycle

path, connects downtown Sacramento to Folsom along the American River. The American River Bike Trail borders the Nimbus Fish Hatchery, east of the Proposed Site, and extends along the American River.

- ▶ **Class II** is also known as a bicycle lane, a portion of the roadway network that has been striped and signed for bicycle use. Implementation of Class II facilities requires sufficient right-of-way between the vehicle stream and the curb or curbside parking. Bicycle lanes are typically used along collector or major streets with medium to high traffic volumes, providing additional travel space for bicyclists along busy roadway segments. Class II bicycle lanes exist on Gold Country Boulevard and on Folsom Boulevard near the Proposed Site.
- ▶ **Class III** is also known as a bicycle route, a bikeway that primarily serves to connect other facilities and destinations in the bikeway network but provides a lower level of service than Class I or Class II bikeway facilities. These routes include signage but do not have roadway markings or striping to indicate reserved space for the bicyclist. Bicycle routes are easier to implement because they do not require right-of-way to be reallocated from vehicular traffic. No Class III bicycle routes are present near the Proposed Site.

Alternative 1

Traffic Conditions

Existing Conditions intersection geometries are shown **Exhibit C4-11**. Existing Conditions traffic volumes are shown in **Exhibit C4-12**. Existing Conditions intersection LOS is summarized in **Table C4-9b**.

The following study intersections operate at LOS E or F under Existing Conditions:

- ▶ Non-Caltrans intersection:
 - 3. Sunrise Boulevard/White Rock Road (weekday a.m. and p.m. peak hours)
- ▶ Caltrans intersection:
 - 8. Zinfandel Drive/U.S. 50 EB Ramps/Gold Center Drive (weekday a.m. and p.m. peak hours)

Roadway Segments Existing Conditions LOS for the selected study roadway segments is summarized in **Table C4-10**.

Table C4-9b						
Intersection Level of Service—Existing Conditions						
#	Intersection	Control Type	Peak Hour	Existing Conditions		
				LOS	Delay ¹	v/c Ratio ²
Non-Caltrans Intersections						
1	Kilgore Rd. / Crawford Dr.	TWSC	a.m. p.m.	C C	16.5 16.0	--
2	Kilgore Rd. / White Rock Rd	Signal	a.m. p.m.	A D	-- --	0.55 0.83
3	Sunrise Blvd. / White Rock Rd	Signal	a.m. p.m.	E F	-- --	0.94 1.02
4	Zinfandel Dr./ White Rock Road	Signal	a.m. p.m.	B C	-- --	0.65 0.79
Caltrans Intersections						
5	Sunrise Blvd. / U.S. 50 EB Ramps	Signal	a.m. p.m.	C D	28.7 39.3	-- --
6	Sunrise Blvd. / U.S. 50 WB Ramps	Signal	a.m. p.m.	C D	34.3 46.1	-- --
7	Zinfandel Dr./ U.S. 50 WB Off-Ramp	Signal	a.m. p.m.	B B	12.7 12.0	-- --
8	Zinfandel Dr./ U.S. 50 EB Ramps/Gold Center Drive	Signal	a.m. p.m.	F F	>80.0 >80.0	1.08 1.17
Notes: LOS = level of service, v/c ratio = volume-to-capacity ratio, TWSC = two-way stop control, EB = eastbound, WB = west bound						
Bold indicates intersection operates at LOS E or LOS F.						
'-' indicates not applicable to scenario						
¹ Seconds of delay presented for Caltrans intersections and non-Caltrans unsignalized intersections.						
² v/c ratio is presented for non-Caltrans signalized intersections, and Caltrans intersections operates at unacceptable LOS.						

Table C4-10				
Roadway Segment Level of Service Near Alternative 1 Site—Existing Conditions				
#	Roadway Segment	Peak Hour	Existing Conditions	
			LOS	v/c Ratio
Non-Caltrans Roadway Segment ¹				
1	Sunrise Boulevard North of White Rock Road	--	D	1.03
Caltrans Roadway Segment ²				
2	EB U.S. 50 West of Zinfandel Dr. Off-Ramp	a.m.	E	0.90
		p.m.	E	0.85
3	EB U.S. 50 East of Sunrise Blvd. On-Ramp	a.m.	C	0.58
		p.m.	D	0.76
4	WB U.S. 50 East of Sunrise Blvd. Off-Ramp	a.m.	D	0.80
		p.m.	D	0.71
5	WB U.S. 50 West of Zinfandel Dr. On-Ramp	a.m.	E	0.98
		p.m.	F	1.00
Notes: LOS = level of service, v/c ratio = volume-to-capacity ratio, EB = eastbound, WB = westbound				
Bold indicates intersection operates at LOS E or LOS F.				
¹ Non-Caltrans roadway segments are evaluated using Sacramento County Guidelines methodology (Sacramento County 2004) for average daily traffic.				
² Caltrans roadway segments evaluated using 2000 Highway Capacity Manual methodology (TRB 2000) for peak hour.				
Source: Freeway Performance Measurement System 2010				

Joint Operations Center Relocation Project

The following study roadway segments operate at unacceptable LOS (LOS E or LOS F) under Existing Conditions:

- ▶ Caltrans roadway segments:
 - 2. EB U.S. 50—West of Zinfandel Drive Off-Ramp (weekday a.m. and p.m. peak hours)
 - 5. WB U.S. 50—West of Zinfandel Boulevard On-Ramp (weekday a.m. p.m. peak hours)

Ramps Existing Conditions ramp merge/diverge LOS for the selected study ramps is summarized in **Table C4-11**. At locations where long acceleration and deceleration lanes exist, ramp density calculations can report densities below zero. As a result, for all LOS A locations, the density is presented simply as “less than 10.0 passenger cars per mile per lane” (<10.0 pc/mi/ln), as values within this range are below the meaningful range of the analysis.

Table C4-11					
Ramp Merge/Diverge Level of Service—Existing Conditions					
#	Ramp	Type	Peak Hour	Existing Conditions	
				LOS	Density (pc/mi/ln)
1	WB U.S. 50 Off-Ramp to Sunrise Blvd.	Merge	a.m. p.m.	A A	< 10.0 < 10.0
2	EB U.S. 50 On-Ramp from NB Sunrise Blvd.	Merge	a.m. p.m.	B B	11.3 17.6
3	EB U.S. 50 Off-Ramp to Zinfandel Dr.	Diverge	a.m. p.m.	A A	< 10.0 < 10.0
4	WB U.S. 50 On-Ramp from NB Zinfandel Dr.	Merge	a.m. p.m.	A B	< 10.0 19.0
Notes: LOS = level of service, pc/mi/ln = passenger cars per mile per lane, LOS A reported as < 10.0 pc/mi/ln, EB = eastbound, WB = westbound					
Bold indicates intersection operates at LOS E or LOS F					
Source: Freeway Performance Measurement System 2010					

All of the study ramp merge/diverge areas operate at acceptable LOS under Existing Conditions.

95th Percentile Queues Existing Conditions 95th percentile queue lengths for the selected intersections are summarized in **Table C4-12**.

95th Percentile queues exceed available storage capacity at the following intersection under Existing Conditions:

- ▶ Caltrans intersection:
 - 8. Zinfandel Drive/U.S. 50 EB Ramps (EBR—weekday a.m. peak hour).

#	Intersection	Lane Group	Storage Capacity (ft.)	Peak Hour	Queue Length (ft.)
6	Sunrise Boulevard/ U.S. 50 WB Ramps	WBL	1,875	a.m. p.m.	650 250
		WBR	1,875	a.m. p.m.	325 400
8	Zinfandel Drive/ U.S. 50 EB Ramps	EBL	1,125	a.m. p.m.	350 400
		EBLTR	1,325	a.m. p.m.	1,250 350
		EBR	425	a.m. p.m.	1,175 300

Notes: Storage capacities and queue lengths rounded to the nearest 25 feet.
EBL = eastbound left; EBLR = ,eastbound left/through/right; EBR = eastbound right; WBL = westbound left; WBT = westbound through.

Bold indicates that queue length exceeds storage capacity.

Source: Data compiled by AECOM in 2011

Transit Conditions

According to Caltrans transit performance measures and SacRT ridership data, transit near the Alternative 1 Site operates at less than full capacity. Existing transit services near the Alternative 1 Site are described below and shown in **Exhibit C4-13**.

Route 74 bus service runs between Mather Field Road and Citrus Road and connects to the Gold Line LRT at the LRT station on Sunrise Boulevard. SR 74 operates between 6:00 a.m. and 9:00 p.m. on weekdays in both directions, both with a headway of approximately 60 minutes. The nearest stop to the Alternative 1 Site is Prospect Park Drive/White Rock Road, which is slightly more than a 0.5-mile walk to the site.

Gold Line LRT service provided from downtown Sacramento along the U.S. 50 corridor to the Sunrise Gold Line Station is discussed under “Transit Conditions” on Page 1-14. The closest station is located approximately 1 mile from the Alternative 1 Site, at the Sunrise Boulevard/Folsom Boulevard intersection.

The Alternative 1 Site can be accessed from downtown Sacramento (DWR headquarters) during the weekdays through SR 109, Gold Line LRT, and SR 38. The total travel time via transit from downtown Sacramento to the Alternative 1 Site is between 50 minutes to 1 hour and 5 minutes.

Pedestrian Conditions

Sidewalks are currently provided on both sides of Kilgore Road and White Rock Road and the south side of Crawford Drive near the Alternative 1 Site. All sidewalks are in generally adequate condition.

A signalized crosswalk using push button actuation is provided on the north and west leg of the Kilgore Road/International Drive intersection with a width of 12 feet. A crosswalk is provided on the north, south, and west leg of the Kilgore Road/White Rock Road

intersection with a width of 10 feet. Crosswalks are provided at most signalized intersections near the Alternative 1 Site.

Bicycle Conditions

Bikeways are typically classified as Class I, II, and Class III as described previously. The existing bicycle facilities near the Alternative 1 Site are illustrated in **Exhibit C4-14**.

A Class I off-street bicycle path known as the Folsom South Canal Recreation Trail is provided on both sides of the Folsom South Canal. This trail joins the American River Bike Trail and Jedediah Smith Memorial Trail and connects downtown Sacramento to Folsom along the American River. The American River Bike Trail borders the American River near the Proposed Site and, now known as the Folsom South Canal Recreation Trail, travels along both sides of the Folsom South Canal, east of the Alternative 1 Site and extending south.

Class II (on-street) bike lanes are provided on White Rock Road and International Drive near the Alternative 1 Site, as well as on Sun Center Drive and Folsom Boulevard.

No Class III bikeways exist near the Alternative 1 Site.

Special Treatment Facilities are corridors with unique circumstances requiring treatment options and actions that remove barriers to bicycle circulation and improve the quality of the facility. These corridors include the use of on-street and off-street facilities and special or additional signalization specifically for bicycles. A Special Treatment Facility is provided near the Alternative 1 Site along Sunrise Boulevard and extending north of U.S. 50 and south into Rancho Cordova.

Regulatory Setting

Federal

National Environmental Policy Act and Transportation Decision Making

The principles of the National Environmental Policy Act (NEPA) decision making include:

- ▶ assessment of social, economic, and environmental impacts of the project;
- ▶ analysis of alternatives to the project;
- ▶ consideration of appropriate impact mitigation;
- ▶ interagency coordination;
- ▶ public involvement; and
- ▶ documentation and disclosure.

Federal Highway Administration Travel and Land Use Forecasting

Federal Highway Administration (FHWA) interim guidance on the application of travel and land use forecasting seeks to improve the quality of project-level forecasting in the context of the NEPA process.

The guidance shares key considerations, collective lessons learned, and best practices regarding how to apply forecasting in NEPA.

FHWA Traffic Analysis Toolbox Volume VI: Definition, Interpretation, and Calculation of Traffic Analysis Tools Measures of Effectiveness

FHWA Traffic Analysis Toolbox Volume VI presents how to correctly interpret findings and present recommendations that are easy to comprehend by decision makers and the public. Computing one or more traffic performance measures of effectiveness is to quantify the achievement of a project's traffic operations. These measures include travel time, speed, delay, queue, stops, density, and travel-time variance. The Transportation Research Board's (TRB's) *2000 Highway Capacity Manual* (HCM) LOS and volume-to-capacity ratio are commonly used indicators of performance used to communicate the quality of the facility performance to decision makers (TRB 2000).

State

Caltrans' Guide for the Preparation of Traffic Impact Studies

Caltrans policies are applicable to the project and alternatives under consideration and are summarized in Caltrans' *Guide for the Preparation of Traffic Impact Studies* (Caltrans 2002). These guidelines identify circumstances under which Caltrans believes that a traffic impact study would be required, information that Caltrans believes should be included in the study, analysis scenarios, and guidance on acceptable analysis methodologies.

Caltrans Transportation Corridor Concept Reports

Caltrans TCCRs (Caltrans 2010) are long-range (20-year) planning documents for each State highway that identify existing route conditions and future needs. Each TCCR includes a route summary, segment summaries, existing and forecasted travel data, route maps, and a list of planned, programmed, and needed projects for the highway over the next 20 years. The TCCR establishes the minimum standard at which the Caltrans District 3 expects the highway to function.

If travel forecasting predicts the LOS would drop below the minimum standard, Caltrans will design improvements to maintain acceptable highway conditions. As mentioned above, Caltrans' CSMP (Caltrans 2009) serves as the TCCR for U.S. 50, from its origin at I-80 in West Sacramento to the Cedar Grove Exit. CSMP guidelines are used for identifying roadway segment impacts associated with project-generated traffic.

Regional and Local

The JOC Relocation Project is jointly proposed by Reclamation, a Federal agency, and DWR, a State agency. The Proposed Site is located on Federal property owned by Reclamation. A Federal agency operating on Federal land is not required to comply with regional or local plans, policies, regulations, or ordinances. However, a Federal agency normally will conform with local regulations and state laws that do not interfere with the agency's ability to "carry out the purposes of the government," such as building, health, and safety codes (*Fort Leavenworth R.R. v. Lowe*, 114 U.S. 525 [1885]).

Activities at the Proposed Site would not be required to comply with regional or local regulations, but Reclamation has committed to a “good neighbor” policy and would conform with those regulations to the extent that such compliance would not conflict with or hinder the mission and purposes of the agency or the departments located at the site. Activities at the Alternative 1 Site would take place on private property and would require full compliance with all regional and local regulations.

1993 Sacramento County General Plan

The *1993 Sacramento County General Plan* is a long-term planning document used to plan for important community issues such as new growth, housing needs, and environmental protection, as well as project future growth demand services for sewer, water, roadways, parks, and emergency services. The *1993 Sacramento County General Plan* Circulation Element focuses on encouraging alternative modes of transportation through regional coordination, improved funding, better land use and design, and fair pricing.

Sacramento County General Plan Update

Sacramento County is in the process of preparing a draft *Sacramento County General Plan Update* (Sacramento County 2010) and EIR to plan for growth in the period 2010–2030. Until that EIR has been certified and the update has been adopted by the Sacramento County Board of Supervisors, the 1993 general plan remains in effect. Following receipt of a third-party review in December 2010, hearings on the general plan began in spring 2011 and are ongoing.

Metropolitan Transportation Plan for 2035

The *Metropolitan Transportation Plan 2035* (MTP) (SACOG 2008) is a long-range regional planning document prepared by the Sacramento Area Council of Governments (SACOG) that identifies and programs roadway improvements through the Sacramento region through 2035. The MTP 2035 has a history of being able to fund and deliver identified Tier I projects through State and local funding.

County of Sacramento Traffic Impact Analysis Guidelines

The *County of Sacramento Traffic Impact Analysis Guidelines* (County Guidelines) (Sacramento County 2004), described in detail later in this section, incorporate and are consistent with Caltrans’ requirements. Therefore, the County Guidelines are used for identifying impacts associated with project-generated traffic, which were adopted by the City upon incorporation.

City of Rancho Cordova General Plan

Because the City formally adopted the County’s traffic impact study guidelines upon incorporation, plans and policies from the County Guidelines (Sacramento County 2004) were used in this analysis, except where the Circulation Element of the *Rancho Cordova General Plan* (City General Plan) (City of Rancho Cordova 2006) superseded County thresholds and requirements.

The City General Plan incorporates strategies identified in the Mobility Study, including certain components of the study, such as BRT. The Circulation Element of the City

General Plan (City of Rancho Cordova 2006) also identifies bicycle facilities near the study area.

2010 Sacramento City/County Bikeway Master Plan

The *2010 Sacramento City/County Bikeway Master Plan* (Bikeway Master Plan) (Sacramento County 1992) identifies existing and planned bicycle routes in the city and county of Sacramento, including the vicinity of the proposed project sites. The Folsom South Canal Recreation Trail, an existing off-street path, is located along the Folsom South Canal west of Sunrise Boulevard, connecting Hazel Avenue north of U.S. 50 with Grant Line Road. On-street bike lanes are planned on Sunrise Boulevard, Grant Line Road, Jackson Highway (State Route [SR] 16) (just past Grant Line Road), Kiefer Boulevard west of Sunrise Boulevard, Douglas Road west of Sunrise Boulevard, White Rock Road, and Gold Country Boulevard. The Bikeway Master Plan also contains design, safety, and traffic control standards for use in constructing and/or upgrading facilities. The Circulation Element of the City General Plan also identifies bicycle facilities near the study area.

Sacramento Regional Bicycle, Pedestrian, and Trails Master Plan

The *Sacramento Regional Bicycle, Pedestrian, and Trails Master Plan* (Bicycle, Pedestrian, and Trails Master Plan) (SACOG 2009) identifies existing and planned pedestrian and bicycle routes through Sacramento County. The Bicycle, Pedestrian, and Trail Master Plan is intended to guide the long-term decisions for the Bicycle and Pedestrian Funding Program, adopted by the Sacramento Area Council of Governments (SACOG) Board of Directors in September 2003.

Transit Master Plan

SacRT's 20-year master plan for transit facilities includes planned feeder bus service for Sunrise Boulevard, Mather Boulevard, and Zinfandel Drive. These bus lines are intended to support LRT service along the Folsom Boulevard/U.S. 50 corridor, which currently extends as far east as Sunrise Boulevard. LRT service has recently been extended to the city of Folsom and includes a stop at Hazel Avenue.

City of Rancho Cordova Capital Improvement Plan

The City has been operating under a capital improvement plan (CIP) spanning the years 2005 to 2010 (City of Rancho Cordova 2005), which includes several roadway facilities in the project study area, including improvements to Douglas Road, Jaeger Road, Kiefer Boulevard, International Drive, Sunrise Boulevard, and SR 16. Funding sources associated with the current CIP include development fees, financing districts, Measure A sales taxes, and State and Federal funding sources. The CIP has been expanded and now includes updated development fees and additional roadway improvements identified in the Circulation Element of the City General Plan (City of Rancho Cordova 2006). The City's CIP consists of identification of planned roadway improvements within Rancho Cordova, cost estimates of identified roadway improvements, and a nexus study to identify fair-share contributions of new development to identified roadway improvements.

Mobility Strategies for County Corridors

The *Mobility Strategies for County Corridors* (Mobility Study) (Sacramento County and Fehr & Peers 2004) was an exercise to develop candidate strategies for 11 of Sacramento County's most congested corridors. The purposes of the study were to enhance mobility, as defined by reduced travel times and improved travel-time reliability; increase people-moving capacity; and improve safety for all users of the transportation system. Within Rancho Cordova, the Mobility Study identified optional strategies to improve mobility on Sunrise Boulevard, including pedestrian and bicycle enhancements, Bus Rapid Transit (BRT), transitway development compatibility, lane additions, and intelligent transportation systems. The Mobility Study is a planning-level opportunities study. The City General Plan incorporates strategies identified in the Mobility Study, including certain components of the study, such as BRT.

2 Environmental Consequences and Mitigation Measures

Methods and Assumptions

Project Travel Demand Methodology

Travel demand refers to the new vehicle, transit, pedestrian, and other trips that would be generated by the project. Project travel demand, with the exception of project trip distribution/assignment, would be the same for both sites being evaluated. This section provides an estimate of the travel demand that would be generated by the project.

Trip Generation

Travel demand estimates were primarily based on information contained in the Institute of Transportation Engineers' (ITE's) *Trip Generation* (8th Edition) (ITE 2008), the industry standard for land use-based trip generation. The rates presented were derived from a national sample of sites of similar land uses. Project vehicle-trip generation was estimated using the ITE code for general office use (731).

Mode Split

Vehicle-trip generation for the proposed land uses was taken from ITE's *Trip Generation* (8th Edition) (ITE 2008) and for the sake of a more conservative analysis, a 100% automobile mode split was assumed. (Mode split describes the distribution of transportation modes such as bicycle, walk, automobile, and transit.)

Trip Distribution/Assignment

Trip distribution was determined from information provided in SACOG's most recently modified Sacramento Metropolitan Travel Demand Model (SACMET) and the *Rio del Oro Specific Plan Project Draft EIR/EIS* (2006).

Project Travel Demand

Trip Generation

ITE's *Trip Generation* (8th Edition) (ITE 2008) provides vehicle-trip generation rates for typical land uses. As currently defined, the project consists entirely of new uses, composed of approximately 200,000 sq. ft. of office space with approximately 600 employees. Project vehicle-trip generation is presented in **Table C4-14**.

Table C4-14 Vehicle-Trip Generation								
Land Use	Square Feet	Daily	a.m. Peak Hour			p.m. Peak Hour		
			In	Out	Total	In	Out	Total
General Office 1	200,000	2,275	287	39	326	51	251	302
Notes:								
1 ITE Land Use Code 710 — General Office Building, X = 1,000 square feet								
ITE Land Use Code 710 — Daily Equation: $\ln(T) = (0.77) \ln(X) + 3.65$								
ITE Land Use Code 710 — a.m. Peak Hour Equation: $\ln(T) = (0.80) \ln(X) + 1.55$								
ITE Land Use Code 710 — p.m. Peak Hour Equation: $T = 1.12(X) + 78.81$								
Source: ITE 2008								

Based on ITE rates and proposed square footage, the project would generate approximately 326 vehicle trips during the weekday a.m. peak hour and 302 vehicle trips during the weekday p.m. peak hour.

Mode Split

The State encourages use of alternative transportation through an existing incentive program for State workers to use public transit or alternative-commute modes, which would be implemented at the new JOC. The program includes transit-pass subsidies for employees; preferential parking for carpools, vanpools, and ride-share programs; bicycle storage; showers; and locker facilities. In an effort to develop a more conservative analysis, no mode split was assumed for analysis of project-generated vehicle traffic impacts (i.e., 100% automobile mode split). Mode split describes the distribution of transportation modes such as bicycle, walk, automobile, and transit.

Trip Distribution/Assignment

The trips generated by the project were distributed throughout the network. Trip distribution was based on existing travel patterns. Weekday a.m. peak hour inbound and weekday p.m. peak hour outbound project trip distribution for the Proposed Site is illustrated in **Exhibit C4-15** and **Exhibit C4-16**, respectively. Weekday a.m. peak hour inbound and weekday p.m. peak hour outbound project trip distribution for the Alternative 1 Site is illustrated in **Exhibit C4-17** and **Exhibit C4-18**, respectively.

Signal Warrants

To determine whether signals should be installed at any one location, signal warrants are typically reviewed. Warrants for traffic signal installation at unsignalized intersections were evaluated based on the peak-hour volume warrant contained in the *Traffic Manual* (Caltrans 1996). The peak-hour warrant is a subset of the standard traffic-signal warrants recommended in the *Manual on Uniform Traffic Control Devices* (MUTCD) (FHWA 2009) and associated Caltrans guidelines. The peak-hour signal warrant analysis should not serve as the only basis for deciding whether and when to install a signal. To reach such a decision, the full set of warrants should be investigated based on field-measured, rather than forecasted, traffic data, and on a thorough study of traffic and roadway conditions conducted by an experienced engineer. Furthermore, the decision to install a signal should not be based solely on the warrants, because the installation of signals can

lead to certain types of collisions (i.e., rear-end collisions). Although signals provide increased capacity at intersections and may be needed (from a capacity perspective) to serve predicted volume demands at the intersection, the potential safety implications associated with signal installation should be reviewed by the responsible State or local agency (depending on whether the intersection is controlled by the State, the County, or the City). The responsible agency should undertake regular monitoring of actual traffic conditions and accident data, and a timely reevaluation of the full set of warrants to prioritize and program intersections that may be identified for signalization in this technical report.

Baseline conditions analysis and all future scenarios assume completion of Phase 1 of the Hazel Avenue Widening Project.

Criteria for Determining Significance of Effects

Thresholds of Significance

Because the project and alternatives under consideration would cause traffic impacts on roadways that are under State, County, and City jurisdictions, this analysis was conducted using a combination of policies and guidelines. Sacramento County identifies LOS E as the minimum acceptable standard for intersection operations near the Proposed Site (Proposed Action). The City identifies LOS D as its minimum standard for intersection operations near the Alternative 1 Site (Alternative 1).

For State-controlled facilities, thresholds presented in Caltrans TCCRs were applied. Typical LOS standard in District 3 are LOS D in rural areas and LOS E in urban areas. A local agency may set a higher LOS threshold consistent with community wishes and other local concerns. However, because the Caltrans concept LOS defines the minimum acceptable LOS established by Caltrans as the owner and operator of the facility, the threshold standard LOS established by the local agency should not be lower than the Caltrans concept LOS. The County Guidelines (Sacramento County 2004) and the Caltrans U.S. 50 CSMP identify LOS F as the minimum acceptable operating LOS. The Circulation Element of the City General Plan identifies LOS D as the minimum acceptable operating LOS for roadway segments within Rancho Cordova.

The significance criteria for this analysis are based on the environmental checklist in Appendix G of the State CEQA Guidelines, as amended. These determinations are provided pursuant to CEQA.

The Proposed Action and Alternative 1 were determined to result in a significant impact related to transportation and circulation if they would:

- ▶ conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities;

Joint Operations Center Relocation Project

- ▶ cause significant traffic delays during peak commute hours;
- ▶ result in an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system;
- ▶ result in a change in air traffic patterns including either an increase in traffic levels or a change in location that results in substantial safety risks;
- ▶ result in substantially increased hazards due to a design feature, such as a sharp curve, or incompatible uses, such as farm equipment; or
- ▶ result in inadequate emergency access.

CEQA no longer requires an analysis of the adequacy of parking availability and, therefore, no further analysis of parking availability has been conducted. The Federal and State governments encourage their workers to use alternative transportation through existing incentive programs involving public transit or alternative-commute modes, and these programs would be implemented at the new JOC facility. These programs include transit-pass subsidies for employees, preferential parking for carpools and vanpools, ride-share programs, bicycle storage, showers, and locker facilities.

For the purposes of this analysis, the impact thresholds of Sacramento County and City of Rancho Cordova are used. An impact would be considered significant:

- ▶ for study intersections and roadway segments when the project results in an intersection or roadway segment operating at acceptable LOS (LOS A, B, C, D, or E in the Sacramento County, or LOS A, B, C, or D in Rancho Cordova) to deteriorate to unacceptable LOS (LOS F in the Sacramento County, and LOS E or LOS F in Rancho Cordova);
- ▶ for study signalized intersections and roadway segments when the project increases the v/c ratio by 0.05 or more at a signalized intersection or a roadway in the Sacramento County or Rancho Cordova that is already operating at an unacceptable LOS (LOS F in the Sacramento County, LOS E or LOS F in Rancho Cordova, and LOS F for mainline segments of U.S. 50);
- ▶ for study unsignalized intersections when the project increases the average delay by more than 5 seconds at an unsignalized intersection that is already operating at an unacceptable LOS (LOS F in the Sacramento County, and LOS E or LOS F in Rancho Cordova);
- ▶ for study freeway segments when the project adds 10 trips to a freeway segment that is currently operating at an unacceptable LOS (LOS F in the Sacramento County, and LOS E or LOS F in Rancho Cordova);
- ▶ for study roadway segments if the project would result in a significant increase in reliance on single-occupant vehicles to facilitate mobility within Rancho Cordova; or,

- ▶ for study intersections and roadway segments when the project disturbs or interferes with existing or planned bicycle, pedestrian, and transit facilities.

Environmental Consequences and Mitigation Measures

The following section summarizes the potential impacts of the No-Action Alternative, Proposed Action, and Alternative 1 on transportation facilities. Summary impacts are followed by required mitigation measures. Detailed traffic modeling information is included in the technical appendices to this report as follows:

- ▶ Attachment A - Traffic Volumes,
- ▶ Attachment B - Intersection Levels of Service Calculation Worksheets,
- ▶ Attachment C - Roadway Segment Analysis Worksheets,
- ▶ Attachment D - Ramp Merge/Diverge Analysis Worksheets,
- ▶ Attachment E - 95th Percentile Queue Analysis Worksheets, and
- ▶ Attachment F - Signal Warrant Worksheets.

Reclamation and DWR shall participate in the necessary improvements identified in all of the following mitigation measures. Reclamation and DWR shall be responsible for the project's fair-share participation and the associated timing of the improvements.

Impact C4-1: Increases to Peak-Hour and Daily Traffic Volumes, Resulting in Unacceptable Levels of Service under Existing plus Project Conditions

No-Action

Under the No-Action Alternative, no development would occur and no project-generated traffic would affect the regional transportation system; thus, **no direct** or **indirect** impacts would occur.

Proposed Action

Existing plus Project Conditions volumes are shown in **Exhibit C4-19**. Existing plus Project Conditions intersection LOS is summarized in **Table C4-15**. Detailed LOS calculations are included in Attachment B.

The following study intersection would operate at unacceptable LOS (LOS F) under Existing plus Project Conditions:

- ▶ Caltrans intersection:
 5. Hazel Avenue/U.S. 50 WB Off-Ramp/Tributary Point Drive (weekday a.m. peak hour)

Table C4-15								
Intersection Level of Service—Existing plus Project Conditions								
#	Intersection	Peak Hour	Existing Conditions			Existing plus Project Conditions		
			LOS	Delay ¹	v/c Ratio ²	LOS	Delay ¹	v/c Ratio ²
Non-Caltrans Intersections								
1	Nimbus Road / Gold Country Blvd.	a.m.	A	0.0	-	C	17.1	-
		p.m.	A	0.0	-	C	19.1	-
2	Hazel Ave. / Gold Country Blvd.	a.m.	A	-	0.48	A	-	0.50
		p.m.	E	-	0.96	E	-	0.98
3	Hazel Ave. / Folsom Blvd.	a.m.	A	-	0.25	C	-	0.72
		p.m.	E	-	0.96	E	-	0.97
Caltrans Intersections								
4	Hazel Ave. / U.S. 50 EB Ramps	a.m.	A	7.8	-	A	9.8	-
		p.m.	B	14.6	-	B	15.1	-
5	Hazel Ave. / U.S. 50 WB Off-Ramp / Tributary Pt. Dr.	a.m.	F	> 80.0	1.23	F	> 80.0	1.25
		p.m.	E	79.2	-	E	79.3	-
Notes: V/C ratio = volume-to-capacity ratio, EB = eastbound, WB = westbound								
Bold indicates intersection operates at LOS F.								
'-' indicates not applicable to scenario.								
¹ Seconds of delay are presented for Caltrans intersections and non-Caltrans unsignalized intersections.								
² v/c ratio is presented for non-Caltrans signalized intersections, and Caltrans intersections operating at unacceptable LOS								

This intersection was evaluated to determine if the project would contribute to any intersection impacts. The results of the evaluation are as follows:

5. Hazel Avenue/U.S. 50 WB Off-Ramp/Tributary Point Drive

This signalized intersection operates at LOS F under Existing Conditions and would continue to operate at LOS F under Existing plus Project Conditions during the weekday a.m. peak hour. The intersection operates with a v/c Ratio of 1.23 under Existing Conditions and would operate at 1.25 under Existing plus Project Conditions during the weekday a.m. peak hour. The project would not increase the v/c ratio of the intersection beyond the 0.05 threshold; therefore, the project would have a less-than-significant impact on this intersection.

Overall, the project would result in a less-than-significant impact at all of the study intersections under Existing plus Project Conditions, including the Hazel Avenue/U.S. 50 WB Off-Ramps/Tributary Point Drive intersection.

Existing plus Project Conditions roadway segment LOS for the selected roadway segments is summarized in **Table C4-16**.

Table C4-16						
Roadway Segment Level of Service—Existing plus Project Conditions						
#	Roadway Segment	Peak Hour	Existing Conditions		Existing plus Project Conditions	
			LOS	v/c Ratio	LOS	v/c Ratio
Non-Caltrans Roadway Segment ¹						
1	Hazel Avenue South of Gold Country Blvd	--	E	0.89	E	0.90
Caltrans Roadway Segments ²						
2	EB U.S. 50 West of Hazel Ave. Off-Ramp	a.m.	C	0.58	C	0.60
		p.m.	D	0.76	D	0.76
3	EB U.S. 50 East of Hazel Ave. On-Ramp	a.m.	C	0.56	C	0.56
		p.m.	C	0.67	C	0.67
4	WB U.S. 50 West of Hazel Ave. On-Ramp	a.m.	D	0.80	D	0.80
		p.m.	D	0.71	D	0.72
5	WB U.S. 50 East of Hazel Ave. Off-Ramp	a.m.	C	0.57	C	0.57
		p.m.	C	0.51	C	0.51
Notes: LOS = level of service, v/c ratio = volume-to-capacity ratio, EB = eastbound, WB = westbound						
Bold indicates that roadway segment operates at unacceptable LOS (LOS F).						
¹ Non-Caltrans roadway segments are evaluated using Sacramento County Guidelines methodology (Sacramento County 2004) for average daily traffic.						
² Caltrans roadway segments are evaluated using 2000 Highway Capacity Manual methodology (TRB 2000) for peak hour.						
Source: Freeway Performance Measurement System 2010						

All of the study roadway segments operate at acceptable LOS under Existing Conditions and would continue to operate at acceptable LOS under Existing plus Project Conditions. The project would not contribute to a significant impact on any of the study roadway segments under Existing plus Project Conditions.

Existing plus Project Conditions ramp merge/diverge area LOS is summarized in **Table C4-17**. At locations where long acceleration and deceleration lanes exist, ramp density calculations can report densities below zero. As a result, for all LOS A locations the density is presented simply as “less than 10.0 passenger cars per mile per lane” (< 10.0 pc/mi/ln), as values within this range are below the meaningful range of the analysis.

All of the study ramp merge/diverge areas would operate at acceptable LOS under Existing Conditions and would continue to operate at acceptable LOS under Existing plus Project Conditions. The project would not contribute to a significant impact on any of the study ramp merge/diverge areas under Existing plus Project Conditions.

Table C4-17							
Ramp Merge/Diverge Level of Service—Existing plus Project Conditions							
#	Ramp	Type	Peak Hour	Existing Conditions		Existing plus Project Conditions	
				LOS	Density ¹	LOS	Density ¹
1	EB U.S. 50 Off-Ramp to Hazel Avenue	Diverge	a.m.	A	< 10.0	A	< 10.0
			p.m.	A	< 10.0	A	< 10.0
2	EB U.S. 50 On-Ramp from SB Hazel Avenue	Merge	a.m.	B	13.7	B	13.8
			p.m.	B	15.7	B	15.9
3	WB U.S. 50 Off-Ramp to Hazel Avenue	Diverge	a.m.	A	< 10.0	A	< 10.0
			p.m.	A	< 10.0	A	< 10.0
4	WB U.S. 50 On-Ramp from SB Hazel Avenue	Merge	a.m.	B	18.6	B	18.7
			p.m.	B	13.2	B	13.7
Notes: LOS = level of service, SB = southbound							
¹ Density measured in passenger cars per mile per lane (pc/mi/ln), LOS A reported as < 10.0 pc/mi/ln							
Bold indicates intersection operates at LOS E or LOS F.							

Existing plus Project Conditions 95th percentile queues for the selected intersections are summarized in **Table C4-18**.

The 95th percentile ramp queues would not exceed available storage capacity at either study intersection under Existing plus Project Conditions.

Overall, the Proposed Action would result in a **less-than-significant** impact at all of the study intersections, road segments, freeway ramps, and ramp queues under Existing plus Project Conditions.

Alternative 1

Existing plus Project Conditions traffic volumes are shown in **Exhibit C4-20**. Existing plus Project Conditions intersection LOS is summarized in **Table C4-19**. Detailed LOS calculations are included in the technical appendices to this report.

The following study intersections would operate at unacceptable LOS (LOS E or LOS F) under Existing plus Project Conditions:

- Non-Caltrans intersections:
 2. Kilgore Road/White Rock Road (weekday p.m. peak hour)
 3. Sunrise Boulevard/White Rock Road (weekday a.m. and p.m. peak hours)

Table C4-18 95th Percentile Queues—Existing plus Project Conditions						
#	Intersection	Lane Group	Storage Capacity (ft.)	Peak Hour	Queue Length (ft.)	
					Existing Conditions	Existing plus Project Conditions
4	Hazel Avenue/ U.S. 50 EB Ramps	EBLR	1,350	a.m.	275	350
				p.m.	625	650
		EBR	750	a.m.	75	75
				p.m.	50	50
5	Hazel Avenue/ U.S. 50 WB Ramps	WBL	325	a.m.	200	200
				p.m.	175	175
		WBTR	2,200	a.m.	575	625
				p.m.	825	850
		WBR	2,200	a.m.	325	450
				p.m.	775	800
Notes: Storage capacities and queue lengths rounded to the nearest 25 feet. EBLR = eastbound left/right; EBR = eastbound right; WBL = westbound left; WBR = westbound right; WBTR = westbound through/right Bold indicates that queue length exceeds storage capacity.						

► Caltrans intersection:

8. Zinfandel Drive/U.S. 50 EB Ramps (weekday a.m. and p.m. peak hours)

These intersections were evaluated to determine if Alternative 1 would contribute to significant intersection impacts:

2. Kilgore Road/White Rock Road

This signalized intersection would deteriorate from LOS D under Existing Conditions to LOS E under Existing plus Project Conditions during the weekday p.m. peak hour. Therefore, Alternative 1 would have a direct significant impact on this intersection.

3. Sunrise Boulevard/White Rock Road

This signalized intersection would operate at unacceptable LOS (LOS E in a.m., LOS F in p.m.) under Existing Conditions and would continue to operate at unacceptable LOS (LOS E in a.m., LOS F in p.m.) under Existing plus Project Conditions during the weekday a.m. and p.m. peak hour. The intersection would operate with a v/c ratio of 0.94 (a.m.) and 1.02 (p.m.) under Existing Conditions, which would deteriorate to 0.99 (a.m.) and 1.04 (p.m.) under Existing plus Project Conditions during the weekday a.m. and p.m. peak hours. Alternative 1 would increase the v/c ratio of the intersection by 0.05 during the weekday a.m. peak hour, which meets the 0.05 threshold, and by 0.02 during the weekday p.m. peak hour, which does not meet the threshold. Therefore, Alternative 1 would have a direct significant impact on this.

Table C4-19								
Intersection Level of Service—Existing plus Project Conditions								
#	Intersection	Peak Hour	Existing Conditions			Existing plus Project Conditions		
			LOS	Delay ¹	v/c Ratio ²	LOS	Delay ¹	v/c Ratio ²
Non-Caltrans Intersections								
1	Kilgore Rd. / Crawford Dr.	a.m.	C	16.5	--	E ³	43.5 ³	--
		p.m.	C	16.0	--	F ³	>50.0 ³	--
2	Kilgore Rd. / White Rock Rd	a.m.	A	--	0.55	B	--	0.67
		p.m.	D	--	0.83	E	--	0.90
3	Sunrise Blvd. / White Rock Rd.	a.m.	E	--	0.94	E	--	0.99
		p.m.	F	--	1.02	F	--	1.04
4	Zinfandel Dr./ White Rock Road	a.m.	B	--	0.65	B	--	0.65
		p.m.	C	--	0.79	C	--	0.80
Caltrans Intersections								
5	Sunrise Blvd. / U.S. 50 EB Ramps	a.m.	C	28.7	--	C	29.8	--
		p.m.	D	39.3	--	D	39.8	--
6	Sunrise Blvd. / U.S. 50 WB Off-Ramps	a.m.	C	34.3	--	D	43.2	--
		p.m.	D	46.1	--	D	47.7	--
7	Zinfandel Dr./ U.S. 50 WB Off-Ramp	a.m.	B	12.7	--	B	12.8	--
		p.m.	B	12.0	--	B	12.2	--
8	Zinfandel Dr./ U.S. 50 EB Ramps	a.m.	F	>80.0	1.08	F	>80.0	1.13
		p.m.	F	>80.0	1.17	F	>80.0	1.20
Notes: LOS = level of service, V/C ratio = volume-to-capacity ratio, EB = eastbound, WB = westbound								
Bold indicates intersection operates at unacceptable LOS E or LOS F								
¹ indicates not applicable to scenario								
¹ Seconds of delay presented for Caltrans intersections and non-Caltrans unsignalized intersections.								
² v/c ratio is presented for non-Caltrans signalized intersections, and Caltrans intersections operating at unacceptable LOS								
³ Inclusion of additional new right-turn-only driveway north of Crawford Avenue at the Kilgore Road/Crawford Drive intersection as part of project description ensures that this intersection operates at an acceptable LOS								

8. Zinfandel Drive/U.S. 50 EB Ramps

This signalized intersection would operate at LOS F under Existing Conditions and would continue to operate at LOS F under Existing plus Project Conditions during the weekday a.m. and p.m. peak hour. The intersection would operate with a v/c ratio of 1.08 (a.m.) and 1.17 (p.m.) under Existing Conditions and 1.13 (a.m.) and 1.20 (p.m.) under Existing plus Project Conditions during the weekday a.m. and p.m. peak hours. Alternative 1 would increase the v/c ratio of the intersection by 0.05 during the weekday a.m. peak hour, which meets the 0.05 threshold, and by 0.03 during the weekday p.m. peak hour, which does not meet the threshold. Therefore, Alternative 1 would have a direct significant impact at this intersection.

Alternative 1 would contribute to a significant impact at the following study intersections:

- Non-Caltrans intersections:

2. Kilgore Road/White Rock Road (weekday p.m. peak hour)
 3. Sunrise Boulevard/White Rock Road (weekday a.m. peak hour)
- Caltrans intersection:
8. Zinfandel Drive/U.S. 50 EB Ramps (weekday a.m. peak hours)

Existing plus Project Conditions roadway segment LOS for the selected roadway segments is summarized in **Table C4-20**.

The following study roadway segments would operate at unacceptable LOS (LOS E or F) under Existing plus Project Conditions:

- Non-Caltrans roadway segments:
1. Sunrise Boulevard—North of White Rock Road
- Caltrans roadway segments:
2. EB U.S. 50—West of Zinfandel Drive Off-Ramp (weekday a.m. and weekday a.m. and p.m. peak hours)
 5. WB U.S. 50—West of Zinfandel Drive On-Ramp (weekday a.m. and p.m. peak hours)

Table C4-20						
Roadway Segment Level of Service—Existing plus Project Conditions						
#	Roadway Segment	Peak Hour	Existing Conditions		Existing plus Project Conditions	
			LOS	v/c Ratio	LOS	v/c Ratio
Non-Caltrans Roadway Segment ¹						
1	Sunrise Boulevard North of White Rock Rd.	--	D	1.03	E	1.04
Caltrans Roadway Segments ²						
2	EB U.S. 50 West of Zinfandel Dr. Off-Ramp	a.m.	E	0.90	E	0.92
		p.m.	E	0.85	E	0.85
3	EB U.S. 50 East of Sunrise Blvd. On-Ramp	a.m.	C	0.58	C	0.58
		p.m.	D	0.76	D	0.76
4	WB U.S. 50 East of Sunrise Blvd. Off-Ramp	a.m.	D	0.80	D	0.80
		p.m.	D	0.71	D	0.72
5	WB U.S. 50 West of Zinfandel Dr. On-Ramp	a.m.	E	0.98	E	0.98
		p.m.	F	1.00	F	1.01
Notes: LOS = level of service, v/c ratio = vehicle-to-capacity ratio, EB = eastbound, WB = westbound						
Bold indicates that roadway segment operates at unacceptable LOS (LOS E or LOS F).						
¹ Non-Caltrans roadway segments are evaluated using Sacramento County Guidelines (Sacramento County 2004) methodology for average daily traffic.						
² Caltrans roadway segments are evaluated using 2000 Highway Capacity Manual (TRB 2000) methodology for peak hour.						
Source: Freeway Performance Measurement System 2010						

These roadway segments were evaluated to determine if Alternative 1 would contribute to significant roadway segment impacts:

1. Sunrise Boulevard—North of White Rock Road

This roadway segment would deteriorate from LOS D to LOS E under Existing plus Project Conditions. Therefore, the project would cause a direct **significant** impact.

2. EB U.S. 50—West of Zinfandel Drive Off-Ramp

This roadway segment would continue to operate at LOS E during the weekday a.m. and p.m. peak hour under Existing plus Project Conditions. The roadway segment operates with a v/c ratio of 0.90 and 0.85 under Existing Conditions, and would operate at 0.92 and 0.85 under Existing plus Project Conditions, during the weekday a.m. and p.m. peak hours, respectively. The project would not increase the v/c ratio of the roadway segment beyond the 0.05 threshold; however, the project would add approximately 132 and 23 vehicle trips to the roadway segment during the weekday a.m. and p.m. peak hours, respectively, which would exceed the County's 10-vehicle threshold. Project traffic would exacerbate the existing unacceptable operations; therefore, Alternative 1 would contribute to a **significant** impact at this roadway segment.

5. WB U.S. 50—West of Zinfandel Drive On-Ramp

This roadway segment would continue to operate at unacceptable LOS (LOS E in a.m., LOS F in p.m.) under Existing plus Project Conditions during the weekday a.m. and p.m. peak hours. The roadway segment operates with a v/c ratio of 0.98 (a.m.) and 1.00 (p.m.) under Existing Conditions, and would operate at 0.98 (a.m.) and 1.01 (p.m.) under Existing plus Project Conditions, during the weekday a.m. and p.m. peak hours. Alternative 1 would not increase the v/c ratio of the roadway segment beyond the 0.05 threshold. However, Alternative 1 would add approximately 43 and eight vehicle trips to the roadway segment during the weekday a.m. and p.m. peak hours, respectively, which would exceed the 10-vehicle threshold for the a.m. peak hour but not the p.m. peak hour. Project traffic would exacerbate the existing unacceptable operations during the weekday a.m. peak hour; therefore, Alternative 1 would contribute to a **significant** impact at this roadway segment.

Alternative 1 would contribute to a **significant impact** at three of the study roadway segments;

► Non-Caltrans roadway segment:

1. Sunrise Boulevard—North of White Rock Road

► Caltrans roadway segments:

2. EB U.S. 50—West of Zinfandel Drive Off-Ramp (weekday a.m. and p.m. peak hours)
5. WB U.S. 50—West of Zinfandel Drive On-Ramp (weekday a.m. peak hour)

Existing plus Project Conditions ramp merge/diverge LOS for the selected ramps is summarized in **Table C4-21**. At locations where long acceleration and deceleration lanes exist, ramp density calculations can report densities below zero. As a result, for all LOS A locations the density is presented simply as “less than 10.0 passenger cars per mile per lane” (<10.0 pc/mi/ln), as values within this range are below the meaningful range of the analysis.

All of the study ramp merge/diverge areas operate at acceptable LOS under Existing Conditions and would continue to operate at acceptable LOS under Existing plus Project Conditions. Alternative 1 would not contribute to a significant impact on any of the study ramp merge/diverge areas under Existing plus Project Conditions.

Existing plus Project Conditions 95th percentile queue lengths for the selected intersections are summarized in **Table C4-22**.

Table C4-21 Ramp Merge/Diverge Level of Service—Existing plus Project Conditions							
#	Ramp	Type	Peak Hour	Existing Conditions		Existing plus Project Conditions	
				LOS	Density ¹	LOS	Density ¹
1	WB U.S. 50 Off-Ramp to Sunrise Blvd.	Diverge	a.m.	A	< 10.0	A	< 10.0
			p.m.	A	< 10.0	A	< 10.0
2	EB U.S. 50 On-Ramp from NB Sunrise Blvd.	Merge	a.m.	B	13.7	B	13.8
			p.m.	B	15.7	B	15.9
3	EB U.S. 50 Off-Ramp to Zinfandel Dr.	Diverge	a.m.	A	< 10.0	A	< 10.0
			p.m.	A	< 10.0	A	< 10.0
4	WB U.S. 50 On-Ramp from NB Zinfandel Dr.	Merge	a.m.	B	18.6	B	18.7
			p.m.	B	13.2	B	13.7
Notes: LOS = level of service, EB = eastbound, WB = westbound, NB = northbound							
¹ Density measured in passenger cars per mile per lane (pc/mi/ln), LOS A reported as < 10.0 pc/mi/ln							
Bold indicates intersection operates at unacceptable LOS E or LOS F							
Source: Freeway Performance Measurement System 2010							

95th percentile queues would exceed available storage capacity under Existing plus Project Conditions:

- Caltrans intersection:

8. Zinfandel Drive/U.S. 50 EB Ramps (EBLTR, EBR—weekday a.m. peak hour).

Under Existing plus Project Conditions, queues in the eastbound left-through-right lane group would exceed capacity by approximately 50 feet during the weekday a.m.

Table C4-22 95th Percentile Queues—Existing plus Project Conditions						
#	Intersection	Lane Group	Storage Capacity (ft.)	Peak Hour	Queue Length (ft.)	
					Existing Conditions	Existing plus Project Conditions
6	Sunrise Boulevard/ U.S. 50 WB Ramps	WBL	1,875	a.m.	650	725
				p.m.	250	250
		WBT	1,875	a.m.	325	350
				p.m.	400	400
8	Zinfandel Drive/ U.S. 50 EB Ramps	EBL	1,125	a.m.	350	350
				p.m.	400	400
		EBLTR	1,325	a.m.	1,250	1,375
				p.m.	350	350
		EBR	425	a.m.	1,175	1,275
				p.m.	300	300
Notes: Storage capacities and queue lengths rounded to the nearest 25 feet EBLR = eastbound left/right; EBR = eastbound right; WBL = westbound left; WBR = westbound right; WBTR = westbound through/right Bold indicates that queue length exceeds storage capacity						

peak hours. Queues in the eastbound right lane group exceed capacity by approximately 750 feet during the weekday a.m. peak hour under Existing Conditions, and that exceedance would increase by another 100 feet to approximately 1,275 feet during the weekday a.m. peak hour under Existing plus Project Conditions.

The Zinfandel Drive off-ramp consists of two lanes that later split into four lanes approaching the Zinfandel Drive/U.S. 50 EB Ramps intersection. The second (outside) lane on the ramp serves the eastbound left-through-right and eastbound right lane groups, and is part of an auxiliary lane along eastbound U.S. 50 that begins at the upstream interchange at Mather Field Road. Any queues stretching past the gore area would be contained within the auxiliary lane and would not disrupt mainline operations in the adjacent travel lanes. Caltrans defines a significant impact for a 95th percentile queue as extending beyond the existing storage capacity and disrupting mainline operations. As a result, because the auxiliary lane would contain the additional queue length and prevent it from disrupting the freeway mainline, Alternative 1 is not expected to result in significant queuing impacts at the Zinfandel Drive/U.S. 50 EB Ramps intersection.

Overall, Alternative 1 would have a **significant** impact at three intersections (Kilgore Road/White Rock Road, Sunrise Boulevard/White Rock Road, and Zinfandel Drive/U.S. 50 EB Ramps) and three roadway segments (Sunrise Boulevard—North of White Rock Road, EB U.S. 50—West of Zinfandel Drive Off-Ramp, and WB U.S. 50—West of Zinfandel Drive On-Ramp) under Existing plus Project Conditions. Alternative 1 would have a **less-than-significant** impact at all freeway ramps and ramp queues.

**Mitigation Measure C4-1a: Improve Kilgore Road/White Rock Road Intersection
(Alternative 1—Intersection #2) under Existing plus Project Conditions**

Alternative 1

Reclamation and DWR will contribute a fair share to the addition of one exclusive northbound right-turn lane at the Kilgore Road/White Rock Road intersection.

Responsibility: Reclamation and DWR

Timing: When conditions warrant the improvement and the City of Rancho Cordova contributes its fair share of funding the improvement

Implementing Mitigation Measure C4-1a would reduce the significant impacts under Existing plus Project Conditions to a less-than-significant level, when implemented, by expanding the northbound right-turn capacity at the intersection and allowing this intersection to operate at LOS B, as indicated in Attachment B under “Kilgore-Crawford Site—Existing plus Project Conditions Mitigations, Weekday AM Peak Hour.”

Until the City of Rancho Cordova implements the improvements, the impact would be classified as significant but eventually would be reduced to a less-than-significant level once those improvements are constructed. Implementation of the mitigation measure will improve operations to a LOS B condition.

The requirement that Reclamation and DWR participate in funding these transportation improvements would mitigate or substantially lessen the significant impact on this intersection from Alternative 1, but the impact would remain **significant and unavoidable** until improvements are constructed. This conclusion reflects the reality that successful implementation of the proposed improvements will require the cooperation of the City, over which Reclamation and DWR have no control. For this reason, Reclamation and DWR are conservatively acknowledging the possibility that, despite their own commitment to work with the City, mutually acceptable accommodation may not be reached. Consistent with CEQA Guidelines section 15091, subdivision (a)(2), though, Reclamation and DWR conclude that the City can and should cooperate with them in implementing the mitigation.

**Mitigation Measure C4-1b: Improve Sunrise Boulevard/White Rock Road
Intersection (Alternative 1—Intersection #3)**

Alternative 1

Reclamation and DWR will contribute a fair share to the addition of one exclusive southbound right-turn lane at the Sunrise Boulevard/White Rock Road intersection.

Responsibility: Reclamation and DWR

Timing: When conditions warrant the improvement and the City of Rancho Cordova contributes its fair share of funding the improvement

Implementing Mitigation Measure C4-1b would reduce the significant impacts under Existing plus Project Conditions to a less-than-significant level, by expanding the

southbound right-turn capacity and allowing this intersection to operate at LOS C during the weekday a.m. peak hour, as indicated in Attachment B under “Kilgore-Crawford Site—Existing plus Project Conditions Mitigations, Weekday AM Peak Hour.”

Until the City of Rancho Cordova implements the improvements, the impact would be classified as significant but eventually would be reduced to a less-than-significant level once those improvements are constructed. Implementation of the mitigation measure will improve operations to a LOS C condition.

The requirement that Reclamation and DWR participate in funding these transportation improvements would mitigate or substantially lessen the project’s significant impact on this intersection but the impact would remain **significant and unavoidable** until improvements are constructed. This conclusion reflects the reality that successful implementation of the proposed improvements will require the cooperation of the City, over which Reclamation and DWR have no control. For this reason, Reclamation and DWR are conservatively acknowledging the possibility that, despite their own commitment to work with the City, mutually acceptable accommodation may not be reached. Consistent with CEQA Guidelines section 15091, subdivision (a)(2), though, Reclamation and DWR conclude that the City can and should cooperate with them in implementing the mitigation.

Mitigation Measure C4-1c: Improve Zinfandel Drive/U.S. 50 EB Ramps Intersection (Alternative 1—Intersection #8)

Alternative 1

Reclamation and DWR will contribute a fair share to the addition of one exclusive eastbound right-turn lane and to convert the eastbound through-right shared lane to a through lane at the Zinfandel Drive/U.S. 50 EB Ramps intersection.

Responsibility: Reclamation and DWR

Timing: When conditions warrant the improvement and Caltrans contributes its fair share of funding the improvement.

Implementing Mitigation Measure C4-1c would reduce the significant impacts under Existing plus Project Conditions to a less-than-significant level, by reducing the increase in the v/c ratio to below the 0.05 threshold during the weekday a.m. peak hour, as indicated in Attachment B under “Kilgore-Crawford Site—Existing plus Project Conditions Mitigations, Weekday AM Peak Hour.”

Until Caltrans implements the improvements, the impact would be classified as significant but eventually would be reduced to a less-than-significant level once those improvements are constructed. Implementation of the mitigation measure will improve operations to below the 0.05 threshold.

The requirement that Reclamation and DWR participate in funding these transportation improvements would mitigate or substantially lessen the project’s significant impact on this intersection but the impact would remain **significant and unavoidable** until improvements are constructed. This conclusion reflects the reality that successful

implementation of the proposed improvements will require the cooperation of Caltrans, over which Reclamation and DWR have no control. For this reason, Reclamation and DWR are conservatively acknowledging the possibility that, despite their own commitment to work with Caltrans, mutually acceptable accommodation may not be reached. Consistent with CEQA Guidelines section 15091, subdivision (a)(2), though, Reclamation and DWR conclude that Caltrans can and should cooperate with them in implementing the mitigation.

Mitigation Measure C4-1d: Participate in Improvements on Sunrise Boulevard; North of White Rock Road (Alternative 1—Roadway Segment #1)

Alternative 1

Reclamation and DWR will contribute a fair share to widening Sunrise Boulevard north of White Rock Road by at least one lane.

Responsibility: Reclamation and DWR

Timing: When conditions warrant the improvement and the City of Rancho Cordova contributes its fair share of funding the improvement.

Implementing Mitigation Measure C4-1d would reduce the significant impacts under Existing plus Project Conditions to a less-than-significant level by reducing the increase in v/c ratio on Sunrise Boulevard north of White Rock Road to less than the 0.05 threshold, as indicated in Attachment C under “Roadway Segment Level of Service (Mitigated) - Alternative 1 Site.”

Until the City of Rancho Cordova implements the improvements, the impact would be classified as significant but eventually would be reduced to a less-than-significant level once those improvements are constructed. Implementation of the mitigation measure will improve operations to an acceptable LOS condition.

The requirement that Reclamation and DWR participate in funding these transportation improvements would mitigate or substantially lessen the project’s significant impact on this intersection but the impact would remain **significant and unavoidable** until improvements are constructed. This conclusion reflects the reality that successful implementation of the proposed improvements will require the cooperation of the City, over which Reclamation and DWR have no control. For this reason, Reclamation and DWR are conservatively acknowledging the possibility that, despite their own commitment to work with the City, mutually acceptable accommodation may not be reached. Consistent with CEQA Guidelines section 15091, subdivision (a)(2), though, Reclamation and DWR conclude that the City can and should cooperate with them in implementing the mitigation.

Mitigation Measure C4-1e: Participate in Improvements on U.S. 50: Eastbound U.S. 50—West of Zinfandel Drive Off-Ramp (Alternative 1—Roadway Segment #2); and Westbound U.S. 50—West of Zinfandel Drive On-Ramp (Alternative 1—Roadway Segment #5)

Alternative 1

Reclamation and DWR will contribute a fair share for the following improvements on U.S. 50:

- ▶ construction of auxiliary lanes at Zinfandel Drive;
- ▶ extension of HOV lanes from Zinfandel Drive to downtown Sacramento; and
- ▶ HOV enhancements, such as bypass lanes at existing metered on-ramps.

Responsibility: Reclamation and DWR

Timing: When conditions warrant the improvement and Caltrans contributes its fair share of funding the improvement.

Implementing Mitigation Measure C4-1e would reduce the significant impacts under Existing plus Project Conditions to a less-than-significant level by allowing these roadway segments to operate at an acceptable LOS (LOS C or D), as indicated in Attachment C under “Roadway Segment Level of Service (Mitigated) - Alternative 1 Site.”

Until Caltrans implements the improvements, the impact would be classified as significant but eventually would be reduced to a less-than-significant level once those improvements are constructed. Implementation of the mitigation measure will improve operations to an acceptable LOS condition.

The requirement that Reclamation and DWR participate in funding these transportation improvements would mitigate or substantially lessen the project’s significant impact on this intersection but the impact would remain **significant and unavoidable** until improvements are constructed. This conclusion reflects the reality that successful implementation of the proposed improvements will require the cooperation of Caltrans, over which Reclamation and DWR have no control. For this reason, Reclamation and DWR are conservatively acknowledging the possibility that, despite their own commitment to work with Caltrans, mutually acceptable accommodation may not be reached. Consistent with CEQA Guidelines section 15091, subdivision (a)(2), though, Reclamation and DWR conclude that Caltrans can and should cooperate with them in implementing the mitigation.

Impact C4-2: Increases in Peak-Hour Transit Trips

No-Action

Under the No-Action Alternative, no development would occur and no project-generated trips would affect the regional transportation system; thus, **no direct** or **indirect** impacts would occur.

Proposed Action and Alternative 1

Under all traffic analysis scenarios that assume implementation of the proposed project, project implementation would increase transit trips. Impacts associated with the increased trips were evaluated, resulting in **less-than-significant** impacts, which are discussed below.

The Proposed Site is located less than 1 mile from the SacRT LRT station located just east of Hazel Avenue on Folsom Boulevard. The State encourages use of alternative transportation through an existing incentive program for State workers to use public transit or alternative-commute modes, which would be implemented at the JOC. The program includes transit-pass subsidies for employees; preferential parking for carpools, vanpools, and ride-share programs; bicycle storage; showers; and locker facilities.

Estimates of Project-generated transit and walk trips were developed using mode split data from various sources. Vehicle-trip generation was combined with mode split data from SACOG's SACMET 2001 Travel Demand Forecasting, which uses year 2000 U.S. Census Journey to Work survey data and *Sacramento Regional Bicycle, Pedestrian and Trails Master Plan* data to determine mode of travel for different trip purposes. Home-Work mode split data were used to distribute person trips across the various travel modes (e.g., auto, transit, bicycle, and pedestrian). The transit mode split share is 3.2%, which includes transit-walk and transit-drive trips (Sacramento Regional Travel Demand Model Version 2002). Using the transit trips share, the total is 10 transit trips (nine inbound and one outbound) during the weekday a.m. peak hour and 10 transit trips (two inbound and eight outbound) during the weekday p.m. peak hour. The Proposed Site can be accessed by Bus Routes 109 and the Gold Line LRT. According to Caltrans' transit performance measures and Sacramento Regional Transit's ridership data, transit near the Proposed Site operates under capacity. The project is expected to generate 10 transit trips during the weekday a.m. peak hour and 10 transit trips during the weekday p.m. peak hour. This level of project-generated transit ridership is not expected to result in a significant impact on transit ridership and capacity.

In addition, although the project would increase vehicular traffic on major transit service corridors, the project's overall effect on intersection LOS and delay would be negligible at most study intersections. Therefore, project-generated vehicular traffic would not be expected to result in a significant impact on transit operations.

The Alternative 1 Site is located 1 mile from SacRT Bus Route 74, which connects to the Sunrise LRT station. An incentive program for State workers utilizing alternative transportation and modal split is discussed under Proposed Site “Transit Impacts,” above.

The Alternative 1 Site can be accessed by Bus Route 74 and the Gold Line LRT. According to Caltrans’s CSMP, Bus Route 74 has a daily ridership equal to 18% of total capacity and a peak-hour ridership equal to 57% of total capacity. The project is expected to generate 10 transit trips during the weekday a.m. peak hour and 10 transit trips during the weekday p.m. peak hour. This level of project-generated transit ridership is not expected to result in a significant impact on transit ridership and capacity.

In addition, although the project would increase vehicular traffic on major transit service corridors, the project’s overall effect on intersection LOS and delay is negligible at most study intersections. Therefore, project-generated vehicular traffic would not be expected to result in a significant impact on transit operations. This impact would be less than significant.

Mitigation Measures: No mitigation is required.

Impact C4-3: Increases in Peak-Hour Pedestrian Trips

No-Action

Under the No-Action Alternative, no development would occur and no project-generated trips would affect the pedestrian facilities; thus, **no direct** or **indirect** impacts would occur.

Proposed Action and Alternative 1

Under all traffic analysis scenarios that assume implementation of the proposed project, project implementation would increase pedestrian trips. Impacts associated with the increased trips were evaluated, resulting in **less-than-significant** impacts, which are discussed below.

For the Proposed Site, the existing pedestrian facilities would be sufficient to accommodate the minor increase in pedestrian trips. Project-generated pedestrian trips would include walking trips from transit facilities (i.e., the LRT station and the nearest bus stop). The project is expected to add 17 pedestrian and transit-walk trips during the weekday a.m. peak hour and 16 pedestrian and transit-walk trips during the weekday p.m. peak hour. Thus, the minor increase in pedestrian trips would not be expected to result in significant impacts on pedestrian conditions near the Proposed Site.

In addition, although project-generated vehicle traffic would increase traffic on roadways, the increase is relatively minor compared with existing traffic volumes. While some minor increase in the potential for vehicle-pedestrian conflict may occur, in general, this effect is negligible and would not be expected to result in significant impacts on pedestrian conditions near the Proposed Site.

For the Alternative 1 Site, the existing pedestrian facilities would be sufficient to accommodate the minor increase in pedestrian trips. Project-generated pedestrian trips would include walking trips from transit facilities (i.e., the LRT station and the nearest bus stop). The project is expected to add 17 pedestrian and transit-walk trips during the weekday a.m. peak hour and 16 pedestrian and transit-walk trips during the weekday p.m. peak hour. Thus, the minor increase in pedestrian trips would not be expected to result in significant impacts on pedestrian conditions near the Alternative 1 Site.

In addition, although project-generated vehicle traffic would increase traffic on roadways, the increase is relatively minor compared with existing traffic volumes. While some minor increase in the potential for vehicle-pedestrian conflict may occur, in general, this effect is negligible and would not be expected to result in significant impacts on pedestrian conditions near the Alternative 1 Site. This impact would be less than significant.

Mitigation Measures: No mitigation is required.

Impact C4-4: Increases in Peak-Hour Bicycle Trips

No-Action

Under the No-Action Alternative, no development would occur and no project-generated trips would affect the bicycle facilities; thus, **no direct or indirect** impacts would occur.

Proposed Action and Alternative 1

Under all traffic analysis scenarios that assume implementation of the proposed project, project implementation would increase bicycle trips. Impacts associated with the increased trips were evaluated, resulting in **less-than-significant** impacts, which are discussed below.

For the Proposed Site, the existing bicycle facilities are sufficient to accommodate the minor increase in bicycle trips. The project is expected to add 10 bicycle trips during the weekday a.m. peak hour and 10 bicycle trips during the weekday p.m. peak hour. Thus, the minor increase in bicycle trips would not be expected to result in significant impacts on bicycle conditions near the Proposed Site.

For the Alternative 1 Site, The existing bicycle facilities would be sufficient to accommodate the minor increase in bicycle trips. The project is expected to add 10 bicycle trips during the weekday a.m. peak hour and 10 bicycle trips during the weekday p.m. peak hour. Thus, the minor increase in bicycle trips would not be expected to result in significant impacts on bicycle conditions near the Alternative 1 Site.

In addition, although project-generated vehicle traffic would increase traffic on roadways, the increase is relatively minor compared with existing traffic volumes. While some minor increase in the potential for vehicle-bicycle conflict may occur, in general, this effect is negligible, and would not be expected to result in

significant impacts on bicycle conditions. This impact would be less than significant.

Mitigation Measures: No mitigation is required.

Impact C4-5: Increases to Peak-Hour and Daily Traffic Volumes, Affecting Site Access and Circulation

No-Action

Under the No-Action Alternative, no development would occur and no project-generated trips would affect site access and circulation; thus, **no direct** or **indirect** impacts would occur.

Proposed Action and Alternative 1

Under all traffic analysis scenarios that assume implementation of the proposed project, project implementation would affect site access and circulation. Impacts associated with the increased traffic were evaluated, resulting in **less-than-significant** impacts, which are discussed below.

Vehicle access to the Proposed Site is from U.S. 50 via Hazel Avenue and Gold Country Boulevard. Currently, there is one access driveway off of Gold Country Boulevard. There is adequate access/egress for emergency vehicles, and no additional access driveways would be required.

While the Proposed Site is adjacent to major traffic thoroughfares and has access to public transportation, including bus service and LRT, the total vehicle-trip duration would be approximately 22 minutes, and the total transit-trip duration (depending on mode of travel and transfers) would be approximately 1 hour.

Vehicle access to the Alternative 1 Site is from U.S. 50 via Sunrise Boulevard and White Rock Road. There is adequate access/egress for emergency vehicles, and no additional access driveways would be required.

While the Alternative 1 Site is adjacent to major traffic thoroughfares and has access to public transportation, including bus service and LRT, the total vehicle-trip duration would be approximately 19 minutes and the total transit-trip duration (depending on mode of travel and transfer) would take approximately 1 hour. This impact is less than significant.

Mitigation Measures: No mitigation is required.

Impact C4-6: Increases to Construction Traffic Activities

No-Action

Under the No-Action Alternative, no development would occur and no project-generated trips would affect the regional transportation system; thus, **no direct** or **indirect** impacts would occur.

Proposed Action and Alternative 1

Under all traffic analysis scenarios that assume implementation of the proposed project, project implementation would be the regional transportation system. Impacts associated with the increased traffic were evaluated, resulting in **less-than-significant** impacts, which are discussed below.

It is anticipated that construction activities would occur Monday through Friday, from 7:00 a.m. to 3:30 p.m.

Temporary traffic impacts would result from truck movements and construction vehicles traveling to and from the Proposed Site. Because of the larger turning radii and slower movements of construction trucks, a temporary reduction in capacity near the Proposed Site would be expected. Truck traffic during weekday peak hours may worsen LOS and increase delay at nearby intersections. To minimize traffic impacts on neighboring roadways, truck trips should be scheduled during off-peak hours.

U.S. 50 would be used by construction trucks to travel to and from the Proposed Site. Trucks would be used to transport oversized equipment/materials and overweight loads on State highway facilities. A permit must be obtained from Caltrans before transporting oversized materials and overweight loads. It is anticipated that no regular travel lanes or transit bus stops would need to be closed or relocated during the construction period. If it is determined that travel lane closures would be needed, the lane closures would be coordinated with the County and Caltrans to minimize the impacts on local traffic. In general, lane and sidewalk closures are subject to review and approval of the County and Caltrans.

During the construction period, adjacent property owners may experience inconvenience resulting from noise, truck traffic, and possible lane closures. It is recommended that property owners be notified of such activities and durations to minimize the inconvenience.

Construction staging would occur primarily within the confines of the Proposed Site, including all project materials, equipment, and construction vehicles. Parking management and a sufficient supply of parking are recommended to ensure construction vehicles park within the site.

Project-related construction activity would result in additional trips during the construction period, which may temporarily affect traffic conditions on the local roadways and highways. Construction truck traffic and additional vehicular traffic from construction workers would not substantially affect vehicular, pedestrian, or bicycle circulation. In addition, any potential impacts would not be considered significant because of their temporary and limited duration.

Construction conditions for the Alternative 1 Site would be similar to those discussed for the Proposed Site. These impacts would be less than significant.

Mitigation Measures: No mitigation is required.

Residual Significant Impacts

For the reasons stated above, the following impacts would likely be significant and unavoidable with implementation of all feasible mitigation measures:

- Impact C4-1a (Alternative 1)
- Impact C4-1b (Alternative 1)
- Impact C4-1c (Alternative 1)
- Impact C4-1d (Alternative 1)
- Impact C4-1e (Alternative 1)

Until Caltrans and the City of Rancho Cordova implement the improvements identified above, these impacts would be classified as significant but eventually would be reduced to less-than-significant levels once those improvements are constructed. Implementation of the mitigation measures associated with Impacts C4-1a, -1b, -1c, -1d, and -1e will improve operations to acceptable LOS conditions.

The requirement that Reclamation and DWR participate in funding these transportation improvements would mitigate or substantially lessen the project's significant transportation-related impacts, but the impacts would remain **significant and unavoidable** until improvements are constructed. This conclusion reflects the reality that successful implementation of the proposed improvements will require the cooperation of Caltrans and the City, over which Reclamation and DWR have no control. For this reason, Reclamation and DWR are conservatively acknowledging the possibility that, despite their own commitment to work with the City, mutually acceptable accommodation may not be reached. Consistent with CEQA Guidelines section 15091, subdivision (a)(2), though, Reclamation and DWR conclude that Caltrans and the City can and should cooperate with them in implementing the mitigation.

3 Cumulative Effects

Methods and Assumptions

Background Growth

Impacts on the roadway system for Cumulative 2035 Conditions were determined by forecasting the increase in weekday a.m. and p.m. peak-hour traffic volumes that would occur with implementation of the project. Projections from the *Rio del Oro Specific Plan Project Draft EIR/EIS* (2006) and SACOG's SACMET 2001 Travel Demand Forecasting were utilized to derive growth rates and develop weekday a.m. and weekday p.m. peak-hour traffic volume forecasts for study intersections and study roadway segments. For the Proposed Site, 2006 Rio del Oro projections were utilized to forecast Existing Conditions year 2010 volumes. Traffic counts could not be conducted at the Proposed Site study intersections due to ongoing construction of the Hazel Avenue Widening Project. Similarly, projected growth rates were applied to 2030 Rio del Oro volumes in order to forecast Cumulative 2035 Conditions traffic volumes for the Proposed Site. For the Alternative 1 Site, Rio del Oro growth rates were applied to Existing Conditions traffic counts in order to forecast Cumulative Year 2035 traffic volumes (Attachment A). Volume balancing utilizing Furness methodology was conducted in order to ensure realistic future year projections and consistency.

Roadway Network Modifications

Roadway network modifications are based on improvements that are already under construction or are a direct result of approved and funded projects (these improvements were identified by City and County staff). Regional roadway network modifications assumed for Cumulative 2035 Conditions are consistent with improvements identified in the SACOG MTP 2035, depending on the assumed year of completion. Roadway improvements identified in the County/City's CIP (to be completed before year 2035) and in the SACOG MTP 2035 were incorporated into the Cumulative 2035 Without Project Conditions analysis. This assumes that the projects identified in the City's CIP and SACOG MTP 2035 would be fully funded by Year 2035. The following local roadway improvements were incorporated into Cumulative 2035 without Project Conditions analysis:

- ▶ Hazel Avenue from Gold Country Boulevard to U.S. 50 westbound interchange ramps widened to a six-lane facility, and
- ▶ Extension of International Drive from Kilgore Road to Sunrise Boulevard.

Cumulative 2035 without Project Conditions

Proposed Action

Traffic

Intersection geometry changes were assumed at the following four study intersections in Cumulative 2035 Without Project Conditions analysis as a result of the expected 2011 completion of the proposed Hazel Avenue Widening Project Phase 1 improvements:

- ▶ Non-Caltrans intersections:
 2. Hazel Avenue/Gold Country Boulevard and
 3. Hazel Avenue/Folsom Boulevard.
- ▶ Caltrans intersections:
 4. Hazel Avenue/U.S. 50 EB Ramps and
 5. Hazel Avenue/U.S. 50 WB Off-Ramp/Tributary Point Drive.

The non-Caltrans study roadway segment, Hazel Avenue—South of Gold Country Boulevard, is designated as an arterial, high-access control facility, according to the County of Sacramento General Plan. Upon completion of the Hazel Avenue Widening Project in or after 2016, Hazel Avenue will be widened from a four-lane facility to a six-lane facility from U.S. 50 to Madison Avenue. All construction-related impacts would be temporary and no additional significant impacts would result from the construction of Phases 2 and 3 of the Hazel Avenue Widening Project.

Cumulative 2035 Without Project Conditions intersection geometry is shown in **Exhibit C4-21**. Cumulative 2035 Without Project Conditions traffic volumes are shown in **Exhibit C4-22**. Cumulative 2035 Without Project Conditions intersection LOS is summarized in **Table C4-23**. Detailed LOS calculations are included in Attachment B.

The following study intersections would operate at unacceptable LOS F under Cumulative 2035 Without Project Conditions:

- ▶ Non-Caltrans intersections:
 2. Hazel Avenue/Gold Country Boulevard (weekday a.m. and p.m. peak hours) and
 3. Hazel Avenue/Folsom Boulevard (weekday a.m. and p.m. peak hours).
- ▶ Caltrans intersections:
 4. Hazel Avenue/U.S. 50 EB Ramp (weekday a.m. and p.m. peak hours); and,
 5. Hazel Avenue/U.S. 50 WB Off-Ramp/Tributary Point Drive (weekday a.m. and p.m. peak hours).

Table C4-23								
Intersection Level of Service—Cumulative 2035 Without Project Conditions								
#	Intersection	Peak Hour	Existing Conditions			Cumulative 2035 Without Project Conditions		
			LOS	Delay ¹	v/c Ratio ²	LOS	Delay ¹	v/c Ratio ²
Non-Caltrans Intersections								
1	Nimbus Road / Gold Country Blvd.	a.m.	A	0.0	—	A	0.0	—
		p.m.	A	0.0	—	A	0.0	—
2	Hazel Ave. / Gold Country Blvd.	a.m.	A	—	0.48	F	—	1.56
		p.m.	E	—	0.96	F	—	1.04
3	Hazel Ave. / Folsom Blvd.	a.m.	A	—	0.25	F	—	3.00
		p.m.	E	—	0.96	F	—	2.98
Caltrans Intersections								
4	Hazel Ave. / U.S. 50 EB Ramp	a.m.	A	7.8	-	F	> 80.0	1.36
		p.m.	B	14.6	-	F	> 80.0	1.19
5	Hazel Ave. / U.S. 50 WB Off-Ramp / Tributary Pt. Dr.	a.m.	F	> 80.0	1.23	F	> 80.0	1.99
		p.m.	E	79.2	-	F	> 80.0	1.85
Notes: v/c ratio = volume-to-capacity ratio., EB = eastbound, WB = westbound								
Bold indicates intersection operates at LOS F								
‘-’ indicates not applicable to scenario.								
¹ Seconds of delay are presented for Caltrans intersections and non-Caltrans unsignalized intersections.								
² v/c ratio is presented for non-Caltrans signalized intersections, and Caltrans intersections operating at unacceptable LOS								

Cumulative 2035 Without Project Conditions roadway segment LOS for the study roadway segments are summarized in **Table C4-24**. Growth rates derived from *Rio del Oro Specific Plan Project Draft EIR/EIS* (2006) were applied to existing study ramp intersection traffic volumes to forecast Cumulative 2035 Without Project Conditions study ramp intersection traffic volumes and calculate freeway mainline segment volumes.

Table C4-24						
Roadway Segment Level of Service—Cumulative 2035 Without Project Conditions						
#	Roadway Segment	Peak Hour	Existing Conditions		Cumulative 2035 Without Project Conditions	
			LOS	v/c Ratio	LOS	v/c Ratio
Non-Caltrans Roadway Segment ¹						
1	Hazel Avenue South of Gold Country Blvd	--	E	0.89	F	1.30
Caltrans Roadway Segments ²						
2	EB U.S. 50 West of Hazel Ave. Off-Ramp	a.m.	C	0.58	C	0.69
		p.m.	D	0.76	D	0.83
3	EB U.S. 50 East of Hazel Ave. On-Ramp	a.m.	C	0.56	C	0.60
		p.m.	C	0.67	C	0.71
4	WB U.S. 50 West of Hazel Ave. On-Ramp	a.m.	D	0.80	E	0.95
		p.m.	D	0.71	D	0.78
5	WB U.S. 50 East of Hazel Ave. Off-Ramp	a.m.	C	0.57	C	0.60
		p.m.	C	0.51	C	0.54
Notes: LOS = level of service, v/c ratio = volume-to-capacity ratio, EB = eastbound, WB = westbound						
Bold indicates that roadway segment operates at LOS F						
¹ Non-Caltrans roadway segments are evaluated using Sacramento County Guidelines methodology (Sacramento County 2004) for average daily traffic.						
² Caltrans roadway segments are evaluated using 2000 Highway Capacity Manual methodology (TRB 2000) for peak hour.						
Source: Freeway Performance Measurement System 2010						

The following study roadway segment would operate at unacceptable LOS (LOS F) under Cumulative 2035 Without Project Conditions:

► Non-Caltrans roadway segment:

1. Hazel Avenue—South of Gold Country Boulevard.

Cumulative 2035 Without Project Conditions ramp merge/diverge area LOS for the study ramps are summarized in **Table C4-25**. At locations where long acceleration and deceleration lanes exist, ramp density calculations can report densities below zero. As a result, for all LOS A locations the density is presented simply as “less than 10.0 passenger cars per mile per lane” (< 10.0 pc/mi/ln), as values within this range are below the meaningful range of the analysis.

Table C4-25							
Ramp Merge/Diverge Level of Service—Cumulative 2035 Without Project Conditions							
#	Ramp	Type	Peak Hour	Existing Conditions		Cumulative 2035 Without Project Conditions	
				LOS	Density ¹	LOS	Density ¹
1	EB U.S. 50 Off-Ramp to Hazel Avenue	Diverge	a.m.	A	< 10.0	A	< 10.0
			p.m.	A	< 10.0	A	< 10.0
2	EB U.S. 50 On-Ramp from SB Hazel Avenue	Merge	a.m.	B	13.7	B	14.6
			p.m.	B	15.7	B	16.6
3	WB U.S. 50 Off-Ramp to Hazel Avenue	Diverge	a.m.	A	< 10.0	A	< 10.0
			p.m.	A	< 10.0	A	< 10.0
4	WB U.S. 50 On-Ramp from SB Hazel Avenue	Merge	a.m.	B	18.6	B	21.9
			p.m.	B	13.2	B	16.0
Notes: LOS = level of service, EB = eastbound, WB = westbound, SB = southbound							
¹ Density measured in passenger cars per mile per lane (pc/mi/ln), LOS A is reported as < 10.0 pc/mi/ln							
Bold indicates intersection operates at LOS E or LOS F							

All of the study ramps would operate at acceptable LOS under Existing Conditions and would continue to operate at acceptable LOS under Cumulative 2035 Without Project Conditions.

Cumulative 2035 Without Project Conditions 95th percentile queues for the study intersections are summarized in **Table C4-26**.

The 95th percentile queue lengths would exceed available storage capacity at the following intersection under Cumulative 2035 Without Project Conditions:

► Caltrans intersection:

5. Hazel Avenue/U.S. 50 WB Off-Ramp/Tributary Point Drive (WBL—weekday a.m. peak hour)

Table C4-26						
95th Percentile Queues—Cumulative 2035 Without Project Conditions						
#	Intersection	Lane Group	Storage Capacity (ft.)	Peak Hour	Queue Length (ft.)	
					Existing Conditions	Cumulative 2035 Without Project Conditions
4	Hazel Avenue/ U.S. 50 EB Ramp	EBLR	1,350	a.m.	275	575
				p.m.	625	1,200
		EBR	750	a.m.	75	450
				p.m.	50	575
5	Hazel Avenue/ U.S. 50 WB Off- Ramp/Tributary Point Drive	WBL	325	a.m.	200	525
				p.m.	175	300
		WBTR	2,200	a.m.	575	675
				p.m.	825	800
		WBR	2,200	a.m.	325	325
				p.m.	775	625
Notes: Storage capacities and queue lengths rounded to the nearest 25 feet EBLR = ,eastbound left/right; EBR = eastbound right; WBL = westbound left; WBR = westbound right; WBTR = westbound through/right Bold indicates that queue length exceeds storage capacity Source: Freeway Performance Measurement System 2010						

Alternative 1

Traffic

Because of the extension of International Drive, project and background trips were rerouted utilizing the new roadway for the Alternative 1 Site. Trips with an origin or destination south of the Alternative 1 Site were routed from Kilgore Road onto International Drive and then to Sunrise Boulevard instead of utilizing White Rock Road in order to get onto Sunrise Boulevard.

Cumulative 2035 Conditions traffic volumes are shown in **Exhibit C4-23**. Growth rates derived from *Rio del Oro Specific Plan Project Draft EIR/EIS* (2006) were applied to existing intersection traffic volumes to forecast Cumulative 2035 Without Project Conditions intersection traffic volumes. The Cumulative 2035 Without Project Conditions intersection LOS is summarized in **Table C4-27**. Detailed LOS calculations are included in Attachment B.

The following study intersections would operate at unacceptable LOS (LOS E or LOS F) under Cumulative 2035 Without Project Conditions:

► Non-Caltrans intersections:

1. Kilgore Road/Crawford Drive (weekday a.m. and p.m. peak hours)
2. Kilgore Road/White Rock Road (weekday a.m. and p.m. peak hours)
3. Sunrise Boulevard/White Rock Road (weekday a.m. and p.m. peak hours)
4. Zinfandel Drive/White Rock Road (weekday a.m. and p.m. peak hours)

► Caltrans intersections:

Joint Operations Center Relocation Project

6. Sunrise Boulevard/U.S. 50 WB Ramps (weekday a.m. and p.m. peak hours)
8. Zinfandel Drive/U.S. 50 EB Ramps (weekday a.m. and p.m. peak hours)

Table C4-27								
Intersection Level of Service—Cumulative 2035 Without Project Conditions								
#	Intersection	Peak Hour	Existing Conditions			Cumulative 2035 Without Project Conditions		
			LOS	Delay ¹	v/c Ratio ²	LOS	Delay ¹	v/c Ratio ²
Non-Caltrans Intersections								
1	Kilgore Rd. / Crawford Dr.	a.m.	C	16.5	--	E	37.2	--
		p.m.	C	16.0		F	>50.0	--
2	Kilgore Rd. / White Rock Rd	a.m.	A	--	0.55	E	--	0.91
		p.m.	D	--	0.83	F	--	1.39
3	Sunrise Blvd. / White Rock Rd.	a.m.	E	--	0.94	F	--	1.50
		p.m.	F	--	1.02	F	--	1.44
4	Zinfandel Dr./ White Rock Road	a.m.	B	--	0.65	F	--	1.12
		p.m.	C	--	0.79	F	--	1.24
Caltrans Intersections								
5	Sunrise Blvd. / U.S. 50 EB Ramps	a.m.	C	28.7	--	D	36.0	--
		p.m.	D	39.3	--	D	54.1	--
6	Sunrise Blvd. / U.S. 50 WB Ramps	a.m.	C	34.3	--	F	>80.0	0.90
		p.m.	D	46.1	--	F	>80.0	1.57
7	Zinfandel Dr./ U.S. 50 WB Off-Ramp	a.m.	B	12.7	--	C	22.0	--
		p.m.	B	12.0	--	D	35.3	--
8	Zinfandel Dr./ U.S. 50 EB Ramps	a.m.	F	>80.0	1.08	F	>80.0	1.46
		p.m.	F	>80.0	1.17	F	>80.0	1.84
Notes: LOS = level of service, v/c ratio = volume-to-capacity ratio, EB = eastbound, WB = westbound								
Bold indicates intersection operates at unacceptable LOS E or LOS F								
'-' indicates not applicable to scenario								
¹ Seconds of delay presented for Caltrans intersections and non-Caltrans unsignalized intersections.								
² v/c ratio is presented for non-Caltrans signalized intersections, and Caltrans intersections operating at unacceptable LOS								

Roadway Segments Cumulative 2035 Without Project Conditions roadway segment LOS for the study roadway segments is summarized in **Table C4-28**. Growth rates derived from *Rio del Oro Specific Plan Project Draft EIR/EIS* (2006) were applied to existing study ramp intersection traffic volumes to forecast Cumulative 2035 Without Project Conditions study ramp intersection traffic volumes and calculate freeway mainline segment volumes.

The following study roadway segments would operate at unacceptable LOS (LOS E or LOS F) under Cumulative 2035 Without Project Conditions:

- ▶ Non-Caltrans roadway segment:
 1. Sunrise Boulevard—North of White Rock Road
- ▶ Caltrans roadway segment:

2. EB U.S. 50—West of Zinfandel Drive Off-Ramp (weekday a.m. peak hour)
4. WB U.S. 50—East of Sunrise Boulevard Off-Ramp (weekday a.m. peak hour)
5. WB U.S. 50—West of Zinfandel Drive On-Ramp (weekday a.m. peak hour)

Table C4-28						
Roadway Segment Level of Service—Cumulative 2035 Without Project Conditions						
#	Roadway Segment	Peak Hour	Existing Conditions		Cumulative 2035 Without Project Conditions	
			LOS	v/c Ratio ¹	LOS	v/c Ratio
Non-Caltrans Roadway Segment ¹						
1	Sunrise Boulevard North of White Rock Rd.	--	D	1.03	E	1.83
Caltrans Roadway Segments ²						
2	EB U.S. 50 West of Zinfandel Dr. Off-Ramp	a.m. p.m.	E E	0.90 0.85	E D	0.92 0.82
3	EB U.S. 50 East of Sunrise Blvd. On-Ramp	a.m. p.m.	C D	0.58 0.76	C D	0.69 0.83
4	WB U.S. 50 East of Sunrise Blvd. Off-Ramp	a.m. p.m.	D D	0.80 0.71	E D	0.95 0.78
5	WB U.S. 50 West of Zinfandel Dr. On-Ramp	a.m. p.m.	E F	0.98 1.00	F D	1.31 0.73
Notes: LOS = level of service, v/c ratio = vehicle-to-capacity ratio, EB = eastbound, WB = west bound						
Bold indicates that roadway segment operates at LOS E or LOS F						
¹ Non-Caltrans roadway segments are evaluated using Sacramento County Guidelines (Sacramento County 2004) methodology for average daily traffic.						
² Caltrans roadway segments are evaluated using 2000 Highway Capacity Manual (TRB 2000) methodology for peak hour						
Source: Freeway Performance Measurement System 2010						

Ramp Merge/Diverge Cumulative 2035 Without Project Conditions ramp merge/diverge area LOS for the study ramps is summarized in **Table C4-29**. At locations where long acceleration and deceleration lanes exist, ramp density calculations can report densities below zero. As a result, for all LOS A locations the density is presented simply as “less than 10.0 passenger cars per mile per lane” (< 10.0 pc/mi/ln), as values within this range are below the meaningful range of the analysis.

All study ramps operate at acceptable LOS under Existing Conditions and would continue to operate at acceptable LOS under Cumulative 2035 Without Project Conditions.

95th Percentile Queues Cumulative 2035 Without Project Conditions 95th percentile queue lengths for the study intersections are summarized in **Table C4-30**.

The 95th Percentile queue lengths would exceed available storage capacity at the following intersections under Cumulative 2035 Without Project Conditions:

► Caltrans intersections:

6. Sunrise Boulevard/U.S. 50 WB Ramps (WBT—weekday p.m. peak hour) and
8. Zinfandel Drive/U.S. 50 EB Ramps (EBR—weekday a.m. peak hour).

Table C4-29 Ramp Merge/Diverge Level of Service—Cumulative 2035 Without Project Conditions							
#	Ramp	Type	Peak Hour	Existing Conditions		Cumulative 2035 Without Project Conditions	
				LOS	Density ¹	LOS	Density ¹
1	WB U.S. 50 Off-Ramp to Sunrise Blvd.	Diverge	a.m.	A	< 10.0	A	< 10.0
			p.m.	A	< 10.0	A	< 10.0
2	EB U.S. 50 On-Ramp from NB Sunrise Blvd.	Merge	a.m.	B	11.3	B	12.8
			p.m.	B	17.6	B	18.2
3	EB U.S. 50 Off-Ramp to Zinfandel Dr.	Diverge	a.m.	A	< 10.0	A	< 10.0
			p.m.	A	< 10.0	A	< 10.0
4	WB U.S. 50 On-Ramp from NB Zinfandel Dr.	Merge	a.m.	A	< 10.0	C	26.2
			p.m.	B	19.0	C	21.7
Notes: LOS = level of service, EB = eastbound, WB = westbound							
¹ Density measured in passenger cars per mile per lane (pc/mi/ln), LOS A is reported as < 10.0 pc/mi/ln							
Bold indicates intersection operates at LOS E or LOS F.							

Table C4-30 95th Percentile Queues—Cumulative 2035 Without Project Conditions						
#	Intersection	Lane Group	Storage Capacity (ft.)	Peak Hour	Queue Length (ft.)	
					Existing Conditions	Cumulative 2035 Without Project Conditions
6	Sunrise Boulevard/ U.S. 50 WB Ramps	WBL	1,875	a.m.	650	1,050
				p.m.	250	350
		WBT	1,875	a.m.	325	1,550
				p.m.	400	1,975
8	Zinfandel Drive/ U.S. 50 EB Ramps	EBL	1,125	a.m.	350	475
				p.m.	400	350
		EBLTR	1,325	a.m.	1,250	800
				p.m.	350	300
		EBR	425	a.m.	1,175	750
				p.m.	300	300
Notes: Storage capacities and queue lengths rounded to the nearest 25 feet EBL = eastbound left; EBLTR = eastbound left/through/right; EBR = eastbound right; WBL = westbound left; WBT = westbound through Bold indicates that queue length exceeds storage capacity						

Environmental Consequences and Mitigation Measures

The following section summarizes the proposed Project's potential on transportation facilities. Summary impacts are followed by mitigation measures.

Reclamation and DWR shall participate in the necessary improvements identified in all of the following mitigation measures. Reclamation and DWR shall be responsible for the project's fair-share participation and the associated timing of the improvements.

Impact C4-8: Increases in Peak-Hour and Daily Traffic Volumes, Resulting in Unacceptable Levels of Service under Cumulative 2035 plus Project Conditions

No-Action

Under the No-Action Alternative, no development would occur and no project-generated traffic would affect the regional transportation system; thus, **no direct** or **indirect** impacts would occur.

Proposed Action

Traffic The Cumulative 2035 plus Project Conditions traffic volumes are shown in **Exhibit C4-24**. The Cumulative 2035 plus Project Conditions intersection LOS is summarized in **Table C4-31**. Detailed LOS calculations are included in Attachment B.

Table C4-31								
Intersection Level of Service—Cumulative 2035 plus Project Conditions								
#	Intersection	Peak Hour	Cumulative 2035 Without Project Conditions			Cumulative 2035 plus Project Conditions		
			LOS	Delay ¹	v/c Ratio ²	LOS	Delay ¹	v/c Ratio ²
Non-Caltrans Intersections								
1	Nimbus Road / Gold Country Blvd.	a.m.	A	0.0	-	F	> 80.0	-
		p.m.	A	0.0	-	F	> 80.0	-
2	Hazel Ave. / Gold Country Blvd.	a.m.	F	-	1.56	F	-	1.68
		p.m.	F	-	1.04	F	-	1.06
3	Hazel Ave. / Folsom Blvd.	a.m.	F	-	3.00	F	-	3.01
		p.m.	F	-	2.98	F	-	2.98
Caltrans Intersections								
4	Hazel Ave. / U.S. 50 EB Ramps	a.m.	F	> 80.0	1.36	F	> 80.0	1.38
		p.m.	F	> 80.0	1.19	F	> 80.0	1.19
5	Hazel Ave. / U.S. 50 WB Off-Ramp / Tributary Pt. Dr.	a.m.	F	> 80.0	1.99	F	> 80.0	1.96
		p.m.	F	> 80.0	1.85	F	> 80.0	1.85
Notes: v/c ratio = volume-to-capacity ratio, EB = eastbound, WB = westbound								
Bold indicates intersection operates at unacceptable LOS F								
‘-’ indicates not applicable to scenario								
¹ Seconds of delay are presented for Caltrans intersections and non-Caltrans unsignalized intersections								
² v/c ratio is presented for non-Caltrans signalized intersections, and Caltrans intersections operating at unacceptable LOS								

The following study intersections would operate at LOS F under Cumulative 2035 plus Project Conditions:

► Non-Caltrans intersections:

1. Nimbus Road/Gold Country Boulevard (weekday a.m. and p.m. peak hours);
2. Hazel Avenue/Gold Country Boulevard (weekday a.m. and p.m. peak hours); and

3. Hazel Avenue/Folsom Boulevard (weekday a.m. and p.m. peak hours)
- Caltrans intersections:
 4. Hazel Avenue/U.S. 50 EB Ramps (weekday a.m. and p.m. peak hours);
and
 5. Hazel Avenue/U.S. 50 WB Off-Ramp/Tributary Point Drive (weekday
a.m. and p.m. peak hours)

These intersections were evaluated to determine if the project would contribute to any intersection impacts. The results of the evaluation were as follows:

1. Nimbus Road/Gold Country Boulevard

This unsignalized intersection would operate at LOS A under Cumulative 2035 Conditions and degrade to LOS F under Cumulative 2035 plus Project Conditions during the weekday a.m. and p.m. peak hours. The unsignalized intersection would meet the MUTCD peak-hour traffic signal warrant during the weekday a.m. and p.m. peak hours, and the project would cause the intersection operating at acceptable LOS (LOS A) to degrade to LOS F; therefore, the Proposed Action would make a cumulatively considerable incremental contribution to a **significant** cumulative impact at this intersection. Signal warrants are provided in Attachment F.

2. Hazel Avenue/Gold Country Boulevard

This signalized intersection would operate at LOS F under Cumulative 2035 Without Project Conditions and Cumulative 2035 plus Project Conditions during the weekday a.m. and p.m. peak hours. The intersection would operate with a v/c ratio of 1.56 (a.m.) and 1.04 (p.m.) under Cumulative 2035 Without Project Conditions and 1.68 (a.m.) and 1.06 (p.m.) under Cumulative 2035 plus Project Conditions during the weekday a.m. and p.m. peak hours. The Proposed Action would increase the v/c ratio of the intersection by 0.12 during the weekday a.m. peak hour, which would exceed the 0.05 threshold, and by 0.02 during the weekday p.m. peak hour, which would not. Therefore, the Proposed Action would make a cumulatively considerable incremental contribution to a **significant** cumulative impact at this intersection.

3. Hazel Avenue/Folsom Boulevard

This signalized intersection would operate at LOS F under Cumulative 2035 Without Project Conditions and Cumulative 2035 plus Project Conditions during the weekday a.m. and p.m. peak hours. The intersection would operate with a v/c ratio of 3.00 (a.m.) and 2.98 (p.m.) under Cumulative 2035 Without Project Conditions and 3.01 (a.m.) and 2.98 (p.m.) under Cumulative 2035 plus Project Conditions during the weekday a.m. and p.m. peak hours. The Proposed Action would not increase the v/c ratio of the intersection beyond

the 0.05 threshold; therefore, the Proposed Action would not make a cumulatively considerable incremental contribution to a significant cumulative impact at this intersection.

4. Hazel Avenue/U.S. 50 EB Ramps

This signalized intersection would operate at LOS F under Cumulative 2035 Without Project Conditions and Cumulative 2035 plus Project Conditions during the weekday a.m. and p.m. peak hours. The intersection would operate with a v/c ratio of 1.36 (a.m.) and 1.39 (p.m.) under Cumulative 2035 Without Project Conditions and 1.38 (a.m.) and 1.19 (p.m.) under Cumulative 2035 plus Project Conditions during the weekday a.m. and p.m. peak hours. The Proposed Action would not increase the v/c ratio of the intersection beyond the 0.05 threshold; therefore, the Proposed Action would not make a cumulatively considerable incremental contribution to a significant cumulative impact at this intersection.

5. Hazel Avenue/U.S. 50 WB Off-Ramp/Tributary Point Drive

This signalized intersection would operate at LOS F under Cumulative 2035 Without Project Conditions and Cumulative 2035 plus Project Conditions during the weekday a.m. and p.m. peak hours. The intersection would operate with a v/c ratio of 1.96 (a.m.) and 1.85 (p.m.) under Cumulative 2035 Without Project Conditions and 1.96 (a.m.) and 1.85 (p.m.) under Cumulative 2035 plus Project Conditions during the weekday a.m. and p.m. peak hours. The Proposed Action would not increase the v/c ratio of the intersection beyond the 0.05 threshold; therefore, the Proposed Action would not make a cumulatively considerable incremental contribution to a significant cumulative impact at this intersection.

The Proposed Action would make a cumulatively considerable incremental contribution to **significant** cumulative impacts at two study intersections under Cumulative 2035 plus Project Conditions:

► Non-Caltrans intersections:

1. Nimbus Road/Gold Country Boulevard (weekday a.m. and p.m. peak hours);
2. Hazel Avenue/Gold Country Boulevard (weekday a.m. and p.m. peak hours);

Roadway Segments Cumulative 2035 plus Project conditions roadway segment LOS for the study roadway segments is summarized in **Table C4-32**. Detailed LOS calculations are included in Attachment C.

Table C4-32						
Roadway Segment Level of Service—Cumulative 2035 plus Project Conditions						
#	Roadway Segment	Peak Hour	Cumulative 2035 Without Project Conditions		Cumulative 2035 plus Project Conditions	
			LOS	v/c Ratio	LOS	v/c Ratio
Non-Caltrans Roadway Segment ¹						
1	Hazel Avenue South of Gold Country Blvd	--	F	1.30	F	1.30
Caltrans Roadway Segments ²						
2	EB U.S. 50 West of Hazel Ave. Off-Ramp	a.m.	C	0.69	D	0.70
		p.m.	D	0.83	D	0.83
3	EB U.S. 50 East of Hazel Ave. On-Ramp	a.m.	C	0.60	C	0.60
		p.m.	C	0.71	C	0.72
4	WB U.S. 50 West of Hazel Ave. On-Ramp	a.m.	E	0.95	E	0.95
		p.m.	D	0.78	D	0.79
5	WB U.S. 50 East of Hazel Ave. Off-Ramp	a.m.	C	0.60	C	0.61
		p.m.	C	0.54	C	0.55
Notes: LOS = level of service, v/c ratio = volume-to-capacity ratio, EB = eastbound, WB = westbound						
Bold indicates that roadway segment operates at unacceptable LOS F						
¹ Non-Caltrans roadway segments are evaluated using Sacramento County Guidelines methodology (Sacramento County 2004) for average daily traffic						
² Caltrans roadway segments are evaluated using 2000 Highway Capacity Manual methodology (TRB 2000) for peak hour						

The following study roadway segment would operate at unacceptable LOS (LOS F) under Cumulative 2035 Without Project Conditions and would continue to operate at unacceptable LOS (LOS F) under Cumulative 2035 plus Project Conditions:

► Non-Caltrans roadway segment:

1. Hazel Avenue—South of Gold Country Boulevard.

This roadway segment was evaluated to determine if the project would contribute to any roadway segment impacts. The results of the evaluation are as follows:

1. Hazel Avenue—South of Gold Country Boulevard

This roadway segment would operate at LOS F under Cumulative 2035 Without Project Conditions and Cumulative 2035 plus Project Conditions. The roadway segment would operate with a v/c ratio of 1.30 under Cumulative 2035 Without Project Conditions and Cumulative 2035 plus Project Conditions during the weekday p.m. peak hour. The project would not increase the v/c ratio of the roadway segment beyond the 0.05 threshold; therefore, the project would not make a cumulatively considerable incremental contribution to a significant cumulative impact on this roadway segment.

The Proposed Action would not make a cumulatively considerable incremental contribution to a significant cumulative impact at any study roadway segments under Cumulative 2035 plus Project Conditions.

Ramp Merge/Diverge Cumulative 2035 plus Project conditions ramp merge/diverge area LOS for the study ramps is summarized in **Table C4-33**. Analysis worksheets are provided in Attachment D. At locations where long acceleration and deceleration lanes exist, ramp density calculations can report densities below zero. As a result, for all LOS A locations the density is presented simply as “less than 10.0 passenger cars per mile per lane” (< 10.0 pc/mi/ln), as values within this range are below the meaningful range of the analysis.

Table C4-33							
Ramp Merge/Diverge Level of Service—Cumulative 2035 plus Project Conditions							
#	Ramp	Type	Peak Hour	Cumulative 2035 Without Project Conditions		Cumulative 2035 plus Project Conditions	
				LOS	Density ¹	LOS	Density ¹
1	EB U.S. 50 Off-Ramp to Hazel Avenue	Diverge	a.m.	A	< 10.0	A	< 10.0
			p.m.	A	< 10.0	A	< 10.0
2	EB U.S. 50 On-Ramp from SB Hazel Avenue	Merge	a.m.	B	14.6	B	14.7
			p.m.	B	16.6	B	16.9
3	WB U.S. 50 Off-Ramp to Hazel Avenue	Diverge	a.m.	A	< 10.0	A	< 10.0
			p.m.	A	< 10.0	A	< 10.0
4	WB U.S. 50 On-Ramp from SB Hazel Avenue	Merge	a.m.	B	21.9	B	21.9
			p.m.	B	16.0	B	16.0
Notes: LOS = level of service, EB = eastbound, WB = westbound, SB = southbound							
¹ Density measured in passenger cars per mile per lane (pc/mi/ln), LOS A is reported as < 10.0 pc/mi/ln							
Bold indicates intersection operates at LOS E or LOS F							

All of the study ramps would operate at acceptable LOS under Cumulative 2035 Conditions and would continue to operate at acceptable LOS under Cumulative 2035 plus Project Conditions. The Proposed Action would not make a cumulatively considerable incremental contribution to a significant cumulative impact at any study ramps under Cumulative 2035 plus Project Conditions.

95th Percentile Queues Cumulative 2035 plus Project conditions 95th percentile queues for the study intersections are summarized in **Table C4-34**. Analysis worksheets are provided in Attachment E.

95th percentile queue lengths would exceed available storage capacity at the following study intersection under Cumulative 2035 Conditions and Cumulative 2035 plus Project Conditions:

► Caltrans intersections:

5. Hazel Avenue/U.S. 50 WB Ramp/Tributary Point Drive (weekday a.m. peak hour).

Table C4-34 95th Percentile Queues—Cumulative 2035 plus Project Conditions						
#	Intersection	Lane Group	Storage Capacity (ft.)	Peak Hour	Queue Length (ft.)	
					Cumulative 2035 Without Project Conditions	Cumulative 2035 plus Project Conditions
4	Hazel Avenue/ U.S. 50 EB Ramp	EBLR	1,350	a.m.	575	725
				p.m.	1,200	1,225
		EBR	750	a.m.	450	500
				p.m.	575	575
5	Hazel Avenue/ U.S. 50 WB Off- Ramp/Tributary Point Drive	WBL	325	a.m.	525	525
				p.m.	300	300
		WBTR	2,200	a.m.	675	675
				p.m.	800	800
		WBR	2,200	a.m.	325	350
				p.m.	625	650
Notes: Storage capacities and queue lengths rounded to the nearest 25 feet EBLR = eastbound left/right; EBR = eastbound right; WBL = westbound left; WBR = westbound right; WBTR = westbound through/right Bold indicates that queue length exceeds storage capacity						

The Proposed Action would not cause a substantial increase in the 95th percentile queue length, and sufficient capacity is available in the adjacent westbound through-right lane group; therefore, the Proposed Action would not make a cumulatively considerable incremental contribution to a significant cumulative impact at this intersection under Cumulative 2035 plus Project Conditions.

Conclusion

Overall for Impact C4-8, the Proposed Action would make a cumulatively considerable incremental contribution to a **significant** cumulative impact on two intersections (Nimbus Road/Gold Country Boulevard and Hazel Avenue/Gold Country Boulevard). The Proposed Action would not make a cumulatively considerable incremental contribution to a significant cumulative impact at any roadway segments, freeway ramps, or ramp queues.

Alternative 1

Traffic The Cumulative 2035 plus Project Conditions traffic volumes are shown in **Exhibit C4-25**. The Cumulative 2035 plus Project Conditions intersection LOS is summarized in **Table C4-35**. Detailed LOS calculations are included in Attachment B.

The following study intersections operate at unacceptable LOS (LOS E or LOS F) under Cumulative 2035 plus Project Conditions:

► Non-Caltrans intersections:

1. Kilgore Road/Crawford Drive (weekday a.m. and p.m. peak hours)
2. Kilgore Road/White Rock Road (weekday a.m. and p.m. peak hours)
3. Sunrise Boulevard/White Rock Road (weekday a.m. and p.m. peak hours)
4. Zinfandel Drive/White Rock Road (weekday a.m. and p.m. peak hours)

Table C4-35								
Intersection Level of Service—Cumulative 2035 plus Project Conditions								
#	Intersection	Peak Hour	Cumulative 2035 Conditions			Cumulative 2035 plus Project Conditions		
			LOS	Delay ¹	v/c Ratio ²	LOS	Delay ¹	v/c Ratio ²
Non-Caltrans Intersections								
1	Kilgore Rd. / Crawford Dr.	a.m.	E	37.2	--	F	>50.0	--
		p.m.	F	>50.0	--	F	>50.0	--
2	Kilgore Rd. / White Rock Rd	a.m.	E	--	0.91	E	--	0.98
		p.m.	F	--	1.39	F	--	1.45
3	Sunrise Blvd. / White Rock Rd.	a.m.	F	--	1.50	F	--	1.55
		p.m.	F	--	1.44	F	--	1.45
4	Zinfandel Dr./ White Rock Road	a.m.	F	--	1.12	F	--	1.18
		p.m.	F	--	1.24	F	--	1.25
Caltrans Intersections								
5	Sunrise Blvd. / U.S. 50 EB Ramps	a.m.	D	36.0	--	D	35.9	--
		p.m.	D	54.1	--	D	54.5	--
6	Sunrise Blvd. / U.S. 50 WB Ramps	a.m.	F	>80.0	0.90	F	>80.0	0.90
		p.m.	F	>80.0	1.57	F	>80.0	1.58
7	Zinfandel Dr./ U.S. 50 WB Off-Ramps	a.m.	C	22.0	--	C	22.0	--
		p.m.	D	35.3	--	D	35.3	--
8	Zinfandel Dr./ U.S. 50 EB Ramps	a.m.	F	>80.0	1.46	F	>80.0	1.50
		p.m.	F	>80.0	1.84	F	>80.0	1.87
Notes: LOS = level of service, v/c ratio = volume-to-capacity ratio, EB = eastbound, WB = westbound								
Bold indicates intersection operates at unacceptable LOS E or LOS F								
¹ - indicates not applicable to scenario								
¹ Seconds of delay presented for Caltrans intersections and non-Caltrans unsignalized intersections								
² v/c ratio is presented for non-Caltrans signalized intersections, and Caltrans intersections operating at unacceptable LOS								

► Caltrans intersections:

6. Sunrise Boulevard/U.S. 50 WB Ramps (weekday a.m. and p.m. peak hours)
8. Zinfandel Drive/U.S. 50 EB Ramps (weekday a.m. and p.m. peak hours)

These intersections were evaluated to determine if the project would contribute to any intersection impacts. The results of the evaluation are as follows:

1. Kilgore Road/Crawford Drive

This unsignalized intersection would operate at unacceptable LOS during the weekday a.m. and p.m. peak hours under Cumulative 2035 Without Project Conditions and would continue to operate at unacceptable LOS under Cumulative 2035 plus Project Conditions (without consideration of an additional new right-turn-only driveway north of Crawford Avenue at the Kilgore Road/Crawford Drive intersection that is part of the project description to ensure that this intersection operates at an acceptable LOS). The intersection would operate with a delay of 37.2 seconds under Cumulative 2035 Without Project Conditions and greater than 50.0 seconds under Cumulative 2035 plus Project Conditions during the a.m. peak hour (without consideration of an additional new right-turn-only driveway north of Crawford Avenue at the Kilgore Road/Crawford Drive intersection that is part of the project description to ensure that this intersection operates at an acceptable LOS). The unsignalized intersection would meet the MUTCD peak-hour traffic signal warrant during the p.m. peak hour, which indicates that a signal should be installed at the intersection. (Signal warrants are provided in Appendix C4a, "Traffic Impact Technical Report," Attachment F.) Alternative 1 would increase the delay of the intersection beyond 5 seconds (greater than 0.05) (without consideration of an additional new right-turn-only driveway north of Crawford Avenue at the Kilgore Road/Crawford Drive intersection that is part of the project description to ensure that this intersection operates at an acceptable LOS). The inclusion in the project description of the additional new right-turn-only driveway described above, however, ensures that this intersection operates at an acceptable LOS. Therefore, Alternative 1 would not make a cumulatively considerable incremental contribution to a significant cumulative impact at this intersection.

2. Kilgore Road/White Rock Road

This signalized intersection would operate at unacceptable LOS under Cumulative 2035 Without Project Conditions and would continue to operate at unacceptable LOS under Cumulative 2035 plus Project Conditions during the weekday a.m. and p.m. peak hours. The intersection would operate with a v/c ratio of 0.91 (a.m.) and 1.39 (p.m.) under Cumulative 2035 Without Project Conditions and 0.98 (a.m.) and 1.45 (p.m.) under Cumulative 2035 plus Project Conditions during the weekday a.m. and p.m. peak hours. Alternative 1 would increase the v/c ratio of the intersection by 0.07 (a.m.) and 0.06 (p.m.) during the weekday a.m. and p.m. peak hour, which exceeds the 0.05 threshold. Therefore, Alternative 1 would make a cumulatively considerable incremental contribution to a **significant** cumulative impact at this intersection.

3. Sunrise Boulevard/White Rock Road

This signalized intersection would operate at unacceptable LOS during the weekday a.m. and p.m. peak hours under Cumulative 2035 Without Project Conditions and would continue to operate at unacceptable LOS under Cumulative 2035 plus Project Conditions. The intersection would operate with a v/c ratio of 1.50 (a.m.) and 1.44 (p.m.) under Cumulative 2035 Without Project Conditions and 1.55 (a.m.) and 1.45 (p.m.) under Cumulative 2035 plus Project Conditions during the weekday a.m. and p.m. peak hours. Alternative 1 would increase the v/c ratio of the intersection by 0.05 during the weekday a.m. peak hour, which reaches the 0.05 threshold, and by 0.01 during the weekday p.m. peak hour, which does not; therefore, Alternative 1 would make a cumulatively considerable incremental contribution to a **significant** cumulative impact at this intersection.

4. Zinfandel Drive/White Rock Road

This signalized intersection would operate at unacceptable LOS during the a.m. and p.m. peak hours under Cumulative 2035 Without Project Conditions and would continue to operate at unacceptable LOS under Cumulative 2035 plus Project Conditions during the weekday a.m. and p.m. peak hours. The intersection would operate with a v/c ratio of 1.12 (a.m.) and 1.24 (p.m.) under Cumulative 2035 without Project Conditions and 1.18 (a.m.) and 1.25 (p.m.) under Cumulative 2035 plus Project Conditions during the weekday a.m. and p.m. peak hours. Alternative 1 would increase the v/c ratio of the intersection by 0.06 during the weekday a.m. peak hour, which exceeds the 0.05 threshold, and by 0.01 during the p.m. peak hour, which does not. Therefore, Alternative 1 would make a cumulatively considerable incremental contribution to a **significant** cumulative impact at this intersection.

6. Sunrise Boulevard/U.S. 50 WB Ramps

This signalized intersection would operate at unacceptable LOS during the weekday a.m. and p.m. peak hours under Cumulative 2035 Without Project Conditions and would continue to operate at unacceptable LOS under Cumulative 2035 plus Project Conditions. The intersection would operate with a v/c ratio of 0.90 (a.m.) and 1.57 (p.m.) under Cumulative 2035 Without Project Conditions and 0.90 (a.m.) and 1.58 (p.m.) under Cumulative 2035 plus Project Conditions during the weekday a.m. and p.m. peak hours. Alternative 1 would not increase the v/c ratio of the intersection beyond the 0.05 threshold; therefore, Alternative 1 would not make a cumulatively considerable incremental contribution to a significant cumulative impact at this intersection.

8. Zinfandel Drive/U.S. EB Ramps

This signalized intersection would operate at unacceptable LOS during the weekday a.m. and p.m. peak hours under Cumulative 2035 Without Project Conditions and would continue to operate at unacceptable LOS under Cumulative 2035 plus Project Conditions. The intersection would operate with a v/c ratio of 1.46 (a.m.) and 1.84 (p.m.) under Cumulative 2035 Without Project Conditions and 1.50 (a.m.) and 1.87 (p.m.) under Cumulative 2035 plus Project Conditions during the weekday a.m. and p.m. peak hours. Alternative 1 would not increase the v/c ratio of the intersection beyond the 0.05 threshold; therefore, Alternative 1 would not make a cumulatively considerable incremental contribution to a significant cumulative impact at this intersection.

Alternative 1 would make a cumulatively considerable incremental contribution to a significant cumulative impact at three study intersections:

► Non-Caltrans intersections:

2. Kilgore Road/White Rock Road (weekday a.m. and p.m. peak hours)
3. Sunrise Boulevard/White Rock Road (weekday a.m. and p.m. peak hours)
4. Zinfandel Drive/White Rock Road (weekday a.m. and p.m. peak hours)

Roadway Segment LOS Cumulative 2035 plus Project Conditions roadway segment LOS for the study roadway segments is summarized in **Table C4-36**. Detailed roadway segment LOS calculations are included in **Attachment C**.

Project trips would be added to the roadway segments including the highway facilities, U.S. 50. Alternative 1 would add 61 vehicles on U.S. 50 westbound (43 inbound, 18 outbound) during the weekday a.m. peak hour and 123 vehicles (8 inbound, 115 outbound) during the weekday p.m. peak hour. Alternative 1 would add 138 vehicles (132 inbound, 6 outbound) on U.S. 50 eastbound during the weekday a.m. peak hour and 61 vehicles (23 inbound, 38 outbound) during the weekday p.m. peak hour.

The following study roadway segments operating at unacceptable LOS (LOS E or LOS F) under Cumulative 2035 Without Project Conditions would continue to operate at unacceptable LOS (LOS E or LOS F) under Cumulative 2035 plus Project Conditions:

► Non-Caltrans roadway segments:

1. Sunrise Boulevard—North of White Rock Road

► Caltrans roadway segments:

2. EB U.S. 50—West of Zinfandel Drive Off-Ramp (weekday a.m. peak hour)
4. WB U.S. 50—East of Sunrise Boulevard Off-Ramp (weekday a.m. peak hour)
5. WB U.S. 50—West of Zinfandel Drive On-Ramp (weekday a.m. peak hour)

Table C4-36						
Roadway Segment Level of Service—Cumulative 2035 plus Project Conditions						
#	Roadway Segment	Peak Hour	Cumulative 2035 Without Project Conditions		Cumulative 2035 plus Project Conditions	
			LOS	v/c Ratio ¹	LOS	v/c Ratio
Non-Caltrans Roadway Segment ¹						
1	Sunrise Boulevard North of White Rock Rd.	--	E	1.83	E	1.83
Caltrans Roadway Segments ²						
2	EB U.S. 50 West of Zinfandel Dr. Off-Ramp	a.m.	E	0.92	E	0.93
		p.m.	D	0.82	D	0.83
3	EB U.S. 50 East of Sunrise Blvd. On-Ramp	a.m.	C	0.69	C	0.69
		p.m.	D	0.83	D	0.83
4	WB U.S. 50 East of Sunrise Blvd. Off-Ramp	a.m.	E	0.95	E	0.95
		p.m.	D	0.78	D	0.79
5	WB U.S. 50 West of Zinfandel Dr. On-Ramp	a.m.	F	1.31	F	1.32
		p.m.	D	0.73	D	0.73
Notes: LOS = level of service, v/c ratio = vehicle-to-capacity ratio, EB = eastbound, WB = westbound						
Bold indicates that roadway segment operates at unacceptable LOS E or LOS F						
¹ Non-Caltrans roadway segments are evaluated using Sacramento County Guidelines (Sacramento County 2004) methodology for average daily traffic						
² Caltrans roadway segments are evaluated using 2000 Highway Capacity Manual (TRB 2000) methodology for peak hour						

These roadway segments were evaluated to determine if Alternative 1 would make a cumulatively considerable incremental contribution to any significant cumulative roadway segment impacts. The results of the evaluation are as follows:

1. Sunrise Boulevard—North of White Rock Road

This roadway segment would operate at LOS E under Cumulative 2035 Without Project Conditions and Cumulative 2035 Conditions. The roadway segment would operate with a v/c ratio of 1.83 under Cumulative 2035 Without Project Conditions and 1.83 under Cumulative 2035 plus Project Conditions. Alternative 1 would not increase the v/c ratio of the roadway segment beyond the 0.05 threshold; therefore, Alternative 1 would not make a cumulatively considerable incremental contribution to a significant cumulative impact at this intersection.

2. EB U.S. 50—West of Zinfandel Drive Off-Ramp

This roadway segment would operate at LOS F under Cumulative 2035 Without Project Conditions and Cumulative 2035 plus Project Conditions during the weekday a.m. and p.m. peak hours. The roadway segment would operate with a v/c ratio of 0.92 under Cumulative 2035 Conditions and 0.93 under Cumulative 2035 plus Project Conditions during the weekday a.m. peak hour. Alternative 1 would not increase the v/c ratio of the roadway segment beyond the 0.05 threshold; however, the project would add 132 vehicle trips during the weekday a.m. peak hour and 23 during the p.m. peak hour, which would exceed the 10-vehicle threshold. Alternative 1 traffic would exacerbate already unacceptable operations; therefore, Alternative 1 would make a cumulatively considerable incremental contribution to a **significant** cumulative impact at this roadway segment.

4. WB U.S. 50—East of Sunrise Boulevard Off-Ramp

This roadway segment would operate at LOS E or F under Cumulative 2035 Without Project Conditions and Cumulative 2035 plus Project Conditions during the weekday a.m. and p.m. peak hours. The roadway segment would operate with a v/c ratio of 0.95 under Cumulative 2035 Conditions and Cumulative 2035 plus Project Conditions during the weekday a.m. peak hour. Alternative 1 would not increase the v/c ratio of the roadway segment by 0.05 or more; however, Alternative 1 would add 18 vehicle trips to this roadway segment during the weekday a.m. peak hour, which would exceed the 10-vehicle threshold. Alternative 1 traffic would exacerbate already unacceptable operations; therefore, Alternative 1 would make a cumulatively considerable incremental contribution to a **significant** cumulative impact at this roadway segment.

5. WB U.S. 50—West of Zinfandel Drive On-Ramp

This roadway segment would operate at LOS F under Cumulative 2035 Without Project Conditions and Cumulative 2035 plus Project Conditions during the weekday a.m. peak hour. The roadway segment would operate with a v/c ratio of 1.31 under Cumulative 2035 Without Project Conditions and 1.32 under Cumulative 2035 plus Project Conditions during the weekday a.m. peak hour. Alternative 1 would not increase the v/c ratio of the roadway segment beyond the 0.05 threshold; however, the project would add 43 vehicle trips to this roadway segment during the weekday a.m. peak hour, which would exceed the 10-vehicle threshold. Alternative 1 traffic would exacerbate already unacceptable operations; therefore, Alternative 1 would make a cumulatively considerable incremental contribution to a **significant** cumulative impact at this roadway segment.

Alternative 1 would make a cumulatively considerable incremental contribution to a significant cumulative impact at three study roadway segments under Cumulative 2035 plus Project Conditions:

- Caltrans roadway segments:
 2. EB U.S. 50—West of Zinfandel Drive Off-Ramp (weekday a.m. peak hour)
 4. WB U.S. 50—East of Sunrise Boulevard Off-Ramp (weekday a.m. peak hour)
 5. WB U.S. 50—West of Zinfandel Drive On-Ramp (weekday a.m. peak hour)

Ramp Merge/Diverge Table C4-37 summarizes LOS for the selected ramps under Cumulative 2035 plus Project Conditions. At locations where long acceleration and deceleration lanes exist, ramp density calculations can report densities below zero. As a result, for all LOS A locations the density is presented simply as “less than 10.0 passenger cars per mile per lane” (< 10.0 pc/mi/ln), as values within this range are below the meaningful range of the analysis.

Table C4-37 Ramp Merge/Diverge Level of Service—Cumulative 2035 plus Project Conditions							
#	Ramp	Type	Peak Hour	Cumulative 2035 Without Project Conditions		Cumulative 2035 plus Project Conditions	
				LOS	Density ¹	LOS	Density ¹
1	WB U.S. 50 Off-Ramp to Sunrise Blvd.	Diverge	a.m.	A	< 10.0	A	< 10.0
			p.m.	A	< 10.0	A	< 10.0
2	EB U.S. 50 On-Ramp from NB Sunrise Blvd.	Merge	a.m.	B	12.8	B	12.9
			p.m.	B	18.2	B	18.4
3	EB U.S. 50 Off-Ramp to Zinfandel Dr.	Diverge	a.m.	A	< 10.0	A	< 10.0
			p.m.	A	< 10.0	A	< 10.0
4	WB U.S. 50 On-Ramp from NB Zinfandel Dr.	Merge	a.m.	C	26.2	C	26.3
			p.m.	C	21.7	C	22.8
Notes: LOS = level of service, EB = eastbound, WB = westbound, NB = northbound							
¹ Density measured in passenger cars per mile per lane (pc/mi/ln), LOS A is reported as < 10.0 pc/mi/ln							
Bold indicates intersection operates at LOS E or LOS F							

All of the study ramps would operate at acceptable LOS under Cumulative 2035 Without Project Conditions and would continue to operate at acceptable LOS under Cumulative 2035 plus Project Conditions. Alternative 1 would not make a cumulatively considerable incremental contribution to a significant cumulative impact at any study ramps under Cumulative 2035 plus Project Conditions.

95th Percentile Queues Cumulative 2035 plus Project Conditions 95th percentile queues for the study intersections are summarized in **Table C4-38**. Analysis worksheets are provided in Attachment E.

The 95th percentile queues would exceed available storage capacity at the following intersections under Cumulative 2035 Without Project Conditions and would continue to exceed available storage capacity under Cumulative 2035 plus Project Conditions:

► Caltrans intersection:

6. Sunrise Boulevard/U.S. 50 WB Ramps (WBT—weekday p.m. peak hour)
8. Zinfandel Drive/U.S. 50 EB Ramps (EBR—weekday a.m. peak hour)

Results of the ramp merge/diverge analysis for these intersections are provided below:

Table C4-38								
95th Percentile Queues—Cumulative 2035 plus Project Conditions								
#	Intersection	Lane Group	Storage Capacity (ft.)	Peak Hour	Queue Length (ft.)			
					Cumulative 2035 Without Project Conditions	Cumulative 2035 plus Project Conditions		
6	Sunrise Boulevard/ U.S. 50 WB Ramps	WBL	1,875	a.m. p.m.	1,050 350	1,125 350		
		WBT	1,875	a.m. p.m.	1,550 1,975	1,550 1,975		
8	Zinfandel Drive/ U.S. 50 EB Ramps	EBL	1,125	a.m. p.m.	475 350	475 350		
				EBLTR	1,325	a.m. p.m.	800 300	900 325
		EBR	425			a.m. p.m.	750 300	850 325
						Notes: Storage capacities and queue lengths rounded to the nearest 25 feet EBL = eastbound left; EBLTR = eastbound left/through/right; EBR = eastbound right; WBL = westbound left; WBT = westbound through Bold indicates that queue length exceeds storage capacity		

6. Sunrise Boulevard/U.S. 50 WB Ramps (WBT—weekday p.m. peak hour)

Under Cumulative without Project Conditions, queues in the westbound through lane at this intersection would exceed available storage capacity by 100 feet during the weekday p.m. peak hour. No additional exceedance would result from Alternative 1; therefore, Alternative 1 would not make a cumulatively considerable incremental contribution to a significant cumulative impact at this intersection.

8. Zinfandel Drive/U.S. 50 EB Ramps (EBR—weekday a.m. peak hour)

Under Cumulative without Project Conditions, queues in the eastbound right lane group would exceed available storage capacity by approximately 325 feet during the weekday a.m. peak hour. Under Cumulative 2035 plus Project Conditions, Alternative 1 would increase this exceedance by 100 feet to 425 feet during the weekday a.m. peak hour. However, the Zinfandel Drive off-ramp consists of two lanes that later split into four lanes approaching the Zinfandel Drive/U.S. 50 EB Ramps intersection. The second (outside) lane on the ramp serves the eastbound left-through-right and eastbound right lane groups, and is part of an auxiliary lane along eastbound U.S. 50 that begins at the upstream interchange at Mather Field Road. Because of the auxiliary lane, any queues stretching past the gore area would be contained within the auxiliary lane and would not disrupt mainline operations in the adjacent travel lanes. Caltrans defines a significant impact for a 95th percentile queue as extending beyond the existing storage capacity and disrupting mainline operations. As a result, because the auxiliary lane would contain the additional queue length and prevent it from disrupting the freeway mainline, Alternative 1 is not expected to make a cumulatively considerable incremental contribution to a significant cumulative impact at the Zinfandel Drive/U.S. 50 EB Ramps intersection.

Conclusion Overall for Impact C4-8, Alternative 1 would make a cumulatively considerable incremental contribution to a **significant** cumulative impact at three intersections (Kilgore Road/White Rock Road, Sunrise Boulevard/White Rock Road, and Zinfandel Drive/White Rock Road) and three roadway segments (EB U.S. 50—West of Zinfandel Drive Off-Ramp, WB U.S. 50—West of Sunrise Boulevard Off-Ramp, and WB U.S. 50—West of Zinfandel Drive On-Ramp) under Cumulative 2035 plus Project Conditions. Alternative 1 would not make a cumulatively considerable incremental contribution to a significant cumulative impact at any freeway ramps or ramp queues.

Implementing Mitigation Measures 3.10-8a through 3.10-8g below, as applicable, would substantially lessen the Proposed Action's and Alternative 1's incremental contributions to the significant cumulative impact on these intersections to a less-than-considerable level, as well as reduce the overall significant cumulative impacts to less-than-significant levels, with the caveats included below regarding the inability of Reclamation and DWR to control actions of the responsible jurisdictions.

Mitigation Measure 4C-8a: Improve Nimbus Road/Gold Country Boulevard Intersection (Proposed Site—Intersection #1) under Cumulative 2035 Plus Project Conditions

Proposed Action

To ensure that this intersection operates at an acceptable LOS, Reclamation and DWR will contribute a fair share for signaling the Nimbus Road/Gold Country

Boulevard intersection (Proposed Site—Intersection #1) when conditions warrant the improvement.

Responsibility: Reclamation and DWR

Timing: When conditions warrant the improvement and the County of Sacramento contributes its fair share of funding the improvement.

Implementing Mitigation Measure 4C-8a would substantially lessen the Proposed Action's and Alternative 1's incremental contribution to the significant cumulative impact on this intersection to a less-than-considerable level, as well as reduce the overall significant cumulative impact to a less-than-significant level, by allowing this intersection to operate at LOS A), as indicated in Attachment B under "Proposed Site—Cumulative 2035 plus Project Conditions Mitigations, Weekday PM Peak Hour."

Until Sacramento County implements the improvements, the overall cumulative impact would be classified as significant but eventually would be reduced to a less-than-significant cumulative impact once those improvements are constructed. Implementation of the mitigation measure will result in operations at LOS A.

The requirement that Reclamation and DWR participate in funding these transportation improvements would mitigate or substantially lessen the project's incremental contribution to the significant cumulative impact on this intersection, but the impact would remain **significant and unavoidable** until the improvements are constructed. This conclusion reflects the reality that successful implementation of the proposed improvements will require the cooperation of the County, over which Reclamation and DWR have no control. For this reason, Reclamation and DWR are conservatively acknowledging the possibility that, despite their own commitment to work with the County, mutually acceptable accommodation may not be reached. Consistent with CEQA Guidelines section 15091, subdivision (a)(2), though, Reclamation and DWR conclude that the County can and should cooperate with them in implementing the mitigation.

Mitigation Measure 4C-8b: Improve Hazel Avenue/Gold Country Boulevard Intersection (Proposed Site—Intersection #2) under Cumulative 2035 Plus Project Conditions

Proposed Action

To ensure that this intersection operates at an acceptable LOS, Reclamation and DWR will contribute a fair share of funding for the following improvements:

- ▶ Addition of one exclusive southbound right-turn lane; and
- ▶ Optimization of signal timing and cycle length—Reoptimization of the signal typically includes development of signal timing plans and reallocation of green time for each intersection approach relative to the traffic volumes on those approaches. Depending on the existing traffic signal infrastructure, this may also require an upgrade to the signal controller, installation of GPS

communication, signal interconnect cables, and other equipment in order to allow the traffic signal to operate in concert with adjacent signals.

Responsibility: Reclamation and DWR

Timing: When conditions warrant the improvement and the County of Sacramento contributes its fair share of funding the improvements.

Implementing Mitigation Measure 4C-8b would substantially lessen the Proposed Action's incremental contribution to the significant cumulative impact on this intersection to a less-than-considerable level, as well as reduce the overall significant cumulative impact to a less-than-significant level, by reducing the increase in v/c ratio to below the 0.05 threshold, as indicated in Attachment B under "Proposed Site—Cumulative 2035 Plus Project Conditions Mitigation, Weekday AM Peak Hour."

Until Sacramento County implements the improvements, the overall cumulative impact would be classified as significant but eventually would be reduced to a less-than-significant cumulative impact once those improvements are constructed. Implementation of the mitigation measure will reduce the increase in v/c ratio to below the 0.05 threshold.

The requirement that Reclamation and DWR participate in funding these transportation improvements would mitigate or substantially lessen the project's incremental contribution to the significant cumulative impact on this intersection, but the impact would remain **significant and unavoidable** until the improvements are constructed. This conclusion reflects the reality that successful implementation of the proposed improvements will require the cooperation of the County, over which Reclamation and DWR have no control. For this reason, Reclamation and DWR are conservatively acknowledging the possibility that, despite their own commitment to work with the County, mutually acceptable accommodation may not be reached. Consistent with CEQA Guidelines section 15091, subdivision (a)(2), though, Reclamation and DWR conclude that the County can and should cooperate with them in implementing the mitigation.

Mitigation Measure 4C-8c: Improve the Kilgore Road/White Rock Road Intersection (Alternative 1 - Intersection #2) under 2035 Cumulative plus Project Conditions

Alternative 1

To ensure that this intersection operates at acceptable LOS, Reclamation and DWR will contribute a fair share of funding to implement one of the following improvements:

- ▶ Addition of one exclusive northbound right-turn lane, or
- ▶ Addition of an eastbound through lane (this would require additional right-of-way to accommodate three receiving lanes on eastbound White Rock Road).

Responsibility: Reclamation and DWR

Timing: When conditions warrant the improvement and the City of Rancho Cordova contributes its fair share of funding the improvement.

Implementing Mitigation Measure 4C-8c would substantially lessen Alternative 1's incremental contribution to the significant cumulative impact on this intersection to a less-than-considerable level, as well as reduce the overall significant cumulative impact to a less-than-significant level, by reducing the increase in v/c ratio to below the 0.05 threshold, as indicated in Attachment B under "Alternative 1 Site—Cumulative 2035 Plus Project Conditions Mitigation, Weekday AM Peak Hour" And "Weekday PM Peak Hour."

Until the City of Rancho Cordova implements the improvements, the overall cumulative impact would be classified as significant but eventually would be reduced to a less-than-significant cumulative impact once those improvements are constructed. Implementation of the mitigation measure will reduce the increase in v/c ratio below the 0.05 threshold.

The requirement that Reclamation and DWR participate in funding these transportation improvements would mitigate or substantially lessen the project's incremental contribution to the significant cumulative impact on this intersection, but the impact would remain **significant and unavoidable** until the improvements are constructed. This conclusion reflects the reality that successful implementation of the proposed improvements will require the cooperation of the City, over which Reclamation and DWR have no control. For this reason, Reclamation and DWR are conservatively acknowledging the possibility that, despite their own commitment to work with the City, mutually acceptable accommodation may not be reached. Consistent with CEQA Guidelines section 15091, subdivision (a)(2), though, Reclamation and DWR conclude that the City can and should cooperate with them in implementing the mitigation.

Mitigation Measure 4C-8d: Improve the Sunrise Boulevard/White Rock Road Intersection (Alternative 1 - Intersection #3) under 2035 Cumulative plus Project Conditions

Alternative 1

To ensure that this intersection operates at acceptable LOS, Reclamation and DWR will contribute a fair share of funding to add one exclusive southbound right-turn lane.

Responsibility: Reclamation and DWR

Timing: When conditions warrant the improvement and the City of Rancho Cordova contributes its fair share of funding the improvement.

Implementing Mitigation Measure 3.10-8d would substantially lessen Alternative 1's incremental contribution to the significant cumulative impact on this intersection to a less-than-considerable level, as well as reduce the overall significant cumulative impact to a less-than-significant level, by reducing the increase in v/c ratio to below the 0.05 threshold, as indicated in Attachment B under "Alternative 1 Site—Cumulative 2035 Plus Project Conditions Mitigation, Weekday AM Peak Hour."

Until the City of Rancho Cordova implements the improvements, the overall cumulative impact would be classified as significant but eventually would be reduced to a less-than-significant cumulative impact once those improvements are constructed. Implementation of the mitigation measure will reduce the increase in v/c ratio below the 0.05 threshold.

The requirement that Reclamation and DWR participate in funding these transportation improvements would mitigate or substantially lessen the project's incremental contribution to the significant cumulative impact on this intersection, but the impact would remain **significant and unavoidable** until the improvements are constructed. This conclusion reflects the reality that successful implementation of the proposed improvements will require the cooperation of the City, over which Reclamation and DWR have no control. For this reason, Reclamation and DWR are conservatively acknowledging the possibility that, despite their own commitment to work with the City, mutually acceptable accommodation may not be reached. Consistent with CEQA Guidelines section 15091, subdivision (a)(2), though, Reclamation and DWR conclude that the City can and should cooperate with them in implementing the mitigation.

Mitigation Measure 4C-8e: Improve Zinfandel Drive/White Rock Road Intersection (Alternative 1 - Intersection #4) under Cumulative 2035 plus Project Conditions

Alternative 1

To ensure that this intersection operates at acceptable LOS, Reclamation and DWR will contribute a fair share of funding to add one exclusive northbound right-turn lane.

Responsibility: Reclamation and DWR

Timing: When conditions warrant the improvement and the City of Rancho Cordova contributes its fair share of funding the improvement.

Implementing Mitigation Measure 4C-8e would substantially lessen Alternative 1's incremental contribution to the significant cumulative impact on this intersection to a less-than-considerable level, as well as reduce the overall significant cumulative impact to a less-than-significant level, by reducing the increase in v/c ratio to below the 0.05 threshold, as indicated in Attachment B under "Alternative 1 Site—Cumulative 2035 Plus Project Conditions Mitigation, Weekday AM Peak Hour."

Until the City of Rancho Cordova implements the improvements, the overall cumulative impact would be classified as significant but eventually would be reduced to a less-than-significant cumulative impact once those improvements are constructed. Implementation of the mitigation measure will reduce the increase in v/c ratio below the 0.05 threshold.

The requirement that Reclamation and DWR participate in funding these transportation improvements would mitigate or substantially lessen the project's incremental contribution to the significant cumulative impact on this intersection, but the impact would remain **significant and unavoidable** until the improvements are constructed. This conclusion reflects the reality that successful implementation of the proposed

improvements will require the cooperation of the City, over which Reclamation and DWR have no control. For this reason, Reclamation and DWR are conservatively acknowledging the possibility that, despite their own commitment to work with the City, mutually acceptable accommodation may not be reached. Consistent with CEQA Guidelines section 15091, subdivision (a)(2), though, Reclamation and DWR conclude that the City can and should cooperate with them in implementing the mitigation.

Mitigation Measure 4C-8f: Improve the U.S. 50 Eastbound—West of Zinfandel Drive Off-Ramp (Alternative 1—Roadway Segment #2); U.S. 50 Westbound—East of Sunrise Boulevard Off-Ramp (Alternative 1—Roadway Segment #4); and U.S. 50 Westbound—West of Zinfandel Drive On-Ramp (Alternative 1—Roadway Segment #5) under Cumulative 2035 plus Project Conditions.

Alternative 1

To ensure that these roadway segments operate at an acceptable LOS, Reclamation and DWR will contribute a fair share of funding to widen the roadway to an 8-lane facility with 2 HOV lanes and auxiliary lanes as identified in Caltrans' *U.S. 50 Corridor Systems Management Plan*.

Responsibility: Reclamation and DWR

Timing: When conditions warrant the improvement and Caltrans contributes its fair share of funding the improvement.

Implementation of Mitigation Measure 4C-8f would substantially lessen Alternative 1's incremental contribution to the significant cumulative impact on these roadway segments to a less-than-considerable level, as well as reduce the overall significant cumulative impact to a less-than-significant level, by reducing the increase in v/c ratio below the 0.05 threshold, as indicated in Attachment C.

Until Caltrans implements the improvements, the overall cumulative impact would be classified as significant but eventually would be reduced to a less-than-significant cumulative impact once those improvements are constructed. Implementation of the mitigation measure will reduce the increase in v/c ratio below the 0.05 threshold.

The requirement that Reclamation and DWR participate in funding these transportation improvements would mitigate or substantially lessen the project's cumulatively considerable incremental contribution to the significant cumulative impact on this intersection, but the impact would remain **significant and unavoidable** until the improvements are constructed. This conclusion reflects the reality that successful implementation of the proposed improvements will require the cooperation of Caltrans, over which Reclamation and DWR have no control. For this reason, Reclamation and DWR are conservatively acknowledging the possibility that, despite their own commitment to work with Caltrans, mutually acceptable accommodation may not be reached. Consistent with CEQA Guidelines section 15091, subdivision (a)(2), though,

Reclamation and DWR conclude that Caltrans can and should cooperate with them in implementing the mitigation.

Impact C4-9: Cumulative Impacts from Other Impact Mechanisms

Proposed Action and Alternative 1

Non-cumulative Impacts C4-2 (Increases in Peak-Hour Transit Trips), C4-3 (Increases in Peak-Hour Pedestrian Trips), C4-4 (Increases in Peak-Hour Bicycle Trips), C4-6 (Increases to Peak-Hour and Daily Traffic Volumes, Affecting Site Access and Circulation), and C4-7 (Increases to Construction Traffic Activities) would all be less than significant under the Proposed Action. None of these impacts, when considered in a cumulative context considering past, present, and reasonably foreseeable future projects, would make a cumulatively considerable incremental contribution to a significant cumulative impact. Impact C4-5 (Increases in Peak-Hour and Daily Traffic Volumes, Resulting in Increased Parking Demand) is no longer required for evaluation under CEQA.

Mitigation Measures: No mitigation is required.

Residual Significant Impacts

For the reasons stated above, the following cumulative impacts would be significant and unavoidable after all feasible mitigation measures are implemented:

- Impact 4C-8a (Proposed Action)
- Impact 4C-8b (Proposed Action)
- Impact 4C-8c (Alternative 1)
- Impact 4C-8d (Alternative 1)
- Impact 4C-8e (Alternative 1)
- Impact 4C-8f (Alternative 1)

Until Caltrans, Sacramento County, and the City of Rancho Cordova implement the improvements specified in the mitigation measures identified above of which they have responsibilities, the overall cumulative impacts would be classified as significant but eventually would be reduced to less-than-significant cumulative impacts once the necessary improvements are constructed. Implementation of the identified mitigation measures will reduce the increase in v/c ratio below the 0.05 threshold.

The requirement that Reclamation and DWR participate in funding these transportation improvements would mitigate or substantially lessen the project's incremental contributions to the significant cumulative impacts identified above, but the impacts would remain **significant and unavoidable** until the improvements are constructed. This conclusion reflects the reality that successful implementation of the proposed improvements will require the cooperation of the applicable agencies, over which Reclamation and DWR have no control. For this reason, Reclamation and DWR are conservatively acknowledging the possibility that, despite their own commitment to work

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with these other agencies, mutually acceptable accommodation may not be reached. Consistent with CEQA Guidelines section 15091, subdivision (a)(2), though, Reclamation and DWR conclude that Caltrans, the County, and the City can and should cooperate with them in implementing the mitigation.

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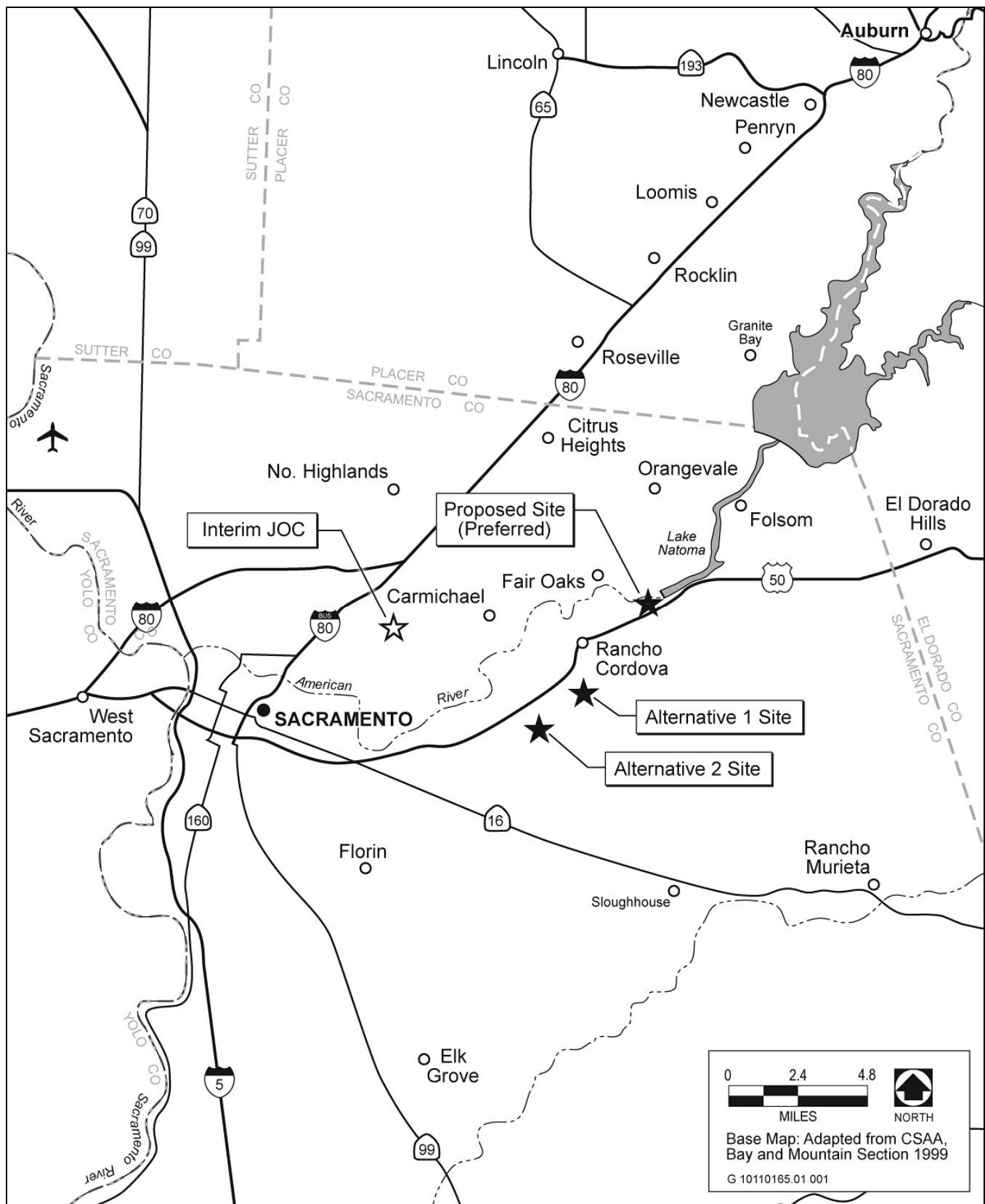


Exhibit C4 1: Project Location and Vicinity

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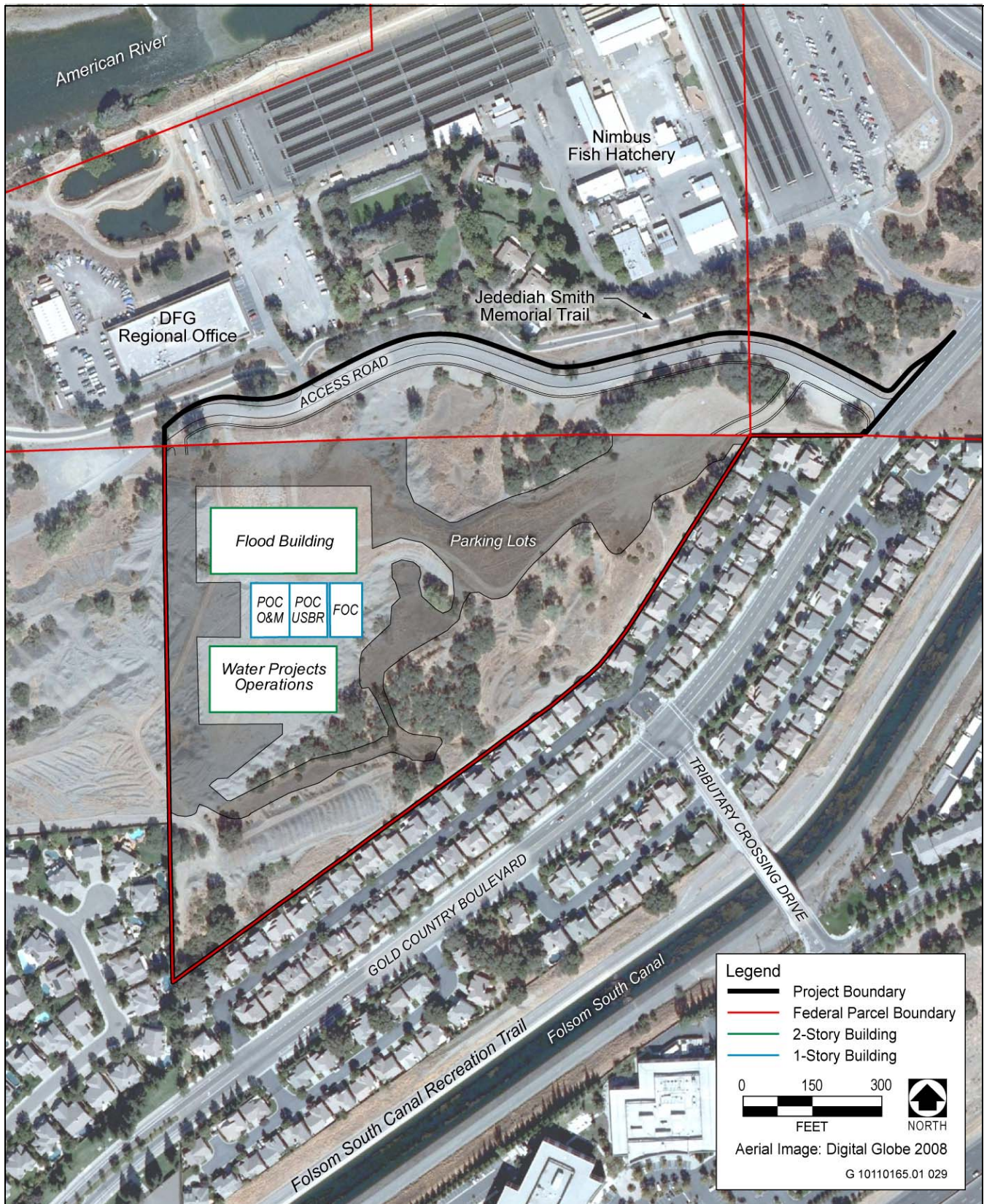


Exhibit C4 2: Proposed Action Campus Layout Option

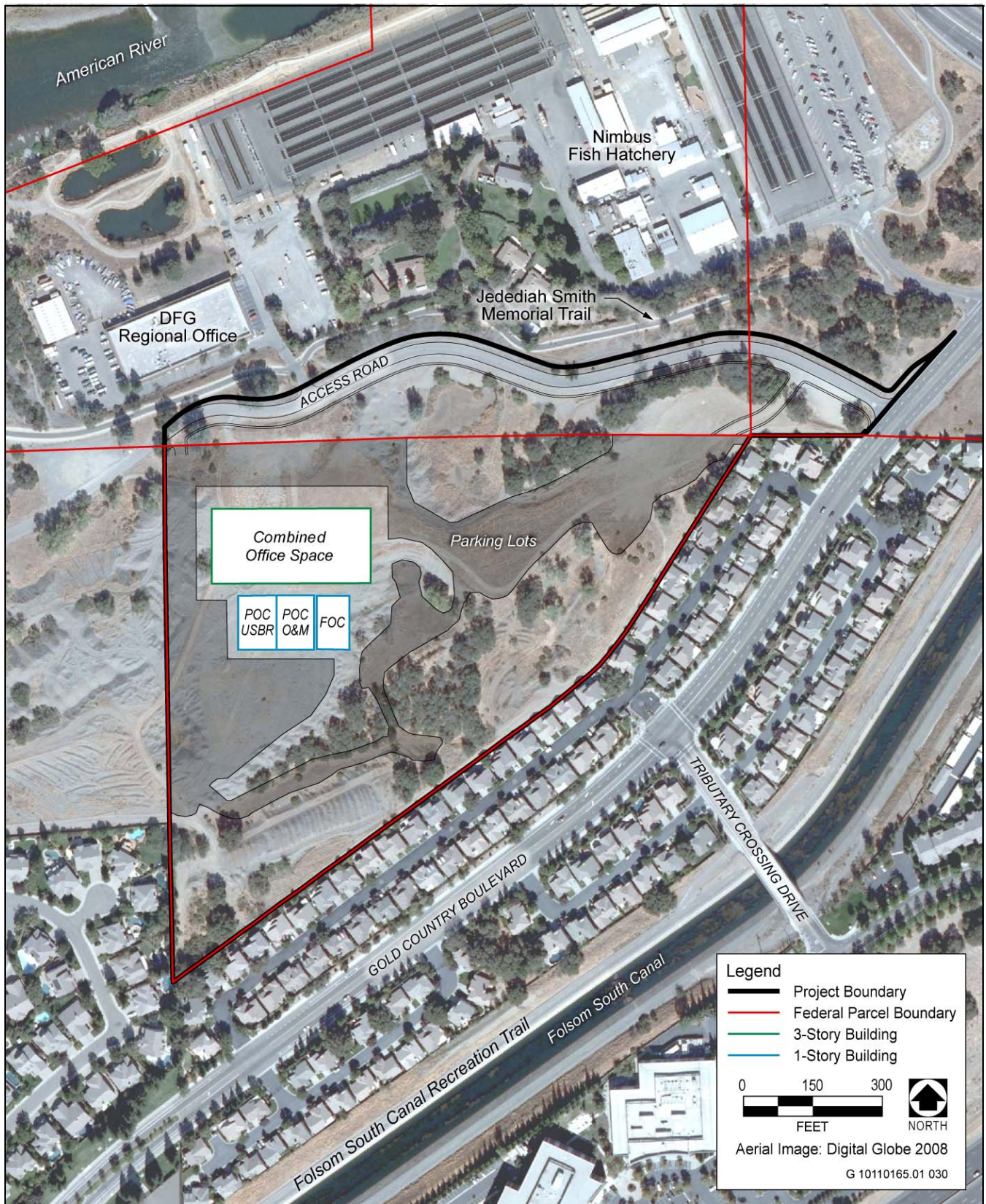
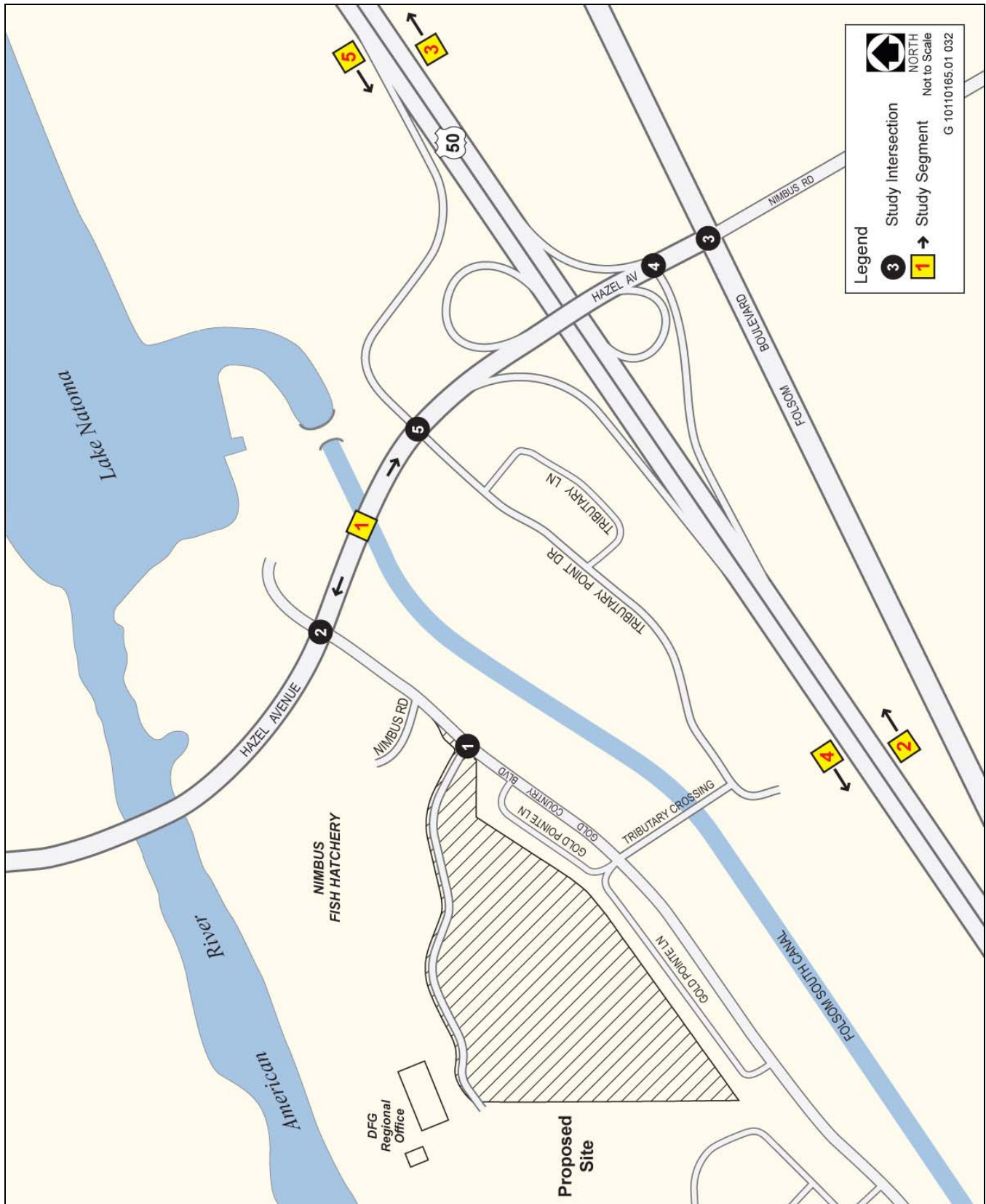


Exhibit C4 3: Proposed Action Three-Story Building Option

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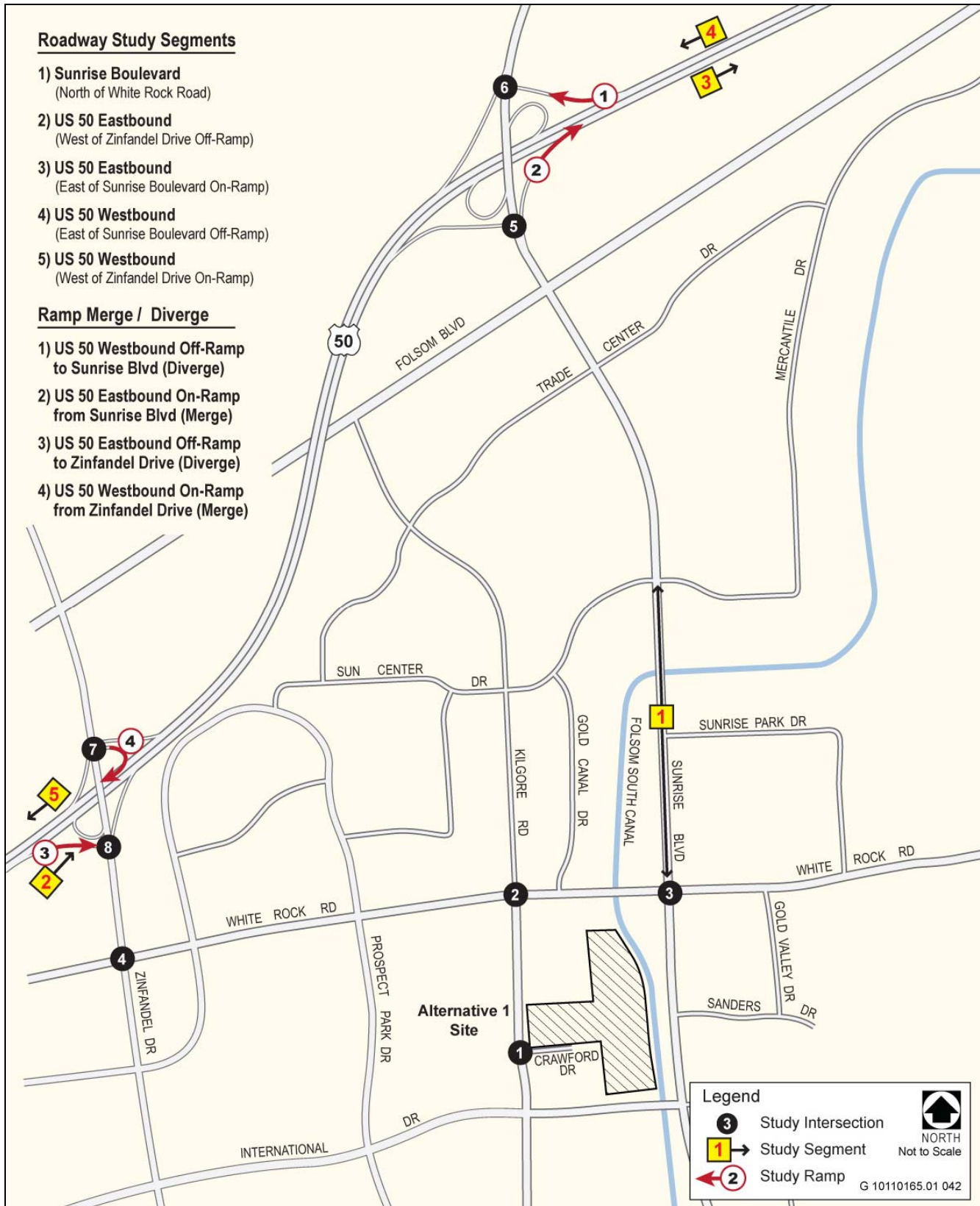


Exhibit C4 4: Alternative 1 Site Plan (Campus Layout)



**Exhibit C4 5: Study Intersections, Ramps, and Study Roadway Segments—
Proposed Site**

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**Exhibit C4 6: Study Intersections, Ramps, and Study Roadway Segments—
Alternative 1 Site**

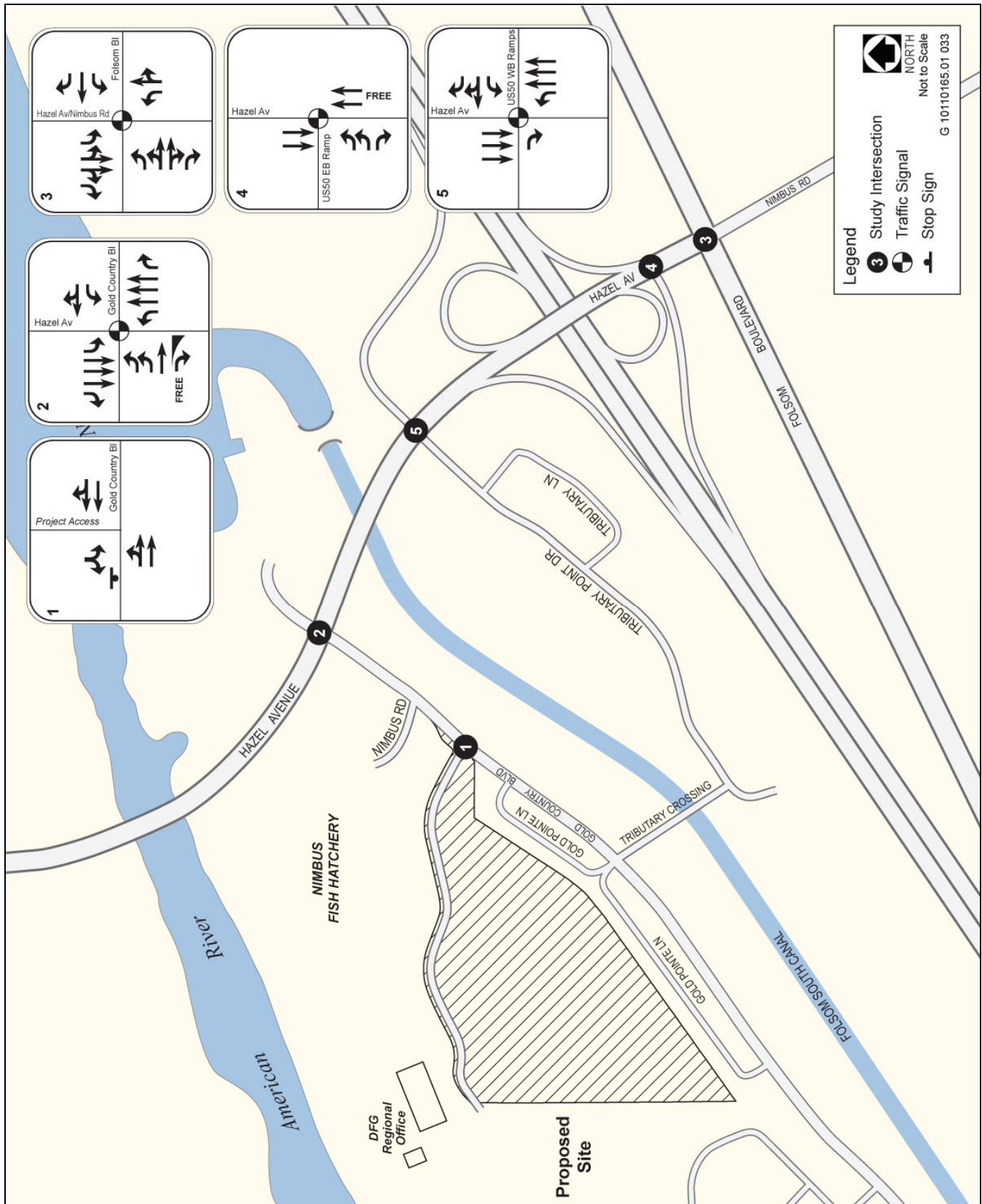


Exhibit C4 7: Existing Conditions Intersection Geometry—Proposed Site

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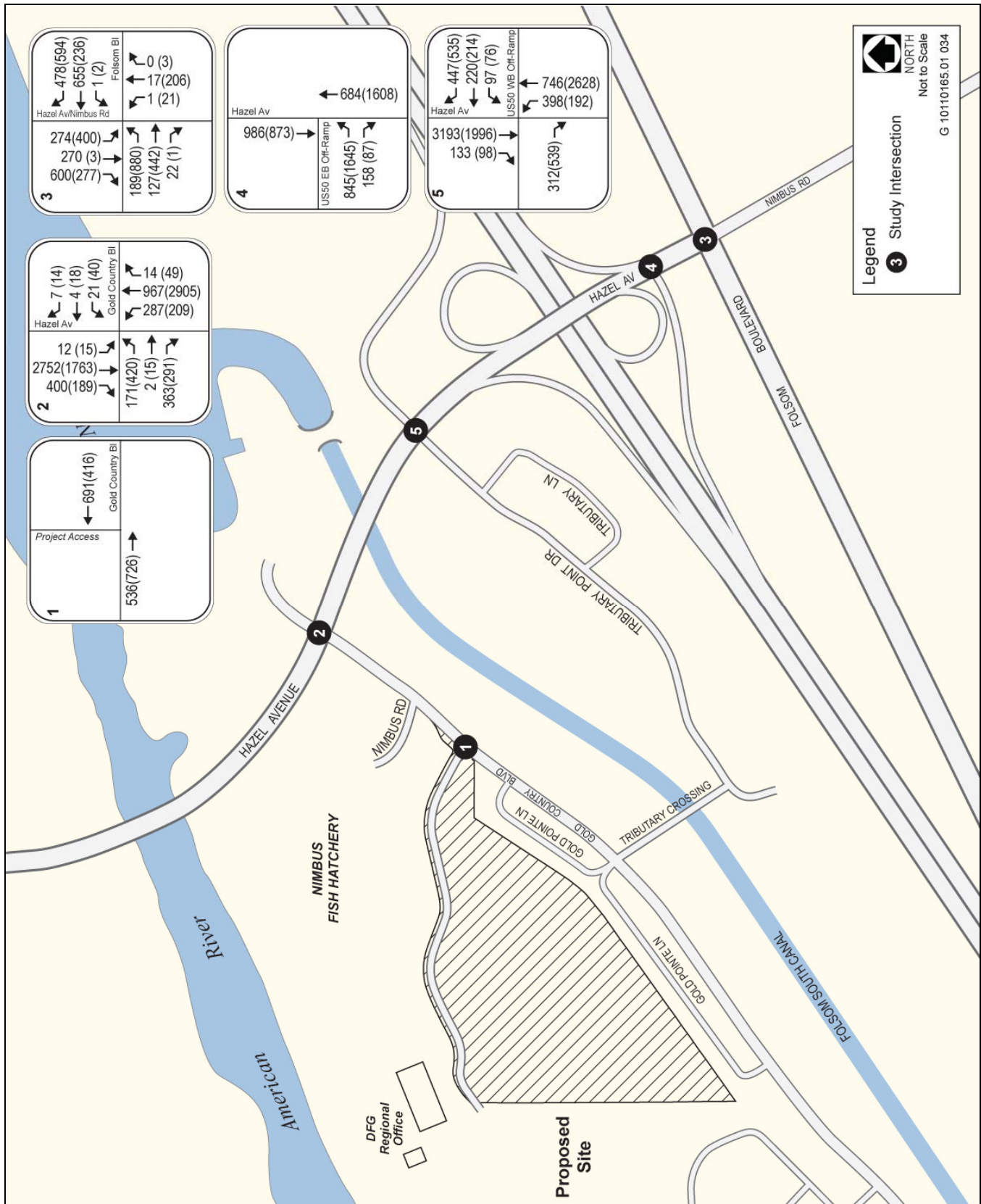


Exhibit C4 8: Existing Conditions Traffic Volumes—Proposed Site

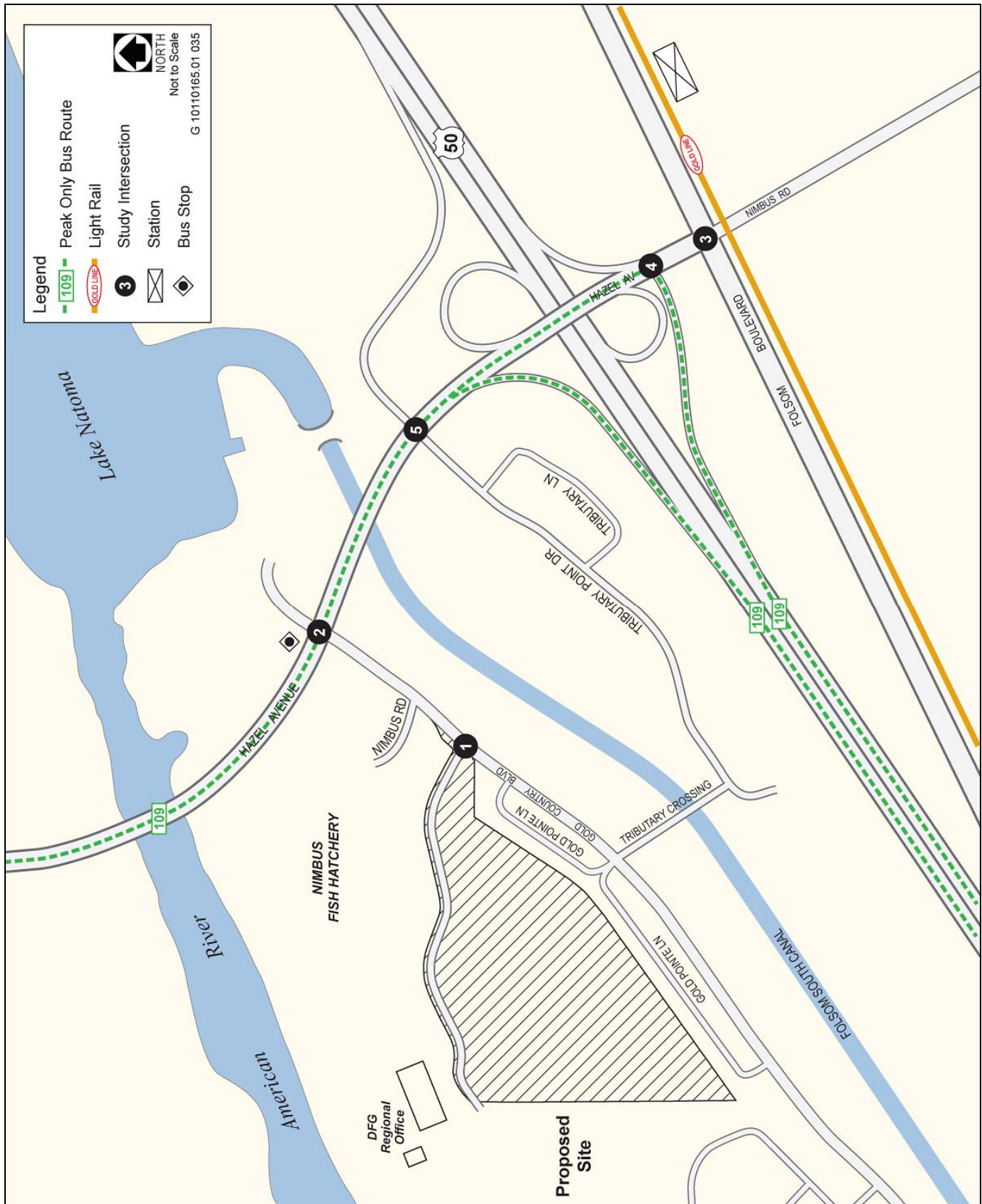


Exhibit C4 9: Existing Transit Network—Proposed Site

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Exhibit C4 10: Existing Bicycle Facilities—Proposed Site

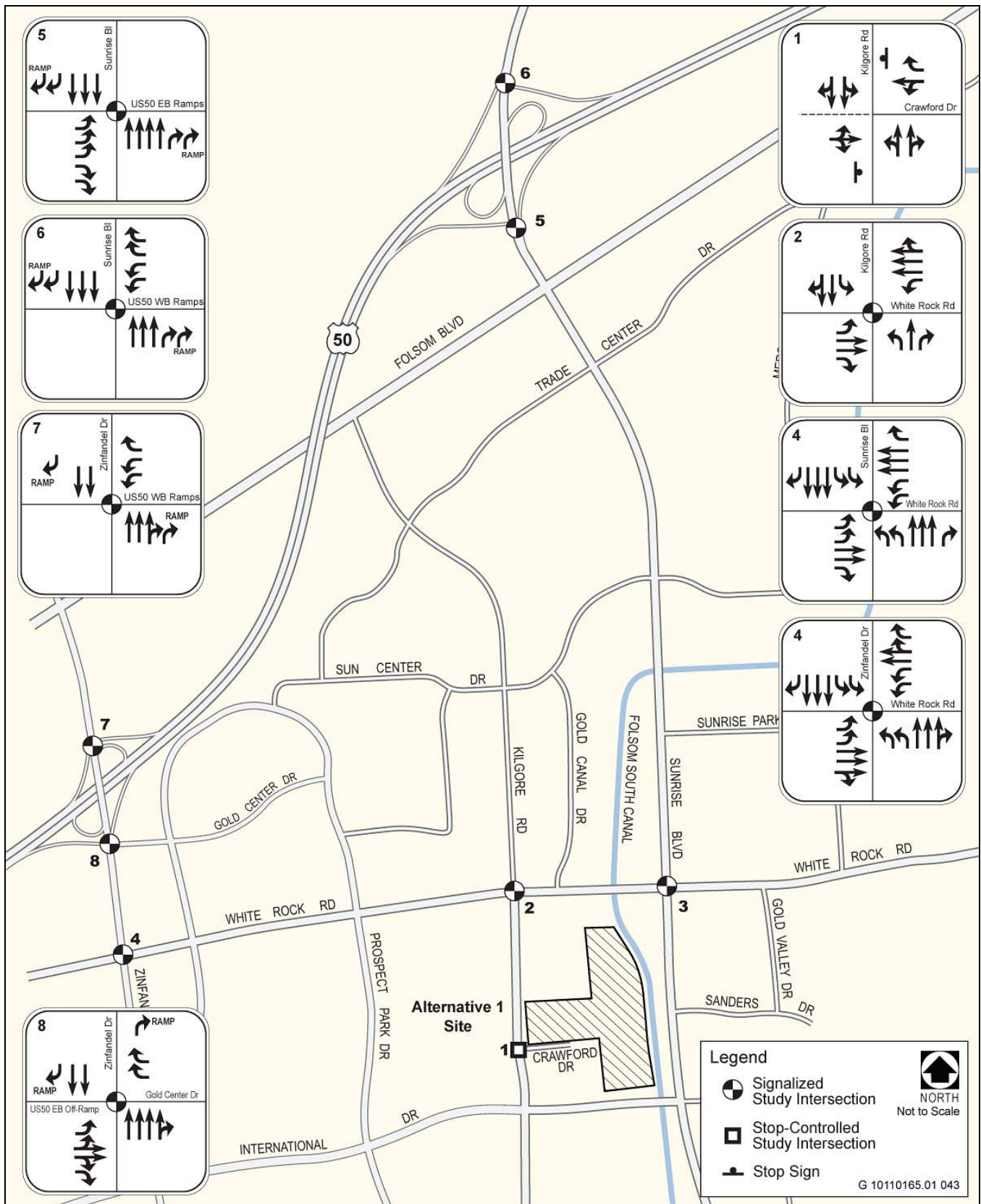


Exhibit C4 11: Existing Conditions Intersection Geometry—Alternative 1 Site

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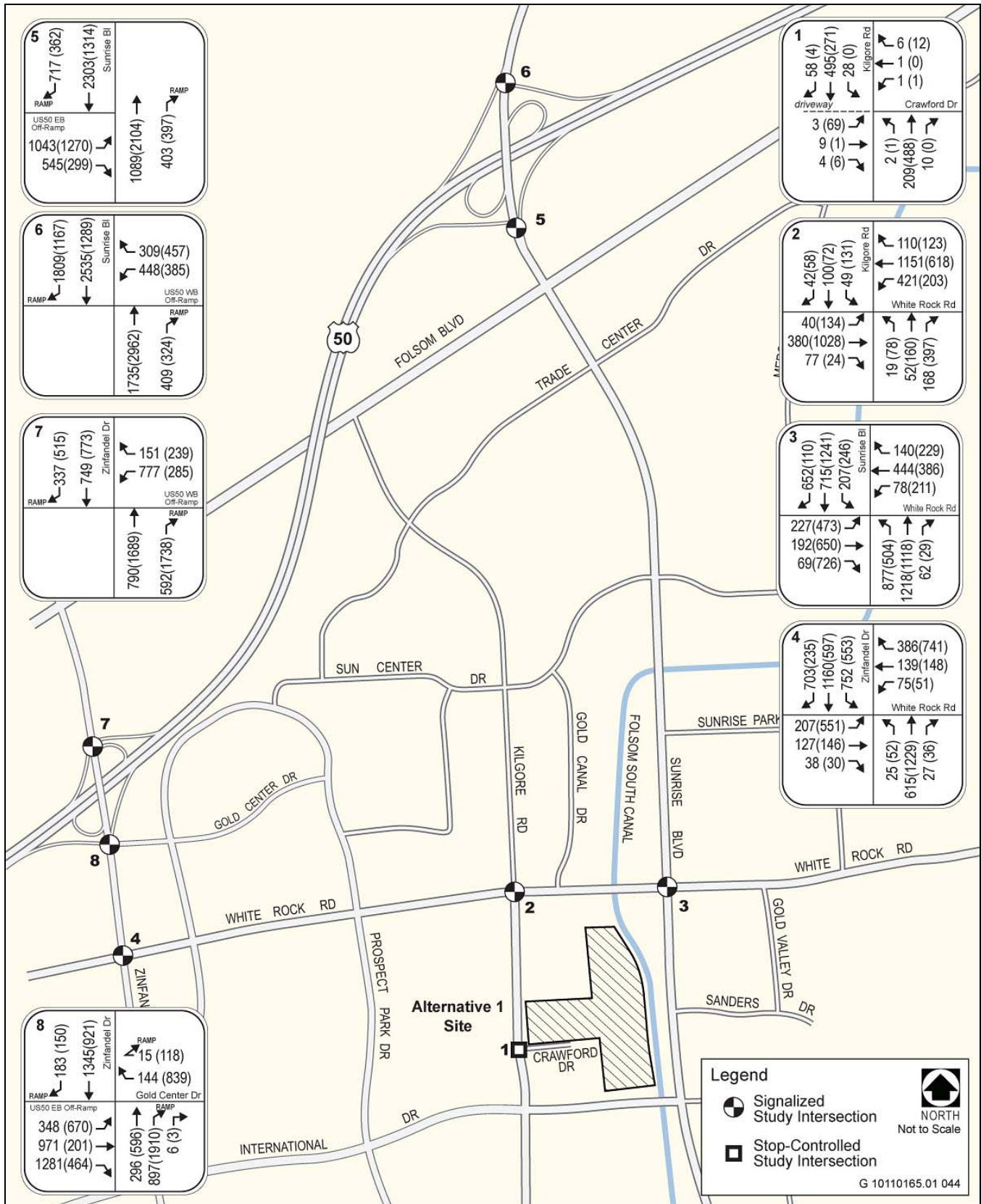


Exhibit C4 12: Existing Traffic Volumes—Alternative 1 Site