APPENDIX G.1
Hydrology Study

2011

MOONRIDGE ANIMAL PARK
Hydrology Report

Prepared For:
San Bernardino County
Special Districts Department
San Bernardino CA, 92415-0450
Attention: Jim Oravets

Tetra Tech Inc.,
301 East Vanderbilt Way, Suite 450
San Bernardino CA, 92408

9/1/2011

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1.0 DISCUSSION

1.1 PURPOSE

The purpose of this project is to identify the pre- and post-project Rathbun Creek peak flows at the proposed site of the Moonridge Animal Park. The proposed site of the Moonridge Animal Park is located at the intersection of Moonridge Road and Club View Drive in Big Bear Lake, San Bernardino County, California. This hydrology study may be used as supplemental information to the Environmental Impact Report being prepared by others. The development of the Moonridge Animal Park relocation site will increase the impervious area of the site; thus the use of on-site stormwater controls will most likely be necessary to detain the difference in pre- and post-project peak flows before leaving the site. On-site stormwater controls will be developed during the preliminary design phase.

1.2 DESCRIPTION OF WATERSHED

The Rathbun Creek drainage area is part of the Santa Ana River-San Bernardino Mountain watershed. The project drainage area is approximately 2,251 acres and consists of mountain and valley topography. The tributaries to Rathbun Creek consist of the Bow, Deer and Sand Canyons of the Sugarloaf Mountains located in the San Bernardino National Forest; developed mountain ski resort; natural floodplains; and commercial and residential developments. The watershed boundary map is shown on Figure 1.

The watershed is a mountainous area with steep mountain slopes draining to a mildly sloping valley. The area north of Goldmine Road is mostly developed and consists of a golf course, ski resort, and commercial and residential developments. The area south of Goldmine Road is primarily the mountainous area and is part of the San Bernardino National Forest. The vegetation consists of pine trees, brush, and grass. Some areas of the forest have been cleared of timber for recreational skiing.

The area is drained by Rathbun Creek which flows in a northwesterly direction through the project site. The headwaters of Rathbun Creek consist of four major tributaries: Bow Canyon, Deer Canyon, Sand Canyon, and Rathbun Creek.

Bow Canyon stream flow begins in the National Forest Sugarloaf Mountain and flows northwesterly through a residential development south of Rockspray Drive. The tributary eventually merges with flow from Sand Canyon just east of Moonridge Road, and then merges with Rathbun Creek within the Gold Mine Golf Course.

Sand Canyon is very similar to Bow Canyon. Stream flow begins in the National Forest northeast of Bow Canyon and flows northwesterly through a residential development along Sand Canyon Road. The tributary merges with Bow Canyon east

of Moonridge Road and merges with Rathbun Creek within the Gold Mine Golf Course.

Deer Canyon drainage area is mostly made up of the national forest. Stream flow begins in the National Forest Sugarloaf Mountains west of Rathbun Creek and flows north. The tributary merges with Rathbun Creek south of Lassen Drive.

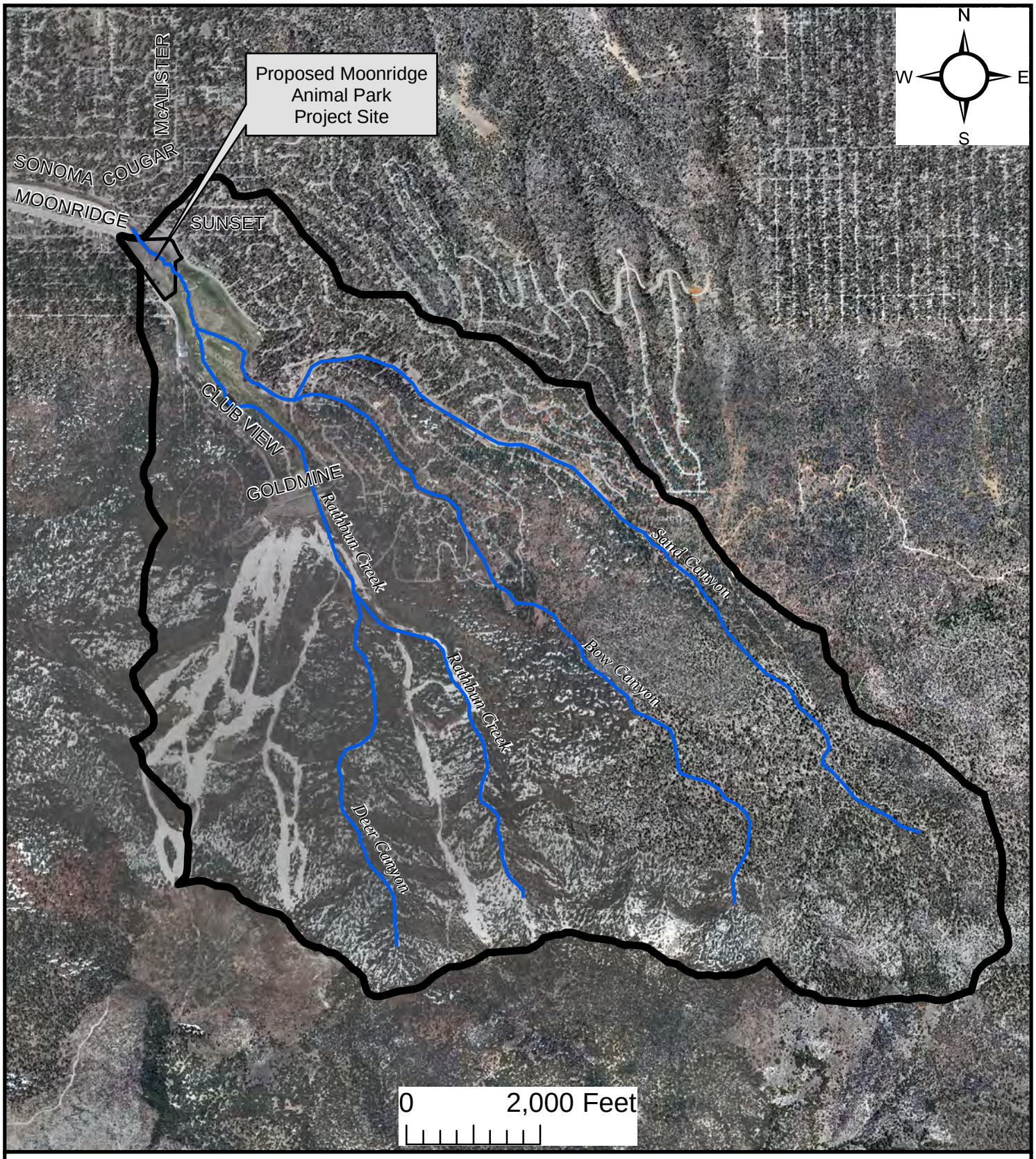
Rathbun Creek stream flow begins in the National Forest Sugarloaf Mountains between Deer and Bow Canyons. The stream flows into the ski resort and merges with Deer Canyon just south of Lassen Drive. At this point it is unclear what happens to the stream and water draining to the ski resort until the natural channel is exposed south of Goldmine Road. The stream then flows through the Goldmine Golf Course and adjoining undeveloped land (proposed Animal Park location), under Moonridge Road and eventually into Big Bear Lake. For purposes of this study, it was assumed that a natural stream channel conveyed the stream flow of Rathbun Creek and Deer Canyons from the Ski Resort to south of Goldmine Road. However, based on USGS Topography Maps and aerial imagery it is unclear what happens to the natural stream. It appears that the Ski Resort may contain the flow to produce snow for the slopes when natural snow is not being provided. Since the natural channel is not shown in aerial imagery or USGS Topography maps, the flow is most likely conveyed through underground pipes. Because this was not confirmed, the natural channel assumption was made to convey the flows from the mountains through the valley.

1.3 METHODOLOGY

1.3.1 Overview

This hydrology study was conducted in accordance with portions of the procedures outlined in the San Bernardino County Hydrology Manual (SBCHM). Two different studies were performed to determine the difference in pre- and post-project peak flows entering and leaving the proposed Moonridge Animal Park relocation site. The peak flows were computed with Bently's Pond Pack Hydrology Model Version 8i. The existing conditions model was based on aerial imagery and landuse data provided by San Bernardino County. The post-project conditions model was based on the proposed Moonridge Animal Park site plan which increases the impervious area of the project site.

The project drainage area was established using USGS Topography maps obtained from http://atlas.ca.gov/. Figure 2 shows the USGS Topographic project drainage area map. Sub drainage areas were delineated for use in



2009 aerial imagery and base GIS data provided by San Bernardino County Information Services Department.

Legend

Streams

Drainage Area

Moonridge Animal Park Hydrology Study Figure 1A Watershed Boundary Map

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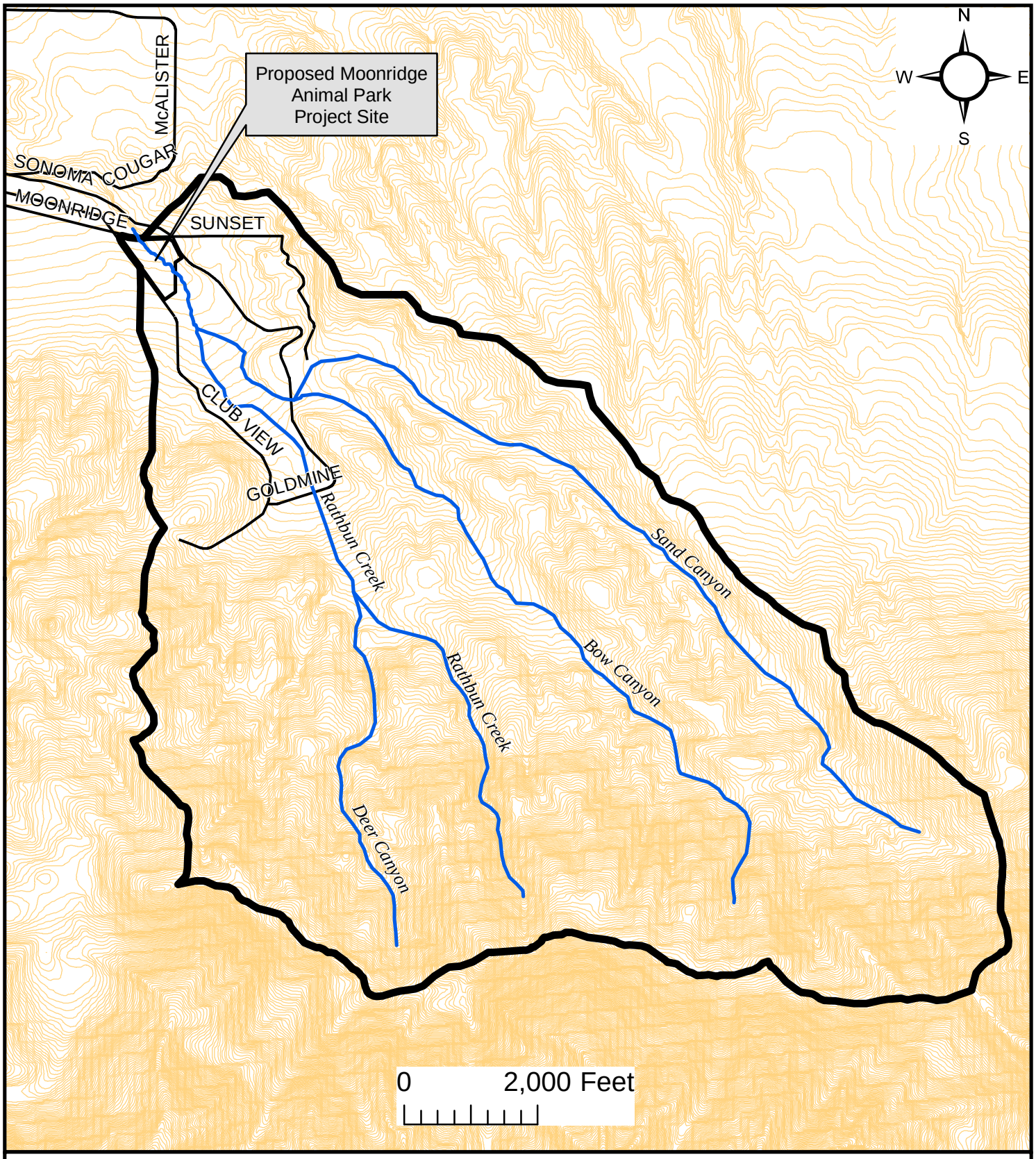

2009 aerial imagery and base GIS data provided by San Bernardino County Information Services Department.

Legend

- Streams
- Major Roads
- 10 ft Contours
- Drainage Area

Moonridge Animal Park
Hydrology Study
Figure 1B
Watershed Boundary Map

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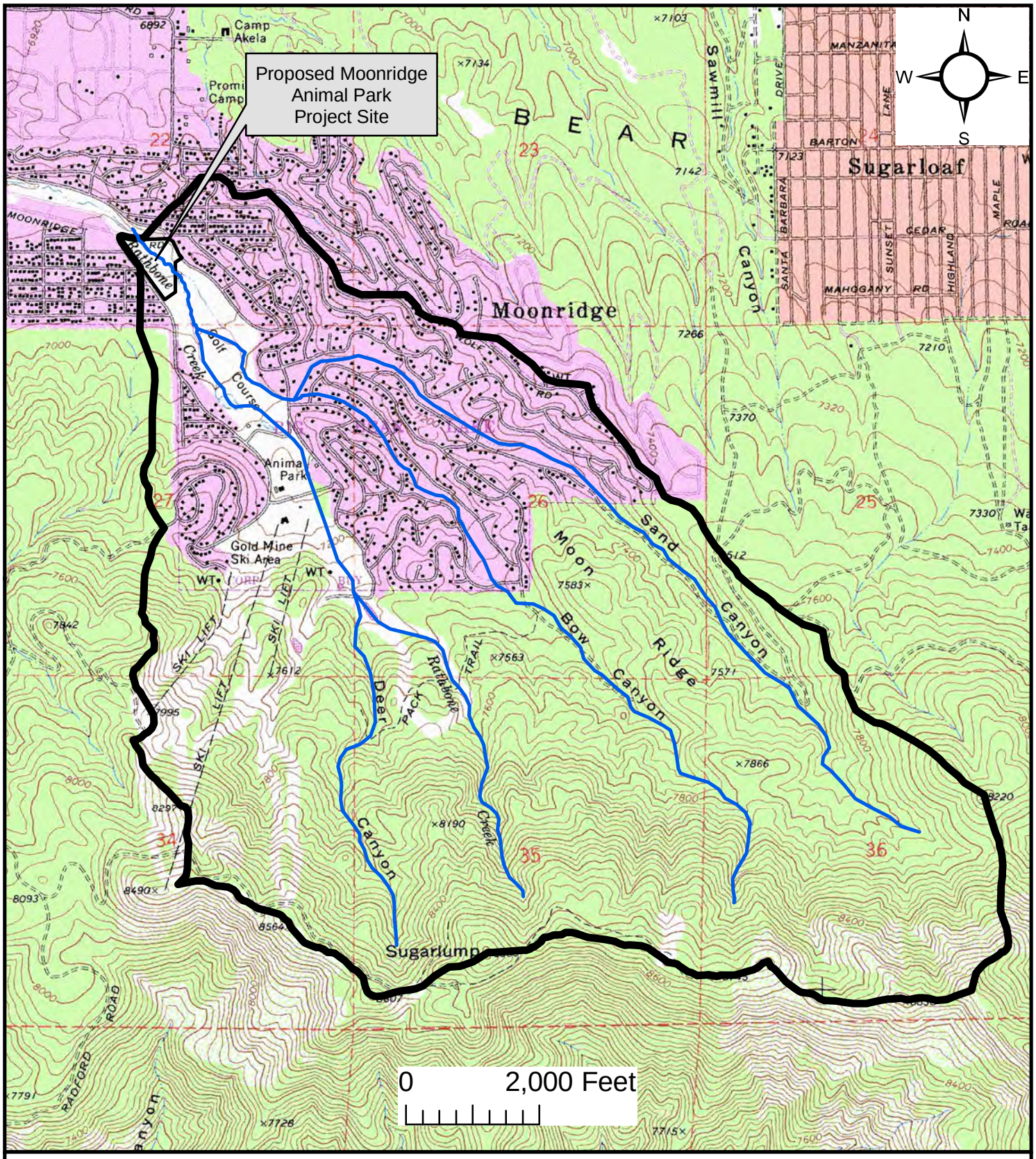

USGS Topographic Map provided by:
http://atlas.ca.gov/

Legend

Streams

Drainage Area

Moonridge Animal Park
Hydrology Study
Figure 2
USGS Topographic Map

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the unit hydrograph method and for construction of the model. The sub drainage areas were based on key locations of determining flows and basin characteristics.

1.3.2 Preliminary Information and Data

1.3.2.1 Rainfall

The SBCHM provides isohytel maps for use in determining point precipitations values. The maps are based on NOAA Atlas 2, Precipitation Frequency Atlas of the Western United States, published by the National Weather Service. However, the maps were not used in determining the point precipitation values. Instead rain data was obtained from the NOAA National Weather Service website (http://hdsc.nws.noaa.gov/hdsc/pfds/index.html) per SBCHM Addendum released April 2010. To determine the project drainage area average point precipitation value, several locations were chosen throughout the drainage area which included the mountains and developed and undeveloped valley. Figure 3 shows the rain data locations as well as the Big Bear Lake Rain Gauge data location. The Big Bear Rain Gauge data was used to compare the calculated average point precipitation values for the 10-, 25-, and 100-year, 5, 30, and 60 minute, and 3, 6, and 24 hour frequencies. Table 1 shows the 100-year point precipitations average values.

Table 1. 100-year Point Precipitation Average Values

	Precipitation Depth (inches)[1]					
Point	5 min	30 min	1 hr	3 hr	6 hr	24 hr
RD1	0.641	1.60	2.26	3.59	5.15	11.80
RD2	0.643	1.59	2.25	3.59	5.16	12.00
RD3	0.637	1.59	2.26	3.58	5.13	11.70
RD5	0.643	1.59	2.25	3.59	5.16	12.00
RD6	0.660	1.63	2.29	3.62	5.18	12.00
RD7	0.678	1.66	2.33	3.66	5.21	12.00
RD8	0.653	1.62	2.28	3.61	5.17	11.90
RD9	0.649	1.61	2.27	3.60	5.17	11.90
RD11	0.640	1.60	2.26	3.60	5.16	11.90
RD12	0.642	1.60	2.26	3.58	5.14	11.80
RD13	0.640	1.60	2.26	3.60	5.16	11.90
Average	**0.648**	**1.61**	**2.27**	**3.60**	**5.16**	**11.90**
Min	0.637	1.59	2.25	3.58	5.13	11.70
Max	0.678	1.66	2.33	3.66	5.21	12.00
Big Bear RG	0.660	1.66	2.35	3.73	5.34	12.20

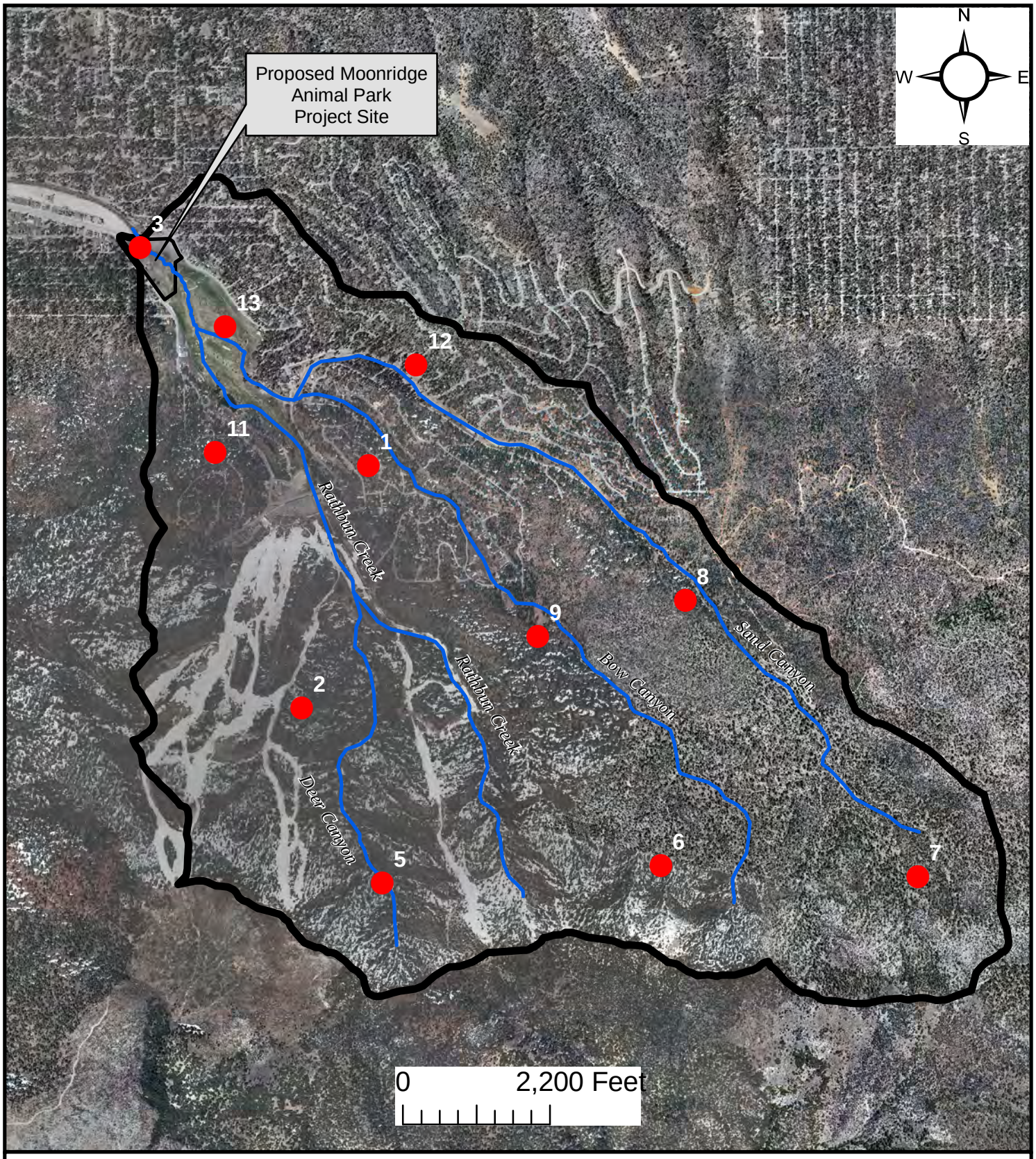
1. Source: NOAA Atlas 14 Point Precipitation Frequency Estimates
http://hdsc.nws.noaa.gov/hdsc/pfds/

25-year, 24-hour Point Precipitation Values
Project Site Average: 8.39”
Big Bear Lake: 8.32”

10-year, 24-hour Point Precipitation Values
Project Site Average: 6.43”
Big Bear Lake: 6.24”

The NOAA Atlas 14 Point Precipitation Frequency Estimates information is in Appendix A.

The average point precipitation values were then used in accordance with the SBCHM Unit Hydrograph Methodology procedure to produce the adjusted unit rainfall, effective rainfall



2009 aerial imagery and base GIS data provided by San Bernardino County Information Services Department.

Legend

- Rain Data Locations
- Streams
- Drainage Area

Moonridge Animal Park
Hydrology Study
Figure 3
NOAA Point Precipatation Map

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depths and modified SCS Type II rainfall distribution. The SBCHM design storm pattern is based upon a modification of the SCS 24-hour storm pattern. The design storm pattern provides a representation of local precipitation depth-frequency tendencies by constructing several nested intervals to fit local recorded rainfall data. Additionally, the SCS storm pattern is further modified to include the necessary adjustments due to watershed area effects. The SBCHM procedure was used to produce the modified SCS storm distribution. Table 2 compares the 10, 25, and 100 year 24 hour rainfall depths for the project area. Figure 4 shows the unadjusted and adjusted mass rainfall plots. Figure 5 shows the difference between the typical SCS Type II Rainfall Distribution and the modified SCS Type II Rainfall Distribution.

Table 2. Project Area Rainfall Depths (inches)

	Rainfall Depth (inches)			
	Big Bear Lake RG	Average Point Precipitation	Adjusted	Effective
100-YR, 24-HR	12.2	11.9	11.8	8.5
25-YR, 24-HR	8.32	8.39	8.3	5.9
10-YR, 24-HR	6.24	6.43	6.4	4.5

Figure 4. Adjusted and Unadjusted Mass Rainfall Plots

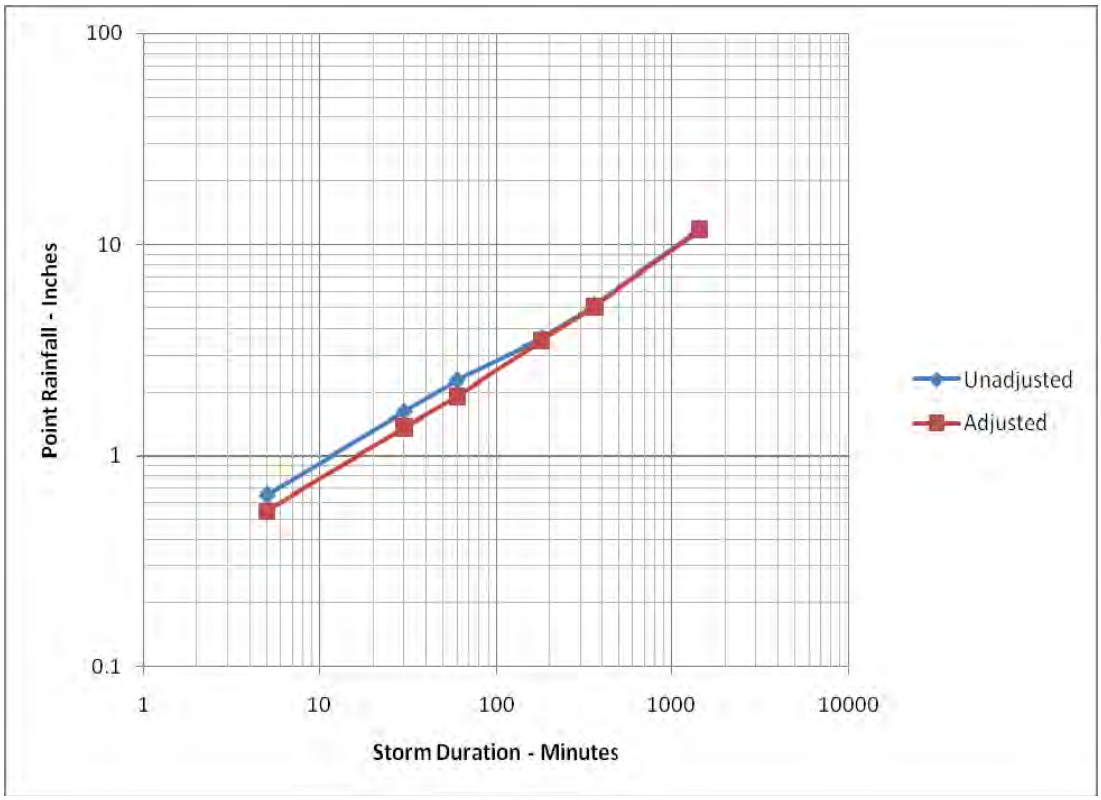
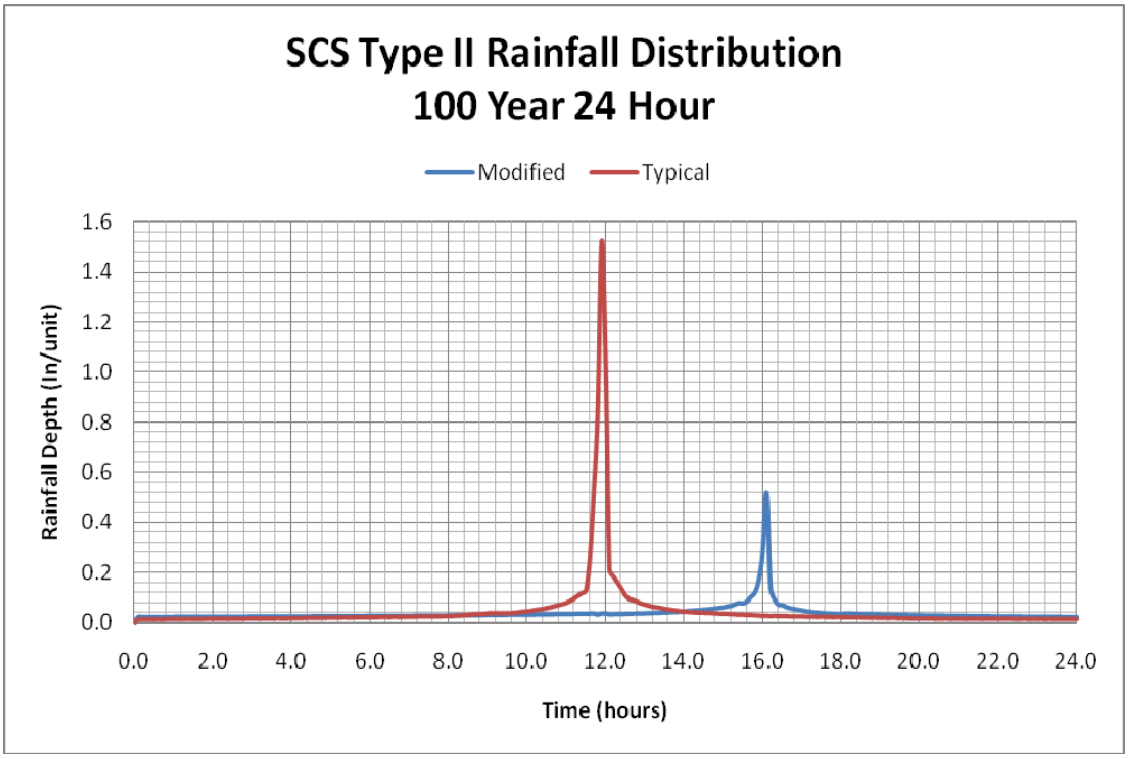


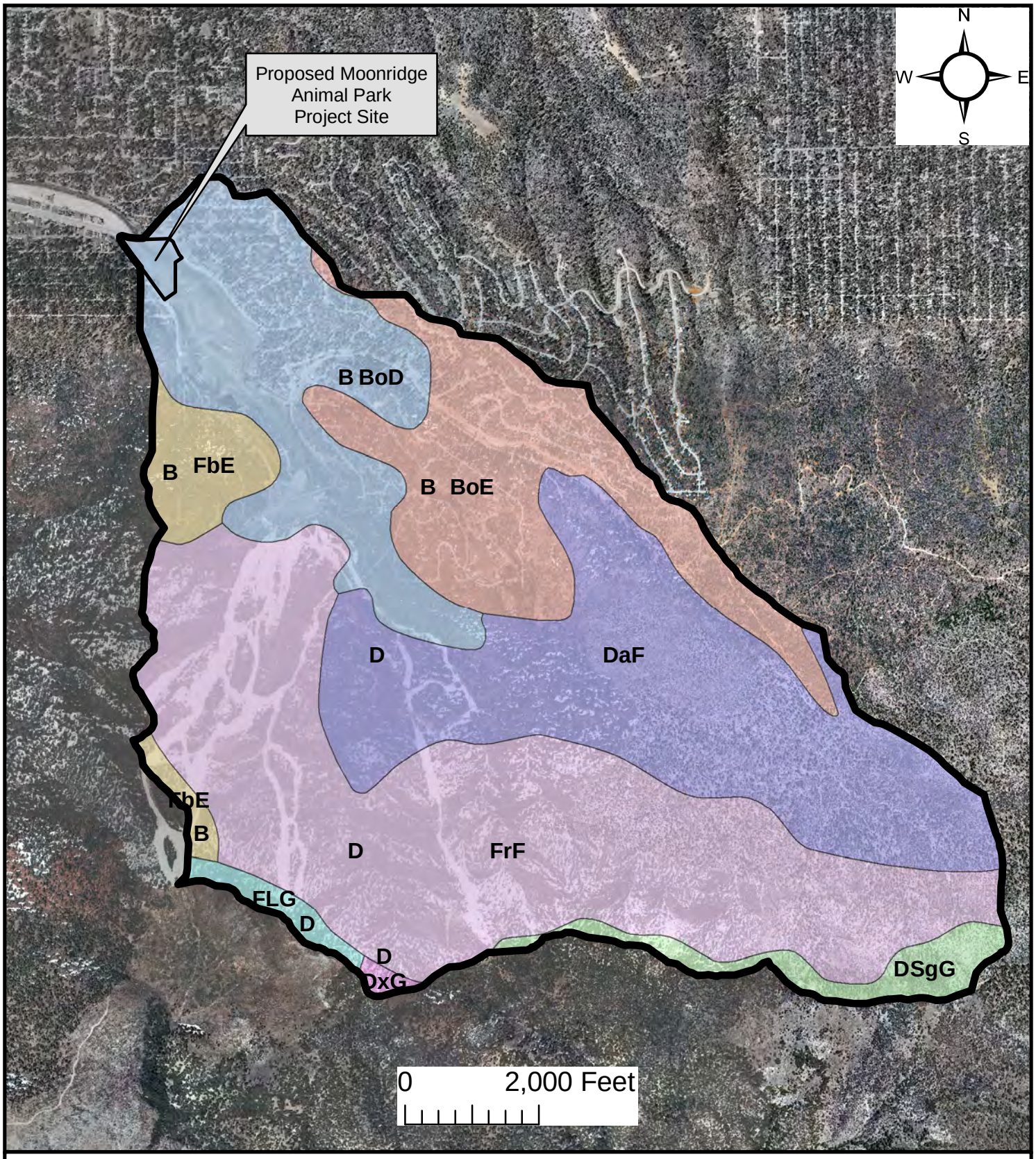
Figure 5 Typical and Modified SCS Type II Rainfall Distribution (unit periods = 6 minutes)



1.3.2.2 Soil

The SBCHM provides soil maps which designate the locations of various soil groups (A, B, C, and D). However, theses maps were not used to determine the soils within the drainage area. A digital soil coverage was obtained from the NRCS website (http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx).

The soil coverage was then clipped to the project drainage area. The project drainage area consists of hydrologic soil group B: Morical Family (BoD), Morical Family (BoE), and Merkel Family (FbE), and hydrologic soil group D: Wapi Family (DaF), Wapi Family (DxG), Lithic Xerorthents (FLG), Lithic Xerorthents calccerous (FrF), and Goulding Family (SgG). Figure 6 shows the project drainage area soils.



2009 aerial imagery and base GIS data provided by San Bernardino County Information Services Department.

Moonridge Animal Park
Hydrology Study
Figure 6
Soils Map

Legend

NRCS Soils (Hydrologic Soil, Name)

Drainage Area

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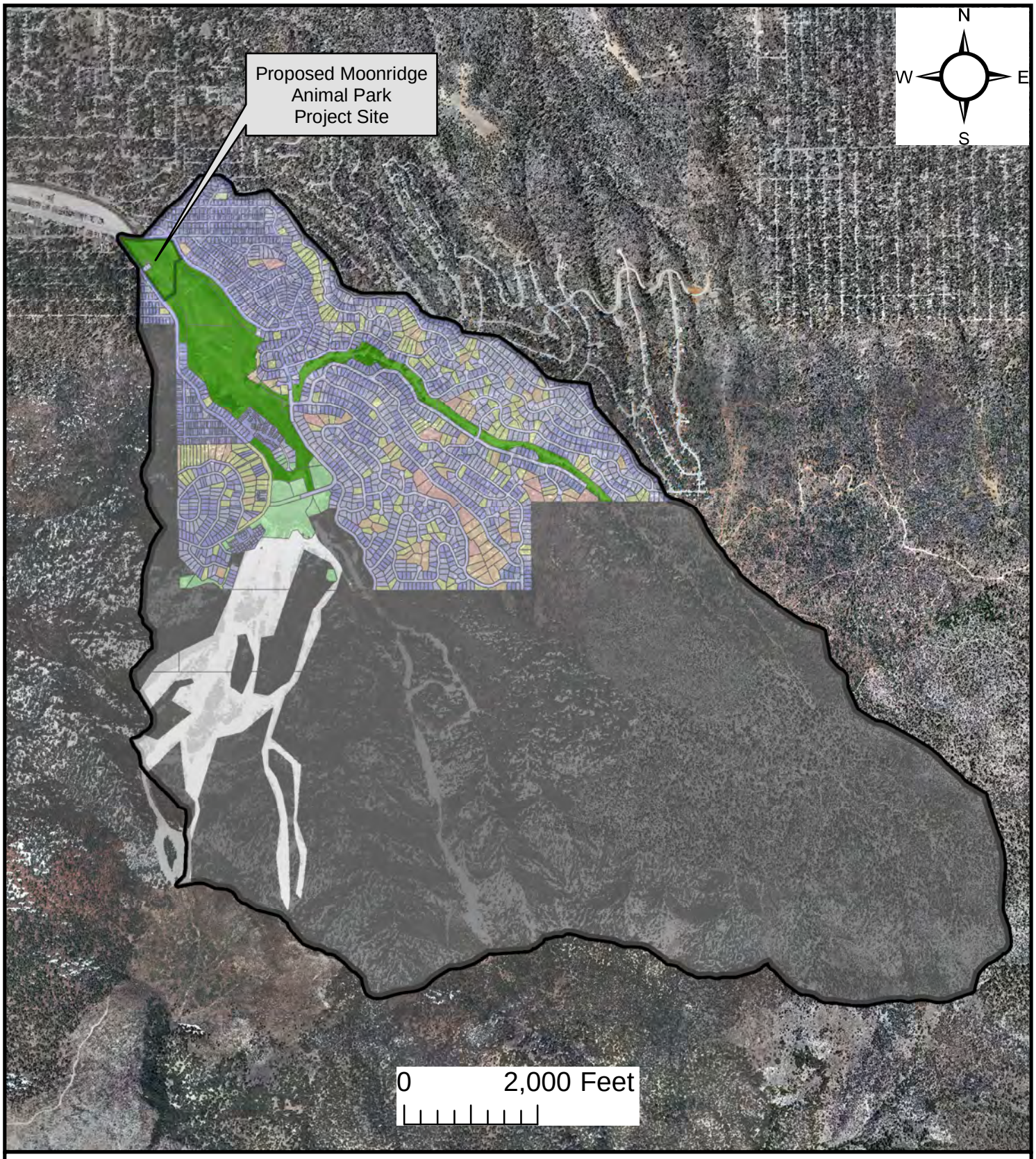
1.3.2.3 Landuse

A digital landuse coverage was provided by the San Bernardino County Information Services Department. The landuse coverage and 2009 Aerial imagery were used to determine the existing landuse types in the project drainage area. Figure 7 shows the drainage area landuse. The following types of landuse were identified within the project drainage area:

- Residential (Developed Areas within the Valley) - 523 Acres
  - 1/8 Acre
  - 1/4 Acre
  - 1/3 Acre
  - 1/2 Acre
  - 1 Acre
- Commercial (Ski Resort and nearby Parcels within Valley) - 21 Acres
- Woodland (Mountains, National Forest) – 1,508 Acres
- Barren (Ski Resort within Mountains) - 112 Acres
- Open Space (Golf Course, Undeveloped Project Site) - 87 Acres`



2009 aerial imagery and base GIS data provided by San Bernardino County Information Services Department.

Legend

- 1 Acre Residential
- 1/2 Acre Residential
- 1/3 Acre Residential
- 1/4 Acre Residential
- 1/8 Acre Residential
- Commercial
- Mountains
- Open Space
- Ski Resort
- Drainage Area

Moonridge Animal Park
Hydrology Study
Figure 7
Landuse Map

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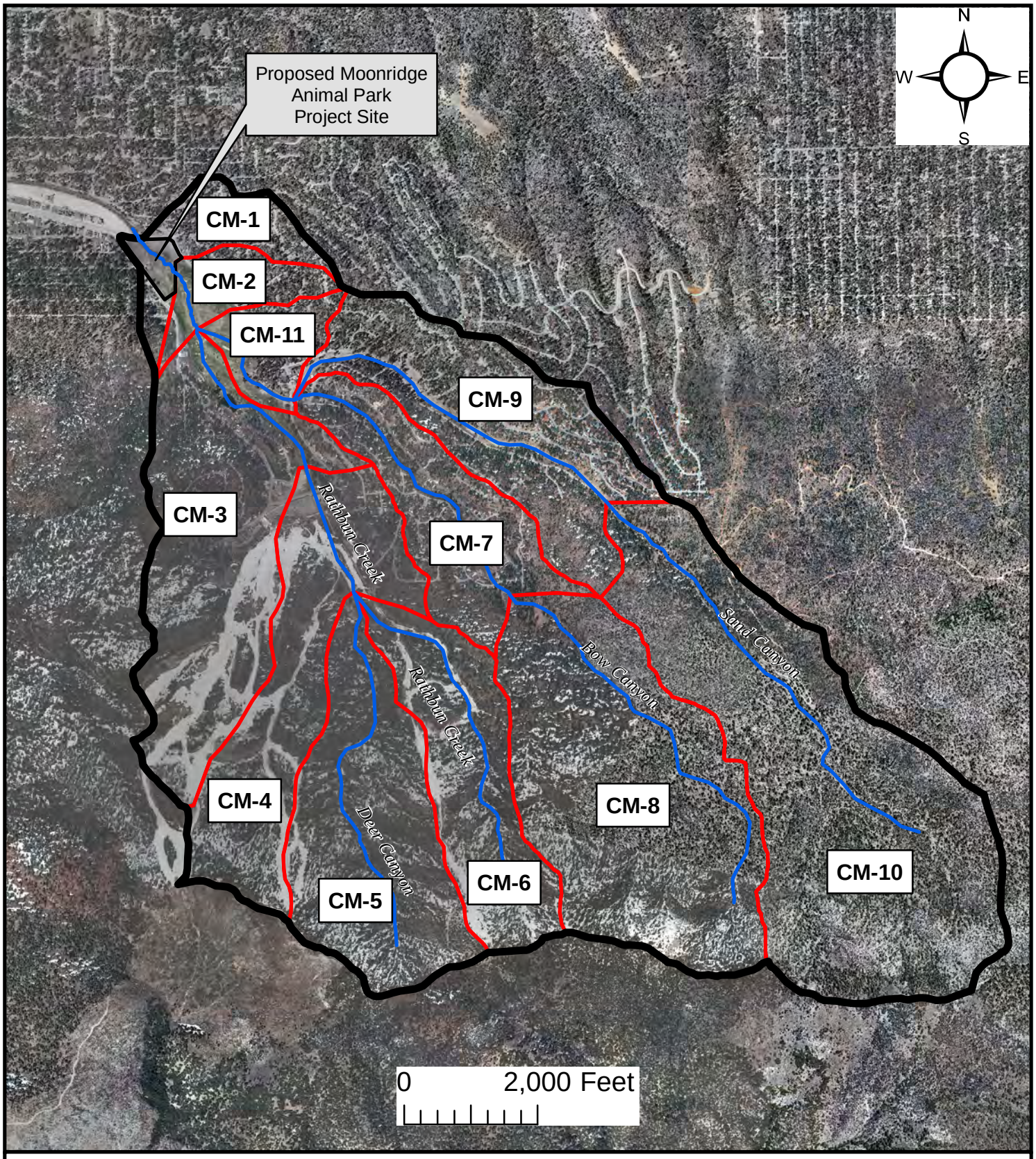
1.3.2.4 Sub Drainage Areas

The project drainage area was divided into 11 sub drainage areas. Figure 8 shows the sub-drainage areas. The sub-drainage area delineations were based on the natural tributary drainage areas to Rathbun Creek, critical flow value points (entering and leaving the site), and uniform basin characteristics. Table 3 shows the acreage of each sub-drainage area.

Table 3. Sub-Drainage Area Size (acres)

Sub-Drainage Area	Acres
CM-1	66
CM-2	48
CM-3	276
CM-4	212
CM-5	230
CM-6	162
CM-7	145
CM-8	364
CM-9	216
CM-10	482
CM-11	50



2009 aerial imagery and base GIS data provided by San Bernardino County Information Services Department.

Legend

- Streams
- Drainage Area
- Sub-Drainage Area

Moonridge Animal Park Hydrology Study
Figure 8
Sub-Drainage Area Map

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1.3.3 Hydrology Model

1.3.3.1 Model Construction and Procedures

1.3.3.1.1 Design Storms

The hydrologic model was set up to analyze the 10-, 25-, and 100-year, 24-hour modified SCS Type II rainfall distributions. The respective effective rainfall depths are 4.5, 5.9, and 8.5 – inches. The modified rainfall distribution produces a peak flow at hour 16 of the 24 hour event. The peak unit period (6 minute) incremental depths are 0.27, 0.36, and 0.52 – inches respectively.

1.3.3.1.2 Time of Concentration

Time of concentration was calculated using the NRCS TR-55 methodology for each sub-drainage area. Table 4 shows the computed time of concentration and corresponding lag time for each sub-drainage area. Time of concentration calculations are included in Appendix B.

Table 4. Sub-Drainage Area Time of Concentration and Lag Time.

Sub Drainage Area	Tc (hours)	Lag (0.8*Tc)
CM-1	0.40	0.32
CM-2	0.31	0.25
CM-3	0.40	0.32
CM-4	0.41	0.33
CM-5	0.40	0.32
CM-6	0.39	0.31
CM-7	0.62	0.50
CM-8	0.57	0.46
CM-9	0.66	0.53
CM-10	0.61	0.49
CM-11	0.29	0.23

1.3.3.1.3 Curve Numbers

A composite curve number was calculated for each sub-drainage area by the hydrologic model software. The program requires the sub drainage areas landuse, soil type and acreage as input. The resulting composite

curve numbers are shown in Table 5. Appendix C contains AMC II curve numbers used for each landuse and soil type within the project drainage area. Figure 9 shows the proposed Moonridge Animal Park site plan. The percent increase in impervious area is approximately 36% which is accounted for in the model within sub-drainage area CM-1 increases in curve numbers.

Table 5. Sub-Drainage Area AMC II Curve Numbers

	AMC II Curve Number	
Sub Drainage Area	Pre Project	Post Project
CM-1	77	79
CM-2	74	74
CM-3	77	77
CM-4	74	74
CM-5	72	72
CM-6	69	69
CM-7	70	70
CM-8	70	70
CM-9	74	74
CM-10	68	68
CM-11	73	73

CM-1: 78% Residential; 16% Open Space; and 6% Mountains.
CM-2: 64% Residential; 31% Open Space; and 5% Mountains.
CM-3: 33% Residential; 8% Open Space; 27% Ski Resort, 4% Commercial; and 29% Mountains.
CM-4: 10% Residential; 1% Open Space; 16% Ski Resort, 5% Commercial; and 62% Mountains.
CM-5: 10% 2% Ski Resort, 5and 98% Mountains.
CM-6: 100% Mountains.
CM-7: 81% Residential; and 19% Mountains.
CM-8: 100% Mountains.
CM-9: 77% Residential; 8% Open Space; and 14% Mountains.
CM-10: 100% Mountains.
CM-11: 63% Residential; and 37% Open Space.

Figure 9 Proposed Moonridge Animal Park Site plan

For the 10- and 25-year, 24-hour model runs, AMC II conditions were assumed for the soil. Per the SBCHM, AMC III conditions were assumed for the soil for the 100-year, 24-hour model run. Table 6 shows the AMC III adjusted curve numbers.

Table 6. Sub-Drainage Area AMC III Curve Numbers

	AMC III Curve Number	
Sub Drainage Area	Pre Project	Post Project
CM-1	92	93
CM-2	90	90
CM-3	92	92
CM-4	90	90
CM-5	89	89
CM-6	86	86
CM-7	87	87
CM-8	87	87
CM-9	90	90
CM-10	85	85
CM-11	89	89

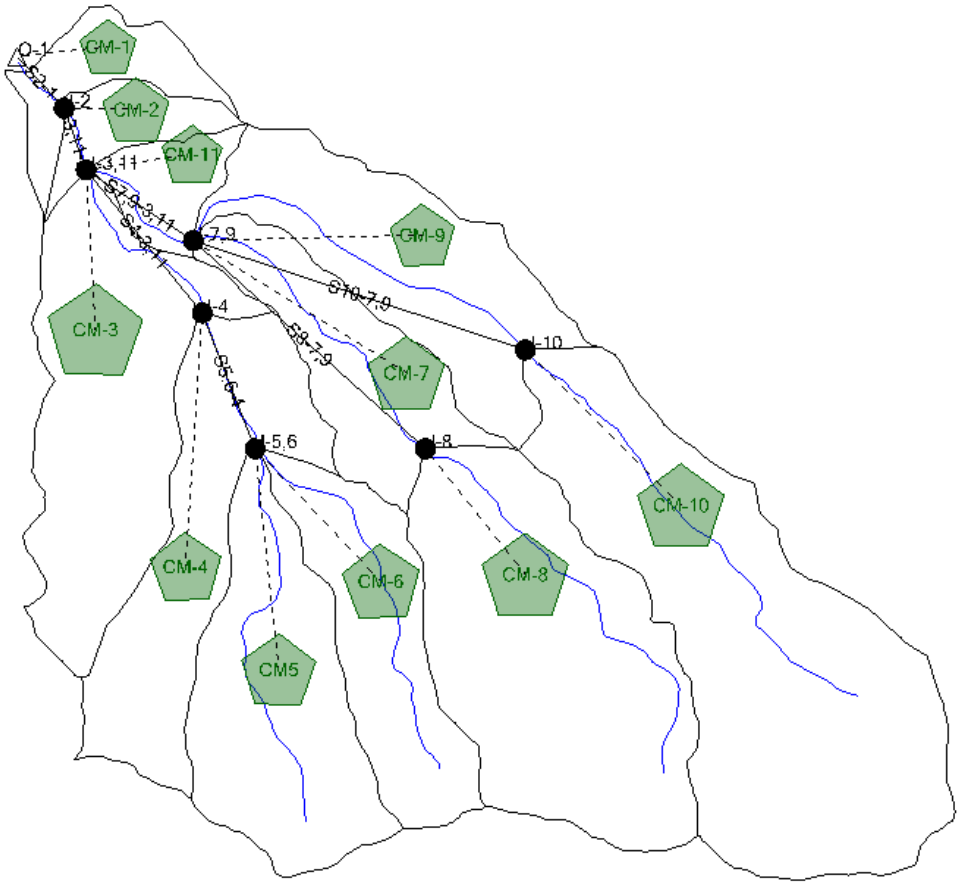
1.3.3.1.4 Stream Routing

The natural channel streams were input to the model as trapezoidal channels based on geometry obtained from 2009 aerial imagery and modeled with the Modified Puls routing method. All flow paths were modeled as natural channels and all existing hydraulic structures such as culverts and storm water pipes were not included within this model. For purposes of this project, it is assumed that all flow is surface water flow and that all structures natural and manmade are capable of conveying the 100-year, 24-hour peak flow.

1.3.3.1.5 Pond Pack Version 8i Model Configuration

The following figure illustrates the model configuration within Bently's Pond Pack Version 8i.

Figure 10. Model Configuration



1.3.3.2 Model Results

The flow rates rounded to the nearest tenth are shown in Table 7.

The 89 study flows came from the City of Big Bear Lake Master Plan of Drainage Rathbun Creek Report prepared by Boyle Engineering Corporation in May 1989. These values are shown in this report to validate the current calculated flow rates.

J-2 is located just off-site where the proposed Animal Park property line adjoins the existing golf course. These flow values represent the peak flows entering the site.

CM-1 is the sub-drainage area that contains the proposed Moonridge Animal Park site. These flow values are reported to show the difference in pre- and post-project peak flow.

Outfall is located at Rathbun Creek south of Moonridge Road. These flow values represent the pre- and post-project flows leaving the proposed Moonridge Animal Park Site. The outfall was modeled as a natural channel free outfall. The existing culvert under Moonridge Road was not constructed in the model.

Figure 11 and 12 show the pre- and post-project hydrographs of sub-drainage area CM-1.

Figure 11. Sub-Drainage Area CM-1 Pre-project Hydrograph

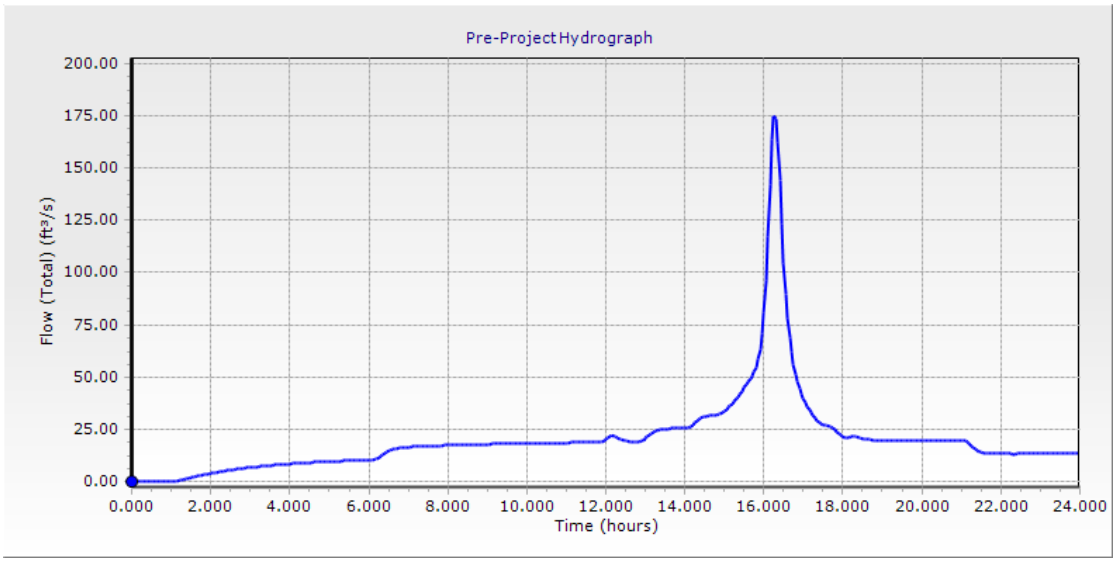
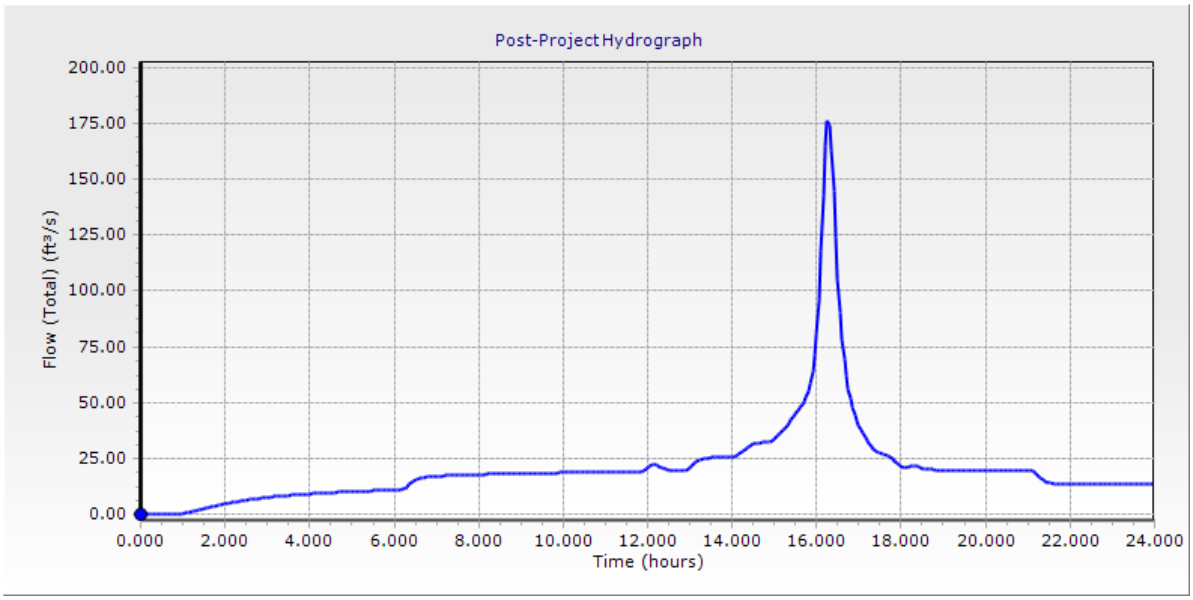


Figure 12. Sub-Drainage Area CM-1 Post-project Hydrograph



Per San Bernardino County Special Districts Department design standards, the calculated flow rates have been multiplied by a factor of 1.5 to account for sediment and debris transfer through the drainage area. This flow rate is considered the bulk flow rate and is shown in Table 8.

Table 7. Peak Flow Rates

			Peak Flow (cfs)									
			J-2		Difference (cfs)	CM-1		Difference (cfs)		Outfall		Difference (cfs)
AMC		88 Study	Pre-Project	Post-Project	Post - Pre	Pre-Project	Post-Project	Post - Pre	88 Study	Pre-Project	Post-Project	Post - Pre
II	10YR - 24HR		1340	1340	0	60	63	3		1388	1391	2
II	25YR - 24HR		2236	2236	0	94	97	3		2313	2316	2
II	100YR - 24HR		3855	3855	0	154	157	3		3974	3976	2
III	100YR - 24HR	4600	4687	4687	0	175	176	1	4800	4824	4825	1

Table 8. Peak Bulk Flow Rates

			Bulk Peak Flow (cfs)									
			A		Difference (cfs)	B		Difference (cfs)		Outfall		Difference (cfs)
AMC		88 Study	Pre-Project	Post-Project	Post - Pre	Pre-Project	Post-Project	Post - Pre	88 Study	Pre-Project	Post-Project	Post - Pre
II	10YR - 24HR		2010	2010	0	91	95	5		2082	2086	4
II	25YR - 24HR		3354	3354	0	141	146	4		3470	3474	3
II	100YR - 24HR		5783	5783	0	231	235	4		5961	5964	3
III	100YR - 24HR	6900	7031	7031	0	263	264	1	7200	7236	7237	1

1.4 SUMMARY

The increase in peak flow rate for the project site (CM-1) is 3, 3, and 1 cfs for the 10-, 25-, and 100-yr, 24-hr design storm events. The small increase in peak flows is contributed to the small increase in curve numbers from pre- and post-project conditions (increase in impervious area). Tetra Tech recommends on-site stormwater controls to mitigate the small increase in peaks flows.

APPENDIX A – NOAA Rainfall Data

NOAA ATLAS 14 POINT PRECIPITATION FREQUENCY ESTIMATES - RD1

PDS-based precipitation frequency estimates with 90% confidence intervals (in inches)[1]

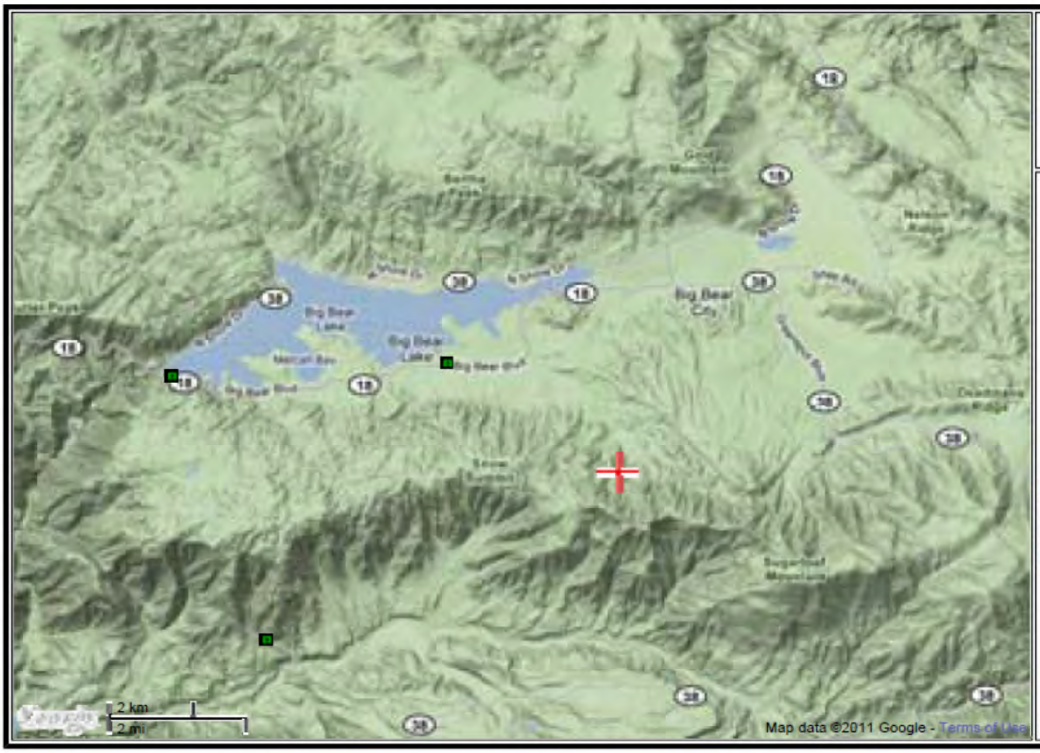
Duration	Average recurrence interval(years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.141 (0.116-0.172)	0.195 (0.161-0.238)	0.274 (0.226-0.336)	0.345 (0.282-0.425)	0.450 (0.366-0.575)	0.541 (0.419-0.705)	0.641 (0.484-0.856)	0.753 (0.554-1.04)	0.923 (0.651-1.32)	1.27 (0.868-1.89)
10-min	0.202 (0.167-0.246)	0.280 (0.231-0.342)	0.393 (0.324-0.481)	0.494 (0.404-0.610)	0.648 (0.511-0.824)	0.776 (0.600-1.01)	0.918 (0.694-1.23)	1.08 (0.794-1.48)	1.32 (0.933-1.89)	1.83 (1.25-2.71)
15-min	0.244 (0.202-0.297)	0.338 (0.280-0.413)	0.475 (0.392-0.582)	0.597 (0.489-0.737)	0.781 (0.618-0.997)	0.937 (0.726-1.22)	1.11 (0.840-1.48)	1.31 (0.960-1.79)	1.60 (1.13-2.29)	2.21 (1.51-3.27)
30-min	0.350 (0.290-0.427)	0.486 (0.402-0.594)	0.683 (0.563-0.836)	0.858 (0.702-1.06)	1.12 (0.888-1.43)	1.35 (1.04-1.76)	1.60 (1.21-2.13)	1.88 (1.38-2.58)	2.30 (1.62-3.29)	3.17 (2.16-4.70)
60-min	0.496 (0.411-0.606)	0.688 (0.569-0.841)	0.967 (0.797-1.18)	1.22 (0.994-1.50)	1.59 (1.26-2.03)	1.91 (1.48-2.49)	2.26 (1.71-3.02)	2.66 (1.95-3.65)	3.26 (2.30-4.66)	4.49 (3.06-6.66)
2-hr	0.717 (0.594-0.875)	0.986 (0.814-1.20)	1.38 (1.12-1.67)	1.69 (1.38-2.08)	2.18 (1.71-2.76)	2.55 (1.98-3.33)	2.97 (2.25-3.97)	3.43 (2.52-4.71)	4.10 (2.89-5.86)	4.85 (3.17-6.89)
3-hr	0.884 (0.741-1.09)	1.22 (1.01-1.49)	1.68 (1.38-2.05)	2.07 (1.69-2.55)	2.63 (2.08-3.36)	3.08 (2.40-4.03)	3.59 (2.71-4.79)	4.12 (3.03-5.66)	4.89 (3.45-6.99)	5.51 (3.76-8.17)
6-hr	1.31 (1.09-1.60)	1.78 (1.48-2.18)	2.44 (2.01-2.98)	3.00 (2.45-3.70)	3.80 (3.01-4.85)	4.45 (3.45-5.81)	5.15 (3.80-6.88)	5.90 (4.34-8.10)	6.97 (4.92-9.98)	7.85 (5.35-11.6)
12-hr	1.82 (1.51-2.22)	2.50 (2.06-3.05)	3.45 (2.85-4.23)	4.28 (3.51-5.29)	5.50 (4.36-7.03)	6.51 (5.05-8.49)	7.61 (5.75-10.2)	8.81 (6.48-12.1)	10.6 (7.45-15.1)	12.0 (8.19-17.8)
24-hr	2.59 (2.29-2.98)	3.69 (3.18-4.14)	5.04 (4.45-5.83)	6.34 (5.55-7.39)	8.30 (7.04-10.0)	9.88 (8.28-12.3)	11.8 (9.60-14.9)	13.9 (11.0-18.0)	17.1 (13.0-23.1)	19.9 (14.5-27.7)
2-day	3.29 (2.91-3.79)	4.66 (4.03-5.25)	6.43 (5.68-7.44)	8.15 (7.13-9.49)	10.8 (9.14-13.0)	13.1 (10.9-16.1)	15.7 (12.7-19.7)	18.7 (14.7-24.2)	23.3 (17.6-31.4)	27.4 (20.0-38.2)
3-day	3.83 (3.22-4.19)	5.03 (4.45-5.80)	7.13 (6.29-8.24)	9.05 (7.93-10.6)	12.0 (10.2-14.5)	14.7 (12.2-18.0)	17.7 (14.3-22.3)	21.2 (16.7-27.4)	26.8 (20.1-35.8)	31.4 (23.0-43.8)
4-day	3.90 (3.46-4.49)	5.41 (4.79-6.24)	7.69 (6.79-8.89)	9.78 (8.56-11.4)	13.0 (11.1-15.7)	15.8 (13.2-19.6)	19.2 (15.6-24.2)	23.0 (18.2-29.8)	29.0 (21.9-39.1)	34.3 (25.1-47.9)
7-day	4.43 (3.93-5.10)	6.22 (5.51-7.17)	8.90 (7.86-10.3)	11.4 (9.95-13.2)	16.2 (12.9-18.3)	18.5 (15.4-22.8)	22.3 (18.1-28.1)	26.7 (21.0-34.5)	33.5 (25.3-45.1)	39.5 (28.9-55.1)
10-day	4.77 (4.22-5.49)	6.74 (5.97-7.77)	8.88 (8.55-11.2)	12.4 (10.8-14.4)	16.5 (14.0-19.9)	20.1 (16.7-24.7)	24.2 (19.6-30.5)	28.9 (22.8-37.4)	36.1 (27.3-48.7)	42.5 (31.1-59.2)
20-day	5.73 (5.08-6.60)	8.17 (7.23-9.42)	11.8 (10.4-13.6)	15.0 (13.2-17.5)	20.0 (17.0-24.1)	24.3 (20.2-29.9)	29.1 (23.6-36.7)	34.8 (27.3-44.8)	43.0 (32.5-58.0)	50.3 (36.8-70.1)
30-day	6.74 (5.97-7.76)	9.60 (8.50-11.1)	13.8 (12.2-16.0)	17.6 (15.4-20.5)	23.4 (19.8-28.1)	28.3 (23.5-34.8)	33.8 (27.4-42.6)	40.0 (31.6-51.8)	49.5 (37.4-66.7)	57.8 (42.1-80.3)
45-day	8.09 (7.17-9.32)	11.5 (10.2-13.2)	16.4 (14.5-19.0)	20.8 (18.2-24.3)	27.5 (23.3-33.1)	33.2 (27.6-40.8)	39.5 (32.0-49.8)	46.8 (36.7-60.3)	57.3 (43.3-77.2)	66.4 (48.6-92.6)
60-day	9.41 (8.34-10.8)	13.2 (11.7-15.3)	18.8 (16.6-21.7)	23.8 (20.8-27.7)	31.3 (26.5-37.6)	37.6 (31.2-46.2)	44.6 (36.1-56.1)	52.4 (41.3-67.8)	64.1 (48.5-86.4)	74.1 (54.2-103)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

NOAA ATLAS 14 POINT PRECIPITATION FREQUENCY ESTIMATES - RD2



a) **Select location** (move crosshair)
b) **Click on station icon**
(show stations on map)

LOCATION INFORMATION:
Name: Big Bear City, California, US*
Latitude: 34.2200
Longitude: -116.8600
Elevation: 7625ft*

* source: Google Maps

PDS-based precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval(years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.160 (0.124-0.183)	0.208 (0.170-0.251)	0.285 (0.235-0.349)	0.355 (0.291-0.438)	0.458 (0.363-0.586)	0.547 (0.424-0.712)	0.643 (0.486-0.859)	0.751 (0.552-1.03)	0.911 (0.643-1.31)	1.13 (0.773-1.68)
10-min	0.215 (0.178-0.263)	0.286 (0.244-0.360)	0.409 (0.337-0.500)	0.508 (0.416-0.628)	0.658 (0.521-0.840)	0.784 (0.607-1.02)	0.922 (0.697-1.23)	1.08 (0.791-1.48)	1.31 (0.921-1.87)	1.63 (1.11-2.41)
15-min	0.260 (0.216-0.317)	0.357 (0.295-0.435)	0.494 (0.408-0.605)	0.615 (0.504-0.760)	0.798 (0.630-1.02)	0.948 (0.735-1.24)	1.12 (0.843-1.49)	1.30 (0.957-1.79)	1.58 (1.11-2.26)	1.97 (1.34-2.91)
30-min	0.372 (0.308-0.454)	0.508 (0.421-0.622)	0.708 (0.583-0.864)	0.878 (0.720-1.09)	1.14 (0.900-1.45)	1.35 (1.05-1.77)	1.59 (1.21-2.13)	1.88 (1.37-2.55)	2.26 (1.59-3.23)	2.81 (1.91-4.16)
60-min	0.528 (0.435-0.641)	0.720 (0.595-0.879)	0.997 (0.823-1.22)	1.24 (1.02-1.53)	1.61 (1.27-2.05)	1.91 (1.48-2.49)	2.25 (1.70-3.01)	2.63 (1.93-3.61)	3.18 (2.25-4.57)	3.97 (2.70-5.88)
2-hr	0.751 (0.622-0.916)	1.02 (0.849-1.24)	1.38 (1.15-1.70)	1.71 (1.40-2.12)	2.18 (1.73-2.78)	2.58 (1.99-3.34)	2.97 (2.25-3.97)	3.42 (2.51-4.69)	4.06 (2.87-5.81)	4.59 (3.13-6.81)
3-hr	0.934 (0.773-1.14)	1.26 (1.04-1.54)	1.71 (1.41-2.09)	2.10 (1.72-2.59)	2.65 (2.10-3.39)	3.11 (2.41-4.05)	3.58 (2.71-4.79)	4.11 (3.02-5.64)	4.88 (3.43-6.95)	5.47 (3.73-8.10)
6-hr	1.37 (1.13-1.67)	1.84 (1.52-2.24)	2.48 (2.05-3.04)	3.04 (2.48-3.75)	3.83 (3.03-4.89)	4.48 (3.47-5.83)	5.16 (3.90-6.89)	5.90 (4.34-8.10)	6.96 (4.91-9.96)	7.82 (5.33-11.6)
12-hr	1.90 (1.57-2.31)	2.58 (2.13-3.15)	3.53 (2.91-4.32)	4.36 (3.57-5.39)	5.57 (4.41-7.11)	6.57 (5.10-8.57)	7.65 (5.79-10.2)	8.83 (6.50-12.1)	10.6 (7.44-15.1)	12.0 (8.17-17.8)
24-hr	2.70 (2.40-3.11)	3.73 (3.30-4.30)	5.21 (4.59-6.02)	6.52 (5.71-7.59)	8.48 (7.18-10.2)	10.1 (8.42-12.5)	12.0 (9.71-15.1)	14.0 (11.1-18.2)	17.1 (13.0-23.1)	19.8 (14.5-27.6)
2-day	3.42 (3.03-3.94)	4.73 (4.18-5.45)	6.66 (5.87-7.68)	8.38 (7.33-9.76)	11.0 (9.34-13.3)	13.3 (11.0-16.3)	15.9 (12.9-20.0)	18.8 (14.8-24.3)	23.2 (17.6-31.3)	27.2 (19.9-37.9)
3-day	3.77 (3.34-4.34)	5.21 (4.61-6.01)	7.38 (6.49-8.51)	9.31 (8.15-10.9)	12.3 (10.4-14.8)	14.9 (12.4-18.3)	17.8 (14.5-22.5)	21.3 (16.8-27.6)	26.5 (20.1-35.8)	31.2 (22.8-43.5)
4-day	4.04 (3.58-4.65)	5.61 (4.96-6.47)	7.94 (7.01-9.18)	10.1 (8.82-11.7)	13.3 (11.3-16.1)	16.2 (13.5-19.9)	19.5 (15.8-24.5)	23.2 (18.3-30.0)	29.0 (21.9-39.1)	34.1 (25.0-47.6)
7-day	4.59 (4.07-5.29)	6.43 (5.69-7.42)	9.17 (8.09-10.6)	11.7 (10.2-13.6)	15.5 (13.1-18.6)	18.8 (15.6-23.1)	22.6 (18.3-28.4)	26.9 (21.2-34.8)	33.5 (25.3-45.1)	39.3 (28.7-54.8)
10-day	4.94 (4.38-5.69)	6.97 (6.17-8.03)	9.97 (8.80-11.5)	12.7 (11.1-14.8)	16.9 (14.3-20.3)	20.6 (17.0-25.1)	24.5 (19.9-30.9)	29.1 (23.0-37.7)	36.2 (27.4-48.8)	42.4 (31.0-59.1)
20-day	5.95 (5.28-6.86)	8.48 (7.49-9.76)	12.1 (10.7-14.0)	15.5 (13.5-18.0)	20.5 (17.4-24.7)	24.8 (20.6-30.5)	29.6 (24.0-37.3)	35.1 (27.7-45.4)	43.3 (32.8-58.4)	50.5 (36.9-70.4)
30-day	6.97 (6.18-8.03)	9.91 (8.77-11.4)	14.2 (12.5-16.4)	18.0 (15.8-21.0)	23.8 (20.2-28.7)	28.8 (23.9-35.4)	34.3 (27.8-43.1)	40.4 (31.9-52.3)	49.7 (37.6-67.1)	57.7 (42.2-80.5)
45-day	8.39 (7.43-9.66)	11.8 (10.5-13.7)	16.8 (14.9-19.5)	21.3 (18.7-24.9)	28.1 (23.8-33.8)	33.7 (28.0-41.5)	40.0 (32.4-50.4)	47.1 (37.1-60.9)	57.5 (43.6-77.6)	66.5 (48.7-92.8)
60-day	9.75 (8.64-11.2)	13.7 (12.1-15.7)	19.3 (17.0-22.3)	24.3 (21.3-28.3)	31.8 (26.9-38.3)	38.1 (31.6-46.8)	45.1 (36.5-56.7)	52.8 (41.6-68.3)	64.3 (48.6-86.6)	74.0 (54.1-103)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

NOAA ATLAS 14 POINT PRECIPITATION FREQUENCY ESTIMATES - RD3

PDS-based precipitation frequency estimates with 90% confidence intervals (in inches)[1]

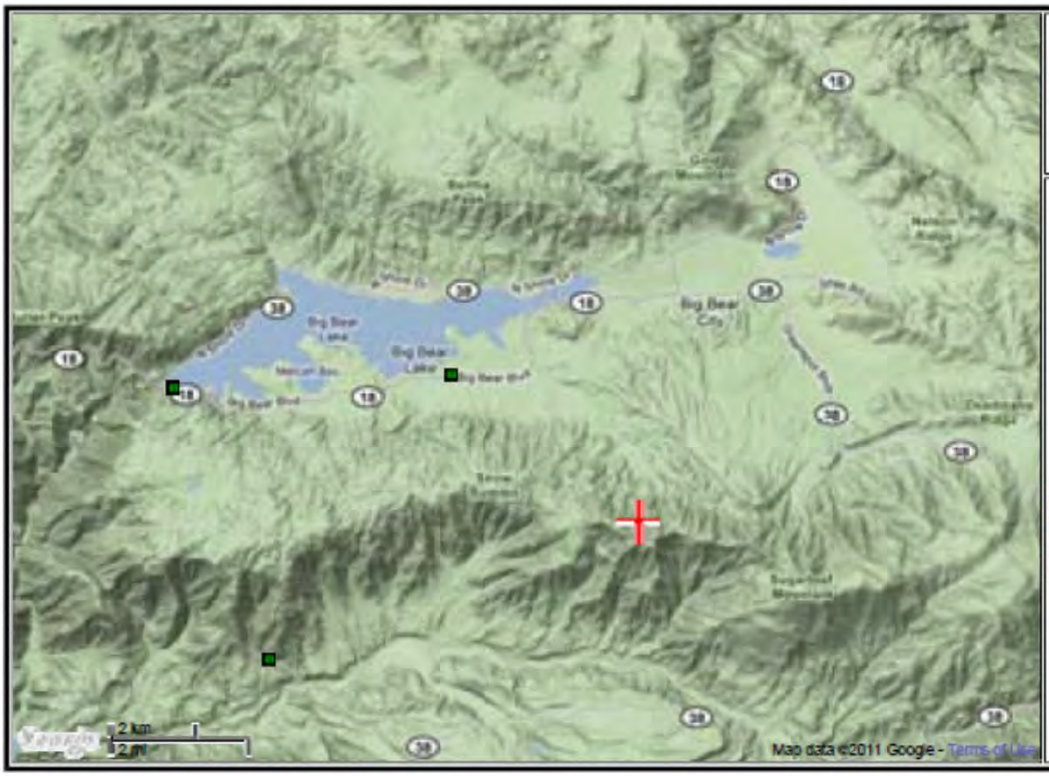
Duration	Average recurrence interval(years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.133 (0.110–0.162)	0.186 (0.154–0.227)	0.265 (0.218–0.324)	0.335 (0.274–0.414)	0.442 (0.350–0.565)	0.534 (0.414–0.696)	0.637 (0.482–0.851)	0.753 (0.554–1.04)	0.981 (0.692–1.41)	1.38 (0.940–2.04)
10-min	0.190 (0.157–0.232)	0.267 (0.221–0.326)	0.379 (0.313–0.465)	0.480 (0.393–0.593)	0.634 (0.502–0.809)	0.766 (0.593–0.996)	0.913 (0.690–1.22)	1.08 (0.794–1.48)	1.41 (0.992–2.01)	1.98 (1.35–2.93)
15-min	0.230 (0.190–0.281)	0.323 (0.267–0.394)	0.459 (0.378–0.562)	0.581 (0.475–0.718)	0.767 (0.607–0.979)	0.926 (0.717–1.21)	1.10 (0.835–1.48)	1.31 (0.960–1.79)	1.70 (1.20–2.44)	2.39 (1.63–3.54)
30-min	0.332 (0.275–0.405)	0.466 (0.385–0.569)	0.662 (0.546–0.811)	0.838 (0.686–1.04)	1.11 (0.875–1.41)	1.34 (1.04–1.74)	1.59 (1.20–2.13)	1.88 (1.39–2.59)	2.45 (1.73–3.51)	3.45 (2.35–5.11)
60-min	0.471 (0.390–0.574)	0.660 (0.546–0.807)	0.939 (0.774–1.15)	1.19 (0.972–1.47)	1.57 (1.24–2.00)	1.89 (1.47–2.47)	2.26 (1.71–3.02)	2.67 (1.96–3.67)	3.48 (2.45–4.98)	4.89 (3.33–7.25)
2-hr	0.687 (0.569–0.838)	0.954 (0.789–1.17)	1.33 (1.10–1.63)	1.66 (1.36–2.05)	2.14 (1.69–2.73)	2.54 (1.97–3.31)	2.96 (2.24–3.96)	3.43 (2.52–4.72)	4.12 (2.90–5.89)	4.94 (3.37–7.32)
3-hr	0.860 (0.712–1.05)	1.19 (0.983–1.45)	1.65 (1.36–2.02)	2.04 (1.67–2.52)	2.61 (2.07–3.34)	3.08 (2.39–4.02)	3.58 (2.71–4.78)	4.12 (3.03–5.66)	4.90 (3.46–7.02)	5.55 (3.78–8.22)
6-hr	1.26 (1.05–1.54)	1.74 (1.44–2.12)	2.39 (1.96–2.93)	2.96 (2.42–3.65)	3.77 (2.98–4.81)	4.43 (3.43–5.77)	5.13 (3.88–6.85)	5.89 (4.33–8.09)	6.97 (4.92–9.99)	7.86 (5.36–11.7)
12-hr	1.75 (1.45–2.14)	2.43 (2.01–2.96)	3.38 (2.79–4.14)	4.21 (3.45–5.20)	5.44 (4.30–6.94)	6.46 (5.00–8.42)	7.56 (5.72–10.1)	8.78 (6.45–12.1)	10.6 (7.45–15.1)	12.0 (8.21–17.9)
24-hr	2.49 (2.21–2.87)	3.47 (3.07–4.00)	4.90 (4.33–5.67)	6.19 (5.42–7.22)	8.15 (6.91–9.82)	9.84 (8.17–12.1)	11.7 (9.50–14.8)	13.9 (10.9–17.9)	17.1 (12.9–23.1)	19.9 (14.6–27.8)
2-day	3.19 (2.82–3.67)	4.42 (3.91–5.10)	6.27 (5.53–7.25)	7.96 (6.97–9.28)	10.6 (8.96–12.8)	12.9 (10.7–15.9)	15.6 (12.6–19.6)	18.6 (14.7–24.1)	23.4 (17.7–31.5)	27.6 (20.2–38.5)
3-day	3.53 (3.13–4.07)	4.89 (4.33–5.64)	6.95 (6.14–8.04)	8.86 (7.76–10.3)	11.9 (10.0–14.3)	14.5 (12.0–17.8)	17.6 (14.2–22.1)	21.1 (16.6–27.3)	26.7 (20.2–36.0)	31.7 (23.2–44.2)
4-day	3.79 (3.36–4.37)	5.26 (4.66–6.07)	7.49 (6.61–8.66)	9.56 (8.37–11.1)	12.8 (10.9–15.4)	15.7 (13.0–19.3)	19.1 (15.4–24.0)	22.9 (18.1–29.7)	29.1 (22.0–39.2)	34.6 (25.3–48.2)
7-day	4.31 (3.82–4.96)	6.06 (5.36–6.98)	8.70 (7.68–10.1)	11.1 (9.75–13.0)	14.9 (12.7–18.0)	18.3 (15.2–22.5)	22.1 (17.9–27.9)	26.6 (21.0–34.4)	33.5 (25.4–45.2)	39.7 (29.1–55.4)
10-day	4.62 (4.10–5.32)	6.56 (5.80–7.56)	9.46 (8.35–10.9)	12.1 (10.6–14.1)	16.3 (13.8–19.6)	19.9 (16.5–24.4)	24.0 (19.5–30.2)	28.8 (22.7–37.2)	36.1 (27.3–48.7)	42.6 (31.2–59.5)
20-day	5.54 (4.91–6.38)	7.93 (7.02–9.14)	11.5 (10.1–13.3)	14.7 (12.9–17.1)	19.6 (16.6–23.6)	23.9 (19.9–29.4)	28.8 (23.3–36.2)	34.3 (27.0–44.4)	42.7 (32.3–57.6)	50.1 (36.7–69.9)
30-day	6.54 (5.80–7.53)	9.35 (8.28–10.8)	13.5 (11.9–15.6)	17.3 (15.1–20.1)	23.0 (19.5–27.7)	27.9 (23.2–34.4)	33.5 (27.1–42.2)	39.8 (31.4–51.5)	49.3 (37.3–66.5)	57.6 (42.1–80.4)
45-day	7.85 (6.96–9.04)	11.2 (9.88–12.9)	16.0 (14.2–18.5)	20.4 (17.9–23.8)	27.1 (22.9–32.6)	32.8 (27.2–40.3)	39.1 (31.7–49.3)	46.3 (36.5–59.9)	57.1 (43.2–77.0)	66.4 (48.6–92.7)
60-day	9.13 (8.09–10.5)	12.9 (11.4–14.9)	18.4 (16.2–21.3)	23.3 (20.4–27.2)	30.8 (26.1–37.1)	37.2 (30.9–45.7)	44.2 (35.9–55.7)	52.2 (41.1–67.5)	64.1 (48.5–86.4)	74.3 (54.4–104)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

NOAA ATLAS 14 POINT PRECIPITATION FREQUENCY ESTIMATES - RD5



a) Select location (move crosshair)
b) Click on station icon
(show stations on map)

LOCATION INFORMATION:
Name: Big Bear City, California, US*
Latitude: 34.2128
Longitude: -116.8560
Elevation: 8039ft*

* source: Google Maps

PDS-based precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval(years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.150 (0.124–0.183)	0.206 (0.170–0.251)	0.285 (0.235–0.349)	0.355 (0.291–0.438)	0.459 (0.363–0.586)	0.547 (0.424–0.712)	0.643 (0.486–0.859)	0.751 (0.552–1.03)	0.911 (0.643–1.31)	1.13 (0.773–1.68)
10-min	0.215 (0.178–0.263)	0.295 (0.244–0.360)	0.409 (0.337–0.500)	0.509 (0.416–0.628)	0.658 (0.521–0.840)	0.784 (0.607–1.02)	0.922 (0.697–1.23)	1.08 (0.791–1.48)	1.31 (0.921–1.87)	1.63 (1.11–2.41)
15-min	0.260 (0.216–0.317)	0.357 (0.295–0.435)	0.494 (0.408–0.605)	0.615 (0.504–0.760)	0.796 (0.630–1.02)	0.948 (0.735–1.24)	1.12 (0.843–1.49)	1.30 (0.957–1.79)	1.58 (1.11–2.26)	1.97 (1.34–2.91)
30-min	0.372 (0.308–0.454)	0.509 (0.421–0.622)	0.706 (0.583–0.864)	0.879 (0.720–1.09)	1.14 (0.900–1.45)	1.35 (1.05–1.77)	1.59 (1.21–2.13)	1.86 (1.37–2.55)	2.26 (1.59–3.23)	2.81 (1.91–4.16)
60-min	0.526 (0.435–0.641)	0.720 (0.595–0.879)	0.997 (0.823–1.22)	1.24 (1.02–1.53)	1.61 (1.27–2.05)	1.91 (1.48–2.49)	2.25 (1.70–3.01)	2.63 (1.93–3.61)	3.19 (2.25–4.57)	3.97 (2.70–5.68)
2-hr	0.751 (0.622–0.916)	1.02 (0.843–1.24)	1.39 (1.15–1.70)	1.71 (1.40–2.12)	2.18 (1.73–2.78)	2.56 (1.99–3.34)	2.97 (2.25–3.97)	3.42 (2.51–4.69)	4.06 (2.87–5.81)	4.59 (3.13–6.81)
3-hr	0.934 (0.773–1.14)	1.26 (1.04–1.54)	1.71 (1.41–2.09)	2.10 (1.72–2.59)	2.65 (2.10–3.39)	3.11 (2.41–4.05)	3.59 (2.71–4.79)	4.11 (3.02–5.64)	4.86 (3.43–6.95)	5.47 (3.73–8.10)
6-hr	1.37 (1.13–1.67)	1.84 (1.52–2.24)	2.48 (2.05–3.04)	3.04 (2.48–3.75)	3.83 (3.03–4.89)	4.48 (3.47–5.83)	5.16 (3.90–6.89)	5.90 (4.34–8.10)	6.96 (4.91–9.96)	7.82 (5.33–11.6)
12-hr	1.90 (1.57–2.31)	2.58 (2.13–3.15)	3.53 (2.91–4.32)	4.36 (3.57–5.39)	5.57 (4.41–7.11)	6.57 (5.10–8.57)	7.65 (5.79–10.2)	8.83 (6.50–12.1)	10.6 (7.44–15.1)	12.0 (8.17–17.8)
24-hr	2.70 (2.40–3.11)	3.73 (3.30–4.30)	5.21 (4.59–6.02)	6.52 (5.71–7.59)	8.48 (7.18–10.2)	10.1 (8.42–12.5)	12.0 (9.71–15.1)	14.0 (11.1–18.2)	17.1 (13.0–23.1)	19.8 (14.5–27.6)
2-day	3.42 (3.03–3.94)	4.73 (4.18–5.45)	6.65 (5.87–7.66)	8.38 (7.33–9.76)	11.0 (9.34–13.3)	13.3 (11.0–16.3)	15.9 (12.9–20.0)	18.8 (14.8–24.3)	23.2 (17.6–31.3)	27.2 (19.9–37.9)
3-day	3.77 (3.34–4.34)	5.21 (4.61–6.01)	7.36 (6.49–8.51)	9.31 (8.15–10.9)	12.3 (10.4–14.8)	14.9 (12.4–18.3)	17.9 (14.5–22.5)	21.3 (16.8–27.6)	26.5 (20.1–35.8)	31.2 (22.8–43.5)
4-day	4.04 (3.58–4.65)	5.61 (4.96–6.47)	7.94 (7.01–9.18)	10.1 (8.82–11.7)	13.3 (11.3–16.1)	16.2 (13.5–19.9)	19.5 (15.8–24.5)	23.2 (18.3–30.0)	29.0 (21.9–39.1)	34.1 (25.0–47.6)
7-day	4.59 (4.07–5.29)	6.43 (5.69–7.42)	9.17 (8.09–10.6)	11.7 (10.2–13.6)	15.5 (13.1–18.6)	18.8 (15.6–23.1)	22.6 (18.3–28.4)	26.9 (21.2–34.8)	33.5 (25.3–45.1)	39.3 (28.7–54.8)
10-day	4.94 (4.38–5.69)	6.97 (6.17–8.03)	9.97 (8.80–11.5)	12.7 (11.1–14.8)	16.9 (14.3–20.3)	20.5 (17.0–25.1)	24.5 (19.9–30.9)	29.1 (23.0–37.7)	36.2 (27.4–48.8)	42.4 (31.0–59.1)
20-day	5.95 (5.28–6.86)	8.46 (7.49–9.76)	12.1 (10.7–14.0)	15.5 (13.5–18.0)	20.5 (17.4–24.7)	24.8 (20.6–30.5)	29.6 (24.0–37.3)	35.1 (27.7–45.4)	43.3 (32.8–58.4)	50.5 (36.9–70.4)
30-day	6.97 (6.18–8.03)	9.91 (8.77–11.4)	14.2 (12.5–16.4)	18.0 (15.8–21.0)	23.8 (20.2–28.7)	28.8 (23.9–35.4)	34.3 (27.8–43.1)	40.4 (31.9–52.3)	49.7 (37.6–67.1)	57.7 (42.2–80.5)
45-day	8.39 (7.43–9.66)	11.8 (10.5–13.7)	16.9 (14.9–19.5)	21.3 (18.7–24.9)	28.1 (23.8–33.8)	33.7 (28.0–41.5)	40.0 (32.4–50.4)	47.1 (37.1–60.9)	57.5 (43.6–77.6)	66.5 (48.7–92.8)
60-day	9.75 (8.64–11.2)	13.7 (12.1–15.7)	19.3 (17.0–22.3)	24.3 (21.3–28.3)	31.8 (26.9–38.3)	38.1 (31.6–46.8)	45.1 (36.5–56.7)	52.8 (41.6–68.3)	64.3 (48.6–86.6)	74.0 (54.1–103)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

NOAA ATLAS 14 POINT PRECIPITATION FREQUENCY ESTIMATES - RD6

a) **Select location** (move crosshair)
b) **Click on station icon**
(show stations on map)

LOCATION INFORMATION:
Name: Big Bear City, California, US*
Latitude: 34.2135
Longitude: -116.8420
Elevation: 8255ft*

* source: Google Maps

PDS-based precipitation frequency estimates with 90% confidence intervals (in inches)[1]

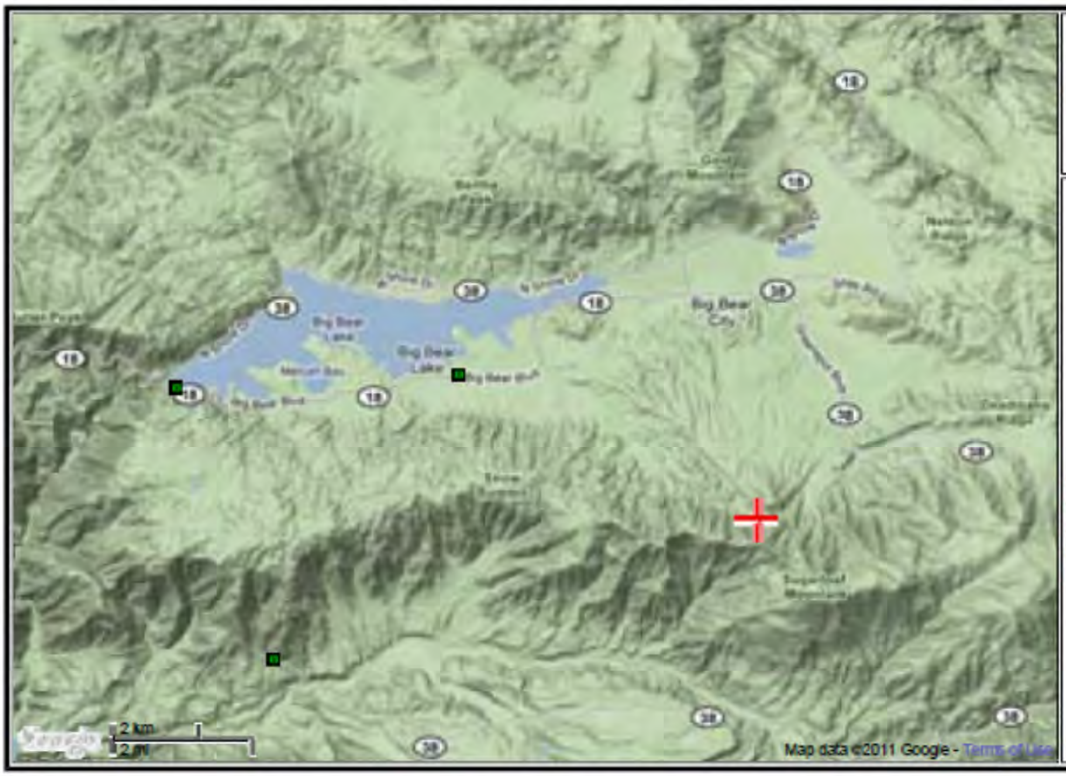
Duration	Average recurrence interval(years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.158 (0.131–0.192)	0.215 (0.178–0.263)	0.297 (0.245–0.363)	0.368 (0.301–0.454)	0.474 (0.375–0.605)	0.562 (0.436–0.733)	0.660 (0.499–0.881)	0.768 (0.564–1.05)	0.928 (0.655–1.33)	1.11 (0.754–1.64)
10-min	0.226 (0.187–0.276)	0.308 (0.255–0.376)	0.425 (0.351–0.520)	0.527 (0.432–0.651)	0.679 (0.538–0.867)	0.806 (0.625–1.05)	0.945 (0.715–1.26)	1.10 (0.809–1.51)	1.33 (0.938–1.91)	1.59 (1.08–2.35)
15-min	0.274 (0.227–0.334)	0.373 (0.308–0.455)	0.514 (0.424–0.629)	0.638 (0.522–0.787)	0.821 (0.650–1.05)	0.975 (0.756–1.27)	1.14 (0.865–1.53)	1.33 (0.979–1.83)	1.61 (1.14–2.30)	1.92 (1.31–2.84)
30-min	0.389 (0.322–0.475)	0.531 (0.439–0.648)	0.731 (0.603–0.895)	0.908 (0.743–1.12)	1.17 (0.925–1.49)	1.39 (1.08–1.81)	1.63 (1.23–2.17)	1.89 (1.39–2.60)	2.29 (1.62–3.28)	2.73 (1.86–4.04)
60-min	0.547 (0.453–0.667)	0.746 (0.617–0.911)	1.03 (0.848–1.26)	1.28 (1.04–1.58)	1.64 (1.30–2.10)	1.95 (1.51–2.54)	2.29 (1.73–3.05)	2.66 (1.96–3.66)	3.22 (2.27–4.61)	3.83 (2.61–5.68)
2-hr	0.774 (0.641–0.944)	1.04 (0.864–1.28)	1.42 (1.17–1.74)	1.75 (1.43–2.15)	2.21 (1.75–2.83)	2.60 (2.01–3.38)	3.01 (2.27–4.02)	3.45 (2.54–4.74)	4.09 (2.89–5.86)	4.62 (3.15–6.85)
3-hr	0.957 (0.792–1.17)	1.28 (1.06–1.57)	1.74 (1.43–2.13)	2.12 (1.74–2.62)	2.68 (2.12–3.42)	3.13 (2.43–4.08)	3.62 (2.74–4.83)	4.14 (3.04–5.68)	4.88 (3.44–6.99)	5.49 (3.74–8.14)
6-hr	1.39 (1.15–1.70)	1.86 (1.54–2.27)	2.51 (2.07–3.07)	3.06 (2.50–3.78)	3.85 (3.05–4.92)	4.49 (3.48–5.86)	5.18 (3.92–6.92)	5.91 (4.35–8.12)	6.97 (4.92–9.97)	7.83 (5.33–11.6)
12-hr	1.93 (1.60–2.35)	2.60 (2.15–3.18)	3.56 (2.94–4.36)	4.39 (3.59–5.41)	5.59 (4.42–7.13)	6.58 (5.10–8.58)	7.65 (5.79–10.2)	8.82 (6.49–12.1)	10.5 (7.42–15.1)	11.9 (8.13–17.7)
24-hr	2.74 (2.43–3.16)	3.78 (3.34–4.35)	5.26 (4.64–6.06)	6.57 (5.75–7.65)	8.52 (7.22–10.3)	10.2 (8.44–12.5)	12.0 (9.71–15.1)	14.0 (11.0–18.1)	17.0 (12.9–23.0)	19.6 (14.4–27.4)
2-day	3.44 (3.05–3.96)	4.76 (4.21–5.48)	6.67 (5.89–7.72)	8.40 (7.35–9.79)	11.0 (9.34–13.3)	13.3 (11.0–16.3)	15.8 (12.8–19.9)	18.7 (14.7–24.2)	23.0 (17.4–31.0)	26.8 (19.6–37.4)
3-day	3.78 (3.35–4.35)	5.23 (4.63–6.03)	7.38 (6.51–8.53)	9.32 (8.16–10.9)	12.3 (10.4–14.8)	14.9 (12.4–18.3)	17.8 (14.4–22.4)	21.1 (16.7–27.4)	26.3 (19.9–35.4)	30.8 (22.5–42.9)
4-day	4.06 (3.60–4.67)	5.63 (4.98–6.49)	7.96 (7.03–9.21)	10.1 (8.83–11.8)	13.3 (11.3–16.1)	16.2 (13.4–19.9)	19.4 (15.7–24.4)	23.1 (18.2–29.8)	28.7 (21.7–38.7)	33.7 (24.7–47.0)
7-day	4.61 (4.09–5.31)	6.45 (5.71–7.44)	9.18 (8.10–10.6)	11.7 (10.2–13.6)	15.4 (13.1–18.6)	18.7 (15.5–23.0)	22.4 (18.2–28.2)	26.7 (21.0–34.5)	33.1 (25.1–44.7)	38.8 (28.4–54.1)
10-day	4.97 (4.40–5.72)	6.99 (6.19–8.06)	9.98 (8.81–11.5)	12.7 (11.1–14.8)	16.8 (14.2–20.2)	20.4 (16.9–25.0)	24.4 (19.7–30.7)	28.9 (22.8–37.4)	35.8 (27.1–48.3)	41.9 (30.6–58.4)
20-day	5.99 (5.31–6.90)	8.50 (7.52–9.80)	12.2 (10.7–14.1)	15.5 (13.5–18.0)	20.5 (17.3–24.6)	24.7 (20.5–30.4)	29.5 (23.9–37.1)	34.9 (27.5–45.1)	43.0 (32.5–58.0)	50.0 (36.6–69.8)
30-day	7.00 (6.20–8.06)	9.92 (8.78–11.4)	14.2 (12.5–16.4)	18.0 (15.8–21.0)	23.8 (20.1–28.6)	28.7 (23.8–35.2)	34.1 (27.6–42.9)	40.2 (31.7–52.0)	49.3 (37.3–66.4)	57.1 (41.8–79.7)
45-day	8.40 (7.45–9.68)	11.8 (10.5–13.7)	16.8 (14.9–19.5)	21.3 (18.6–24.8)	27.9 (23.7–33.6)	33.6 (27.9–41.3)	39.8 (32.2–50.1)	46.7 (36.8–60.4)	57.0 (43.1–76.8)	65.8 (48.1–91.7)
60-day	9.76 (8.65–11.2)	13.6 (12.1–15.7)	19.3 (17.0–22.3)	24.2 (21.2–28.2)	31.6 (26.8–36.1)	37.9 (31.4–46.5)	44.7 (36.2–56.3)	52.3 (41.2–67.7)	63.5 (48.1–85.7)	73.1 (53.5–102)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

NOAA ATLAS 14 POINT PRECIPITATION FREQUENCY ESTIMATES - RD7



PDS-based precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval(years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.166 (0.137–0.202)	0.225 (0.186–0.275)	0.309 (0.255–0.378)	0.382 (0.312–0.471)	0.490 (0.388–0.625)	0.580 (0.449–0.756)	0.678 (0.513–0.905)	0.787 (0.579–1.08)	0.948 (0.669–1.36)	1.09 (0.742–1.61)
10-min	0.238 (0.197–0.290)	0.322 (0.267–0.394)	0.442 (0.365–0.542)	0.547 (0.448–0.676)	0.702 (0.556–0.896)	0.831 (0.644–1.06)	0.972 (0.735–1.30)	1.13 (0.829–1.55)	1.36 (0.959–1.95)	1.56 (1.06–2.31)
15-min	0.287 (0.238–0.350)	0.390 (0.323–0.476)	0.535 (0.441–0.655)	0.662 (0.542–0.817)	0.849 (0.672–1.08)	1.01 (0.779–1.31)	1.18 (0.889–1.57)	1.36 (1.00–1.87)	1.64 (1.16–2.35)	1.89 (1.29–2.80)
30-min	0.406 (0.337–0.496)	0.552 (0.456–0.673)	0.757 (0.624–0.927)	0.936 (0.766–1.16)	1.20 (0.950–1.53)	1.42 (1.10–1.85)	1.66 (1.26–2.22)	1.93 (1.42–2.65)	2.33 (1.64–3.33)	2.67 (1.82–3.95)
60-min	0.569 (0.471–0.694)	0.772 (0.639–0.943)	1.06 (0.874–1.30)	1.31 (1.07–1.62)	1.68 (1.33–2.15)	1.99 (1.54–2.59)	2.33 (1.76–3.11)	2.70 (1.99–3.71)	3.26 (2.30–4.66)	3.74 (2.55–5.54)
2-hr	0.798 (0.661–0.973)	1.07 (0.887–1.31)	1.45 (1.20–1.78)	1.78 (1.46–2.20)	2.25 (1.78–2.88)	2.64 (2.05–3.44)	3.05 (2.31–4.08)	3.50 (2.57–4.81)	4.14 (2.92–5.93)	4.67 (3.19–6.93)
3-hr	0.982 (0.813–1.20)	1.31 (1.09–1.60)	1.77 (1.46–2.16)	2.16 (1.77–2.66)	2.72 (2.15–3.47)	3.17 (2.46–4.14)	3.66 (2.77–4.88)	4.18 (3.07–5.74)	4.93 (3.48–7.05)	5.54 (3.78–8.21)
6-hr	1.42 (1.18–1.73)	1.89 (1.56–2.31)	2.54 (2.09–3.10)	3.09 (2.53–3.81)	3.88 (3.07–4.96)	4.53 (3.51–5.90)	5.21 (3.94–6.96)	5.95 (4.37–8.17)	7.00 (4.94–10.0)	7.86 (5.36–11.6)
12-hr	1.96 (1.62–2.39)	2.64 (2.18–3.22)	3.59 (2.96–4.39)	4.41 (3.61–5.45)	5.61 (4.44–7.17)	6.60 (5.12–8.60)	7.66 (5.60–10.2)	8.82 (6.49–12.1)	10.5 (7.41–15.0)	11.9 (8.11–17.6)
24-hr	2.78 (2.46–3.20)	3.82 (3.38–4.40)	5.30 (4.68–6.13)	6.60 (5.78–7.70)	8.55 (7.24–10.3)	10.2 (8.45–12.5)	12.0 (9.71–15.1)	14.0 (11.0–18.1)	17.0 (12.8–22.9)	19.5 (14.3–27.2)
2-day	3.47 (3.07–4.00)	4.79 (4.24–5.52)	6.71 (5.92–7.76)	8.43 (7.38–9.83)	11.0 (9.35–13.3)	13.3 (11.0–16.3)	15.8 (12.8–19.8)	18.6 (14.7–24.1)	22.9 (17.3–30.8)	26.6 (19.5–37.1)
3-day	3.80 (3.37–4.38)	5.26 (4.66–6.07)	7.41 (6.54–8.57)	9.35 (8.19–10.9)	12.3 (10.4–14.8)	14.9 (12.4–18.3)	17.8 (14.4–22.4)	21.1 (16.6–27.2)	26.1 (19.8–35.2)	30.5 (22.3–42.6)
4-day	4.08 (3.61–4.70)	5.66 (5.01–6.53)	8.00 (7.06–9.25)	10.1 (8.86–11.8)	13.4 (11.3–16.1)	16.2 (13.4–19.9)	19.3 (15.7–24.4)	23.0 (18.1–29.7)	28.5 (21.6–38.5)	33.4 (24.5–45.6)
7-day	4.64 (4.11–5.34)	6.48 (5.74–7.48)	9.21 (8.13–10.6)	11.7 (10.2–13.6)	15.4 (13.1–18.6)	18.7 (15.5–23.0)	22.4 (18.1–28.1)	26.5 (20.9–34.3)	32.9 (24.9–44.3)	38.5 (28.1–53.6)
10-day	5.00 (4.43–5.75)	7.02 (6.21–8.09)	10.0 (8.83–11.6)	12.7 (11.1–14.8)	16.8 (14.2–20.2)	20.3 (16.9–25.0)	24.3 (19.7–30.5)	28.7 (22.7–37.2)	35.6 (26.9–47.9)	41.5 (30.4–57.9)
20-day	6.03 (5.34–6.94)	8.53 (7.55–9.83)	12.2 (10.8–14.1)	15.5 (13.5–18.0)	20.4 (17.3–24.6)	24.7 (20.5–30.3)	29.4 (23.8–37.0)	34.7 (27.4–44.9)	42.7 (32.3–57.6)	49.6 (36.3–69.2)
30-day	7.02 (6.22–8.08)	9.94 (8.79–11.5)	14.2 (12.5–16.4)	18.0 (15.7–21.0)	23.7 (20.1–28.5)	28.5 (23.7–35.1)	33.9 (27.5–42.7)	39.9 (31.4–51.6)	48.9 (37.0–65.9)	56.6 (41.4–78.9)
45-day	8.41 (7.46–9.69)	11.8 (10.5–13.7)	16.8 (14.8–19.4)	21.2 (18.6–24.7)	27.8 (23.6–33.5)	33.4 (27.7–41.0)	39.5 (32.0–49.7)	46.3 (36.5–59.9)	56.4 (42.7–76.1)	65.1 (47.6–90.7)
60-day	9.75 (8.64–11.2)	13.6 (12.0–15.7)	19.2 (16.9–22.2)	24.1 (21.1–28.1)	31.4 (26.6–37.9)	37.6 (31.2–45.2)	44.3 (35.9–55.8)	51.8 (40.8–67.0)	62.8 (47.5–84.7)	72.1 (52.8–101)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

NOAA ATLAS 14 POINT PRECIPITATION FREQUENCY ESTIMATES - RD8

PDS-based precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval(years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.153 (0.127–0.187)	0.209 (0.173–0.256)	0.290 (0.239–0.355)	0.361 (0.295–0.446)	0.467 (0.369–0.596)	0.556 (0.431–0.724)	0.653 (0.494–0.873)	0.762 (0.561–1.05)	0.925 (0.653–1.32)	1.15 (0.783–1.70)
10-min	0.219 (0.182–0.267)	0.300 (0.248–0.367)	0.416 (0.343–0.509)	0.518 (0.424–0.639)	0.669 (0.529–0.854)	0.796 (0.617–1.04)	0.936 (0.708–1.25)	1.09 (0.804–1.50)	1.33 (0.935–1.90)	1.65 (1.12–2.44)
15-min	0.265 (0.220–0.323)	0.363 (0.300–0.443)	0.503 (0.415–0.616)	0.626 (0.512–0.773)	0.809 (0.640–1.03)	0.963 (0.746–1.26)	1.13 (0.856–1.51)	1.32 (0.972–1.82)	1.60 (1.13–2.30)	1.99 (1.36–2.95)
30-min	0.379 (0.314–0.462)	0.518 (0.429–0.633)	0.718 (0.592–0.879)	0.894 (0.731–1.10)	1.16 (0.914–1.48)	1.38 (1.07–1.79)	1.62 (1.22–2.16)	1.89 (1.39–2.59)	2.29 (1.62–3.28)	2.84 (1.94–4.21)
60-min	0.534 (0.442–0.651)	0.730 (0.604–0.892)	1.01 (0.834–1.24)	1.26 (1.03–1.56)	1.63 (1.29–2.08)	1.94 (1.50–2.53)	2.28 (1.72–3.04)	2.66 (1.96–3.65)	3.23 (2.28–4.62)	4.01 (2.73–5.94)
2-hr	0.759 (0.629–0.926)	1.03 (0.851–1.25)	1.41 (1.16–1.72)	1.73 (1.42–2.14)	2.20 (1.74–2.81)	2.58 (2.00–3.37)	3.00 (2.27–4.00)	3.45 (2.53–4.73)	4.09 (2.89–5.86)	4.63 (3.16–6.66)
3-hr	0.941 (0.779–1.15)	1.27 (1.05–1.55)	1.72 (1.42–2.11)	2.11 (1.73–2.60)	2.67 (2.11–3.41)	3.12 (2.42–4.07)	3.61 (2.73–4.82)	4.13 (3.04–5.67)	4.88 (3.44–6.99)	5.50 (3.75–8.14)
6-hr	1.37 (1.14–1.67)	1.84 (1.52–2.25)	2.49 (2.05–3.05)	3.04 (2.49–3.76)	3.84 (3.04–4.90)	4.48 (3.47–5.84)	5.17 (3.91–6.90)	5.91 (4.35–8.12)	6.97 (4.91–9.97)	7.83 (5.34–11.6)
12-hr	1.90 (1.57–2.31)	2.58 (2.13–3.15)	3.53 (2.91–4.32)	4.36 (3.57–5.38)	5.57 (4.41–7.10)	6.56 (5.09–8.55)	7.64 (5.78–10.2)	8.81 (6.48–12.1)	10.5 (7.42–15.1)	11.9 (8.14–17.7)
24-hr	2.70 (2.39–3.11)	3.72 (3.30–4.29)	5.20 (4.59–6.01)	6.50 (5.69–7.58)	8.45 (7.16–10.2)	10.1 (8.39–12.4)	11.9 (9.67–15.0)	14.0 (11.0–18.1)	17.0 (12.9–23.0)	19.7 (14.4–27.4)
2-day	3.40 (3.01–3.91)	4.70 (4.16–5.42)	6.60 (5.83–7.64)	8.32 (7.29–9.70)	10.9 (9.27–13.2)	13.2 (11.0–16.2)	15.7 (12.8–19.8)	18.6 (14.7–24.1)	23.1 (17.4–31.1)	26.9 (19.7–37.5)
3-day	3.74 (3.31–4.30)	5.17 (4.58–5.97)	7.30 (6.45–8.44)	9.24 (8.09–10.8)	12.2 (10.4–14.7)	14.8 (12.3–18.2)	17.7 (14.4–22.3)	21.1 (16.6–27.3)	26.3 (19.9–35.5)	30.9 (22.6–43.1)
4-day	4.01 (3.55–4.62)	5.57 (4.93–6.42)	7.88 (6.96–9.11)	9.93 (8.75–11.6)	13.2 (11.2–15.9)	16.1 (13.4–19.8)	19.3 (15.6–24.3)	23.0 (18.1–29.8)	28.7 (21.7–38.7)	33.8 (24.7–47.1)
7-day	4.56 (4.04–5.25)	6.39 (5.65–7.36)	9.10 (8.03–10.5)	11.6 (10.1–13.5)	15.4 (13.0–18.5)	18.6 (15.5–22.9)	22.4 (18.1–28.2)	26.6 (21.0–34.4)	33.2 (25.1–44.7)	38.9 (28.5–54.3)
10-day	4.91 (4.35–5.65)	6.92 (6.12–7.98)	9.89 (8.73–11.4)	12.6 (11.0–14.7)	16.7 (14.2–20.1)	20.3 (16.8–24.9)	24.3 (19.7–30.6)	28.9 (22.8–37.4)	35.9 (27.1–48.3)	42.0 (30.7–58.5)
20-day	5.92 (5.25–6.82)	8.41 (7.44–9.69)	12.1 (10.6–13.9)	15.3 (13.4–17.9)	20.3 (17.2–24.5)	24.6 (20.4–30.2)	29.4 (23.8–37.0)	34.8 (27.4–45.0)	42.9 (32.5–57.9)	50.0 (36.6–69.8)
30-day	6.93 (6.14–7.98)	9.83 (8.70–11.3)	14.1 (12.4–16.3)	17.9 (15.7–20.8)	23.6 (20.0–28.5)	28.5 (23.7–35.1)	34.0 (27.5–42.8)	40.1 (31.6–51.9)	49.3 (37.3–66.4)	57.2 (41.8–79.7)
45-day	8.32 (7.37–9.58)	11.7 (10.4–13.5)	16.7 (14.8–19.3)	21.2 (18.5–24.7)	27.8 (23.6–33.5)	33.4 (27.8–41.1)	39.7 (32.1–49.9)	46.6 (36.8–60.3)	57.0 (43.1–76.8)	65.8 (48.2–91.8)
60-day	9.67 (8.56–11.1)	13.5 (12.0–15.6)	19.1 (16.9–22.1)	24.1 (21.1–28.1)	31.5 (26.7–37.9)	37.8 (31.4–46.4)	44.6 (36.2–56.2)	52.3 (41.2–67.6)	63.6 (48.1–85.8)	73.2 (53.6–102)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

NOAA ATLAS 14 POINT PRECIPITATION FREQUENCY ESTIMATES - RD9

a) Select location (move crosshair)
b) Click on station icon
(show stations on map)

LOCATION INFORMATION:
Name: Big Bear City, California, US*
Latitude: 34.2229
Longitude: -116.8480
Elevation: 7397ft*

* source: Google Maps

PDS-based precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval(years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.149 (0.124–0.182)	0.205 (0.170–0.251)	0.285 (0.235–0.349)	0.356 (0.291–0.440)	0.462 (0.365–0.589)	0.551 (0.427–0.718)	0.649 (0.491–0.867)	0.759 (0.558–1.04)	0.923 (0.651–1.32)	1.18 (0.806–1.75)
10-min	0.214 (0.177–0.261)	0.294 (0.243–0.359)	0.409 (0.337–0.501)	0.510 (0.417–0.630)	0.662 (0.524–0.844)	0.789 (0.612–1.03)	0.930 (0.703–1.24)	1.09 (0.800–1.49)	1.32 (0.933–1.89)	1.69 (1.16–2.51)
15-min	0.259 (0.214–0.316)	0.356 (0.294–0.434)	0.494 (0.408–0.605)	0.617 (0.505–0.762)	0.800 (0.633–1.02)	0.954 (0.740–1.24)	1.13 (0.851–1.50)	1.32 (0.967–1.81)	1.60 (1.13–2.29)	2.05 (1.40–3.04)
30-min	0.370 (0.307–0.451)	0.508 (0.421–0.621)	0.707 (0.583–0.865)	0.882 (0.722–1.09)	1.14 (0.905–1.46)	1.36 (1.06–1.78)	1.61 (1.22–2.15)	1.88 (1.38–2.58)	2.29 (1.61–3.27)	2.93 (2.00–4.34)
60-min	0.522 (0.433–0.637)	0.718 (0.594–0.876)	0.998 (0.823–1.22)	1.25 (1.02–1.54)	1.61 (1.26–2.06)	1.93 (1.49–2.51)	2.27 (1.72–3.03)	2.65 (1.95–3.64)	3.23 (2.28–4.62)	4.13 (2.82–6.13)
2-hr	0.747 (0.619–0.911)	1.02 (0.841–1.24)	1.39 (1.15–1.71)	1.72 (1.41–2.12)	2.19 (1.73–2.79)	2.57 (1.99–3.35)	2.99 (2.26–3.99)	3.44 (2.53–4.72)	4.09 (2.89–5.86)	4.63 (3.16–6.86)
3-hr	0.928 (0.769–1.13)	1.26 (1.04–1.53)	1.71 (1.41–2.09)	2.10 (1.72–2.59)	2.66 (2.10–3.39)	3.12 (2.41–4.06)	3.60 (2.72–4.81)	4.13 (3.04–5.67)	4.88 (3.44–6.99)	5.50 (3.75–8.15)
6-hr	1.36 (1.12–1.66)	1.83 (1.51–2.23)	2.48 (2.04–3.03)	3.03 (2.48–3.75)	3.83 (3.03–4.89)	4.48 (3.47–5.84)	5.17 (3.91–6.90)	5.91 (4.35–8.12)	6.97 (4.92–9.99)	7.84 (5.35–11.6)
12-hr	1.88 (1.56–2.29)	2.56 (2.12–3.13)	3.52 (2.90–4.31)	4.35 (3.56–5.37)	5.56 (4.40–7.10)	6.56 (5.09–8.55)	7.65 (5.78–10.2)	8.83 (6.49–12.1)	10.6 (7.45–15.1)	12.0 (8.17–17.8)
24-hr	2.68 (2.37–3.08)	3.70 (3.27–4.26)	5.17 (4.56–5.98)	6.48 (5.67–7.55)	8.44 (7.15–10.2)	10.1 (8.39–12.4)	11.9 (9.68–15.0)	14.0 (11.0–18.1)	17.1 (13.0–23.1)	19.8 (14.5–27.6)
2-day	3.38 (3.00–3.89)	4.68 (4.14–5.39)	6.58 (5.81–7.61)	8.31 (7.27–9.68)	10.9 (9.27–13.2)	13.2 (11.0–16.3)	15.8 (12.8–19.9)	18.7 (14.8–24.2)	23.2 (17.6–31.3)	27.1 (19.9–37.8)
3-day	3.73 (3.30–4.29)	5.16 (4.56–5.95)	7.29 (6.43–8.42)	9.23 (8.08–10.8)	12.2 (10.4–14.7)	14.8 (12.3–18.2)	17.8 (14.4–22.4)	21.2 (16.7–27.4)	26.5 (20.0–35.7)	31.1 (22.8–43.4)
4-day	4.00 (3.54–4.60)	5.55 (4.91–6.40)	7.86 (6.94–9.09)	9.98 (8.73–11.6)	13.2 (11.2–15.9)	16.1 (13.4–19.8)	19.4 (15.7–24.4)	23.1 (18.2–29.9)	28.9 (21.9–39.0)	34.1 (24.9–47.5)
7-day	4.54 (4.03–5.23)	6.37 (5.64–7.34)	9.08 (8.02–10.5)	11.6 (10.1–13.5)	15.4 (13.0–18.5)	18.7 (15.5–23.0)	22.4 (18.2–28.2)	26.7 (21.1–34.6)	33.4 (25.3–45.0)	39.2 (28.7–54.7)
10-day	4.89 (4.33–5.63)	6.90 (6.11–7.96)	9.88 (8.72–11.4)	12.6 (11.0–14.7)	16.7 (14.2–20.1)	20.3 (16.9–25.0)	24.4 (19.8–30.7)	29.0 (22.9–37.5)	36.1 (27.3–48.6)	42.3 (30.9–59.0)
20-day	5.89 (5.22–6.79)	8.38 (7.42–9.66)	12.0 (10.6–13.9)	15.3 (13.4–17.9)	20.3 (17.2–24.5)	24.6 (20.4–30.3)	29.4 (23.9–37.1)	34.9 (27.5–45.1)	43.1 (32.7–58.2)	50.3 (36.8–70.2)
30-day	6.90 (6.12–7.95)	9.81 (8.68–11.3)	14.1 (12.4–16.3)	17.9 (15.7–20.8)	23.7 (20.0–28.5)	28.6 (23.7–35.1)	34.1 (27.6–42.9)	40.2 (31.7–52.1)	49.5 (37.5–66.8)	57.5 (42.1–80.2)
45-day	8.30 (7.35–9.56)	11.7 (10.4–13.5)	16.7 (14.7–19.3)	21.2 (18.5–24.7)	27.9 (23.6–33.5)	33.5 (27.8–41.2)	39.8 (32.3–50.1)	46.8 (36.9–60.6)	57.3 (43.4–77.3)	66.3 (48.5–92.5)
60-day	9.65 (8.55–11.1)	13.5 (12.0–15.6)	19.1 (16.9–22.1)	24.1 (21.1–28.1)	31.6 (26.8–36.0)	37.9 (31.5–46.6)	44.8 (36.3–56.4)	52.5 (41.4–68.0)	64.0 (48.5–86.3)	73.8 (54.0–103)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

NOAA ATLAS 14 POINT PRECIPITATION FREQUENCY ESTIMATES - RD11

PDS-based precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval(years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.137 (0.113–0.167)	0.191 (0.158–0.233)	0.270 (0.222–0.330)	0.340 (0.278–0.420)	0.447 (0.354–0.570)	0.538 (0.417–0.701)	0.640 (0.484–0.854)	0.754 (0.555–1.04)	0.953 (0.672–1.36)	1.33 (0.907–1.97)
10-min	0.196 (0.162–0.239)	0.273 (0.226–0.334)	0.386 (0.319–0.473)	0.488 (0.399–0.602)	0.641 (0.507–0.818)	0.771 (0.598–1.01)	0.917 (0.693–1.23)	1.08 (0.795–1.49)	1.37 (0.963–1.96)	1.91 (1.30–2.83)
15-min	0.237 (0.196–0.289)	0.331 (0.274–0.404)	0.467 (0.385–0.572)	0.590 (0.482–0.728)	0.775 (0.613–0.989)	0.933 (0.723–1.22)	1.11 (0.838–1.48)	1.31 (0.962–1.80)	1.65 (1.17–2.37)	2.31 (1.57–3.42)
30-min	0.341 (0.282–0.416)	0.476 (0.394–0.581)	0.673 (0.555–0.824)	0.849 (0.694–1.05)	1.12 (0.882–1.42)	1.34 (1.04–1.75)	1.60 (1.21–2.13)	1.88 (1.38–2.59)	2.38 (1.68–3.40)	3.32 (2.26–4.92)
60-min	0.484 (0.401–0.590)	0.675 (0.558–0.824)	0.954 (0.787–1.17)	1.20 (0.985–1.49)	1.58 (1.25–2.02)	1.90 (1.48–2.48)	2.26 (1.71–3.02)	2.67 (1.96–3.67)	3.37 (2.38–4.83)	4.71 (3.21–6.96)
2-hr	0.703 (0.582–0.858)	0.971 (0.804–1.19)	1.35 (1.11–1.65)	1.68 (1.37–2.07)	2.16 (1.71–2.75)	2.55 (1.98–3.32)	2.98 (2.25–3.98)	3.44 (2.53–4.73)	4.12 (2.90–5.90)	4.76 (3.24–7.05)
3-hr	0.879 (0.728–1.07)	1.21 (0.999–1.48)	1.67 (1.38–2.04)	2.06 (1.69–2.55)	2.63 (2.08–3.36)	3.10 (2.40–4.04)	3.60 (2.72–4.80)	4.14 (3.04–5.68)	4.91 (3.46–7.03)	5.55 (3.78–8.22)
6-hr	1.29 (1.07–1.58)	1.77 (1.46–2.16)	2.42 (2.00–2.97)	2.99 (2.45–3.69)	3.80 (3.01–4.85)	4.46 (3.46–5.81)	5.16 (3.90–6.89)	5.92 (4.35–8.13)	7.00 (4.94–10.0)	7.89 (5.38–11.7)
12-hr	1.79 (1.49–2.19)	2.47 (2.04–3.02)	3.43 (2.83–4.20)	4.27 (3.49–5.27)	5.50 (4.35–7.02)	6.52 (5.05–8.49)	7.62 (5.76–10.2)	8.84 (6.50–12.1)	10.6 (7.49–15.2)	12.1 (8.25–17.9)
24-hr	2.55 (2.26–2.94)	3.55 (3.14–4.09)	5.00 (4.41–5.78)	6.30 (5.52–7.35)	8.28 (7.01–9.97)	9.97 (8.26–12.3)	11.9 (9.61–14.9)	14.0 (11.0–18.1)	17.2 (13.0–23.2)	20.0 (14.6–27.9)
2-day	3.26 (2.89–3.75)	4.52 (4.00–5.21)	6.39 (5.64–7.39)	8.11 (7.10–9.45)	10.8 (9.12–13.0)	13.1 (10.9–16.1)	15.7 (12.8–19.8)	18.8 (14.8–24.3)	23.5 (17.8–31.7)	27.7 (20.2–38.6)
3-day	3.61 (3.20–4.16)	5.00 (4.42–5.76)	7.09 (6.26–8.19)	9.02 (7.90–10.5)	12.0 (10.2–14.5)	14.7 (12.2–18.1)	17.7 (14.4–22.3)	21.3 (16.8–27.6)	26.8 (20.3–36.2)	31.8 (23.3–44.4)
4-day	3.87 (3.43–4.46)	5.37 (4.76–6.20)	7.64 (6.74–8.83)	9.74 (8.53–11.3)	13.0 (11.0–15.7)	15.9 (13.2–19.6)	19.3 (15.6–24.3)	23.2 (18.3–30.0)	29.3 (22.1–39.4)	34.7 (25.4–48.4)
7-day	4.40 (3.90–5.07)	6.18 (5.47–7.13)	8.86 (7.82–10.2)	11.3 (9.91–13.2)	15.2 (12.8–18.3)	18.5 (15.4–22.8)	22.4 (18.1–28.2)	26.8 (21.2–34.7)	33.8 (25.5–45.5)	39.9 (29.2–55.7)
10-day	4.73 (4.19–5.44)	6.69 (5.92–7.72)	9.64 (8.51–11.1)	12.3 (10.8–14.4)	16.5 (14.0–19.9)	20.2 (16.7–24.8)	24.3 (19.7–30.6)	29.0 (22.9–37.6)	36.4 (27.5–49.1)	42.9 (31.4–59.8)
20-day	5.68 (5.03–6.54)	8.10 (7.17–9.34)	11.7 (10.3–13.5)	15.0 (13.1–17.4)	20.0 (16.9–24.0)	24.3 (20.2–29.9)	29.2 (23.6–36.7)	34.7 (27.4–44.9)	43.2 (32.7–58.2)	50.6 (37.0–70.5)
30-day	6.68 (5.92–7.70)	9.54 (8.44–11.0)	13.7 (12.1–15.9)	17.5 (15.4–20.4)	23.3 (19.8–28.1)	28.3 (23.5–34.8)	33.9 (27.4–42.6)	40.2 (31.7–52.0)	49.7 (37.6–67.0)	58.0 (42.4–80.9)
45-day	8.03 (7.12–9.25)	11.4 (10.1–13.1)	16.3 (14.4–18.9)	20.8 (18.2–24.2)	27.5 (23.3–33.1)	33.2 (27.6–40.8)	39.6 (32.1–49.8)	46.8 (36.9–60.5)	57.6 (43.6–77.6)	66.9 (48.9–93.3)
60-day	9.34 (8.28–10.8)	13.2 (11.6–15.2)	18.7 (16.5–21.7)	23.7 (20.8–27.6)	31.2 (26.5–37.6)	37.6 (31.2–46.3)	44.7 (36.2–56.3)	52.6 (41.5–68.1)	64.5 (48.8–87.0)	74.7 (54.7–104)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

NOAA ATLAS 14 POINT PRECIPITATION FREQUENCY ESTIMATES - RD12

a) Select location (move crosshair)
b) Click on station icon
(show stations on map)

LOCATION INFORMATION:
Name: Big Bear City, California, US*
Latitude: 34.2341
Longitude: -116.8540
Elevation: 7151ft*

* source: Google Maps

PDS-based precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval(years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.145 (0.120–0.176)	0.200 (0.165–0.244)	0.279 (0.230–0.341)	0.349 (0.286–0.431)	0.454 (0.360–0.580)	0.544 (0.421–0.709)	0.642 (0.486–0.858)	0.753 (0.554–1.04)	0.920 (0.649–1.32)	1.22 (0.833–1.81)
10-min	0.207 (0.172–0.253)	0.286 (0.237–0.349)	0.400 (0.330–0.489)	0.500 (0.409–0.618)	0.651 (0.515–0.832)	0.779 (0.604–1.02)	0.921 (0.696–1.23)	1.08 (0.794–1.48)	1.32 (0.930–1.89)	1.75 (1.20–2.60)
15-min	0.251 (0.207–0.306)	0.346 (0.286–0.422)	0.483 (0.399–0.592)	0.605 (0.495–0.747)	0.788 (0.623–1.01)	0.943 (0.730–1.23)	1.11 (0.842–1.49)	1.31 (0.960–1.79)	1.59 (1.13–2.28)	2.12 (1.45–3.14)
30-min	0.359 (0.297–0.438)	0.496 (0.410–0.606)	0.693 (0.571–0.849)	0.868 (0.710–1.07)	1.13 (0.894–1.44)	1.35 (1.05–1.76)	1.60 (1.21–2.13)	1.87 (1.38–2.57)	2.29 (1.61–3.27)	3.04 (2.07–4.51)
60-min	0.508 (0.421–0.620)	0.701 (0.580–0.857)	0.980 (0.808–1.20)	1.23 (1.00–1.52)	1.60 (1.26–2.04)	1.91 (1.48–2.49)	2.26 (1.71–3.02)	2.65 (1.95–3.64)	3.23 (2.28–4.63)	4.30 (2.93–6.37)
2-hr	0.731 (0.605–0.891)	0.998 (0.826–1.22)	1.37 (1.13–1.68)	1.70 (1.39–2.10)	2.17 (1.72–2.77)	2.56 (1.96–3.33)	2.97 (2.25–3.97)	3.43 (2.52–4.71)	4.08 (2.88–5.85)	4.63 (3.15–6.86)
3-hr	0.909 (0.753–1.11)	1.24 (1.02–1.51)	1.69 (1.39–2.07)	2.08 (1.70–2.57)	2.64 (2.09–3.37)	3.10 (2.40–4.03)	3.58 (2.71–4.79)	4.11 (3.02–5.65)	4.87 (3.43–6.97)	5.49 (3.74–8.13)
6-hr	1.33 (1.10–1.62)	1.80 (1.49–2.20)	2.45 (2.02–3.00)	3.00 (2.46–3.71)	3.80 (3.01–4.85)	4.45 (3.45–5.80)	5.14 (3.89–6.87)	5.88 (4.33–8.06)	6.95 (4.90–9.95)	7.82 (5.33–11.6)
12-hr	1.84 (1.53–2.25)	2.52 (2.08–3.07)	3.47 (2.86–4.25)	4.30 (3.52–5.31)	5.51 (4.36–7.03)	6.51 (5.04–8.49)	7.59 (5.74–10.1)	8.78 (6.45–12.1)	10.5 (7.41–15.0)	11.9 (8.14–17.7)
24-hr	2.62 (2.32–3.01)	3.62 (3.21–4.18)	5.08 (4.48–5.87)	6.38 (5.58–7.43)	8.33 (7.06–10.0)	9.99 (8.29–12.3)	11.8 (9.58–14.9)	13.9 (11.0–18.0)	17.0 (12.9–22.9)	19.7 (14.4–27.5)
2-day	3.31 (2.94–3.82)	4.59 (4.06–5.29)	6.47 (5.71–7.48)	8.18 (7.16–9.53)	10.8 (9.15–13.0)	13.1 (10.9–16.1)	15.6 (12.7–19.7)	18.6 (14.6–24.0)	23.1 (17.5–31.1)	27.1 (19.8–37.8)
3-day	3.66 (3.24–4.21)	5.06 (4.48–5.84)	7.16 (6.32–8.28)	9.08 (7.95–10.6)	12.1 (10.2–14.5)	14.7 (12.2–18.0)	17.6 (14.3–22.2)	21.0 (16.6–27.2)	26.4 (19.9–35.5)	31.1 (22.7–43.3)
4-day	3.92 (3.48–4.52)	5.45 (4.82–6.28)	7.73 (6.82–8.93)	9.82 (8.60–11.4)	13.1 (11.1–15.7)	15.9 (13.2–19.6)	19.2 (15.5–24.1)	22.9 (18.1–29.7)	28.8 (21.8–38.8)	34.0 (24.8–47.4)
7-day	4.46 (3.95–5.14)	6.26 (5.54–7.21)	8.94 (7.89–10.3)	11.4 (9.97–13.3)	15.2 (12.9–18.3)	18.5 (15.3–22.7)	22.2 (18.0–28.0)	26.5 (20.9–34.4)	33.2 (25.1–44.8)	39.1 (28.6–54.5)
10-day	4.80 (4.25–5.53)	6.78 (6.00–7.82)	9.73 (8.58–11.2)	12.4 (10.9–14.5)	16.5 (14.0–19.9)	20.1 (16.7–24.7)	24.1 (19.6–30.4)	28.8 (22.7–37.2)	35.9 (27.2–48.4)	42.1 (30.8–58.7)
20-day	5.78 (5.12–6.66)	8.23 (7.28–9.49)	11.8 (10.4–13.7)	15.1 (13.2–17.6)	20.1 (17.0–24.2)	24.3 (20.2–29.9)	29.1 (23.6–36.7)	34.6 (27.2–44.7)	42.8 (32.4–57.7)	50.0 (36.6–69.7)
30-day	6.78 (6.01–7.81)	9.65 (8.54–11.1)	13.9 (12.2–16.0)	17.6 (15.4–20.6)	23.4 (19.8–28.2)	28.3 (23.5–34.8)	33.7 (27.3–42.5)	39.9 (31.5–51.6)	49.2 (37.2–66.3)	57.2 (41.9–79.8)
45-day	8.15 (7.22–9.38)	11.5 (10.2–13.3)	16.5 (14.5–19.0)	20.9 (18.3–24.3)	27.5 (23.3–33.1)	33.2 (27.6–40.8)	39.4 (32.0–49.7)	46.5 (36.6–60.1)	57.0 (43.1–76.8)	66.0 (48.3–92.0)
60-day	9.47 (8.39–10.9)	13.3 (11.8–15.3)	18.9 (16.7–21.8)	23.8 (20.9–27.8)	31.3 (26.5–37.6)	37.5 (31.2–46.1)	44.5 (36.0–56.0)	52.2 (41.2–67.6)	63.7 (48.2–85.9)	73.6 (53.8–103)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

NOAA ATLAS 14 POINT PRECIPITATION FREQUENCY ESTIMATES - RD13

a) **Select location** (move crosshair)
b) **Click on station icon**
(☐ show stations on map)

LOCATION INFORMATION:
Name: Big Bear City, California, US*
Latitude: 34.2357
Longitude: -116.8640
Elevation: 6960ft*

* source: Google Maps

PDS-based precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval(years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.137 (0.113–0.167)	0.191 (0.158–0.233)	0.270 (0.222–0.330)	0.340 (0.278–0.420)	0.447 (0.354–0.570)	0.538 (0.417–0.701)	0.640 (0.484–0.854)	0.754 (0.555–1.04)	0.953 (0.672–1.36)	1.33 (0.907–1.97)
10-min	0.196 (0.162–0.239)	0.273 (0.226–0.334)	0.386 (0.319–0.473)	0.488 (0.399–0.602)	0.641 (0.507–0.818)	0.771 (0.598–1.01)	0.917 (0.693–1.23)	1.08 (0.795–1.49)	1.37 (0.963–1.96)	1.91 (1.30–2.83)
15-min	0.237 (0.196–0.289)	0.331 (0.274–0.404)	0.467 (0.385–0.572)	0.590 (0.482–0.728)	0.775 (0.613–0.989)	0.933 (0.723–1.22)	1.11 (0.838–1.48)	1.31 (0.962–1.80)	1.65 (1.17–2.37)	2.31 (1.57–3.42)
30-min	0.341 (0.282–0.416)	0.476 (0.394–0.581)	0.673 (0.555–0.824)	0.849 (0.694–1.05)	1.12 (0.882–1.42)	1.34 (1.04–1.75)	1.60 (1.21–2.13)	1.88 (1.38–2.59)	2.38 (1.68–3.40)	3.32 (2.26–4.92)
60-min	0.484 (0.401–0.590)	0.675 (0.558–0.824)	0.954 (0.787–1.17)	1.20 (0.985–1.49)	1.58 (1.25–2.02)	1.90 (1.48–2.48)	2.26 (1.71–3.02)	2.67 (1.96–3.67)	3.37 (2.38–4.83)	4.71 (3.21–6.96)
2-hr	0.703 (0.582–0.858)	0.971 (0.804–1.19)	1.35 (1.11–1.65)	1.68 (1.37–2.07)	2.16 (1.71–2.75)	2.55 (1.98–3.32)	2.98 (2.25–3.98)	3.44 (2.53–4.73)	4.12 (2.90–5.90)	4.76 (3.24–7.05)
3-hr	0.879 (0.728–1.07)	1.21 (0.999–1.48)	1.67 (1.38–2.04)	2.06 (1.69–2.55)	2.63 (2.08–3.36)	3.10 (2.40–4.04)	3.60 (2.72–4.80)	4.14 (3.04–5.68)	4.91 (3.46–7.03)	5.55 (3.78–8.22)
6-hr	1.29 (1.07–1.58)	1.77 (1.46–2.16)	2.42 (2.00–2.97)	2.99 (2.45–3.69)	3.80 (3.01–4.85)	4.46 (3.46–5.81)	5.16 (3.90–6.89)	5.92 (4.35–8.13)	7.00 (4.94–10.0)	7.89 (5.38–11.7)
12-hr	1.79 (1.49–2.19)	2.47 (2.04–3.02)	3.43 (2.83–4.20)	4.27 (3.49–5.27)	5.50 (4.35–7.02)	6.52 (5.05–8.49)	7.62 (5.76–10.2)	8.84 (6.50–12.1)	10.6 (7.49–15.2)	12.1 (8.25–17.9)
24-hr	2.55 (2.25–2.94)	3.55 (3.14–4.09)	5.00 (4.41–5.78)	6.30 (5.52–7.35)	8.28 (7.01–9.97)	9.97 (8.28–12.3)	11.9 (9.61–14.9)	14.0 (11.0–18.1)	17.2 (13.0–23.2)	20.0 (14.6–27.9)
2-day	3.26 (2.89–3.75)	4.52 (4.00–5.21)	6.39 (5.64–7.39)	8.11 (7.10–9.45)	10.8 (9.12–13.0)	13.1 (10.9–16.1)	15.7 (12.8–19.8)	18.8 (14.8–24.3)	23.5 (17.8–31.7)	27.7 (20.2–38.6)
3-day	3.61 (3.20–4.16)	5.00 (4.42–5.76)	7.09 (6.26–8.19)	9.02 (7.90–10.5)	12.0 (10.2–14.5)	14.7 (12.2–18.1)	17.7 (14.4–22.3)	21.3 (16.8–27.6)	26.8 (20.3–36.2)	31.8 (23.3–44.4)
4-day	3.87 (3.43–4.46)	5.37 (4.76–6.20)	7.64 (6.74–8.83)	9.74 (8.53–11.3)	13.0 (11.0–15.7)	15.9 (13.2–19.6)	19.3 (15.6–24.3)	23.2 (18.3–30.0)	29.3 (22.1–39.4)	34.7 (25.4–48.4)
7-day	4.40 (3.90–5.07)	6.18 (5.47–7.13)	8.86 (7.82–10.2)	11.3 (9.91–13.2)	15.2 (12.8–18.3)	18.5 (15.4–22.8)	22.4 (18.1–28.2)	26.8 (21.2–34.7)	33.8 (25.5–45.5)	39.9 (29.2–55.7)
10-day	4.73 (4.19–5.44)	6.69 (5.92–7.72)	9.64 (8.51–11.1)	12.3 (10.8–14.4)	16.5 (14.0–19.9)	20.2 (16.7–24.8)	24.3 (19.7–30.6)	29.0 (22.9–37.6)	36.4 (27.5–49.1)	42.9 (31.4–59.8)
20-day	5.68 (5.03–6.54)	8.10 (7.17–9.34)	11.7 (10.3–13.5)	15.0 (13.1–17.4)	20.0 (16.9–24.0)	24.3 (20.2–29.9)	29.2 (23.6–36.7)	34.7 (27.4–44.9)	43.2 (32.7–58.2)	50.6 (37.0–70.5)
30-day	6.68 (5.92–7.70)	9.54 (8.44–11.0)	13.7 (12.1–15.9)	17.5 (15.4–20.4)	23.3 (19.8–28.1)	28.3 (23.5–34.8)	33.9 (27.4–42.6)	40.2 (31.7–52.0)	49.7 (37.6–67.0)	58.0 (42.4–80.9)
45-day	8.03 (7.12–9.25)	11.4 (10.1–13.1)	16.3 (14.4–18.9)	20.8 (18.2–24.2)	27.5 (23.3–33.1)	33.2 (27.6–40.6)	39.6 (32.1–49.8)	46.8 (36.9–60.5)	57.6 (43.6–77.6)	66.9 (48.9–93.3)
60-day	9.34 (8.28–10.8)	13.2 (11.6–15.2)	18.7 (16.5–21.7)	23.7 (20.8–27.6)	31.2 (26.5–37.6)	37.6 (31.2–46.3)	44.7 (36.2–56.3)	52.6 (41.5–68.1)	64.5 (48.8–87.0)	74.7 (54.7–104)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

APPENDIX B – Time of Concentration Calculations

Project	Moonridge Animal Park	By	CD	Date	Aug-11
Location	Big Bear Lake California	Checked	MR	Date	Aug-11

✔	Present	✔	Tc
	Developed		Tt

CM-1

Sheet flow (Applicable to Tc only)

Segment ID			
1. Surface Description			Table 3-1
2. Manning's roughness coefficient, n		0.2	Table 3-1
3. Flow length, L (total L < 300 ft) (ft)		300	
4. Two-year 24-hour rainfall, P2 (in)		3.47	
5. Land Slope, s (ft/ft)	0.000	0.067	
Elevation 2 (ft)		7030	
Elevation 1 (ft)		7010	
6. $Tt = \frac{0.007\ (nL)^{0.8}}{P_2^{0.5}\ s^{0.4}}$ (hr)	0.00	0.29	0.29

Shallow concentrated flow

Segment ID			
7. Surface Description (paved or unpaved)		unpaved	
8. Flow length, L (ft)		1491.4	
9. Watercourse slope, s (ft/ft)	0.000	0.067	
Elevation 2 (ft)		7010	
Elevation 1 (ft)		6910	
10. Average velocity, V (ft/s)		4.25	Figure 3-1
11. $Tt = \frac{L}{3600\ V}$ (hr)	0.00	0.10	0.10

Channel flow

Segment ID			
12. Cross sectional flow area, a (ft²)	0.00	192.00	
Width (ft)		20	
Depth (ft)		6	
Side slope (H:V)		2	
13. Wetted perimeter, pw (ft)	0.00	46.83	
14. Hydraulic radius, r (ft)	0.00	4.10	
15. Channel slope, s (ft/ft)	0.000	0.035	
Elevation 2 (ft)		6910	
Elevation 1 (ft)		6890	
16. Manning's roughness coefficient, n		0.025	
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$ (ft/s)	0.00	28.53	
18. Flow length, L (ft)		572.7	
19. $Tt = \frac{L}{3600\ V}$ (hr)	0.00	0.01	0.01

20. Watershed Tc (hr) **0.40**

Project	Moonridge Animal Park	By	CD	Date	Aug-11
Location	Big Bear Lake California	Checked	MR	Date	Aug-11

✔	Present	✔	Tc
	Developed		Tt

CM-2

Sheet flow (Applicable to Tc only)

Segment ID			
1. Surface Description			Table 3-1
2. Manning's roughness coefficient, n		0.2	Table 3-1
3. Flow length, L (total L < 300 ft) (ft)		300	
4. Two-year 24-hour rainfall, P2 (in)		3.47	
5. Land Slope, s (ft/ft)	0.000	0.183	
Elevation 2 (ft)		7250	
Elevation 1 (ft)		7195	
6. $Tt = \frac{0.007\ (nL)^{0.8}}{P_2^{0.5}\ s^{0.4}}$ (hr)	0.00	0.20	0.20

Shallow concentrated flow

Segment ID			
7. Surface Description (paved or unpaved)		unpaved	
8. Flow length, L (ft)		2444.8	
9. Watercourse slope, s (ft/ft)	0.000	0.110	
Elevation 2 (ft)		7195	
Elevation 1 (ft)		6925	
10. Average velocity, V (ft/s)		5.75	Figure 3-1
11. $Tt = \frac{L}{3600\ V}$ (hr)	0.00	0.12	0.12

Channel flow

Segment ID			
12. Cross sectional flow area, a (ft²)	0.00	192.00	
Width (ft)		20	
Depth (ft)		6	
Side slope (H:V)		2	
13. Wetted perimeter, pw (ft)	0.00	46.83	
14. Hydraulic radius, r (ft)	0.00	4.10	
15. Channel slope, s (ft/ft)	0.000	0.142	
Elevation 2 (ft)		6925	
Elevation 1 (ft)		6920	
16. Manning's roughness coefficient, n		0.025	
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$ (ft/s)	0.00	57.62	
18. Flow length, L (ft)		35.1	
19. $Tt = \frac{L}{3600\ V}$ (hr)	0.00	0.00	0.00

20. Watershed Tc (hr) **0.31**

Project	Moonridge Animal Park	By	CD	Date	Aug-11
Location	Big Bear Lake California	Checked	MR	Date	Aug-11

✔	Present	✔	Tc
	Developed		Tt

CM-3

Sheet flow (Applicable to Tc only)

	Segment ID			
1. Surface Description				Table 3-1
2. Manning's roughness coefficient, n			0.2	Table 3-1
3. Flow length, L (total L < 300 ft) (ft)			300	
4. Two-year 24-hour rainfall, P2 (in)			3.47	
5. Land Slope, s (ft/ft)		0.000	0.450	
Elevation 2 (ft)			8290	
Elevation 1 (ft)			8155	
6. $Tt = \frac{0.007\ (nL)^{0.8}}{P_2^{0.5}\ s^{0.4}}$	(hr)	0.00	0.14	0.14

Shallow concentrated flow

	Segment ID			
7. Surface Description (paved or unpaved)			unpaved	
8. Flow length, L (ft)			6233.2	
9. Watercourse slope, s (ft/ft)		0.000	0.180	
Elevation 2 (ft)			8155	
Elevation 1 (ft)			7030	
10. Average velocity, V (ft/s)			7	Figure 3-1
11. $Tt = \frac{L}{3600\ V}$	(hr)	0.00	0.25	0.25

Channel flow

	Segment ID			
12. Cross sectional flow area, a (ft^2)		0.00	92.00	
Width (ft)			15	
Depth (ft)			4	
Side slope (H:V)			2	
13. Wetted perimeter, pw (ft)		0.00	32.89	
14. Hydraulic radius, r (ft)		0.00	2.80	
15. Channel slope, s (ft/ft)		0.000	0.044	
Elevation 2 (ft)			7030	
Elevation 1 (ft)			6960	
16. Manning's roughness coefficient, n			0.025	
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$	(ft/s)	0.00	24.81	
18. Flow length, L (ft)			1592.8	
19. $Tt = \frac{L}{3600\ V}$	(hr)	0.00	0.02	0.02
20. Watershed Tc (hr)		**0.40**		

Project	Moonridge Animal Park	By	CD	Date	Aug-11
Location	Big Bear Lake California	Checked	MR	Date	Aug-11

✔	Present	✔	Tc
	Developed		Tt

CM-4

Sheet flow (Applicable to Tc only)

	Segment ID			
1. Surface Description				Table 3-1
2. Manning's roughness coefficient, n			0.2	Table 3-1
3. Flow length, L (total L < 300 ft) (ft)			300	
4. Two-year 24-hour rainfall, P2 (in)			3.47	
5. Land Slope, s (ft/ft)		0.000	0.200	
Elevation 2 (ft)			8570	
Elevation 1 (ft)			8510	
6. $Tt = \frac{0.007\ (nL)^{0.8}}{P_2^{0.5}\ s^{0.4}}$	(hr)	0.00	0.19	0.19

Shallow concentrated flow

	Segment ID			
7. Surface Description (paved or unpaved)			unpaved	
8. Flow length, L (ft)			5544.7	
9. Watercourse slope, s (ft/ft)		0.000	0.226	
Elevation 2 (ft)			8510	
Elevation 1 (ft)			7255	
10. Average velocity, V (ft/s)			7.5	Figure 3-1
11. $Tt = \frac{L}{3600\ V}$	(hr)	0.00	0.21	0.21

Channel flow

	Segment ID			
12. Cross sectional flow area, a (ft²)		0.00	92.00	
Width (ft)			15	
Depth (ft)			4	
Side slope (H:V)			2	
13. Wetted perimeter, pw (ft)		0.00	32.89	
14. Hydraulic radius, r (ft)		0.00	2.80	
15. Channel slope, s (ft/ft)		0.000	0.104	
Elevation 2 (ft)			7255	
Elevation 1 (ft)			7085	
16. Manning's roughness coefficient, n			0.025	
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$	(ft/s)	0.00	38.22	
18. Flow length, L (ft)			1629.3	
19. $Tt = \frac{L}{3600\ V}$	(hr)	0.00	0.01	0.01

20. Watershed Tc (hr) **0.41**

Project	Moonridge Animal Park	By	CD	Date	Aug-11
Location	Big Bear Lake California	Checked	MR	Date	Aug-11

✔	Present	✔	Tc
	Developed		Tt

CM-5

Sheet flow (Applicable to Tc only)

	Segment ID			
1. Surface Description				Table 3-1
2. Manning's roughness coefficient, n			0.2	Table 3-1
3. Flow length, L (total L < 300 ft) (ft)			300	
4. Two-year 24-hour rainfall, P2 (in)			3.47	
5. Land Slope, s (ft/ft)		0.000	0.400	
Elevation 2 (ft)			8810	
Elevation 1 (ft)			8690	
6. $Tt = \frac{0.007\ (nL)^{0.8}}{P_2^{0.5}\ s^{0.4}}$	(hr)	0.00	0.14	0.14

Shallow concentrated flow

	Segment ID			
7. Surface Description (paved or unpaved)			unpaved	
8. Flow length, L (ft)			1223.1	
9. Watercourse slope, s (ft/ft)		0.000	0.437	
Elevation 2 (ft)			8690	
Elevation 1 (ft)			8155	
10. Average velocity, V (ft/s)			10.5	Figure 3-1
11. $Tt = \frac{L}{3600\ V}$	(hr)	0.00	0.03	0.03

Channel flow

	Segment ID			
12. Cross sectional flow area, a (ft²)		0.00	14.00	
Width (ft)			5	
Depth (ft)			2	
Side slope (H:V)			1	
13. Wetted perimeter, pw (ft)		0.00	10.66	
14. Hydraulic radius, r (ft)		0.00	1.31	
15. Channel slope, s (ft/ft)		0.000	0.154	
Elevation 2 (ft)			8155	
Elevation 1 (ft)			7290	
16. Manning's roughness coefficient, n			0.1	
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$	(ft/s)	0.00	7.02	
18. Flow length, L (ft)			5603	
19. $Tt = \frac{L}{3600\ V}$	(hr)	0.00	0.22	0.22
20. Watershed Tc (hr)		**0.40**		

Project	Moonridge Animal Park	By	CD	Date	Aug-11
Location	Big Bear Lake California	Checked	MR	Date	Aug-11

✔	Present	✔	Tc
	Developed		Tt

CM-6

Sheet flow (Applicable to Tc only)

Segment ID			
1. Surface Description			Table 3-1
2. Manning's roughness coefficient, n		0.2	Table 3-1
3. Flow length, L (total L < 300 ft) (ft)		300	
4. Two-year 24-hour rainfall, P2 (in)		3.47	
5. Land Slope, s (ft/ft)	0.000	0.333	
Elevation 2 (ft)		8810	
Elevation 1 (ft)		8710	
6. $Tt = \frac{0.007\ (nL)^{0.8}}{P_2^{0.5}\ s^{0.4}}$ (hr)	0.00	0.15	0.15

Shallow concentrated flow

Segment ID			
7. Surface Description (paved or unpaved)		unpaved	
8. Flow length, L (ft)		885.4	
9. Watercourse slope, s (ft/ft)	0.000	0.418	
Elevation 2 (ft)		8710	
Elevation 1 (ft)		8340	
10. Average velocity, V (ft/s)		10.25	Figure 3-1
11. $Tt = \frac{L}{3600\ V}$ (hr)	0.00	0.02	0.02

Channel flow

Segment ID			
12. Cross sectional flow area, a (ft²)	0.00	14.00	
Width (ft)		5	
Depth (ft)		2	
Side slope (H:V)		1	
13. Wetted perimeter, pw (ft)	0.00	10.66	
14. Hydraulic radius, r (ft)	0.00	1.31	
15. Channel slope, s (ft/ft)	0.000	0.182	
Elevation 2 (ft)		8340	
Elevation 1 (ft)		7290	
16. Manning's roughness coefficient, n		0.1	
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$ (ft/s)	0.00	7.62	
18. Flow length, L (ft)		5780.7	
19. $Tt = \frac{L}{3600\ V}$ (hr)	0.00	0.21	0.21
20. Watershed Tc (hr)		**0.39**	

Project	Moonridge Animal Park	By	CD	Date	Aug-11
Location	Big Bear Lake California	Checked	MR	Date	Aug-11

✔	Present	✔	Tc
	Developed		Tt

CM-7

Sheet flow (Applicable to Tc only)

	Segment ID			
1. Surface Description				Table 3-1
2. Manning's roughness coefficient, n			0.2	Table 3-1
3. Flow length, L (total L < 300 ft) (ft)			300	
4. Two-year 24-hour rainfall, P2 (in)			3.47	
5. Land Slope, s (ft/ft)		0.000	0.017	
Elevation 2 (ft)			7570	
Elevation 1 (ft)			7565	
6. $Tt = \frac{0.007\ (nL)^{0.8}}{P_2^{0.5}\ s^{0.4}}$	(hr)	0.00	0.51	0.51

Shallow concentrated flow

	Segment ID			
7. Surface Description (paved or unpaved)			unpaved	
8. Flow length, L (ft)			1786.3	
9. Watercourse slope, s (ft/ft)		0.000	0.168	
Elevation 2 (ft)			7565	
Elevation 1 (ft)			7265	
10. Average velocity, V (ft/s)			6.63	Figure 3-1
11. $Tt = \frac{L}{3600\ V}$	(hr)	0.00	0.07	0.07

Channel flow

	Segment ID			
12. Cross sectional flow area, a (ft²)		0.00	100.00	
Width (ft)			10	
Depth (ft)			5	
Side slope (H:V)			2	
13. Wetted perimeter, pw (ft)		0.00	32.36	
14. Hydraulic radius, r (ft)		0.00	3.09	
15. Channel slope, s (ft/ft)		0.000	0.053	
Elevation 2 (ft)			7265	
Elevation 1 (ft)			7050	
16. Manning's roughness coefficient, n			0.025	
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$	(ft/s)	0.00	29.18	
18. Flow length, L (ft)			4037.5	
19. $Tt = \frac{L}{3600\ V}$	(hr)	0.00	0.04	0.04

20. Watershed Tc (hr) **0.62**

Project	Moonridge Animal Park	By	CD	Date	Aug-11
Location	Big Bear Lake California	Checked	MR	Date	Aug-11

✔	Present	✔	Tc
	Developed		Tt

CM-8

Sheet flow (Applicable to Tc only)

	Segment ID			
1. Surface Description				Table 3-1
2. Manning's roughness coefficient, n			0.2	Table 3-1
3. Flow length, L (total L < 300 ft) (ft)			300	
4. Two-year 24-hour rainfall, P2 (in)			3.47	
5. Land Slope, s (ft/ft)		0.000	0.083	
Elevation 2 (ft)			8720	
Elevation 1 (ft)			8695	
6. $Tt = \frac{0.007\ (nL)^{0.8}}{P_2^{0.5}\ s^{0.4}}$	(hr)	0.00	0.27	0.27

Shallow concentrated flow

	Segment ID			
7. Surface Description (paved or unpaved)			unpaved	
8. Flow length, L (ft)			1202	
9. Watercourse slope, s (ft/ft)		0.000	0.329	
Elevation 2 (ft)			8695	
Elevation 1 (ft)			8300	
10. Average velocity, V (ft/s)			9.25	Figure 3-1
11. $Tt = \frac{L}{3600\ V}$	(hr)	0.00	0.04	0.04

Channel flow

	Segment ID			
12. Cross sectional flow area, a (ft²)		0.00	14.00	
Width (ft)			5	
Depth (ft)			2	
Side slope (H:V)			1	
13. Wetted perimeter, pw (ft)		0.00	10.66	
14. Hydraulic radius, r (ft)		0.00	1.31	
15. Channel slope, s (ft/ft)		0.000	0.148	
Elevation 2 (ft)			8300	
Elevation 1 (ft)			7330	
16. Manning's roughness coefficient, n			0.1	
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$	(ft/s)	0.00	6.87	
18. Flow length, L (ft)			6574.4	
19. $Tt = \frac{L}{3600\ V}$	(hr)	0.00	0.27	0.27
20. Watershed Tc (hr)		**0.57**		

Project	Moonridge Animal Park	By	CD	Date	Aug-11
Location	Big Bear Lake California	Checked	MR	Date	Aug-11

✔	Present	✔	Tc
	Developed		Tt

CM-9

Sheet flow (Applicable to Tc only)

	Segment ID			
1. Surface Description				Table 3-1
2. Manning's roughness coefficient, n			0.2	Table 3-1
3. Flow length, L (total L < 300 ft) (ft)			300	
4. Two-year 24-hour rainfall, P2 (in)			3.47	
5. Land Slope, s (ft/ft)		0.000	0.017	
Elevation 2 (ft)			7570	
Elevation 1 (ft)			7565	
6. $Tt = \frac{0.007\ (nL)^{0.8}}{P_2^{0.5}\ s^{0.4}}$ (hr)		0.00	0.51	0.51

Shallow concentrated flow

	Segment ID			
7. Surface Description (paved or unpaved)			unpaved	
8. Flow length, L (ft)			2075.2	
9. Watercourse slope, s (ft/ft)		0.000	0.166	
Elevation 2 (ft)			7565	
Elevation 1 (ft)			7220	
10. Average velocity, V (ft/s)			6.6	Figure 3-1
11. $Tt = \frac{L}{3600\ V}$ (hr)		0.00	0.09	0.09

Channel flow

	Segment ID			
12. Cross sectional flow area, a (ft²)		0.00	72.00	
Width (ft)			10	
Depth (ft)			4	
Side slope (H:V)			2	
13. Wetted perimeter, pw (ft)		0.00	27.89	
14. Hydraulic radius, r (ft)		0.00	2.58	
15. Channel slope, s (ft/ft)		0.000	0.036	
Elevation 2 (ft)			7220	
Elevation 1 (ft)			7050	
16. Manning's roughness coefficient, n			0.025	
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$ (ft/s)		0.00	21.18	
18. Flow length, L (ft)			4768.5	
19. $Tt = \frac{L}{3600\ V}$ (hr)		0.00	0.06	0.06

20. Watershed Tc (hr) **0.66**

Project	Moonridge Animal Park	By	CD	Date	Aug-11
Location	Big Bear Lake California	Checked	MR	Date	Aug-11

✔	Present	✔	Tc
	Developed		Tt

CM-10

Sheet flow (Applicable to Tc only)

	Segment ID			
1. Surface Description				Table 3-1
2. Manning's roughness coefficient, n			0.2	Table 3-1
3. Flow length, L (total L < 300 ft) (ft)			300	
4. Two-year 24-hour rainfall, P2 (in)			3.47	
5. Land Slope, s (ft/ft)		0.000	0.300	
Elevation 2 (ft)			8890	
Elevation 1 (ft)			8800	
6. $Tt = \frac{0.007\ (nL)^{0.8}}{P_2^{0.5}\ s^{0.4}}$	(hr)	0.00	0.16	0.16

Shallow concentrated flow

	Segment ID			
7. Surface Description (paved or unpaved)			unpaved	
8. Flow length, L (ft)			3356.1	
9. Watercourse slope, s (ft/ft)		0.000	0.314	
Elevation 2 (ft)			8800	
Elevation 1 (ft)			7745	
10. Average velocity, V (ft/s)			9	Figure 3-1
11. $Tt = \frac{L}{3600\ V}$	(hr)	0.00	0.10	0.10

Channel flow

	Segment ID			
12. Cross sectional flow area, a (ft²)		0.00	14.00	
Width (ft)			5	
Depth (ft)			2	
Side slope (H:V)			1	
13. Wetted perimeter, pw (ft)		0.00	10.66	
14. Hydraulic radius, r (ft)		0.00	1.31	
15. Channel slope, s (ft/ft)		0.000	0.077	
Elevation 2 (ft)			7745	
Elevation 1 (ft)			7270	
16. Manning's roughness coefficient, n			0.1	
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$	(ft/s)	0.00	4.94	
18. Flow length, L (ft)			6207	
19. $Tt = \frac{L}{3600\ V}$	(hr)	0.00	0.35	0.35

20. Watershed Tc (hr) **0.61**

Project	Moonridge Animal Park	By	CD	Date	Aug-11
Location	Big Bear Lake California	Checked	MR	Date	Aug-11

✔	Present	✔	Tc
	Developed		Tt

CM-11

Sheet flow (Applicable to Tc only)

	Segment ID			
1. Surface Description				Table 3-1
2. Manning's roughness coefficient, n			0.2	Table 3-1
3. Flow length, L (total L < 300 ft) (ft)			300	
4. Two-year 24-hour rainfall, P2 (in)			3.47	
5. Land Slope, s (ft/ft)		0.000	0.183	
Elevation 2 (ft)			7250	
Elevation 1 (ft)			7195	
6. $Tt = \frac{0.007\ (nL)^{0.8}}{P_2^{0.5}\ s^{0.4}}$	(hr)	0.00	0.20	0.20

Shallow concentrated flow

	Segment ID			
7. Surface Description (paved or unpaved)			unpaved	
8. Flow length, L (ft)			1837.3	
9. Watercourse slope, s (ft/ft)		0.000	0.120	
Elevation 2 (ft)			7195	
Elevation 1 (ft)			6975	
10. Average velocity, V (ft/s)			5.75	Figure 3-1
11. $Tt = \frac{L}{3600\ V}$	(hr)	0.00	0.09	0.09

Channel flow

	Segment ID			
12. Cross sectional flow area, a (ft^2)		0.00	192.00	
Width (ft)			20	
Depth (ft)			6	
Side slope (H:V)			2	
13. Wetted perimeter, pw (ft)		0.00	46.83	
14. Hydraulic radius, r (ft)		0.00	4.10	
15. Channel slope, s (ft/ft)		0.000	0.040	
Elevation 2 (ft)			6975	
Elevation 1 (ft)			6960	
16. Manning's roughness coefficient, n			0.025	
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$	(ft/s)	0.00	30.67	
18. Flow length, L (ft)			371.7	
19. $Tt = \frac{L}{3600\ V}$	(hr)	0.00	0.00	0.00

20. Watershed Tc (hr) **0.29**

APPENDIX C – AMC II Curve Numbers

		AMC II	
Landuse	Condition	B	D
1 Acre Residential		68	84
1/2 Acre Residential		70	85
1/3 Acre Residential		72	86
1/4 Acre Residential		75	87
1/8 Acre Residential		85	92
Mountains	Good	41	71
Open Space	Good	61	80
Ski Resort		86	94
Commercial		92	95
Impervious Area		98	98

APPENDIX G.2
Big Bear Lake FEMA Map Panel

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

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NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
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Silver Spring, Maryland 20910-3282
(301) 713-3242

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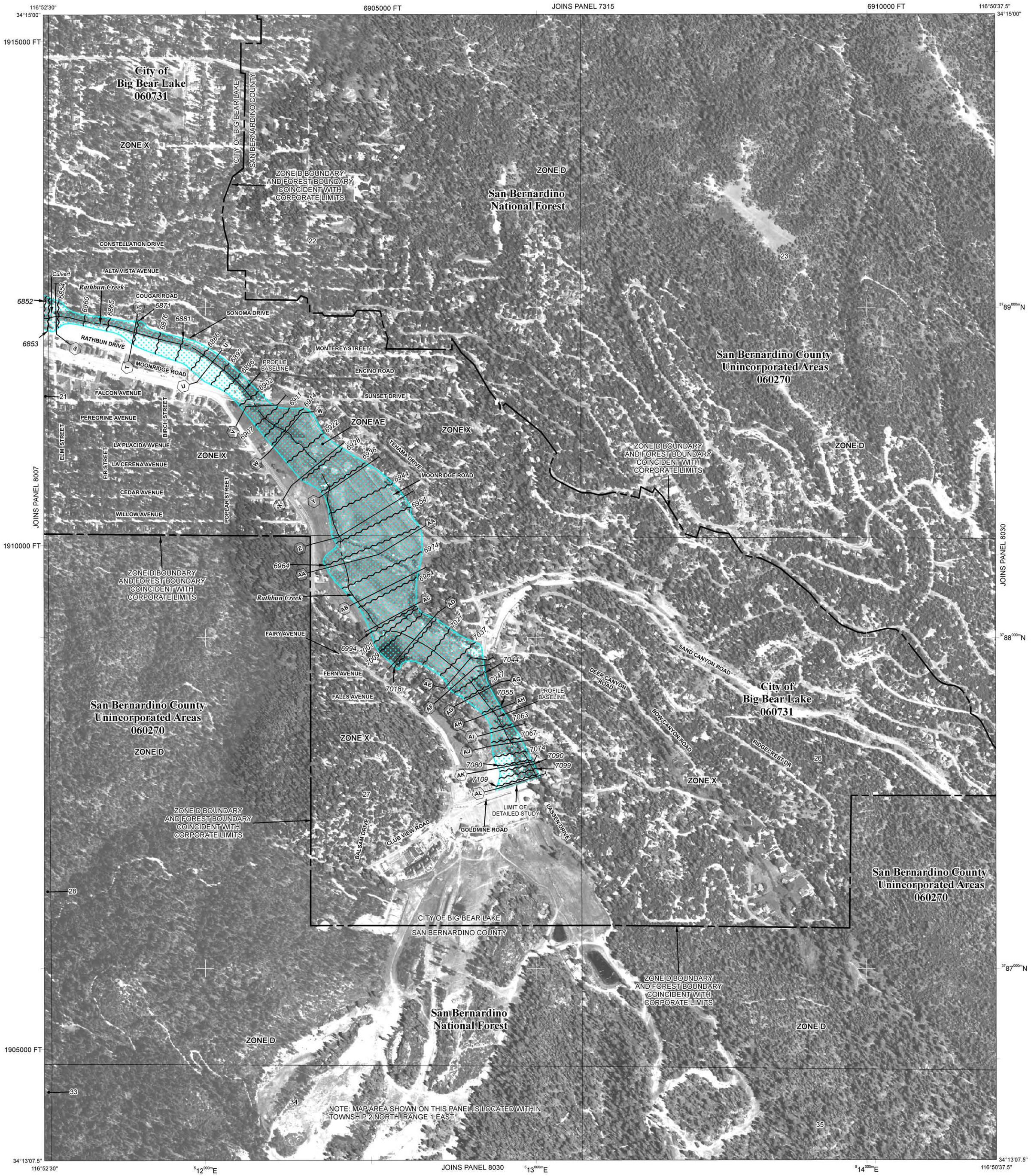

LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

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ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
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ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
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ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% annual chance floodplain boundary
0.2% annual chance floodplain boundary
Floodway boundary
Zone D boundary
CBRS and OPA boundary
Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.

513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

(A)——(A)	Cross section line
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600000 FT	5000-foot grid ticks: California State Plane coordinate system, zone V (FIPSZONE 0405), Lambert Conformal Conic projection
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
●M1.5	River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

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MAP SCALE 1" = 500'

250 0 500 1000 FEET
150 0 150 300 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 8026H

FIRM
FLOOD INSURANCE RATE MAP

SAN BERNARDINO COUNTY, CALIFORNIA
AND INCORPORATED AREAS
PANEL 8026 OF 9400

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BIG BEAR LAKE, CITY OF	060731	8026	H
SAN BERNARDINO COUNTY	060270	8026	H

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MAP NUMBER
06071C8026H

MAP REVISED
AUGUST 28, 2008

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

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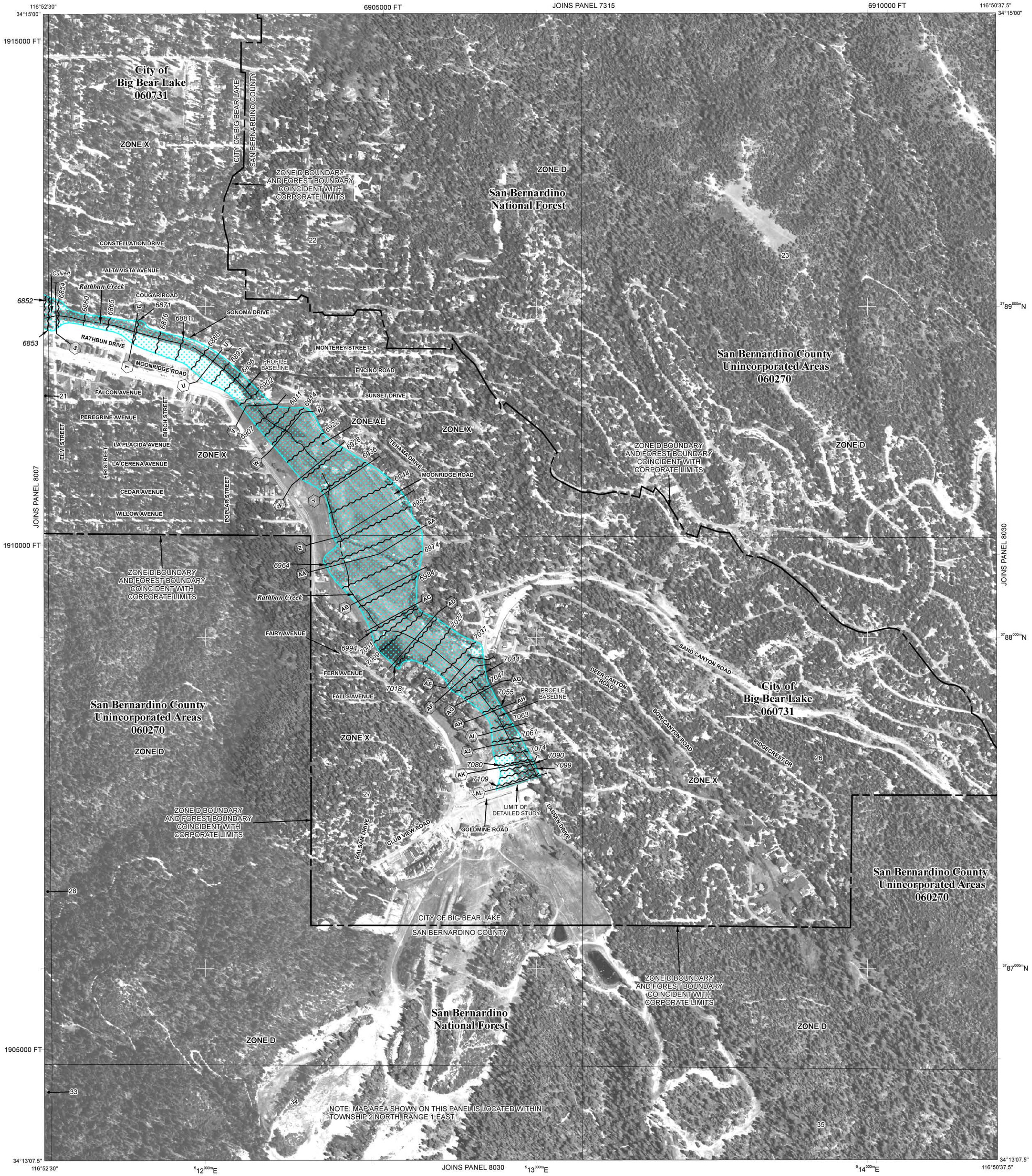

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NFIP

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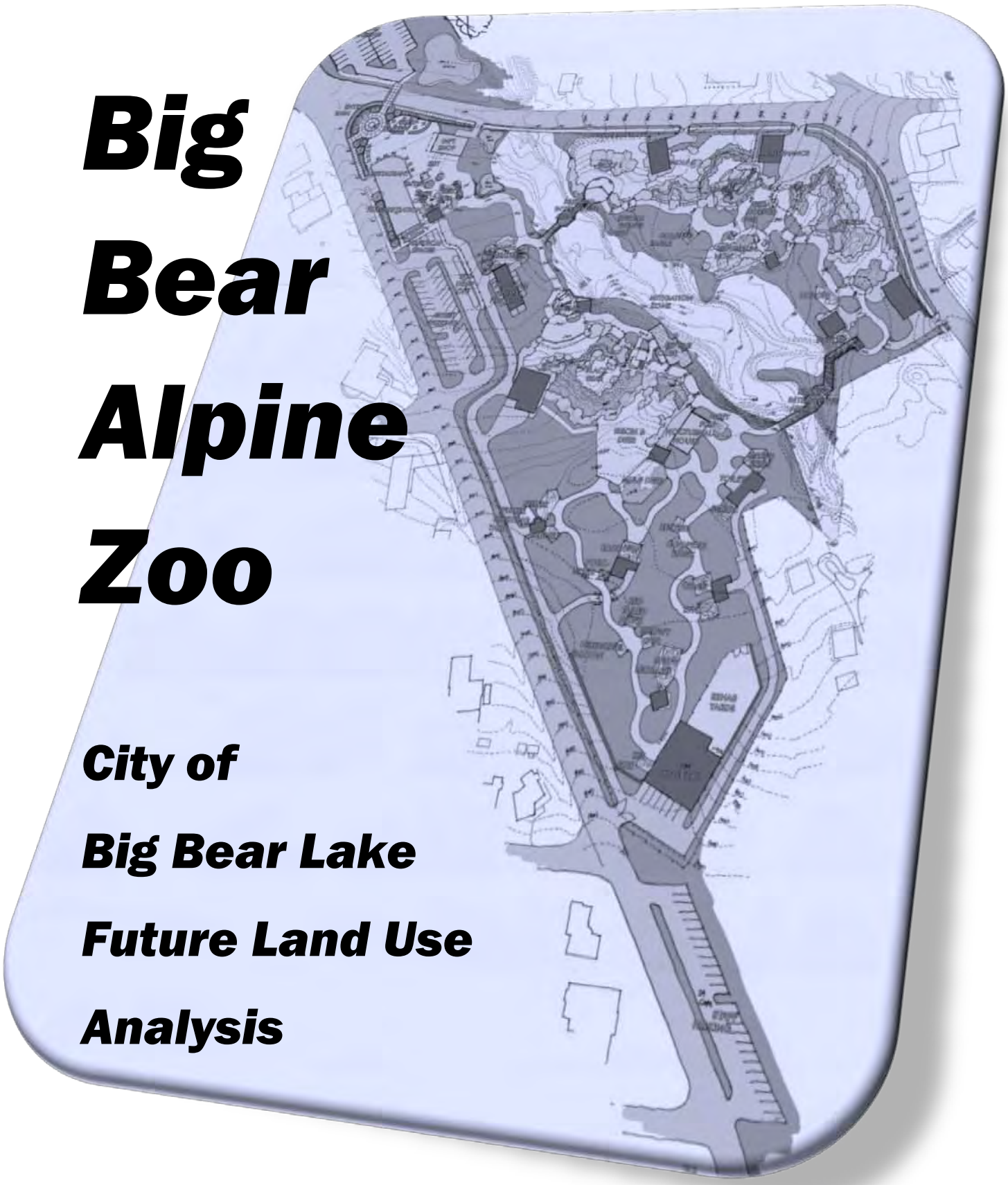
MAP REVISED
AUGUST 28, 2008

Federal Emergency Management Agency

APPENDIX H
Future Land Use Analysis

Big Bear Alpine Zoo



City of Big Bear Lake Future Land Use Analysis

Prepared for:

County of San Bernardino, Special Districts Department
157 West 5th Street, Second Floor
San Bernardino, CA
92415-0450
Contact: Carrie Hyke, AICP, District Planner

Prepared by:

FAB

Felicia A. Bradfield, AICP LLC
231 East Alessandro Boulevard, Suite A-273
Riverside, CA 92508-6039

October 2012

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References

City of Big Bear Lake Development Code, http://www.citybigbearlake.com/images/stories/DOWNLOADS/BUSINESS/PLAN_CHECKS/BROCHURES/Development%20Code.pdf.

City of Big Bear Lake General Plan, Resolution No. 99-36, 8/23/99, City of Big Bear Lake, http://worldcat.org/arcviewer/1/CBG/2007/02/06/0000058425/viewer/file1.html.

Big Bear Alpine Zoo
City of Big Bear Lake Future Land Use Analysis

INTRODUCTION

The Big Bear Alpine Zoo is a County of San Bernardino facility. Hence, in the *Big Bear Alpine Zoo Relocation Project Initial Study*, land use is analyzed to determine concurrence with County of San Bernardino land use requirements per the California Government Code. County of San Bernardino facilities are exempt from City of Big Bear Lake land use requirements and building codes pursuant to California Government Code Sections 53090(a)(b) and 53091(a):

> ***53090***. *As used in this article:*
> *(a) "Local agency" means an agency of the state for the local performance of governmental or proprietary function within limited boundaries. "Local agency" does not include the state, a city, a county, a rapid transit district, or a rail transit district whose board of directors is appointed by public bodies or officers or elected from election districts within the area comprising the district, or a district organized pursuant to Part 3 (commencing with Section 27000) of Division 16 of the Streets and Highways Code.*
>
> *(b) "Building ordinances" means ordinances of a county or city regulating building and construction and removal of buildings, including ordinances relating to the matters set forth in Section 38660 and similar matters, and including ordinances relating to building permits and building inspection.*[1]
>
> ***53091***. *(a) Each local agency shall comply with all applicable building ordinances and zoning ordinances of the county or city in which the territory of the local agency is situated.*[2]

In the future, the City of Big Bear Lake may want to determine concurrence with respect to City of Big Bear Lake land use requirements. To facilitate this action, the County of San Bernardino has put forth this document for the use of City of Big Bear Lake citizens, planners, and decisions makers.

[1] California Government Code Section 53090, http://law.onecle.com/california/government/53090.html.
[2] California Government Code Section 53091, http://law.onecle.com/california/government/53091.html.

ISSUES	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
LAND USE AND PLANNING - Would the project:				
a) Physically divide an established community?	☐	☐	☐	☒
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☒	☐
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☒	☐

SETTING

The current 2.5-acre location of the Big Bear Alpine Zoo is at 43285 Goldmine Drive. The proposed zoo relocation site is an approximately 10.4-acre vacant parcel located at the southwest corner of Moonridge Road and Club View Drive in the City of Big Bear Lake, less than 1.0 mile north of its current location.

The project site is relatively flat, sloping gently from southeast to northwest, at an elevation of approximately 6,950 feet. The north contains areas of sage scrub, and the south is made up mainly of meadows. Rathbun Creek transects the site through the center of the property in a south to north direction, ultimately draining into Big Bear Lake to the north. A dense canopy of willow trees, ranging from 10 to 20 feet tall, dominates the creek.

Adjoining uses for the project are a proposed water quality basin and a shared parking area. These neighboring uses would be located to the north, across Moonridge Drive, on a vacant site. The purpose of the water quality basin would be to provide sufficient capacity to capture and treat stormwater runoff within the project area, including the parking area. The existing parking area, which is used for overflow parking for the nearby Bear Mountain Resort, would be shared with the proposed project. The water quality basin would catch the present storm water runoff within the existing parking area as well as the project site.

Surrounding the project site are commercial uses, the Bear Mountain Resort overflow parking, and residences to the north, residences to the west and east, and a golf course to the south. Table 1 summarizes the existing land uses surrounding the proposed project site and lists the existing land use designations and zoning.

Table 1
Existing Land Uses and Land Use General Plan Designations and Zoning

Location	Existing Land Use	Existing Land Use Designation	Existing Zoning
Project Site	Vacant	Commercial Visitor (CV) Open Space (OS)	Commercial-Visitor (C-3) Public/Open Space (P-OS)
North	Parking Lot Residential	Commercial Recreation (CR) Single-Family Residential-4	Commercial- Recreation (C-4) Single Family Residential (R-1-7200)
South	Golf Course Residential	Open Space (OS) Single-Family Residential-4	Public/Open Space (P-OS) Single Family Residential (R-1-7200)
East	Golf Course Residential	Open Space (OS) Single-Family Residential-4	Public/Open Space (P-OS) Single Family Residential (R-1-7200)
West	Residential	Multiple Family Residential Single-Family Residential-4	Multiple Family Residential (R-3) Single Family Residential (R-1-7200)

Sources: *City of Big Bear Lake General Plan Land Use Map, City of Big Bear Lake Zoning Map.*

The existing zoo site to the south is established within residential land uses located to the south, east, and west; a vacant lot sits directly to the west; and a golf course is situated to the northeast and northwest.

DISCUSSION

a) **No Impact**. Located along the primary tourist route to Bear Mountain, the proposed project site is at the Y-junction of Moonridge Road and Club View Drive. Approaching the project site along Moonridge Road, there are existing commercial businesses (mailbox and shipping, a few realty businesses, a gift shop, and a ski rental business), scattered vacant commercial lots, and a few residences and apartments located close to the Y-junction. The proposed Project would not physically divide this business corridor; consequently, there would be no business corridor division impact. Essentially, the proposed project would provide a southeastern anchor for the business corridor along Moonridge Road.

Residential areas and streets would not be permanently blocked or physically divided from one another if the proposed project were constructed. There would still be access to neighbors and surrounding streets. The proposed project would not physically divide an existing community; there would be no impact.

b) **Less than Significant Impact.** The proposed project would require a general plan amendment, change of zone, and a conditional use permit (CUP). The following includes a discussion of these three items in the following order:

i) Existing General Plan Designations
ii) Future General Plan Amendment
iii) General Plan Consistency
iv) Existing Zoning
v) Future Change of Zone
vi) Development Code Consistency
vii) Future Conditional Use Permit
viii) Conditional Use Permit Consistency

i) **Existing General Plan Designations**. According to the *City of Big Bear Lake General Plan Land Use Map*,[3] the project site is presently designated Commercial Visitor (CV) and Open Space (OS). CV is oriented toward services to the traveling and visiting public, especially commercial lodging, specialty shopping, and eating establishments. [4] The OS designation is applied to land that has been set aside for open space and conservation purposes, either as active or passive open space. These areas include land owned by public and non-profit agencies that has been set aside for resource conservation and/or wetland and wildlife mitigation.[5]

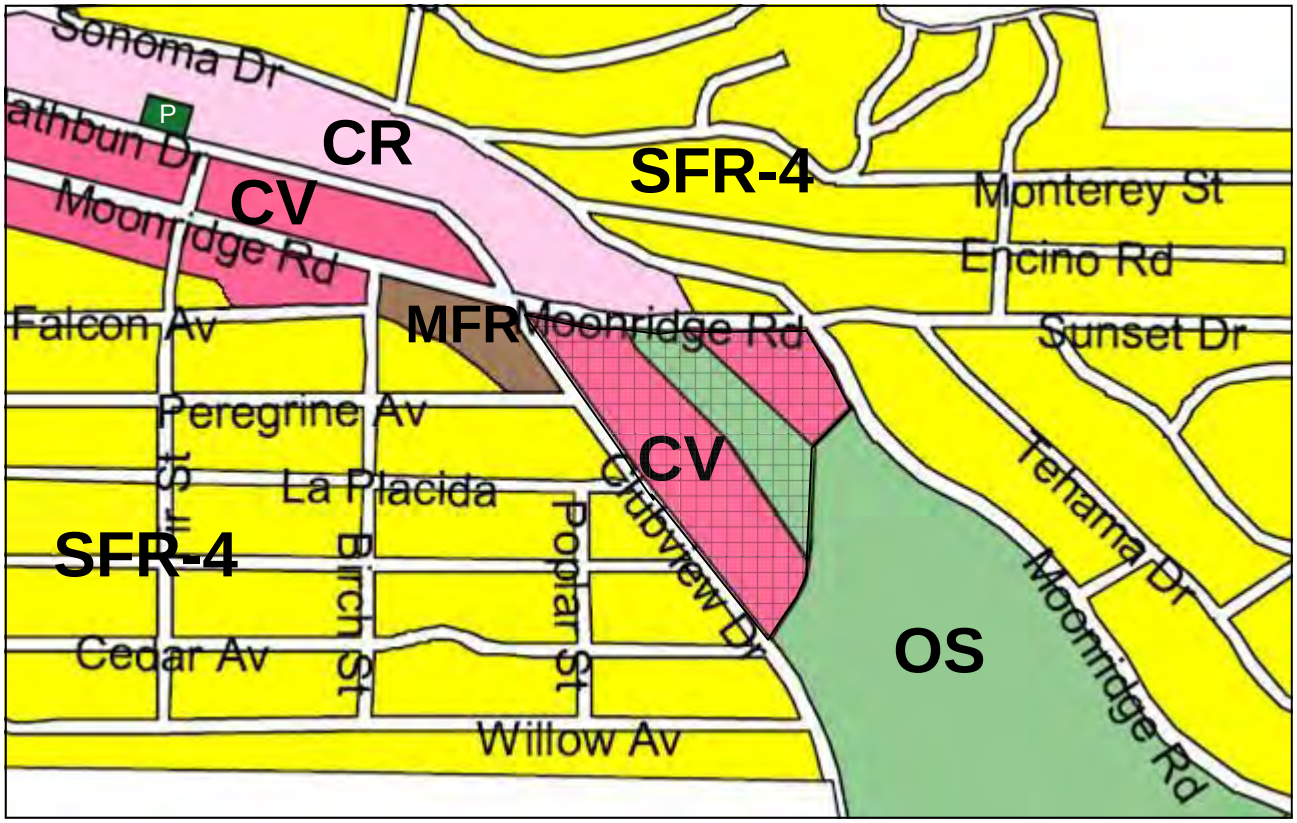
ii) **Future General Plan Amendment**. Part of the proposed project includes a General Plan Amendment to change the designation from CV and OS to Commercial Recreation (CR). See Exhibit 1. The CR designation provides for a "wide range of recreational facilities and services serving a regional market area and providing destination-oriented recreation and entertainment uses for visitors and tourists as well as residents of the Big Bear Valley." [6] One of the typical uses listed for the CR designation is zoos. [7] Also listed is supportive commercial uses such as hotels and lodging facilities, markets and eating establishments, and parking lots associated with these uses whether on- or off- site. It goes on to state:

> *This designation may be located in or adjacent to natural features providing recreational opportunities, including Big Bear Lake, mountain areas for winter sports, and areas providing for golf, hiking, biking and similar uses. Access and infrastructure should be appropriate to the proposed intensity of use. Where this designation is located adjacent to less intensive residential uses, appropriate transitions and buffers should be provided to mitigate potential land use conflicts.*[8]

The main use of the proposed project is a zoo, which is allowed within the CR designation. It is also located adjacent to "natural features providing recreational opportunities," namely Bear Mountain Resort,

---

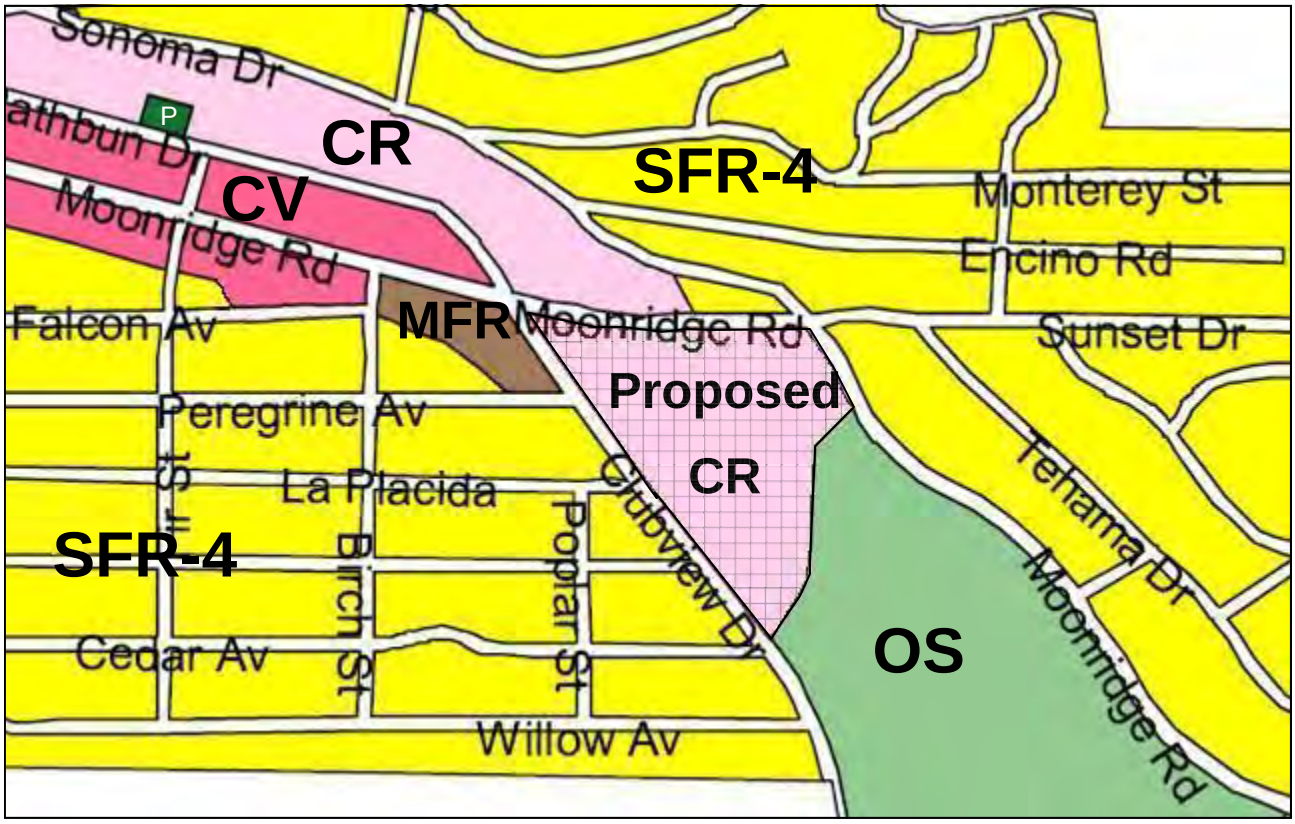
3 *City of Big Bear Lake General Plan Land Use Map*, current with Andrew Mellon, Assistant Planner, on Jan 30, 2012.
4 *City of Big Bear Lake General Plan*, Land Use Element, Land Use Issues and Map Designations, http://worldcat.org/arcviewer/1/CBG/2007/02/06/0000058425/viewer/file1.html.
5 Ibid.
6 *City of Big Bear Lake General Plan*, Land Use Element, Land Use Goals, Policies, and Programs, http://worldcat.org/arcviewer/1/CBG/2007/02/06/0000058425/viewer/file1.html.
7 Ibid.
8 *City of Big Bear Lake Development Code*, Section 17.35.020, http://www.citybigbearlake.com/images/stories/DOWNLOADS/BUSINESS/PLAN_CHECKS/BROCHURES/Development%20Code.pdf.

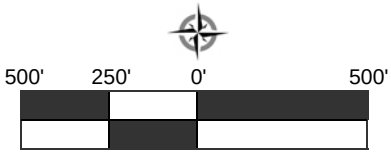


Existing General Plan Designations

Source: *City of Big Bear Lake General Plan Land Use Map.*

Proposed General Plan Designation of Commercial Recreation (CR) for Project Site





CV	Commercial Visitor	CR	Commercial Recreation	MFR	Multiple Family Residential	SFR-4	Single-Family Residential-4
	General Plan Amendment	OS	Open Space	P	Public Facilities		

FAB

Existing and Proposed General Plan Designations

Big Bear Alpine Zoo Future Land Use Analysis

Exhibit 1

as well as an area "providing for golf." Access would be provided to the project site by Moonridge Road. Infrastructure would be available (parking, capture and treatment of stormwater runoff, sewer, water, gas, electric, etc.), and supportive uses, such as a restaurant and specialty retail (gift shop and ticket booth) would be offered. Appropriate transitions and buffers are provided, such as 10-foot walls and vegetation buffers, to mitigate land use conflicts with surrounding residential land uses and are part of the project design features for the project.

iii) **General Plan Consistency**. *Guiding Principles*; the *Vision for the City of Big Bear Lake*; as well General Plan goals, policies, and programs apply to the proposed project.

Guiding Principles. The *Guiding Principles of the General Plan* include those referring to the economic base and the experience of visitors:

- *Encouraging a year-round, well-balanced economic base while recognizing the importance of tourism in the local economy;*
- *Providing and encouraging improvements to the quality of the experience of our visitors.*[9]

Guiding Principles Discussion. The proposed project is consistent with the *Guiding Principles of the General Plan*, specifically pertaining to a year-round, well-balanced economic base. A zoo, along with its other amenities, does not rely on the winter season to attract income to the community. The proposed project would be important to tourism and would improve the visitor experience.

Vision. The *Vision for the City of Big Bear Lake* applies to the proposed project in two broad ways:

- *The Valley's rich history and Western heritage will be recognized and encouraged in the community's design.*
- *The City will seek to remain a vacation destination point by providing high quality lodging, dining and recreational facilities, and by diversifying the types of cultural and entertainment activities available.*[10]

Vision Discussion. From the Gold Rush and lodge architecture to the Serrano Village and organic natural areas, the proposed project is consistent with the *Vision for the City of Big Bear Lake* by displaying the history and heritage of the City of Big Bear Lake. In addition, the proposed project would provide recreation and diversify the types of cultural and entertainment activities available.

[9] *City of Big Bear Lake General Plan*, Guiding Principles of the General Plan, http://worldcat.org/arcviewer/1/CBG/2007/02/06/0000058425/viewer/file105.html.
[10] *City of Big Bear Lake General Plan*, Vision for the City of Big Bear Lake, http://worldcat.org/arcviewer/1/CBG/2007/02/06/0000058425/viewer/file134.html.

Land Use Goals and Policies. The proposed project, by promoting many land use goals and policies, demonstrates consistency with the *City of Big Bear Lake General Plan.*[11]

> *GOAL L 1: Create a vision for development of the City which provides for orderly, functional patterns of land uses, sensitive to the natural environment and meeting the long-term social and economic needs of the community.*

Goal L 1 Discussion. The proposed project would answer the orderly functional patterns of land uses by extending the Commercial Recreation general plan land use designation from the north, husbanding the natural streams, and meeting the economic needs of the community by providing a high quality recreational zoo, thereby diversifying the types of activities available.

> *Policy L 2.3: Promote Big Bear Lake as a major resort destination for southern California, and provide for development of visitor-oriented facilities, services, activities and attractions to enhance tourism.*

Policy L 2.3 Discussion. With a regional zoo near Big Bear Lake, the proposed project would provide for an attraction to enhance tourism.

> *Policy L 2.4. Coordinate with other local agencies to enhance economic development opportunities for the Big Bear Valley through regional cooperation on access, circulation, infrastructure, development of major facilities, marketing and promotion.*

Policy L 2.4 Discussion. With cooperation from the County of San Bernardino and Big Bear Recreation Park District, and the existing zoo, to name a few, the proposed project is an example of inter-agency coordination. The project purveyors would share a parking lot with Bear Mountain Resort to better use resources and would capture and treat stormwater runoff before it entered Big Bear Lake.

> *Goal L. Provide sufficient commercially-designated land to accommodate the City's long-term needs for tourist and recreational facilities, to support the City' s role as a market center for the Big Bear Valley and to provide services to City residents.*

Policy L.4 Discussion. The proposed project would accommodate the above-stated need for tourist facilities, while at the same time would provide a restaurant, gift shop, and learning environment for City residents.

> *Policy L 4.1. Adopt the following policies for designating commercial uses within the City:*

[11] *City of Big Bear Lake General Plan*, Land Use Element, Land Use Goals, Policies, and Programs, http://worldcat.org/arcviewer/1/CBG/2007/02/06/0000058425/viewer/file1.html.

a. Commercial development should be located in areas free from major topographic variation, except that the Commercial-Recreation designation may be appropriate in hillside areas for winter sports uses.
b. Commercial uses should be located so as to minimize interface conflicts with existing and planned residential neighborhoods. Primary access to a commercial site should not be provided through a residential neighborhood.
c. Commercial sites should have visibility from a public street and should have adequate access and infrastructure reasonably available to support the intensity of the use.

Policy L 4.1.a Discussion. The proposed site is virtually free from major topographic variation.

Policy L 4.1.b Discussion. The existing zoo has primary access through residential areas; however, the new zoo location would have access through Moonridge Road at the end of a commercial area. Primary access to the site would not be provided through a residential neighborhood.

Policy L 4.1.c Discussion. The project site has visibility from Moonridge Road, has adequate access (see Section XVI, Transportation/Traffic for discussion in Initial Study), and infrastructure to support the use (capture and treatment of stormwater runoff, sewer, water, gas, electric, etc.; see Section XVII, Utilities and Service Systems for discussion).

Goal L 6. Plan for and reserve land to accommodate uses needed for public benefit, including open space, recreation, public improvements, schools and community facilities.

Goal L 6 Discussion. The Big Bear Alpine Zoo would provide recreation to tourists and City residents and students. The proposed project would continue to provide community and school services, such as the following:[12]

- Feeding Tour
- Animal Presentation
- Photography Contest
- Old Time Bear Country Fair
- Blues for the Zoo Concert
- Ice Cream Safari
- Run for the Grizzlies
- Wolf Awareness Day
- Boo in the Zoo (Halloween)
- Golf Tournament
- Wildlife Awareness Program
- Group Tours
- Birthday Party
- Zoo Camp
- Flashlight Safari

Community Design Element Goals, Policies, and Programs. The Big Bear Alpine Zoo would also be consistent with the Community Design Element in the *Big Bear Lake General Plan*.[13]

[12] Daily Zoo Programs | Other Zoo Programs | Special Events, http://moonridgezoo.org/map/programsevents.html.
[13] *City of Big Bear Lake General Plan*, Community Design Element Goals, Policies, and Programs, http://worldcat.org/arcviewer/1/CBG/2007/02/06/0000058425/viewer/file75.html.

Policy CD 1.3. The history of Big Bear Lake should be reflected in the community's design, through the following means:
a. Use of design elements which reflect the various periods of history and settlement in the Big Bear Valley should be promoted and appropriate historic architectural themes should be incorporated into buildings and public spaces, where appropriate.

Policy CD 1.3.a Discussion. The proposed project reflects various periods of history and settlement in the Big Bear Valley using architectural themes that include the Gold Rush era, a Serrano Village, the 20th Century, and the Organic Future.

Goal CD 3. Encourage the use of architectural treatments which contribute to Big Bear Lake's community character as a mountain resort, complement and enhance the mountain setting, are durable and easy to maintain, screen unsightly uses from public view, and provide for the safety and comfort of users.

Goal CD 3 Discussion. The proposed project uses architectural treatments that contribute to the community character of the City of Big Bear Lake by showing its growth through periods of history. The natural colors of architectural materials and landscaping enhance the mountain setting.

Goal CD 5. Use landscaping to reinforce community identity, create a pleasant environment, provide protection from the elements, enhance development sites, and complement the natural vegetation of Big Bear Lake, while employing water conservation techniques.

Goal CD 5 Discussion. Trees are the most dramatic component of landscaping. As listed in the *Big Bear Lake Development Code*, the Trees in Table 2 are recommended to preserve the character of Big Bear Lake's native Jeffrey pine forest.[14]

Table 2
Recommended Trees in the City of Big Bear

Common Name	Genus/Species	Size/Form	Type	Soil Type	Exposure
Incense Cedar	*Calocedrus decurrens*	75-90 ft. conical	Conifer/ Evergreen	Very acidic to slightly alkaline; clay, loam or sand	Full sun to partial shade
Western Juniper	*Juniperus occidentalis*	50-60 ft. conical to oval	Conifer/ Evergreen	Very acidic to slightly alkaline; clay, loam or sand	Full sun to partial shade

[14] *City of Big Bear Lake Development Code*, Section 17.10.040.C.2 and 3, Preparation of Landscape Plans, http://www.citybigbearlake.com/images/stories/DOWNLOADS/BUSINESS/PLAN_CHECKS/BROCHURES/Development%20Code.pdf.

Table 2
Recommended Trees in the City of Big Bear

Common Name	Genus/Species	Size/Form	Type	Soil Type	Exposure
White Fir	*Abies concolor*	60-70 ft. conical	Conifer/ Evergreen	Very acidic to neutral; clay, loam or sand	Full sun to partial shade
Jeffrey Pine	*Pinus jeffreyi*	60-120 ft. conical	Conifer/ Evergreen	Very acidic to neutral; loam or sand	Full sun to partial shade
Sugar Pine	*Pinus lambertiana*	Up to 200 ft. conical	Conifer/ Evergreen	Very acidic to neutral; clay, loam or sand	Full sun to partial shade
Pinon Pine	*Pinus monophylla*	10-25 ft. conical or rounded	Conifer/ Evergreen	Very acidic to very alkaline; clay, loam or sand	Full sun to partial shade
Rocky Mountain Maple	*Acer glabrum*	8-20 ft. oval or rounded	Deciduous	Very acidic to slightly alkaline; loam or sand	Full sun to full shade
Bigleaf Maple	*Acer macrophyllum*	30-95 ft. oval or rounded	Deciduous	Very acidic to slightly alkaline; loam or sand	Full sun to full shade
California Black Oak	*Quercus kelloggii*	30-65 ft. oval, rounded or umbrella shaped	Deciduous	Very acidic to slightly alkaline; clay, loam or sand	Full sun to partial shade
Canyon Live Oak	*Quercus chrysolopsis*	20-60 ft. oval, rounded or umbrella shaped	Hardwood/ evergreen	Very acidic to slightly alkaline; clay, loam or sand	Full sun to partial shade
Quaking Aspen	*Populus tremuloides*	50-65 ft. columnar, conical or oval shape	Deciduous	Very acidic to neutral; loam	Full sun to partial shade
Black Cottonwood	*Populus trichocarpa*	40 ft. in 15 yrs.; 150-180 ft. in age columnar or oval shape	Deciduous	Very acidic to neutral; loam or sand	Full sun to partial shade
Redstem Dogwood	*Cornus stolonifera*	20 ft./oval, rounded or umbrella shaped	Deciduous	Very acidic to slightly alkaline; clay, loam or sand	Partial shade

Source: *Big Bear Lake Development Code*, Exhibit 1, *Trees of Big Bear*, Chapter 17.10, *Tree Conservation*.

The City of Big Bear Lake would make sure these trees make up most of the project site as well as other appropriate landscaping, creating an environment that is required in Goal CD 5.

Open Space, Parks, and Recreation Element Goals, Policies and Programs. The existing zoo is located within County Service Area 53 and the Big Bear Valley Recreation and Park District, both of which have

identical boundaries.[15] The proposed project promotes several Open Space, Parks and Recreation Element goals, policies, and programs.[16]

> *Goal OPR 1. An expanded, high-quality system of public parks and recreational facilities that support a broad range of activities to meet the active and passive public recreation needs of current and future residents and visitors.*
> *Policy OPR 1.1. To encourage and, if necessary, construct appropriate, high quality public park and recreational facilities that improve and expand the range of recreational activities available within the Valley.*

Policy OPR 1.1 Discussion. The proposed project would improve and expand the range of recreational activities available within the Valley and beyond. The Big Bear Alpine Zoo would be a regional zoo.

> *Policy OPR 1.2. Explore various means of acquiring or facilitating additional park and recreation facilities and seek creative and flexible techniques to accomplish City goals, which may include but are not limited to the following strategies:*
> *b. Where feasible, encourage the joint use of park and recreation facilities with flood control facilities, school facilities, or other joint public use to maximize benefits and share costs of infrastructure, parking and access.*
> *d. Seek opportunities to help develop regional parks or recreational facilities which provide recreational benefits to a wide range of residents and visitors through cooperation with other agencies.*
> *h. In cooperation with other public agencies and private developers, investigate sources of land and funding from private and public sources to expand recreation facilities and programs.*

Policy OPR 1.2.b Discussion. The proposed project would share parking and a water quality basin with the Bear Mountain Resort, thereby maximizing benefits and sharing the costs of infrastructure and parking.

Policy OPR 1.2.d Discussion. The Big Bear Alpine Zoo would provide recreational benefits to a wide range of residents and visitors through cooperation with the County of San Bernardino, Special Districts; Big Bear Valley Recreation and Park District; as well as other agencies.

Policy OPR 1.2.h Discussion. This proposed project has been a result of cooperation with public and private sources of funding to expand recreation facilities and programs for the Big Bear Alpine Zoo.

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[15] *City of Big Bear Lake General Plan*, Exhibit OPR-1, *Big Bear Valley Recreation and Park Facilities.*
[16] *City of Big Bear Lake General Plan*, Open Space, Parks and Recreation Element Goals, Policies, and Programs, http://worldcat.org/arcviewer/1/CBG/2007/02/06/0000058425/viewer/file43.html.

> *Goal OPR 4. Maintenance and expansion of cultural programs and special events which enhance the quality of life for City residents and which provide an enhanced experience to visitors and expand economic development opportunities for local businesses.*

Goal OPR 4 Discussion. The proposed project would offer a year-round, well-balanced economic base. A zoo, along with its other amenities, would not rely on the winter season to attract income to the community. It would provide an enhanced educational experience to visitors and residents, as well as schoolchildren.

iv) **Existing Zone Districts**. As for zoning, according to the *City of Big Bear Lake Zoning Map*,[17] the project site is presently zoned Commercial Visitor (C-3) and Public/Open Space (P-OS). The C-3 zone district is established for the development of areas designed primarily for visitor services, including among others, dining, recreation entertainment, and other supporting uses.[18] The *City of Big Bear Lake Development Code* does not contain a description of the P-OS zone; however, a description of the Public (P) zone district is contained therein. The P zone is established to create and preserve areas for public facilities, including recreation and open space uses.[19]

v) **Future Change of Zone**. Part of the proposed project is a Zone Change to change the zone districts from C-3 and P-OS to Commercial-Recreation (C-4). See Exhibit 2. The C-4 zone is "established for the development of destination-oriented recreational facilities serving a regional market area and supportive uses, including ski resorts, marinas, golf courses, snow play facilities, and similar uses. [20] Supportive uses include visitor services, such as lodging, restaurants, specialty retail, and related off-site parking lots."[21]

> *The C-4 zone is appropriately located in areas that are or will be occupied by major recreational facilities drawing large numbers of visitors. The district should be accessible from major streets and highways, and may be designated on or adjacent to natural features providing recreational opportunities such as the mountains or lake. Adequate infrastructure should be available to support permitted uses, and operations in this zone should be conducted so as to have no detrimental effect on adjacent properties or on the environment.*[22]

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17 *City of Big Bear Zoning Map*, http://www.citybigbearlake.com/images/stories/DOWNLOADS/BUSINESS/PLAN_CHECKS/BROCHURES/Zoning%20Map.pdf. Confirmed that map was current with Andrew Mellon, Assistant Planner, on Jan 30, 2012:

18 *City of Big Bear Lake Development Code*, section 17.35.020, http://www.citybigbearlake.com/images/stories/DOWNLOADS/BUSINESS/PLAN_CHECKS/BROCHURES/Development%20Code.pdf.

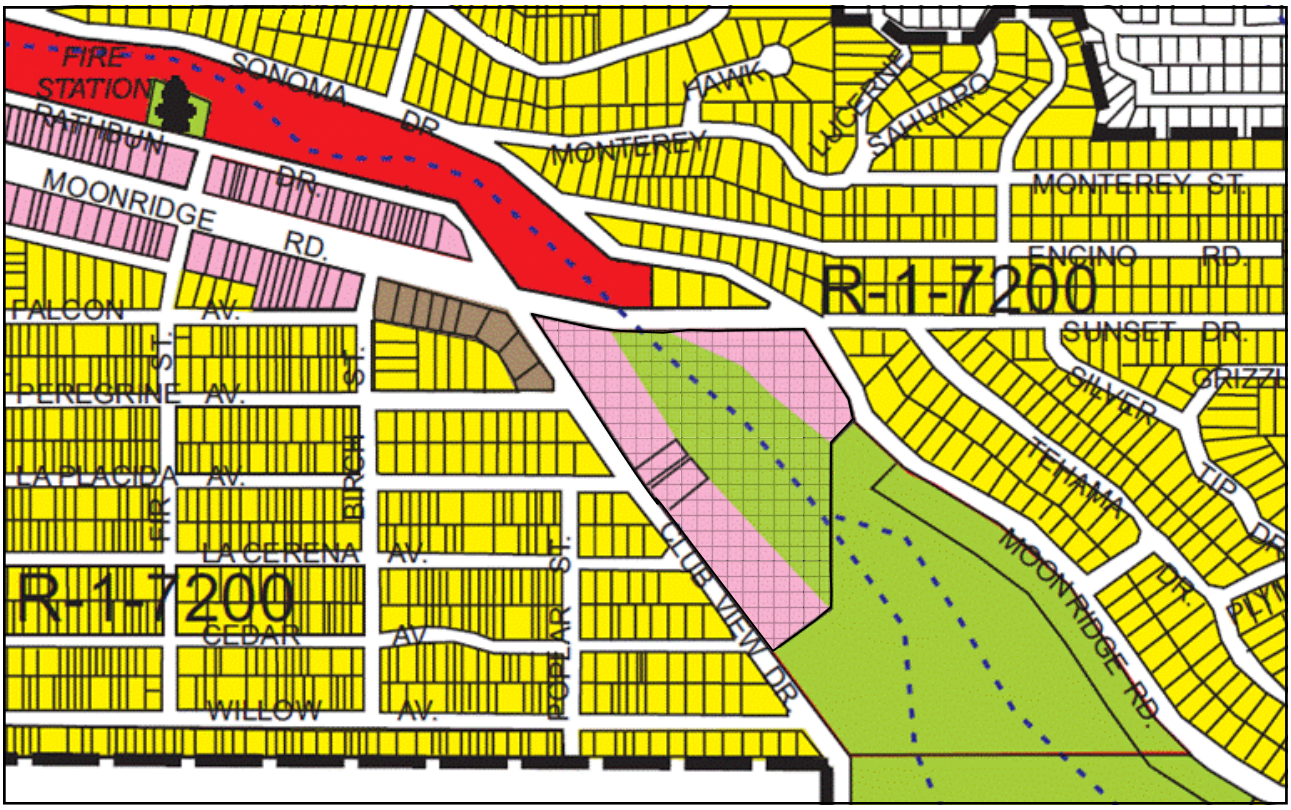
19 Ibid.

20 *City of Big Bear Lake Development Code*, section 17.35.020, http://www.citybigbearlake.com/images/stories/DOWNLOADS/BUSINESS/PLAN_CHECKS/BROCHURES/Development%20Code.pdf.

21 Ibid.

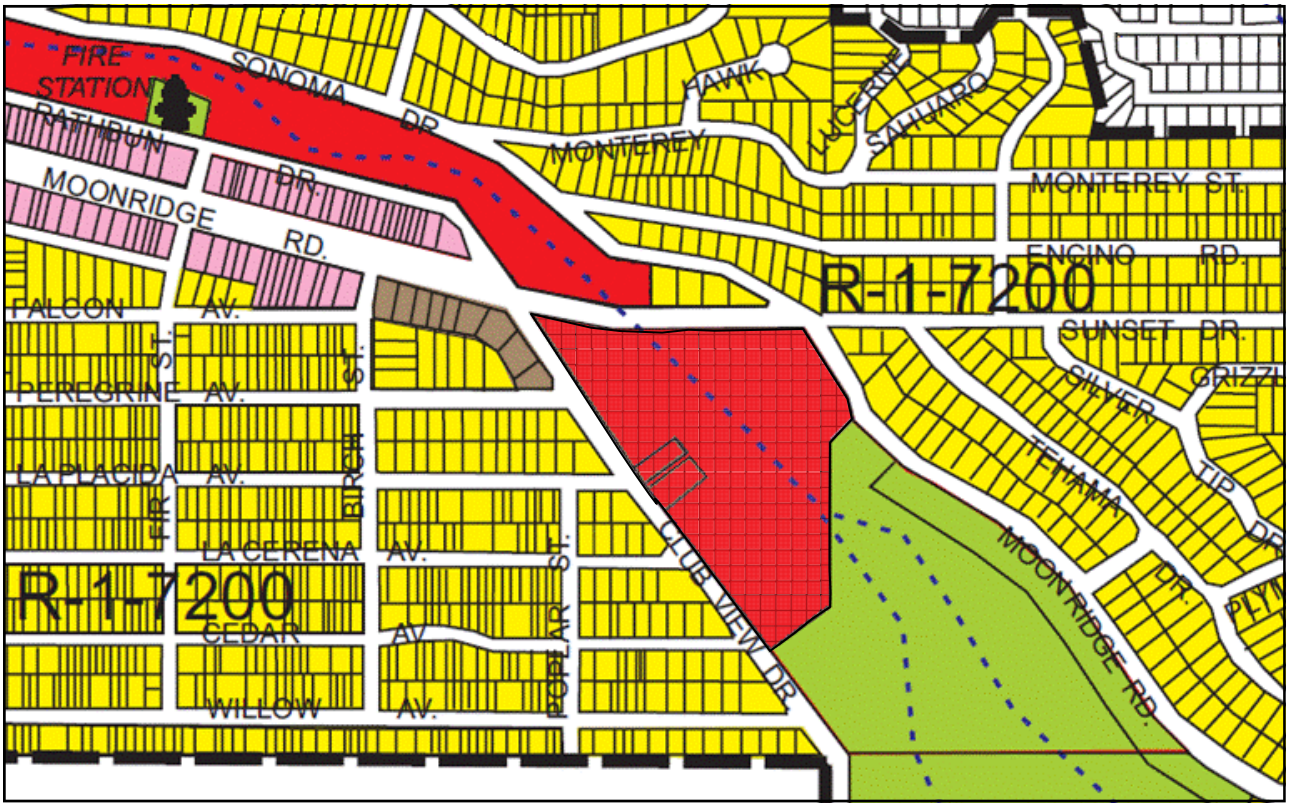
22 Ibid.

Existing Zone Designations



Source: *City of Big Bear Lake Zoning Map.*

Proposed Zone Change Designation of Commercial-Recreation (C-4) for Project Site



500' 250' 0' 500'

C-3	Commercial-Visitor	R-3	Multiple Family Residential	R-1	Single Family Residential
	Change of Zone	P-OS	Public/Open Space	C-4	Commercial-Recreation

FAB

Existing and Proposed Zone Designations

Big Bear Alpine Zoo Future Land Use Analysis

Exhibit 2

vi) **Development Code Consistency**. The Big Bear Alpine Zoo is designated C-4, as it is located in an area that already draws large numbers of visitors to Bear Mountain Resort. The zoo would serve a regional market, and it is hoped by its proponents that this would increase its own visitor numbers. The proposed location of the Big Bear Alpine Zoo would be accessible from Moonridge Road. Infrastructure would be available (parking, capture and treatment of stormwater runoff, sewer, water, gas, electric, etc.), and supportive uses, such as a restaurant and specialty retail (gift shop and ticket booth) would be offered. There would be no significant environmental effects on adjacent properties or on the environment as analyzed in the Initial Study for the proposed project.

vii) **Future Conditional Use Permit**. For a zoo or animal park, the *City of Big Bear Lake Development Code* states in Table 17.35.030.A, that a conditional use permit (CUP) is required in the C-4 zone.[23] The CUP would be part of the proposed City of Big Bear Lake project.

The CUP process provides:

- An opportunity for public review and evaluation of site-specific requirements and characteristics;
- Adequate mitigation of any potentially adverse impacts; and
- Assurance that all site development regulations and performance standards are provided in accordance with the *City of Big Bear Lake Development Code*. [24]

The CUP process requires an application along with associated environmental documents (such as the *Big Bear Alpine Zoo Relocation Project Initial Study*). City of Big Bear Lake Planning staff prepares an environmental review, distributes it to required agencies, and posts a notice for public review at the City of Big Bear Lake Civic Center, Post Office, and Sheriff's Office. The Development Review Committee (DRC) reviews the project. A public hearing notice is prepared and printed in the newspaper; and a staff report is prepared and distributed to the applicant, the property owner(s), and made available to the public. The Planning Commission hears the application at a scheduled public hearing.[25]

viii) **Conditional Use Permit Consistency**. Table 3 depicts the General Development Standards in the C-4 zone. It lists items such as minimum lot area, setbacks (front, side, and rear), building heights, etc. The City of Big Bear would determine whether the project conforms to all development standards when the project is at a more finalized stage.

[23] *City of Big Bear Lake Development Code*, Section 17.35.030.A, Principal Uses Permitted in Commercial and Public Zones, http://www.citybigbearlake.com/images/stories/DOWNLOADS/BUSINESS/PLAN_CHECKS/BROCHURES/Development%20Code.pdf.
[24] Ibid, Section 17.03.170, Conditional Use Permits.
[25] *Conditional Use Permit Development Application Processing*, City of Big Bear Lake, http://www.citybigbearlake.com/images/stories/DOWNLOADS/BUSINESS/PLAN_CHECKS/BROCHURES/Conditional%20Use%20Permits.pdf.

Table 3
General Development Standards in C-4 Zone

Lot Description	Required
Minimum lot area (net)	40,000 square feet
Corner lot width (at required front setback)	70 feet
Minimum lot depth	100 feet
Setbacks	
Front yard and street side yard setback from property line (applies to all structures, buildings, and parking except for sidewalks and walkways)	20 feet
Interior side yard setback (applies to all structures, buildings, and parking except for sidewalks and walkways)	
♦ Adjacent to non- residentially used or designated property	10 feet
♦ Adjacent to residentially used or designated property	20 feet
Rear yard setback	
♦ Adjacent to non- residentially used or designated property	None, except as needed for snow shedding
♦ Adjacent to residentially used or designated property	20 feet building 10 feet parking
Other	
Floor area ratio *	0.5
Landscaped or natural open space (as percentage of total lot area; half to be located in front yard or visible from public streets)	20 percent
Building height	
♦ Primary structures	35 feet within 100 feet of residential district 40 feet elsewhere
♦ Accessory structures	30 feet

Source: Big Bear Lake Development Code, Table 17.35.050.A, *General Development Standards in Commercial Zones.*
* Floor Area Ratio (FAR) = the numerical value obtained through dividing the gross floor area of a building or buildings, excluding below grade floor area, by the total area of the lot or parcel of land on which such building or buildings are located.

The Big Bear Alpine Zoo would be consistent with the *Big Bear Lake General Plan* and the *Big Bear Lake Development Code*; the City of Big Bear Lake would require consistency with general development standards when completing the CUP.

c) **Less than Significant Impact.** The City of Big Bear Lake has a Tree Conservation ordinance, which is discussed here.

According to the Tree Conservation ordinance, it applies to all trees that are a minimum of 6 inches in diameter at breast height (DBH), including native and non-native trees. [26] Most trees on the project site are more than 6 inches in DBH. In addition, the Big Bear Alpine Zoo is considered to be a "major project," which means certain requirements have to be met.[27] For example, a pre-development review is required:

[26] *Big Bear Lake Development Code*, Section 17.10.030.B General Provisions, http://www.citybigbearlake.com/images/stories/DOWNLOADS/BUSINESS/PLAN_CHECKS/BROCHURES/Development%20Code.pdf.

[27] Major project, for purposes of this ordinance, shall mean . . . any project which is subject to environmental review under the California Environmental Quality Act. *Big Bear Lake Development Code*, Section 17.10.020.O, Definitions, http://www.citybigbearlake.com/images/stories/DOWNLOADS/BUSINESS/PLAN_CHECKS/BROCHURES/Development%20Code.pdf.

> *For any major project on land which contains one or more significant stands of trees where it is proposed to remove a significant portion of one or more of these stands of trees, a **pre-development review** shall be required pursuant to the applicable provisions of the Development Code.*[28]

A Tree Management Plan is also required:

> *For major projects on sites containing existing trees six (6) inches or greater DBH, a **Tree Management Plan** shall be submitted concurrently with the formal application.*[29]

The Tree Conservation ordinance also states that landscape plans **may** be required:

> *All applicants for major projects may be required to prepare **landscape plans** for City for review and approval which incorporate trees, including new trees, new replacement trees, and existing trees, regardless of whether the development site contains existing trees or is devoid of trees at the time such development is proposed. . . .*[30]

In preparing landscape plans, trees in the previously discussed Table 2 are recommended. The final step in the Tree Conservation ordinance for a major project is a pre-construction meeting:

> *A **pre-construction meeting** shall be conducted by the Building and Safety Division prior to commencement of any construction on a site with any existing trees of six (6) inches DBH or greater, and the provisions of this section shall be reviewed with the contractor. The contractor shall be required to verify in writing that that he/she was notified of the tree conservation requirements prior to commencing construction. If the applicant wishes to deviate from City requirements based on the recommendations of a qualified tree expert, then the applicant may include the qualified tree expert at the meeting.*[31]

To sum up the steps in the Tree Conservation process:

1. Pre-development review;
2. Tree Management Plan submitted concurrently with the formal application;
3. Landscape plans for City for review and approval; and
4. Pre-construction meeting.

---

[28] *Big Bear Lake Development Code*, Section 17.10.040.A.1, Pre-Development Review, http://www.citybigbearlake.com/images/stories/DOWNLOADS/BUSINESS/PLAN_CHECKS/BROCHURES/Development%20Code.pdf.

[29] Ibid, Section 17.10.040.B.1, Development Review.

[30] Ibid, Section 17.10.040.C.1, Preparation of Landscape Plans.

[31] *Big Bear Lake Development Code*, Section 17.10.040.D.1, Tree Conservation during Construction, http://www.citybigbearlake.com/images/stories/DOWNLOADS/BUSINESS/PLAN_CHECKS/BROCHURES/Development%20Code.pdf.

According to the Tree Conservation ordinance, the third step is not mandatory, although the City of Big Bear may require landscape plans for the proposed project. With the oversight of the City of Big Bear, the potential removal of trees on the project site for maintenance would have impacts that are less than significant.

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APPENDIX I
Noise Assessment

Noise Assessment For The

BIG BEAR ALPINE ZOO

City of Big Bear Lake

Prepared For:

The Altum Group

73-255 El Paseo Drive, Suite 15
Palm Desert, CA 92260

Submitted By:

Mestre Greve Associates

Division of Landrum & Brown

Fred Greve P.E.
Matt Jones, P.E.
27812 El Lazo Road
Laguna Niguel, CA 92677
949•349•0671

February 21, 2012
(Revised October 30, 2012)
Project #526302

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1.0 EXISTING SETTING

1.1 Project Description

The Big Bear Alpine Zoo project would relocate and expand the existing animal park. The project site encompasses approximately 10.4 acres. The proposed animal park would also include related buildings such as administration, retail and concession, amphitheater, other support buildings, and the 2,500 square foot restaurant.

The proposed zoo is being relocated near the existing golf course, on the southeast corner of Moonridge Road and Sunset Drive, less than one mile north of its current location, in the City of Big Bear Lake sphere-of-influence. The animal park is being developed by San Bernardino County Special Districts Department (SDD). The project is anticipated to be in operation by 2015. The project includes the demolition of the existing 2.5 acre zoo facilities at the current location. The reuse of the current animal park site is not park of the project considered in this report. The vicinity map is presented in Exhibit 1, and the conceptual site plan is shown in Exhibit 2.

1.2 Background Information on Noise

1.2.1 Noise Criteria Background

Sound is technically described in terms of the loudness (amplitude) of the sound and frequency (pitch) of the sound. The standard unit of measurement of the loudness of sound is the decibel (dB). Decibels are based on the logarithmic scale. The logarithmic scale compresses the wide range in sound pressure levels to a more usable range of numbers in a manner similar to the Richter scale used to measure earthquakes. In terms of human response to noise, a sound 10 dB higher than another is judged to be twice as loud; and 20 dB higher four times as loud; and so forth. Everyday sounds normally range from 30 dB (very quiet) to 100 dB (very loud).

Since the human ear is not equally sensitive to sound at all frequencies, a special frequency-dependent rating scale has been devised to relate noise to human sensitivity. The A-weighted decibel scale (dBA) performs this compensation by discriminating against frequencies in a manner approximating the sensitivity of the human ear. Community noise levels are measured in terms of the "A-weighted decibel," abbreviated dBA. Exhibit 3 provides examples of various noises and their typical A-weighted noise level.

PROJECT SITE

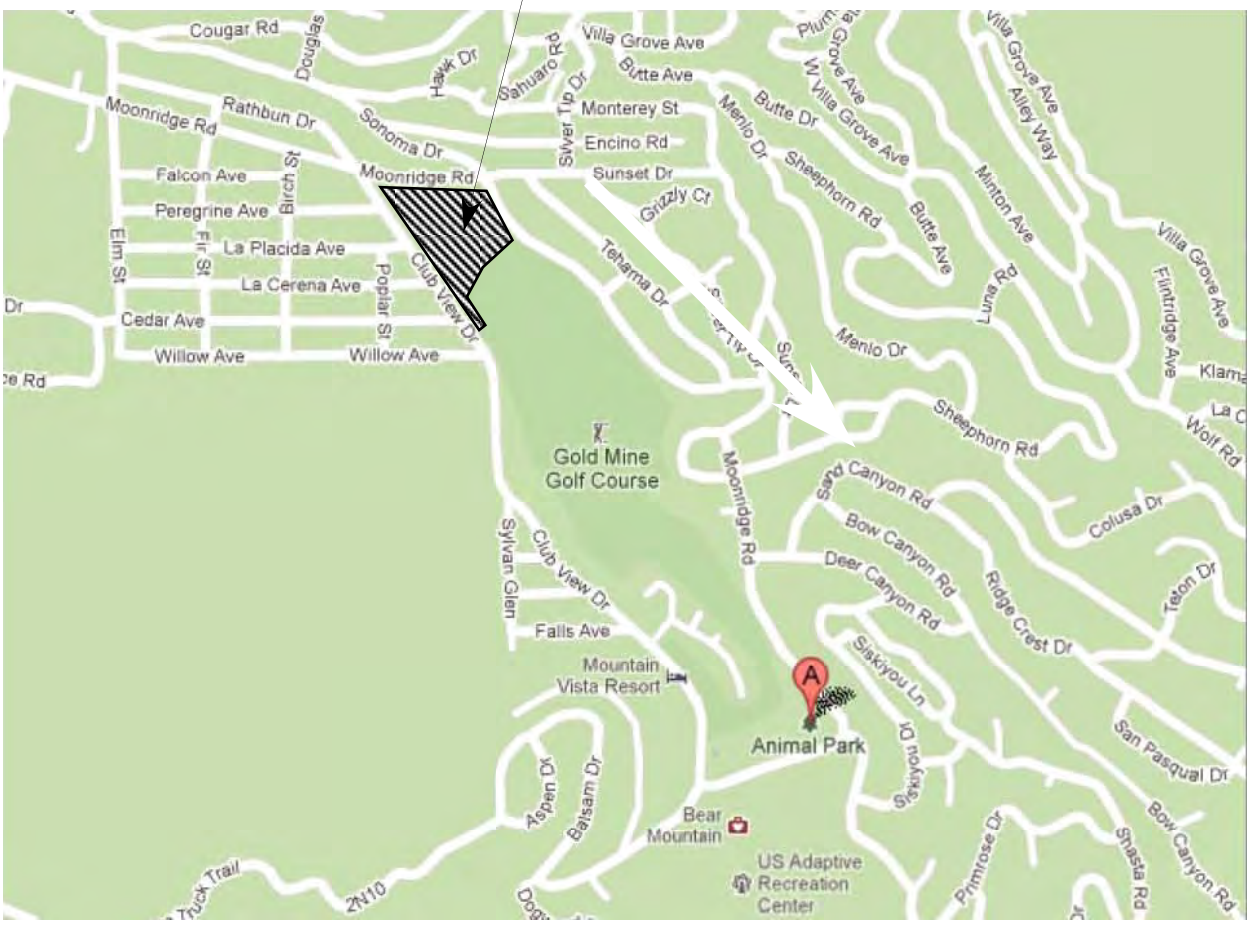
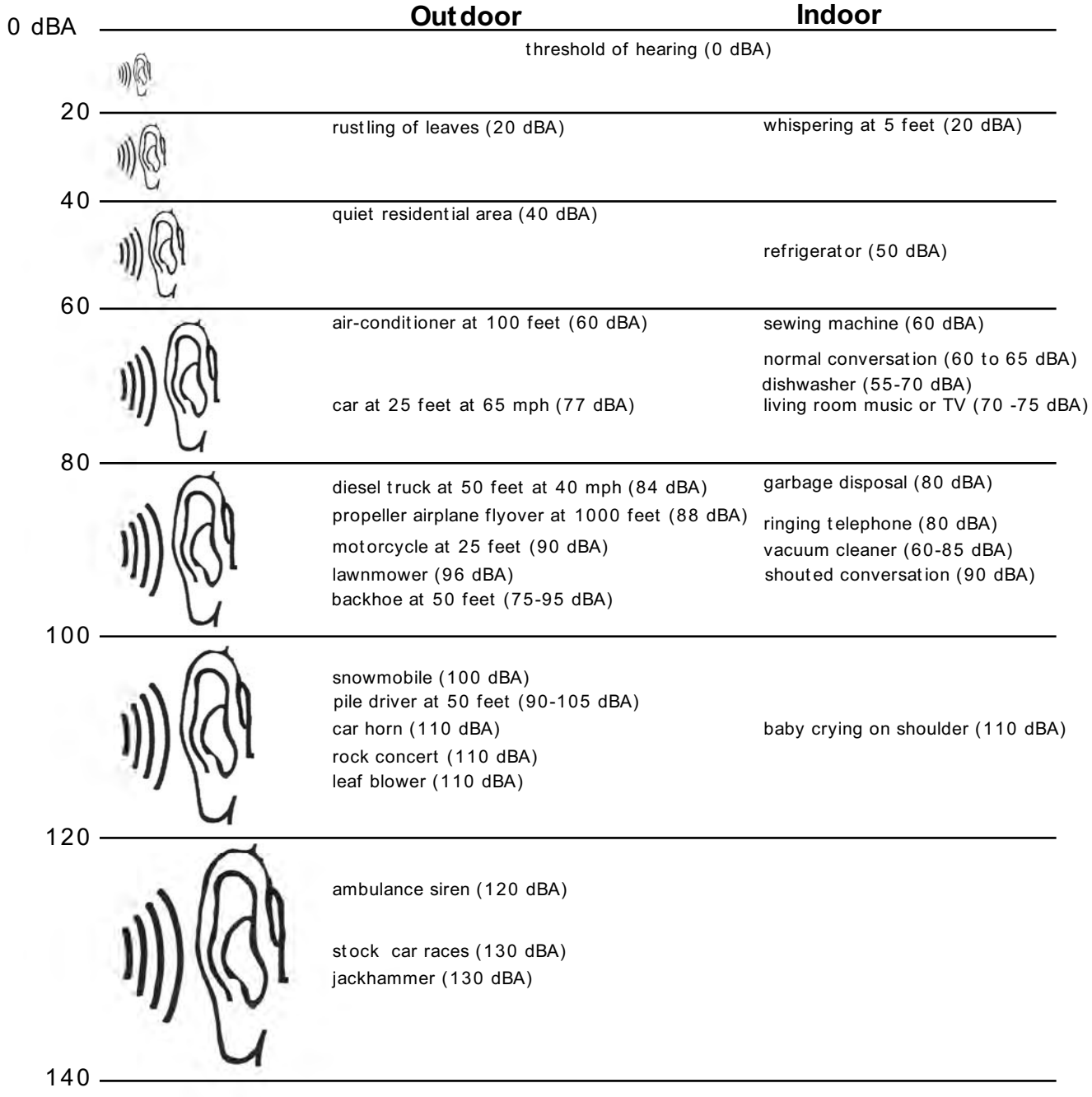


Exhibit 1
Vicinity Map

Mestre Greve Associates

Exhibit 2
Site Plan

Mestre Greve Associates



Sources: League For The Hard Of Hearing, www.lhh.org
Handbook of Noise Control, McGraw Hill, Edited byCyril Harris, 1979
Measurements by Mestre Greve Associates

Exhibit 3

Typical Sounds in A-weighted Decibels (dBA)

Mestre Greve Associates

Sound levels decrease as a function of distance from the source as a result of wave divergence, atmospheric absorption and ground attenuation. As the sound wave form travels away from the source, the sound energy is dispersed over a greater area, thereby dispersing the sound power of the wave. Atmospheric absorption also influences the levels that are received by the observer. The greater the distance traveled, the greater the influence and the resultant fluctuations. The degree of absorption is a function of the frequency of the sound as well as the humidity and temperature of the air. Turbulence and gradients of wind, temperature and humidity also play a significant role in determining the degree of attenuation. Intervening topography can also have a substantial effect on the effective perceived noise levels.

Noise has been defined as unwanted sound and it is known to have several adverse effects on people. From these known effects of noise, criteria have been established to help protect the public health and safety and prevent disruption of certain human activities. This criteria is based on such known impacts of noise on people as hearing loss, speech interference, sleep interference, physiological responses and annoyance. Each of these potential noise impacts on people are briefly discussed in the following narratives:

HEARING LOSS is not a concern in community noise situations of this type. The potential for noise induced hearing loss is more commonly associated with occupational noise exposures in heavy industry or very noisy work environments. Noise levels in neighborhoods, even in very noisy airport environs, are not sufficiently loud to cause hearing loss.

SPEECH INTERFERENCE is one of the primary concerns in environmental noise problems. Normal conversational speech is in the range of 60 to 65 dBA and any noise in this range or louder may interfere with speech. There are specific methods of describing speech interference as a function of distance between speaker and listener and voice level.

SLEEP INTERFERENCE is a major noise concern for traffic noise. Sleep disturbance studies have identified interior noise levels that have the potential to cause sleep disturbance. Note that sleep disturbance does not necessarily mean awakening from sleep, but can refer to altering the pattern and stages of sleep.

PHYSIOLOGICAL RESPONSES are those measurable effects of noise on people that are realized as changes in pulse rate, blood pressure, etc. While such effects can be induced and observed, the extent is not known to which these physiological responses cause harm or are sign of harm.

ANNOYANCE is the most difficult of all noise responses to describe. Annoyance is a very individual characteristic and can vary widely from person to person. What one person considers tolerable can be quite unbearable to another of equal hearing capability.

1.2.2 Noise Assessment Metrics

The description, analysis and reporting of community noise levels around communities is made difficult by the complexity of human response to noise and the myriad of noise metrics that have

been developed for describing noise impacts. Each of these metrics attempts to quantify noise levels with respect to community response. Most of the metrics use the A-weighted noise level to quantify noise impacts on humans. A-weighting is a frequency weighting that accounts for human sensitivity to different frequencies.

Noise metrics can be divided into two categories: single event and cumulative. Single-event metrics describe the noise levels from an individual event such as an aircraft fly over or perhaps a heavy equipment pass-by. Cumulative metrics average the total noise over a specific time period, which is typically 1 or 24-hours for community noise problems. For this type of analysis, cumulative noise metrics will be used.

Several rating scales have been developed for measurement of community noise. These account for: (1) the parameters of noise that have been shown to contribute to the effects of noise on man, (2) the variety of noises found in the environment, (3) the variations in noise levels that occur as a person moves through the environment, and (4) the variations associated with the time of day. They are designed to account for the known health effects of noise on people described previously. Based on these effects, the observation has been made that the potential for a noise to impact people is dependent on the total acoustical energy content of the noise. A number of noise scales have been developed to account for this observation. Two of the predominate noise scales are the: Equivalent Noise Level (Leq) and the Community Noise Equivalent Level (CNEL). These scales are described in the following paragraphs.

> **Leq** is the sound level corresponding to a steady-state sound level containing the same total energy as a time-varying signal over a given sample period. Leq is the "energy" average noise level during the time period of the sample. Leq can be measured for any time period, but is typically measured for 1 hour. This 1-hour noise level can also be referred to as the Hourly Noise Level (HNL). It is the energy sum of all the events and background noise levels that occur during that time period.
>
> **CNEL** is the predominant rating scale now in use in California for land use compatibility assessment. The CNEL scale represents a time weighted 24-hour average noise level based on the A-weighted decibel. Time weighted refers to the fact that noise that occurs during certain sensitive time periods is penalized for occurring at these times. The evening time period (7 p.m. to 10 p.m.) penalizes noises by 5 dBA, while nighttime (10 p.m. to 7 a.m.) noises are penalized by 10 dBA. These time periods and penalties were selected to reflect people's increased sensitivity to noise during these time periods. A CNEL noise level may be reported as a "CNEL of 60 dBA," "60 dBA CNEL," or simply "60 CNEL." Typical noise levels in terms of the CNEL scale for different types of communities are presented in Exhibit 4.

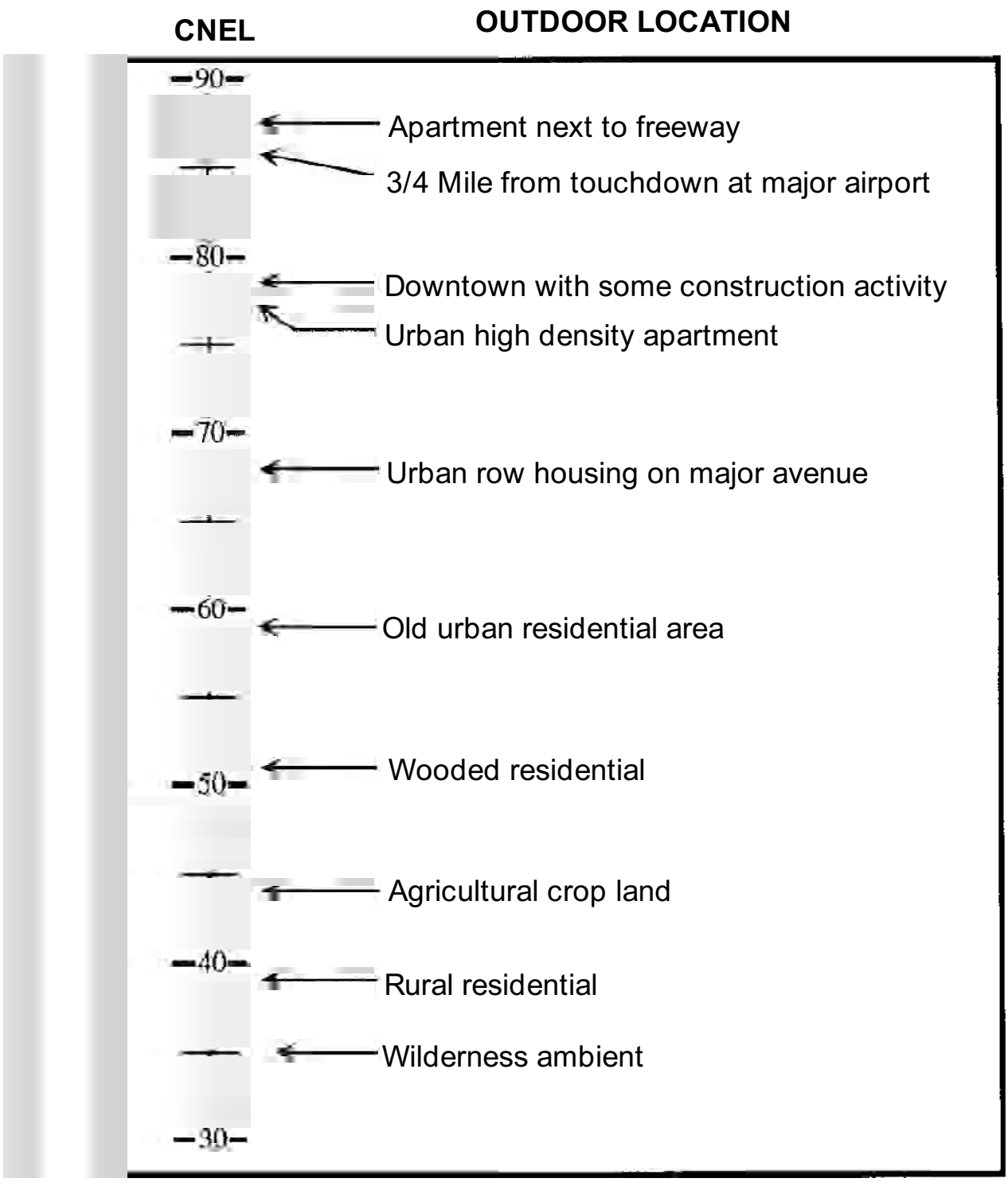


Exhibit 4
Typical CNEL Noise Levels

Ldn, the day-night noise level, is similar to the CNEL scale except that evening noises are not penalized. It is a measure of the overall noise experienced during an entire day. The time-weighted refers to the fact that noise that occurs during certain sensitive time periods is penalized for occurring at these times. In the Ldn scale, those noise levels that occur during the night (10 p.m. to 7 a.m.) are penalized by 10 dB. This penalty was selected to attempt to account for increased human sensitivity to noise during the quieter period of a day, where home and sleep is the most probable activity.

L(%), the percentile noise level, is a statistical method of describing noise which accounts for variance in noise levels throughout a given measurement period. L(%) is a way of expressing the noise level exceeded for a percentage of time in a given measurement period. For example since 15 minutes is 25% of 1 hour, L(25) is the noise level that is equal to or exceeded for 15 minutes in a 1 hour measurement period. It is L(%) noise levels that are used for most Noise Ordinance standards. For example, most daytime County and City Noise Ordinances use an ordinance standard of 55 dBA for 30 minutes per hour or an L(50) level of 55 dBA. In other words, the Noise Ordinance states that no noise level should exceed 55 dBA for more than fifty percent of a given period.

1.3 Noise Criteria

The City of Big Bear Lake has not specified outdoor and indoor noise standards for various land uses impacted by transportation noise sources. Therefore, the County of San Bernardino policies on noise will be utilized for this project. The County's Noise Element of the General Plan includes limits on noise levels from transportation noise sources, vehicles on public roadways, railroads and aircraft. These limits are imposed on new developments. The new developments must incorporate the measures to ensure that the limits are not exceeded.

Also, the City of Big Bear Lake has not specified any noise ordinance criteria. The County of San Bernardino noise ordinance will be utilized for this project. Noise ordinance limits apply to noise on one property impacting an adjacent property such as a residential neighbor. The ordinance sets limits on noise levels that can be experienced at the residence. The Noise Ordinance is part of the County's Municipal Code and is enforceable throughout unincorporated portions of the County. The Noise Element and Noise Ordinance policies are presented below.

1.3.1 County of San Bernardino Noise Element

The County of San Bernardino specifies outdoor and indoor noise standards for various land uses impacted by transportation noise sources (e.g., traffic on public roadways). The County of San Bernardino noise standards are contained in Section 87.0905 (Noise) of the County's municipal code. The interior and exterior noise standards are in terms of the Community Noise Equivalent Level (CNEL). The standards specify that for residential areas, the exterior noise levels shall not exceed 60 CNEL and the interior noise levels shall not exceed 45 CNEL. The County of San Bernardino noise standards (for mobile noise sources) for various land uses are shown in Table 1.

Table 1
County of San Bernardino Noise Standards (Mobile Noise Sources)

Receiving Land Use Category	Noise Level Not To Be Exceeded Exterior	Interior
Residential	60 CNEL	45 CNEL
Institutional (Church)	65 CNEL	45 CNEL

1.3.2 County of San Bernardino Noise Ordinance

A noise ordinance is designed to control unnecessary, excessive and annoying sounds from noise sources located on private property. Noise ordinance requirements cannot be applied to noise sources such as heavy trucks when traveling on public roadways. Federal and state laws preempt control of mobile noise sources on public roads. Noise ordinance standards typically apply to industrial and commercial noise sources impacting residential areas. They are also applicable to noise generated at parks and schools impacting residential areas.

The County's municipal code, Section 87.0905 (Noise), contains noise criteria for sources of noise on private property. The noise limits are applied at the receiving property line. The criteria are presented in Table 2 and are shown in Exhibit 5.

Table 2
County of San Bernardino Noise Ordinance Criteria (Exterior Noise Limits)

Receiving Land Use Category	Noise Metric	Noise Level Not To Be Exceeded 7 a.m. to 10 p.m. (Daytime)	10 p.m. to 7 a.m. (Nighttime)
Residential	Leq	55 dBA	45 dBA
Professional Services	Leq	55 dBA	55 dBA
Other Commercial	Leq	60 dBA	60 dBA
Industrial	Leq	70 dBA	70 dBA

The County of San Bernardino uses a 55 dBA Leq daytime (7 a.m. to 10 p.m.) and a 45 dBA Leq nighttime (10 p.m. to 7 a.m.) noise criteria for noise sources on private property. This means that a noise source operating on private property cannot cause the Leq noise level to exceed 55 dBA during the daytime or 45 dBA during the nighttime at the nearest residential areas.

Many communities exempt construction noise from noise limits as long as construction activities occur during certain times. The City of Big Bear Chapter 17.1 (General Provisions), Section 17.01.090.J (General Performance Standards) municipal code prohibits construction between 7:00 p.m. and 7:00 a.m., Sundays and national holidays, except as approved by the Chief Building Official based on a determination that the work to be performed will not have an adverse effect on public health, safety and welfare.

87.0905 Noise.

(a) NOISE MEASUREMENT. Noise will be measured with a sound level meter, which meets the standards of the American National Standards Institute (ANSI Section SI4-1979, Type 1 or Type 2). Noise levels shall be measured using the "A" weighted sound pressure level scale in decibels (ref. pressure = 20 micronewtons per meter squared). The unit of measure shall be designated as dB(A). The Director of the Department of Environmental Health Services shall be the noise control officer.

(b) NOISE STANDARDS.

(1) Areas within San Bernardino County shall be designated as "noise-impacted" if exposed to existing or projected future exterior noise levels from mobile or stationary sources exceeding the standards listed in subsections (2) and (3) below. New development of residential or other noise-sensitive land uses will not be permitted in noise-impacted areas unless effective mitigation measures are incorporated into the project design to reduce noise levels to these standards. Noise-sensitive land uses include residential uses, schools, hospitals, nursing homes, churches and libraries.

(2) The following table describes the noise standard for emanations from any stationary noise source, as it affects adjacent properties:

NOISE STANDARDS — Stationary Noise Sources

Affected Land Uses (Receiving Noise)	7 am-10 pm Leq*	10 pm-7 am Leq*
Residential	55 dB(A)	45 dB(A)
Professional Services	55 dB(A)	55 dB(A)
Other Commercial	60 dB(A)	60 dB(A)
Industrial	70 dB(A)	70 dB(A)
* Leq = (Equivalent Energy Level)- The sound level corresponding to a steady-state sound level containing the same total energy as a time-varying signal over a given sample period, typically 1, 8 or 24 hours.		
* dB(A) = (A-weighted Sound Pressure Level) - The sound pressure level, in decibels, as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound, placing greater emphasis on those frequencies within the sensitivity range of the human ear.		
* Ldn = (Day-Night Noise Level) - The average equivalent A-weighted sound level during a 24-hour day obtained by adding ten decibels to the hourly noise levels measured during the night (from 10 pm to 7 am). In this way Ldn takes into account the lower tolerance of people for noise during nighttime periods.		

No person shall operate or cause to be operated any source of sound at any location or allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person, which causes the noise level, when measured on any other property, either incorporated or unincorporated, to exceed:

(A) The noise standard for that receiving land use [as specified in Subsection (b)(1) of this section] for a cumulative period of more than thirty (30) minutes in any hour; or

(B) The noise standard plus 5 dB(A) for a cumulative period of more than fifteen (15) minutes in any hour; or

(C) The noise standard plus 10 dB(A) for a cumulative period of more than five (5) minutes in any hour; or

(D) The noise standard plus 15 dB(A) for a cumulative period of more than one (1) minute in any hour; or

(E) The noise standard plus 20 dB(A) for any period of time.

(3) Noise from mobile sources may affect adjacent properties adversely. When it does, such noise shall be mitigated for any new development to a level that will not exceed the standards described in the following table:

(c) If the measured ambient level exceeds any of the first four (4) noise limit categories above, the allowable noise exposure standard shall be increased to reflect said ambient noise level. If the ambient noise level exceeds the fifth noise limit category, the maximum allowable noise level under this category shall be increased to reflect the maximum ambient noise level.

(d) If the alleged offense consists entirely of impact noise or simple tone noise, each of the noise levels in Subsection (b)(1) of this section shall be reduced by 5 dBA.

(e) Exempt Noises.

(1) The following sources of noise are exempt:

(A) Motor vehicles not under the control of the industrial use.

(B) Emergency equipment, vehicles, and devices.

(C) Temporary construction, repair, or demolition activities between 7:00 a.m. and 7:00 p.m. except Sundays and Federal holidays.

Readopted Ordinance 3341 (1989); Amended Ordinance 3616 (1995)

Exhibit 5
County San Bernardino Noise Limits

1.4 Existing Noise Measurements

1.4.1 Moonridge Animal Park Noise Measurements

Noise measurements were conducted at the existing Moonridge Animal Park in order to determine and document the noise levels of the animal park. The park is currently located near the southeast corner of the Big Bear Mountain Golf Course. The noise measurements were taken at two locations within the park. Location #1 is situated near the bear exhibit at its southwest corner. Location #2 is situated at the outdoor animal theater just north of the wolf exhibit.

The noise measurements were performed from 1:03 p.m., October 26 to 12:44 p.m. October 27, 2010. The noise monitors used to measure the noise levels were Brüel & Kjær Type 2236 Sound Level Meters. The measurement systems were calibrated before and after the measurements with a Brüel & Kjær Type 4231 sound level calibrator, with current calibration traceable to the National Institute of Standards and Technology. Leq noise levels were recorded by capturing noise data every 10 seconds. The Lmin and Lmax noise levels were also recorded. The Leq is the sound level corresponding to a steady-state sound level containing the same total energy as a time-varying signal over a given sample period. Leq is the "energy" average noise level during the time period of the sample. Leq can be measured for any time period, but is typically measured for 1 hour. The Lmin is the lowest noise sample measured within a given period. The Lmax is the highest (or loudest) noise sample measured during a given period of time.

The noise measurements were recorded for a period of about 24 hours. Animal sounds and animal shows were the chief noise sources observed during the 24-hour noise measurement period. Some local traffic also added to the noise levels. Construction equipment could occasionally be heard on a distant hill near the zoo. At Location #1 bird squawking could be heard from the birdcages just north of the visitor center. The most predominant animal sounds came from the wolves at the wolf exhibit located just south of the animal theater (on the west side of the park). The typical noise level of the wolves (while howling) was about 65 to 70 dBA at a distance of about 50 feet from the microphone. The animal show was performed on the platform where the microphone was located. The animal show noise levels averaged about 55 dBA at a distance of several feet from the speaker. Passing vehicles tended to vary in noise levels from about 50 to 55 dBA. The centerline of the main highway was approximately 140 feet from Location #1 and Location #2.

The results indicate that the maximum Leq noise level for Location #1 was 62.7 dBA (from 8 to 9 a.m. on Wednesday, October 27th). This maximum noise level was most likely driven by wolves howling. The lowest Lmin noise level during the 24-hour period was 27.0 dBA. The maximum Lmax noise level was 85.5 dBA. For Location #2, the maximum Leq noise level during the 24-hour noise measurement period was 60.7 dBA (from 1 to 2 p.m. on Tuesday, October 26th). This noise level was most likely due to water entering the bear exhibit, which was later turned off. The lowest Lmin noise level was 31.0 dBA. The maximum Lmax noise level was 76.5 dBA.

1.4.2 Ambient Noise Measurements

To document the existing noise levels in the project area, short-term noise measurements were made at five locations in the immediate vicinity of the project. The locations of the measurements are presented in Exhibit 6. The short-term measurements were performed on Friday, January 6, 2012.

Short-term measurements were made for two 10-minute periods at each site. Site 1 was located on the golf course adjacent to the south boundary of the project site. Site 2 was at the nearest residence on the southwest corner of La Cerena Avenue and Club View Drive, immediately west of the project site. Site 3 was located at the apartment buildings at the southwest corner of Moonridge Drive and Club View Drive. Site 4 was located at the residential area immediately north of the project site on Moonridge Drive. Site 5 was located at 42966 Moonridge Drive residence along the east side of the project site.

The measurement survey utilized Brüel & Kjær 2238 automated digital noise data acquisition systems. These instruments automatically calculate both the Equivalent Noise Level (Leq) and Percent Noise Level (L%) for any specific time period. The noise monitors were equipped with Brüel & Kjær 1/2-inch electret microphone and calibrated with a Brüel & Kjær calibrator with calibrations traceable to the National Bureau of Standards. Certification for the instruments is performed annually and is certified through the duration of the measurements. The measurement systems satisfy the ANSI (American National Standards Institute) Standards 1.4 for Type 1 precision noise measurement instrumentation.

The short-term measurement results are presented in Table 3 in terms of the equivalent noise level (Leq), maximum noise level, minimum noise level and percentile noise levels (L%) from the Noise Ordinance criteria for each measurement period. The L50 percentile level represents the noise level that was exceeded 50 percent of the measurement period and represents the median ambient noise level. The L90 noise levels represent the background noise level which is exceeded 90 percent of the time. The L1.7, L8.3, L25 and L50 correspond with the noise ordnance metrics described in Section 1.3.2.

N

Exhibit 6
Noise Measurement Locations

Mestre Greve Associates

Table 3
Sound Levels Measured at Short-Term Site

Site	Start Time	Leq	Lmax	Lmin	L1.7	L8.3	L25	L50	L90	L99
1	12:10 p.m.	50.8	64.4	37.2	58.5	52.5	51.0	48.5	44.5	38.0
	12:25 p.m.	50.3	59.2	40.1	55.0	53.0	51.0	49.0	45.0	41.5
2	11:45 p.m.	61.0	70.6	37.7	68.0	66.0	63.0	56.5	41.5	38.0
	11:56 p.m.	59.9	69.1	38.2	66.5	64.5	62.0	53.0	41.5	38.5
3	11:07 p.m.	66.3	76.8	41.98	73.5	71.5	67.0	62.0	50.0	43.5
	11:19 p.m.	64.6	77.9	43.9	74.0	70.0	64.0	56.5	47.5	44.5
4	12:46 p.m.	62.1	73.7	43.2	70.5	67.5	62.5	52.0	46.5	44.0
	12:57 p.m.	61.9	73.2	39.3	70.0	68.0	62.0	53.5	44.5	40.5
5	1:14 p.m.	63.3	73.6	41.1	71.0	69.5	63.5	54.0	44.5	42.0
	1:26 p.m.	62.7	74.3	41.4	71.0	68.5	62.5	53.5	46.5	42.5

Table 3 shows that the Leq average noise levels in the project area range between approximately 50 dBA and 66 dBA. These levels are consistent with what one would expect in a suburban residential area located adjacent to local roadways.

Site 1 is located on the golf course immediately south of the project site. For Site 1, the golf course was quiet during the measurements, while the nearby traffic from Moonridge Avenue and Club View Drive was the only steady noise source. The maximum noise level experienced on the golf course was 64.4 dBA, and was due to traffic on Club View Drive. The average (Leq) noise level was in the low 50 dBA range.

Site 2 was located at the front yard of the residence on the southwest corner of Club View Drive and La Cerena Avenue. The noise environment was dominated by traffic noise from Club View Drive. Occasionally, vehicles turning on La Cerena Avenue also contributed to the ambient noise. The maximum noise level was approximately 70 dBA, and was due to a vehicle on Club View Drive. The average (Leq) noise level was approximately 60 dBA. This is a moderate level of noise.

Site 3 was located at the residential apartments at the southwest corner of Moonridge Avenue and Club View Drive. The noise source at Site 3 was predominantly traffic from both Moonridge Avenue and Club View Drive. Occasionally, noise from the residential parking lot was audible, but was very short-term and represented impulsive noise. A loud motorcycle passed-by and resulted in a peak noise level of 78 dBA. The average Leq was approximately 65 dBA, and is considered very audible at the nearest residences.

Site 4 was located at the residential area along Moonridge Drive immediately north of the project site. Traffic on Moonridge Avenue was the primary source of noise, while the distant traffic on Club View Drive was secondary. The average Leq was approximately 62 dBA, with a peak traffic noise level of approximately 74 dBA due to a medium truck on Moonridge Drive.

Site 5 is located near the residence at 42966 Moonridge Drive, immediately east of the project site. Traffic on Moonridge Avenue was the main noise source. The distant traffic on Club View Drive also contributed to the background ambient noise. The maximum noise level was approximately 74 dBA, and was due to a vehicle from Moonridge Drive. The average Leq was approximately 63 dBA.

1.5 Existing Roadway Noise Levels

The highway noise levels projected in this report were computed using the Highway Noise Model published by the Federal Highway Administration ("FHWA Highway Traffic Noise Prediction Model," FHWA-RD-77-108, December, 1978). The FHWA Model uses traffic volume, vehicle mix, vehicle speed, and roadway geometry to compute the "equivalent noise level." A computer code has been written which computes equivalent noise levels for each of the time periods used in the calculation of CNEL. Weighting these noise levels and summing them results in the CNEL for the traffic projections used. CNEL contours are found by iterating over many distances until the distances to the 60, 65, and 70 CNEL contours are found.

Traffic volumes and estimated speeds were used with the FHWA Model to estimate the noise levels in terms of CNEL. Existing traffic volumes for arterials were obtained from the traffic report titled "Traffic Impact Analysis - Moonridge Animal Park" prepared by Albert A. Webb Associates, dated March 2012. Only peak-hour intersection volumes were available, and thus, were utilized to calculate the average daily traffic (ADT). The ADT was calculated utilizing the peak-hour volume which is assumed to be approximately 10% of the ADT.

The distances to the CNEL contours for the roadways in the vicinity of the project site are given in Table 4. These numbers represent the distance from the centerline of the road to the contour value shown. Note that the values given in Table 4 do not take into account the effect of any noise barriers or topography that may affect ambient noise levels.

Table 4
Existing Roadway Traffic Noise Levels

Roadway Segment	CNEL @ 100' †	Distance To CNEL Contour from Centerline of Roadway (feet) 70 CNEL	65 CNEL	60 CNEL
Moonridge Road				
East of Club View Drive	54.5	RW	RW	43
West of Club View Drive	56.1	RW	RW	55
Southwest of Big Bear Blvd.	55.7	RW	RW	52
East of Brownie Lane	58.4	RW	RW	78
West of Brownie Lane	55.8	RW	RW	52
Club View Drive				
South of Moonridge Road	51.7	RW	RW	RW
Brownie Lane				
North of Moonridge Road	53.8	RW	RW	RW
South of Moonridge Road	48.5	RW	RW	RW
Big Bear Boulevard (SR-18)				
North of Moonridge Road	65.0	RW	101	217
West of Moonridge Road	65.0	RW	100	215
Southwest of Stanfield Cutoff	65.3	RW	105	226
East of Stanfield Cutoff	64.1	RW	87	187
Stanfield Cutoff				
North of Big Bear Blvd.	59.1	RW	RW	87
South of Big Bear Blvd.	54.1	RW	RW	RW
North of N. Shore Dr. (SR-38)	46.8	RW	RW	RW
South of N. Shore Dr. (SR-38)	59.1	RW	RW	87
North Shore Drive (SR-38)				
East of Stanfield Cutoff	59.8	RW	RW	97
West of Stanfield Cutoff	56.8	RW	RW	61

† From roadway centerline
RW – Noise contour falls within roadway right-of-way.

Table 4 indicates that existing noise levels along the immediate vicinity of Big Bear Boulevard are in excess of 65 CNEL. Areas adjacent to North Shore Drive, Moonridge Road and portions of Stanfield Cutoff experience noise levels in excess of 60 CNEL, but less than 65 CNEL. Club View Drive and Brownie Lane experience low levels of traffic and hence low levels of noise.

1.6 Aircraft Noise Levels

The project site is located approximately 2 miles southwest of the Big Bear City Airport. The project is substantially outside the airport's 60 CNEL noise contour. Therefore, the site is not expected to have significant aircraft noise.

2.0 POTENTIAL NOISE IMPACTS

Potential noise impacts are commonly divided into two groups; temporary and long term. Temporary impacts are usually associated with noise generated by construction activities. Long-term impacts are further divided into impacts on surrounding land uses generated by the proposed project and those impacts that occur at the proposed project site.

2.1 Noise Impact Criteria

Off-site impacts from on-site activities, short-term and long-term, are measured against the Noise Ordinance criteria discussed in Section 1.3.2. On-site activities for this project are primarily the construction noise and also the noise generated by the park once in operation. Construction activities for the proposed project will be required to meet the noise ordinance standards along with any noise generating activities associated with the proposed project. Inability to comply with the Noise Ordinance criteria would result in a significant impact.

Long-term off-site impacts from traffic noise are measured against two criteria. Both criteria must be met for a significant impact to be identified. First, project traffic must cause a noise level increase greater than 3 dB on a roadway segment adjacent to a noise sensitive land use. Second, the resulting future with project noise level must exceed the criteria level for the noise sensitive land use. In this case, the criteria level is 65 CNEL for residential land uses.

In community noise assessment, changes in noise levels greater than 3 dB are often identified as significant, while changes less than 1 dB will not be discernible to local residents. In the range of 1 to 3 dB, residents who are very sensitive to noise may perceive a slight change. Note that there is no scientific evidence is available to support the use of 3 dB as the significance threshold. In laboratory testing situations, humans are able to detect noise level changes of slightly less than 1 dB. In a community noise situation, however, noise exposures are over a long time period, and changes in noise levels occur over years, rather than the immediate comparison made in a laboratory situation. Therefore, the level at which changes in community noise levels become discernible is likely to be some value greater than 1 dB, and 3 dB appears to be appropriate for most people.

2.2 Temporary Impacts

2.2.1 Construction Noise

Construction noise represents a short-term impact on ambient noise levels. Noise generated by construction equipment, including trucks, graders, bulldozers, concrete mixers and portable generators can reach high levels. Demolition, excavation, grading, and building construction activities will have similar noise levels.

The proposed animal zoo would include demolition of the existing zoo site, as well as construction of the animal exhibits, zoo related buildings, and the 2,500 square foot restaurant at the new site. The project construction is anticipated to take approximately 18 months. There is also a proposed animal hospital, but the construction would occur separately in the future based on funding. This phase is not included in the report. Additionally, the demolition of the existing animal park facilities is included as part of this project.

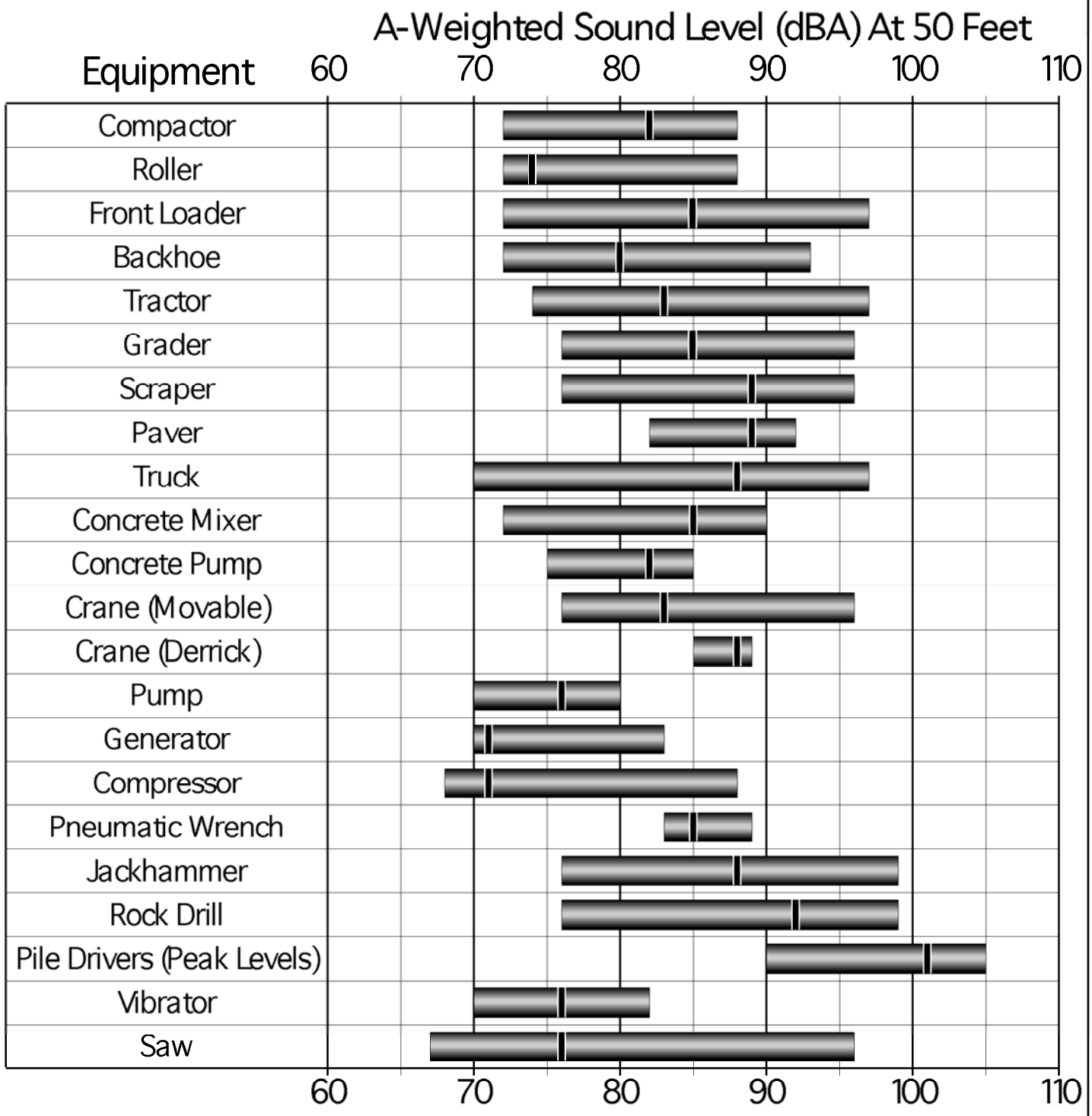
Worst-case examples of construction noise at 50 feet are presented in Exhibit 7. Typical equipment that might be employed for this type of project includes graders, scrapers, front loaders, trucks, concrete mixers and concrete pumps. The peak noise level for most of the equipment that will be used during the construction is 70 to 95 dBA at a distance of 50 feet. Noise levels at further distances would be less than this. For example, at 200 feet, the peak construction noise levels range from 58 to 83 dBA.

The noise levels shown in Exhibit 7 are based upon worst-case (i.e. loudest noise) conditions at the construction site, so these noise levels will be used as the basis for predicting the worst-case construction noise estimate.

There are adjacent residential areas located immediately north, east and west of the new animal park site. Potential construction operations could occur as close as 50 feet from the nearest residences. Based on this distance, the worst-case unmitigated peak (Lmax) construction noise levels could be 95 dBA for very short periods. However, as the construction is moved towards the center of the project site, the noise levels would be significantly less. The average noise levels are typically 5 to 15 dB lower than the peak noise levels. Average noise levels (L50) at the nearest existing residential areas could be in the range of 55 to 80 dBA (L50). It should be noted that traffic noise levels from the adjacent roadways would be higher.

Similarly, there are residents that are about 50 feet from the existing facility that will be exposed to the demolition noise. Graders, scrapers, front loaders, and trucks are some of the louder pieces of equipment that would be expected to operate. Based on a 50 foot distance, the worst-case unmitigated peak (Lmax) construction noise levels could be 95 dBA for very short periods. However, as the construction is moved towards the center of the project site, the noise levels would be significantly less. The average noise levels are typically 5 to 15 dB lower than the peak noise levels. Average noise levels (L50) at the nearest existing residential areas could be in the range of 55 to 80 dBA (L50).

Construction of the project and demolition at the existing site would result in noise levels at nearest residential areas that could be loud. However, the City of Big Bear, Section 17.01.090.J (General Performance Standards) exempts construction activities when operate between the hours of 7:00 a.m. and 7:00 p.m., Monday through Saturday, and none at all on Sundays and national holidays, except as approved by the Chief Building Official based on a determination that the work to be performed will not have an adverse effect on public health, safety and welfare. As long as the project construction operates within these hours, significant noise impacts are not projected.



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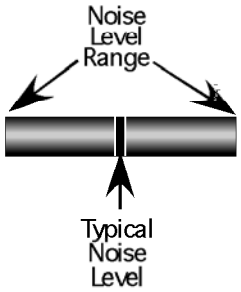


Sources: "Handbook of Noise Control,"
by Cyril Harris, 1979
"Transit Noise and Vibration Impact Assessment"
by Federal Transit Administration, 1995

Exhibit 7
Construction Equipment Noise Levels

Mestre Greve Associates

2.3 Long-Term Off-Site Impacts

Increased traffic caused by the project will result in increased traffic noise levels along the roadways in the vicinity of the project. This section examines noise impacts from the proposed project on the surrounding land uses. Specifically traffic noise increases due to the project are examined.

2.3.1 Traffic Noise

To determine traffic noise impacts as a result of the project, the FHWA (Federal Highway Administration) noise model was used. The FHWA noise model utilizes various traffic-flow parameters (e.g. traffic volume, speed, mix, etc.) to predict noise levels that result from the operation of motor vehicles on the roadways.

Table 5 shows the future noise level increases due to traffic on roadways in the vicinity of the project. Noise level increases along the roadways after completion of the project are presented as well as cumulative increases at the projected buildout of the area around the project. The first column shows the regional noise level increases including the project over existing conditions. This includes the project as well as other cumulative projects in the area. The second column of Table 5 shows the project's contribution to the increase. This noise increase is solely due the proposed project.

Table 5
Traffic Noise Increase (dB)

Roadway Segment	Cumulative Increase Over Existing	Incremental Increase Due to Project
Moonridge Road		
East of Club View Drive	0.9	0.0
West of Club View Drive	1.3	0.2
Southwest of Big Bear Blvd.	1.8	0.0
East of Brownie Lane	1.4	0.5
West of Brownie Lane	1.5	0.4
Club View Drive		
South of Moonridge Road	1.7	0.5
Brownie Lane		
North of Moonridge Road	1.4	0.5
South of Moonridge Road	0.9	0.0
Big Bear Boulevard (SR-18)		
North of Moonridge Road	1.0	0.0
West of Moonridge Road	1.1	0.1
Southwest of Stanfield Cutoff	1.0	0.1
East of Stanfield Cutoff	1.0	0.0
Stanfield Cutoff		
North of Big Bear Blvd.	1.1	0.1
South of Big Bear Blvd.	0.9	0.0
North of N. Shore Dr. (SR-38)	0.8	0.0
South of N. Shore Dr. (SR-38)	1.1	0.1
North Shore Drive (SR-38)		
East of Stanfield Cutoff	1.0	0.1
West of Stanfield Cutoff	1.1	0.1

The first data column of Table 5 shows the cumulative noise increase over existing conditions. The data indicate that the regional noise increase is not projected to result in a substantial noise increase (i.e. an increase of greater than 3 dB) along any of the roadway segments analyzed. The greatest increase of 1.8 dBA is projected to occur along Moonridge Road. As a result, significant cumulative impacts are not projected.

The second column of Table 5 shows the noise increase due to the project. The noise increase is projected to be below the 3 dB significance threshold. Two roadway links increase by 0.5 dB (i.e., Moonridge Road and Club View Drive). This increase is not substantial and will not be discernable to residents. Traffic generated by the project will not result in a significant noise impact.

The future with CNEL contours for the roadways in the vicinity of the proposed project site is presented in Table 6. The values shown under the 60, 65, 70 and 75 CNEL columns represent the distance from the centerline of the roadway to the respective contour value. The CNEL at

100 feet from the roadway centerline is also presented. The contours do not take into account the effect of any noise barriers or topography that may reduce traffic noise levels. Traffic volumes, speeds and traffic mixes used to calculate the noise levels are presented in the appendix.

Table 6
Future Traffic Noise Levels

Roadway Segment	CNEL @ 100' †	Distance To CNEL Contour from Centerline of Roadway (feet) 70 CNEL	65 CNEL	60 CNEL
Moonridge Road				
East of Club View Drive	55.4	RW	RW	49
West of Club View Drive	57.3	RW	RW	67
Southwest of Big Bear Blvd.	57.5	RW	RW	69
East of Brownie Lane	59.8	RW	RW	97
West of Brownie Lane	57.3	RW	RW	66
Club View Drive				
South of Moonridge Road	53.5	RW	RW	RW
Brownie Lane				
North of Moonridge Road	55.2	RW	RW	RW
South of Moonridge Road	49.5	RW	RW	RW
Big Bear Boulevard (SR-18)				
North of Moonridge Road	66.0	54	117	252
West of Moonridge Road	66.1	55	118	254
Southwest of Stanfield Cutoff	66.3	57	122	264
East of Stanfield Cutoff	65.0	RW	100	216
Stanfield Cutoff				
North of Big Bear Blvd.	60.2	RW	RW	103
South of Big Bear Blvd.	55.0	RW	RW	RW
North of N. Shore Dr. (SR-38)	47.6	RW	RW	RW
South of N. Shore Dr. (SR-38)	60.2	RW	RW	103
North Shore Drive (SR-38)				
East of Stanfield Cutoff	60.8	RW	52	113
West of Stanfield Cutoff	57.8	RW	RW	71

† From roadway centerline
RW – Noise contour falls within roadway right-of-way.

Table 6 indicates that existing noise levels along the immediate vicinity of Big Bear Boulevard are approximately in the mid 60 CNEL range. Areas adjacent to North Shore Drive will experience noise levels in excess of 60 CNEL. Moonridge Road and portions of Stanfield Cutoff will experience noise levels slightly less than 60 CNEL. Club View Drive and Brownie Lane will have low levels of traffic and hence low levels of noise.

2.3.2 Off-Site Impacts From On-Site Activities

This section examines noise impacts from the operation of the proposed project on the surrounding land uses. Specifically, noise from activities associated with the proposed animal park is examined. The City of Big Bear does not specify any noise ordinance limits for stationary sources, and therefore, the County of San Bernardino noise criteria will be utilized as a guideline for evaluating this project.

Zoo Animals

The proposed zoo operation hours are during the daytime period. However, animal sounds could be generated during the daytime as well as the nighttime. Therefore, the project will need to meet the more stringent County of San Bernardino nighttime noise limit of 45 dBA Leq at the nearest residential areas.

The noise measurements at the existing Big Bear Alpine Zoo were previously presented in Section 1.4.1. The animal sounds and animal shows are the primary noise sources at the zoo. The noise measurement results indicate that the zoo animals could generate a worst-case noise level of approximately 62.7 dBA Leq at approximately 50 feet during any hour of the day. For the proposed Big Bear Alpine Zoo, the nearest animal cages or habitats are estimated to be located approximately between 80 to 200 feet from the nearest residences, depending on the location. Based on these distances, the unmitigated noise levels from the proposed zoo could range between 51 and 59 Leq. These unmitigated noise levels would be above the nighttime criterion of 45 dBA Leq at the nearest residences. Residences located approximately 400 feet or further away will not be significantly impacted by the animal park noise. There are solid walls ranging between 6 feet and 10 feet proposed at the zoo animal habitats. The locations of these proposed walls from the conceptual site plan are shown in Exhibit 8. These proposed wall heights appear to be adequately high, however, they are not continuous, and therefore, are not effective as noise barriers. The proposed site plan is at the conceptual stage, and therefore, the required noise barriers are preliminary. The preliminary noise barriers are recommended and are shown in Exhibit 8. More specific noise barrier locations and heights can be determined when précised grading plans become available. Mitigation measures are recommended in Section 3.1.1.

Parking Lots

The proposed project includes two small parking lots along Club View Drive and the overflow parking lot at the northwest corner of Club View Drive and Moonridge Road. The project is not anticipated to include the use of public transportation (i.e., public buses), and therefore, only passenger vehicles are included in the traffic analysis.

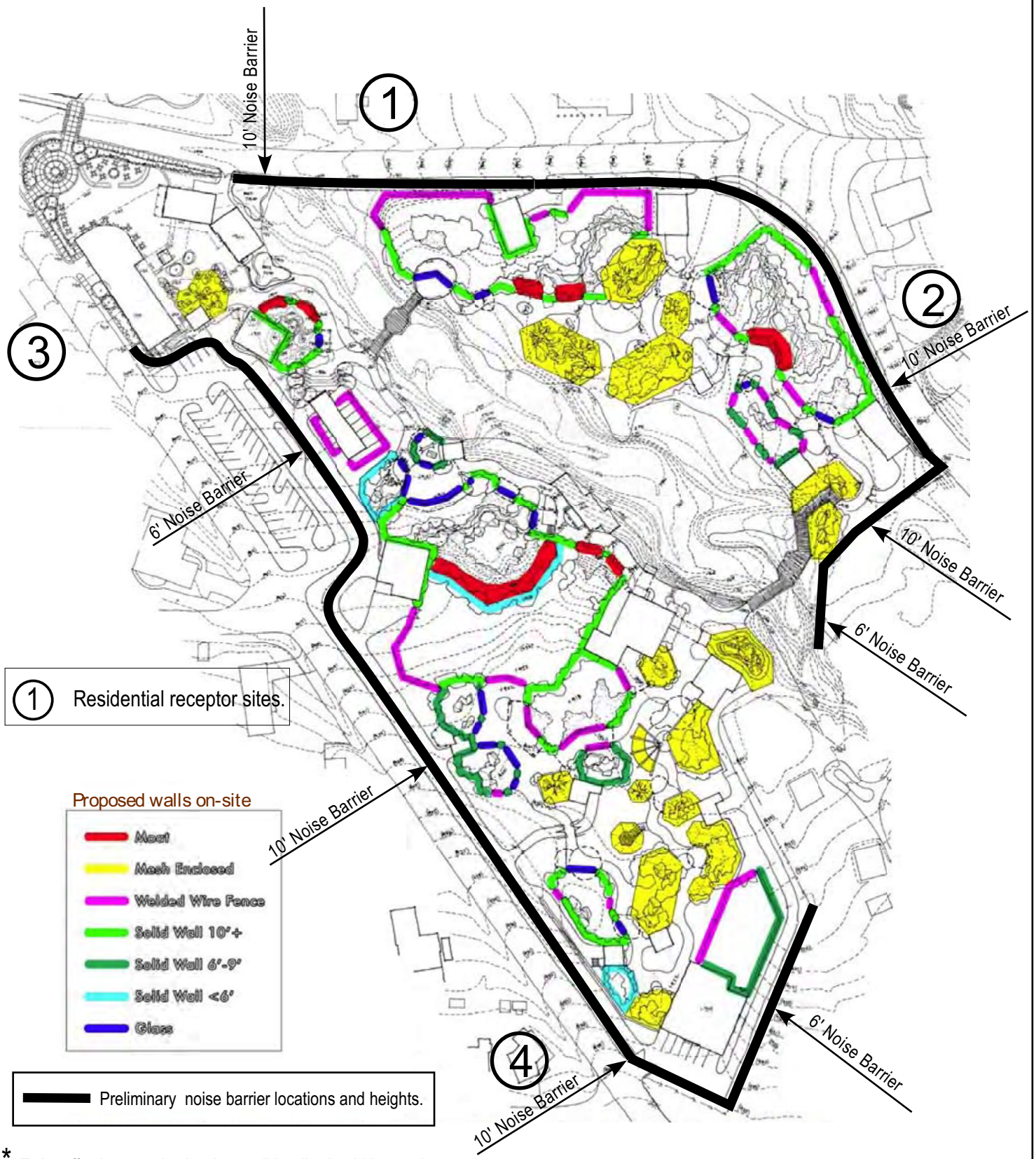
Traffic associated with parking lots is not usually of sufficient volume to exceed community noise standards that are based on a time averaged scale such as the CNEL scale. However, the instantaneous maximum sound levels generated by car door slamming, engine start-up, alarm activation and car pass-bys can still be annoying to nearby residents. Tire squeal may also be a problem depending on the type of parking surface. Estimates of the maximum noise levels associated with some parking lot activities are presented in Table 7. These levels are based on measurements conducted by Mestre Greve Associates. The noise levels presented are for a distance of 50 feet from the source, and are the maximum noise level generated. A range is given to reflect the variability of noise generated by various automobile types and driving styles.

Table 7
Maximum Noise Levels Generated By Parking Lots (dBA at 50 feet)

Event	Lmax
Door Slam	60 to 70
Car Alarm Activation	65 to 70
Engine Start-up	60 to 70
Car pass-by	55 to 70

It should be noted that because the noise events generated by motor vehicles within parking lots are of short duration compared to the duration of the times gaps between events, the average noise levels will be much lower than the maximum noise levels.

The noise levels shown in Table 7 are in terms of peak (Lmax) noise levels. However, the County noise ordinance criteria (Table 2) are in terms of an hourly Leq. The Big Bear Alpine Zoo operation hours are during the daytime period, and therefore, the noise criteria is 55 Leq for the daytime. The traffic analysis indicates that the project could generate a maximum of 97 trips during a peak hour. Based on this worst-case scenario, the average noise is estimated to be approximately 44 Leq at a distance of 50 feet. This average noise levels is well below the daytime 55 Leq criteria. As a result, the parking lot noise is not expected to be a significant noise impact. It should be noted that traffic noise along the adjacent Moonridge Road and Club View Drive will be louder than the parking lot activity.



* To be effective as noise barriers, solid walls should be continuous along the outside perimeters of the project site in such a way as to break direct line-of sight with the adjacent residential areas.

Exhibit 8
Preliminary Noise Barriers On-Site

Mestre Greve Associates

3.0 MITIGATION MEASURES

3.1 Temporary Impacts

3.1.1 Construction Noise

The analysis presented in Section 2.2.1 shows that construction activities could generate loud, but short-term noise levels. The most effective method of controlling construction noise is through limiting construction hours. Therefore, the following mitigation measure is proposed and is consistent with the Big Bear Lake Noise Ordinance.

> **Mitigation Measure N-1:**
> Control of Construction Hours – Construction activities should not permitted to take place between the hours of 7:00 p.m. and 7:00 a.m., Sundays nor national holidays, except as approved by the Chief Building Official based on a determination that the work to be performed will not have an adverse effect on public health, safety and welfare.

3.2 Long Term Off-Site Impacts

3.2.1 On-Site Activities

The analysis presented in Section 2.3.2 shows that the proposed Big Bear Alpine Zoo could generate unmitigated noise levels in excess of the County's nighttime noise criteria. The site plan includes proposed solid walls ranging between 6 and 10 feet high, depending on the location (refer to Exhibit 8). These proposed walls are sufficiently high but are not continuous, and therefore, are not effective as noise barriers. As a result, continuous noise barriers are recommended along the perimeter of the project site. Because the site plan is conceptual, the noise barriers are preliminary. The more specific noise barrier locations and heights can be determined when precise grading plans become available. The preliminary noise barriers are shown in Exhibit 8.

With the recommended noise barriers, the proposed animal park noise levels would be reduced to below significant noise levels the nearest residences. The mitigated noise level would comply with the nighttime noise limit of 45 dBA. The noise levels with and without mitigation are presented in Table 8. The noise barrier calculations are included in the appendix.

Table 8
Required Preliminary Noise Barriers

Site	Land Use	Closest Distance (Feet)	Potential Unmitigated Zoo Noise (Leq)	Preliminary Noise Barrier Height (Feet)	Mitigated Zoo Noise (Leq)
Site 1	Residential area - North	80	58.5	10	43.5
Site 2	Residential area - East	80	58.5	10	43.5
Site 3	Residential area - northwest	200	50.5	6	43.9
Site 4	Residential area - southwest	90	57.5	10	42.5

Nighttime Noise Criteria (Leq) = 45 dBA

Note: Underline noise data indicate exceedances.
Refer to Exhibit 8 for preliminary noise barrier locations and heights.

The noise barriers must have a surface density of at least 3.5 pounds per square foot, and shall be continuous and have no openings or gaps. The walls may be constructed of stud and stucco, 3/8 inch plate glass, 5/8 inch plexiglass, any masonry material, earthen berm, or a combination of these materials.

4.0 UNAVOIDABLE SIGNIFICANT IMPACTS

The mitigation measures described above will mitigate all significant noise impacts to a level of insignificance. The project will not result in an unavoidable impact with mitigation.

APPENDIX

Table A-2
Traffic ADT Data Utilized to Calculate Traffic Noise Levels

Road Segment	SPEED (mph)	Existing ADT	Cumulative No Project ADT	Cumulative With Project ADT
Moonridge Road				
East of Club View Drive	45	1,750	2,160	2,160
West of Club View Drive	45	2,540	3,230	3,390
Southwest of Big Bear Blvd.	45	2,320	3,540	3,540
East of Brownie Lane	45	4,270	5,350	5,960
West of Brownie Lane	45	2,370	3,000	3,320
Club View Drive				
South of Moonridge Road	45	930	1,230	1,390
Brownie Lane				
North of Moonridge Road	40	2,000	2,470	2,760
South of Moonridge Road	40	600	740	740
Big Bear Boulevard (SR-18)				
North of Moonridge Road	50	15,200	19,110	19,110
West of Moonridge Road	50	15,040	18,970	19,300
Southwest of Stanield Cutoff	50	16,180	20,150	20,400
East of Stanield Cutoff	50	12,150	15,100	15,170
Stanfield Cutoff				
North of Big Bear Blvd.	45	5,080	6,350	6,530
South of Big Bear Blvd.	45	1,590	1,960	1,960
North of N. Shore Dr. (SR-38)	45	300	360	360
South of N. Shore Dr. (SR-38)	45	5,050	6,300	6,480
North Shore Drive (SR-38)				
East of Stanield Cutoff	50	4,530	5,610	5,720
West of Stanield Cutoff	50	2,260	2,810	2,880

Note: ADT was calculated based on peak-hour volume, which is assumed to be 10% of the ADT.

Table A-2
Day/Evening/Night Traffic Distributions for Arterial Roadways

	Day	Eve	Night	Equiv.	Total
Auto	75.51%	12.57%	9.34%	208.7%	97.42%
MT	1.56%	0.09%	0.19%	3.7%	1.84%
HT	0.64%	0.02%	0.08%	1.5%	0.74%

BARRIER PREDICTION WORKSHEET, POINT SOURCE
Last Update: 2/22/88

Lmax=	85.5	@ 50
Leq (1hr)=	62.7	@ 50

Moonridge
Animal Zoo + animal show

Leq (1 hr) = 62.7 dBA@50 feet

Noise Level of	*62.7*	**dBA at**	*50.0*	**feet**

Critical Frequency (Hz	*1000*
Noise Level at 50'	62.7

To get other noise levels, Put in Distances

Dist.	dBA
50	62.7
100	56.7
180	51.6
1380	33.9

To get other distances, Put in other noise levels.

dBA	Dist.
50	216
60	68
65	38
70	22

source height

Site	Source Elevation	Distance To Wall	Base Of Wall	Dist. To Observer	Pad Elevation	Observer Height	Wall Height	***Barrier Reduction***	Noise (dBA)
Residential area									
north	*5*	*5*	*0*	*80*	*0*	*5*	*0.0*	0.0	**58.5**
east	*5*	*5*	*0*	*80*	*0*	*5*	*0.0*	0.0	**58.5**
northwest	*5*	*5*	*0*	*200*	*0*	*5*	*0.0*	0.0	**50.5**
southwest	*5*	*5*	*0*	*90*	*0*	*5*	*0.0*	0.0	**57.5**
						Preliminary noise barriers			
north	*5*	*5*	*0*	*80*	*0*	*5*	***10.0***	15.0	**43.5**
east	*5*	*5*	*0*	*80*	*0*	*5*	***10.0***	15.0	**43.5**
northwest	*5*	*5*	*0*	*200*	*0*	*5*	***6.0***	6.6	**43.9**
southwest	*5*	*5*	*0*	*90*	*0*	*5*	***10.0***	14.9	**42.5**

County SB Nighttime Criterion = 45 LEQ

Proposed solid walls between 6' and 10' are proposed, but not continuous

APPENDIX J.1
Traffic Impact Analysis

Traffic Impact Analysis

Moonridge Animal Park

Prepared for

County of San Bernardino - Special Districts

September 2012

ALBERT A. WEBB ASSOCIATES

ALBERT A.
WEBB
ASSOCIATES

ALBERT A. WEBB ASSOCIATES

Corporate Headquarters
3788 McCray Street | Riverside, CA 92506 | T: 951.686.1070 | F: 951.788.1256

Desert Region
36-951 Cook Street #103 | Palm Desert, CA 92211 | T: 760.568.5005 | F: 760.568.3443

September 26, 2012

Ms. Carrie Hyke
County of San Bernardino – Special Districts Department
157 W. 5th Street, 2nd Floor
San Bernardino, CA 92415-0450

RE: Revised Traffic Impact Analysis Report, Moonridge Animal Park, Big Bear Lake, CA.

Dear Ms. Hyke,

We are pleased to submit herewith our revised Traffic Impact Analysis Report for the proposed Moonridge Animal Park which we have prepared at your request.

If you have any questions regarding this report, please call the undersigned for clarification.

Sincerely yours,

ALBERT A. WEBB ASSOCIATES

Dilesh Sheth

Dilesh Sheth, P.E., T.E.
Director, Traffic and Transportation

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SECTION 1 - EXECUTIVE SUMMARY

■ Purpose of Report and Study Objectives

The purpose of this study is to evaluate the effects on traffic circulation produced from the proposed development of Moonridge Animal Park.

The objectives of this study include the following:

- Document existing traffic conditions in the vicinity of the proposed development;
- Determine the traffic generated from the proposed development;
- Evaluate existing plus ambient growth traffic conditions;
- Evaluate existing plus ambient growth plus project traffic conditions;
- Evaluate existing plus ambient growth plus other projects traffic conditions;
- Evaluate existing plus ambient growth plus other projects plus project traffic conditions;
- Determine if the level of service (LOS) required by the San Bernardino General Plan will be maintained at all study area intersections, and if not, determine the mitigation measures that will be necessary in order to maintain the required LOS;
- Determine if peak hour traffic signal warrants are met for any of the unsignalized study area intersections;
- Evaluate the adequacy of on-site circulation for the proposed development;
- Determine if safety and/or operational improvements are necessary due to the proposed development.

■ Site Location and Study Area

The proposed project is located in the City of Big Bear Lake. Moonridge Animal Park is located on the southeast corner of Club View Drive and Moonridge Road.

■ Development Description

▪ Project Size

The project site encompasses approximately 10.4 acres. The project is currently proposed for development of 10.4 acre zoo including a 2.5 thousand square feet (TSF) gross floor area high-turnover (sit-down) restaurant.

▪ Project Trip Generation

The proposed project is anticipated to generate approximately 748 daily trip-ends, including 72 trip-ends during the weekday PM peak hour and 76 trip-ends during the weekend peak hour.

▪ Project Site Circulation

The project will have access to Club View Drive southwest of the project and Moonridge Road north of the project.

▪ Project Zoning and Land Use

The existing and proposed zoning and land use designations are as follows:

- Existing Zoning: C-3 (commercial-visitor), P-OS (public/open space)
- Proposed Zoning: C-3 (commercial-visitor), P-OS (public/open space)
- Existing Land Use: Vacant
- Proposed Land Use: Animal Park, Restaurant

■ Principal Findings

▪ Required Level of Service

According to the Caltrans Guide for the Preparation of Traffic Impact Studies, Section II:

> *The level of service (LOS) for operating State highway facilities is based upon measures of effectiveness (MOEs). These MOEs describe the measures best suited for analyzing State highway facilities. Caltrans endeavors to maintain a target LOS at the transition between LOS "C" and LOS "D" on State highway facilities, however, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS. If an existing State highway facility is operating at less then the appropriate target LOS, the existing MOE should be maintained.*

According to the County of San Bernardino General Plan, Section III Policy M/CI 1.1:

> *The County shall ensure that all new development proposals do not degrade Levels of Service (LOS) on State Routes and Major Arterials below LOS C during non-peak hours or below LOS D during Peak-hours in the Mountain Region.*

According to the Congestion Management Program (CMP) in the County of San Bernardino General Plan:

> *The CMP's level of service (LOS) standard requires all CMP segments to Operate at LOS E or better.*

▪ Levels of Service – Existing Conditions

The existing levels of service for the study area intersections vary from LOS A to D. The following study intersection is anticipated to operate at an unacceptable LOS:

9. Stanfield Cutoff (NS) / Big Bear Boulevard (SR-18) (EW)

- **Levels of Service – Existing Plus Ambient Growth Conditions**

For existing plus ambient growth traffic conditions without off-site improvements, the study area intersections are expected to operate at levels of service that vary from LOS A to D. The following study intersection is anticipated to operate at an unacceptable LOS:

9. Stanfield Cutoff (NS) / Big Bear Boulevard (SR-18) (EW)

- **Levels of Service – Existing Plus Ambient Growth Plus Project Conditions**

For existing plus ambient growth plus project traffic conditions without off-site improvements, the study area intersections are expected to operate at levels of service that vary from LOS A to D. The following study intersection is anticipated to operate at an unacceptable LOS:

9. Stanfield Cutoff (NS) / Big Bear Boulevard (SR-18) (EW)

- **Levels of Service – Existing Plus Ambient Growth Plus Cumulative Conditions**

For existing plus ambient growth plus cumulative traffic conditions without off-site improvements, the study area intersections are expected to operate at levels of service that vary from LOS A to D. The following study intersection is anticipated to operate at an unacceptable LOS:

9. Stanfield Cutoff (NS) / Big Bear Boulevard (SR-18) (EW)

- **Levels of Service – Existing Plus Ambient Growth Plus Cumulative Plus Project Conditions**

For existing plus ambient growth plus cumulative plus project traffic conditions without off-site improvements, the study area intersections are expected to operate at levels of service that vary from LOS B to D. The following study intersection is anticipated to operate at an unacceptable LOS:

9. Stanfield Cutoff (NS) / Big Bear Boulevard (SR-18) (EW)

■ Traffic Signal Warrants

The California MUTCD states that the satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal. Peak hour traffic signal warrant analysis should only be considered as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal. Intersections that exceed the peak hour warrant are more likely to meet one or more of the other volume based signal warrants. The MUTCD also advises that a traffic control signal should not be installed unless:

- One or more of the traffic signal warrants is satisfied;
- An engineering study indicates that installing a traffic control signal will improve the overall safety and/or operation of the intersection; and
- It will not seriously disrupt progressive traffic flow.

For existing traffic conditions, the peak hour traffic control signal warrant is expected to be satisfied for the following study area unsignalized intersections (see Appendix D for technical calculations):

6. Big Bear Boulevard (SR-18) (NS) / Moonridge Way (EW)
10. Stanfield Cutoff (NS) / North Shore Drive (EW)

For existing plus ambient growth traffic conditions, no additional study area unsignalized intersections are expected to meet the peak hour traffic control signal warrant (see Appendix D for technical calculations).

For existing plus ambient growth plus project traffic conditions, no additional study area unsignalized intersections are expected to meet the peak hour traffic control signal warrant (see Appendix D for technical calculations).

For existing plus ambient growth plus other projects traffic conditions, no additional study area unsignalized intersections are expected to meet the peak hour traffic control signal warrant (see Appendix D for technical calculations).

For existing plus ambient growth plus cumulative projects plus project traffic conditions, no additional study area unsignalized intersections are expected to meet the peak hour traffic control signal warrant (see Appendix D for technical calculations).

■ Circulation Recommendations

This traffic impact analysis demonstrates that the direct traffic impacts generated by the Moonridge Animal Park can be mitigated to meet the required level of service if the following recommended improvements are adopted.

▪ Off-Site Recommendations

▫ Intersections

- Modify the signalized intersection of Stanfield Cutoff (NS) and Big Bear Boulevard (SR-18) (EW) to include the following geometrics:
  Northbound: One shared left and through lane. One right-turn lane.
  Southbound: One shared left and through lane. One right-turn lane (overlap phase).
  Eastbound: One left-turn lane. One through lane. One right-turn lane.
  Westbound: One left-turn lane. One through lane. One shared through and right-turn lane.

■ Safety and Operational Improvements

- A flashing beacon should be installed at the pedestrian crosswalk connecting the project site with the parking lot north of Moonridge Road to increase crosswalk visibility and safety.
- An engineering study should be conducted to determine the need for a traffic control signal at the pedestrian crosswalk per California Manual of Uniform Control Devices (California MUTCD)

- Sight distance at the project entrance roadway should be reviewed with respect to standard City of Big Bear Lake sight distance standards at the time of preparation of final grading, landscape and street improvement plans.
- Sight distance at the pedestrian crosswalk should be reviewed with respect to standard City of Big Bear Lake sight distance standards at the time of preparation of final grading, landscape and street improvement plans.
- Participate in the phased construction of off-site traffic signals through payment of project's fair share of traffic signal mitigation fees.
- Signing/striping should be implemented in conjunction with detailed construction plans for the project site.

■ Regional Funding Mechanisms

The project will participate in the cost of off-site improvements through payment of the following mitigation fees:

- Capital Improvement Program (CIP).

These fees should be collected and utilized as needed by City of Big Bear Lake to construct the improvements necessary to maintain the required level of service.

SECTION 2 - INTRODUCTION

■ Purpose of Report and Study Objectives

The purpose of this study is to evaluate the effects on traffic circulation produced from the proposed development of Moonridge Animal Park.

The objectives of this study include the following:

- Document existing traffic conditions in the vicinity of the proposed development;
- Determine the traffic generated from the proposed development;
- Evaluate existing plus ambient growth traffic conditions;
- Evaluate existing plus ambient growth plus project traffic conditions;
- Evaluate existing plus ambient growth plus other projects traffic conditions;
- Evaluate existing plus ambient growth plus other projects plus project traffic conditions;
- Determine if the level of service (LOS) required by the San Bernardino General Plan will be maintained at all study area intersections, and if not, determine the mitigation measures that will be necessary in order to maintain the required LOS;
- Determine if peak hour traffic signal warrants are met for any of the unsignalized study area intersections;
- Evaluate the adequacy of on-site circulation for the proposed development;
- Determine if safety and/or operational improvements are necessary due to the proposed development.

■ Site Location and Study Area

The proposed project is located in the City of Big Bear Lake. Moonridge Animal Park is located on the southeast corner of Club View Drive and Moonridge Road.

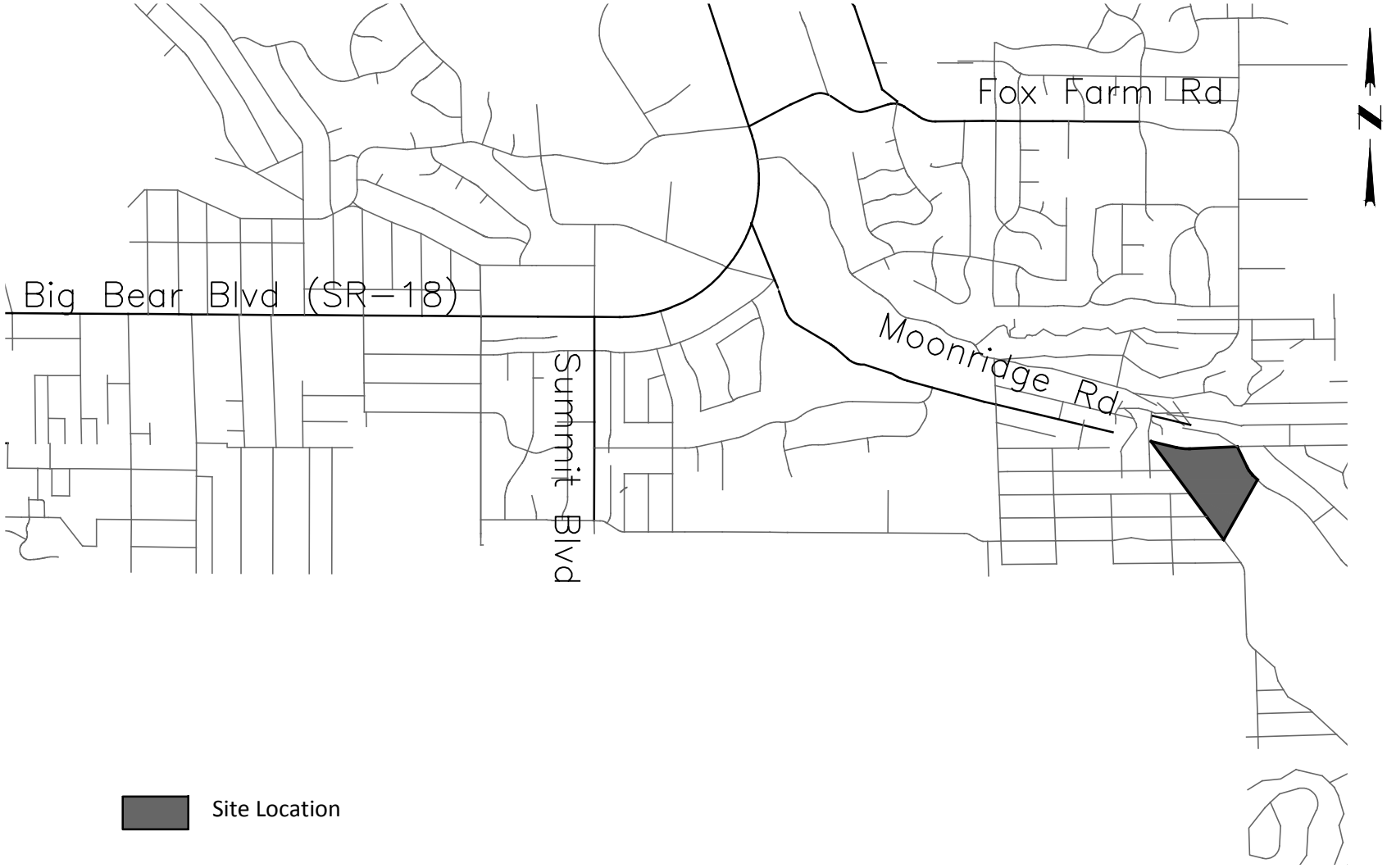
The project site location is presented on Figure 2-A.

■ Development Project Description

▪ Project Size and Description

The project site encompasses approximately 10.4 acres. The project is currently proposed for development of 10.4 acre zoo including a 2.5 thousand square feet (TSF) gross floor area high-turnover (sit-down) restaurant.

Figure 2-A - Project Site Location Map



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▪ Existing Land Use and Zoning

Existing land use and zoning designations are as follows:

- Existing Zoning: C-3 (commercial-visitor), P-OS (public/open space)
- Existing Land Use: Vacant

▪ Proposed Land Use and Zoning

Proposed land use and zoning designations are as follows:

- Proposed Zoning: C-3 (commercial-visitor), P-OS (public/open space)
- Proposed Land Use: Animal Park, Restaurant

▪ Site Plan of Proposed Project

The current proposed project layout is shown on Figure 2-B.

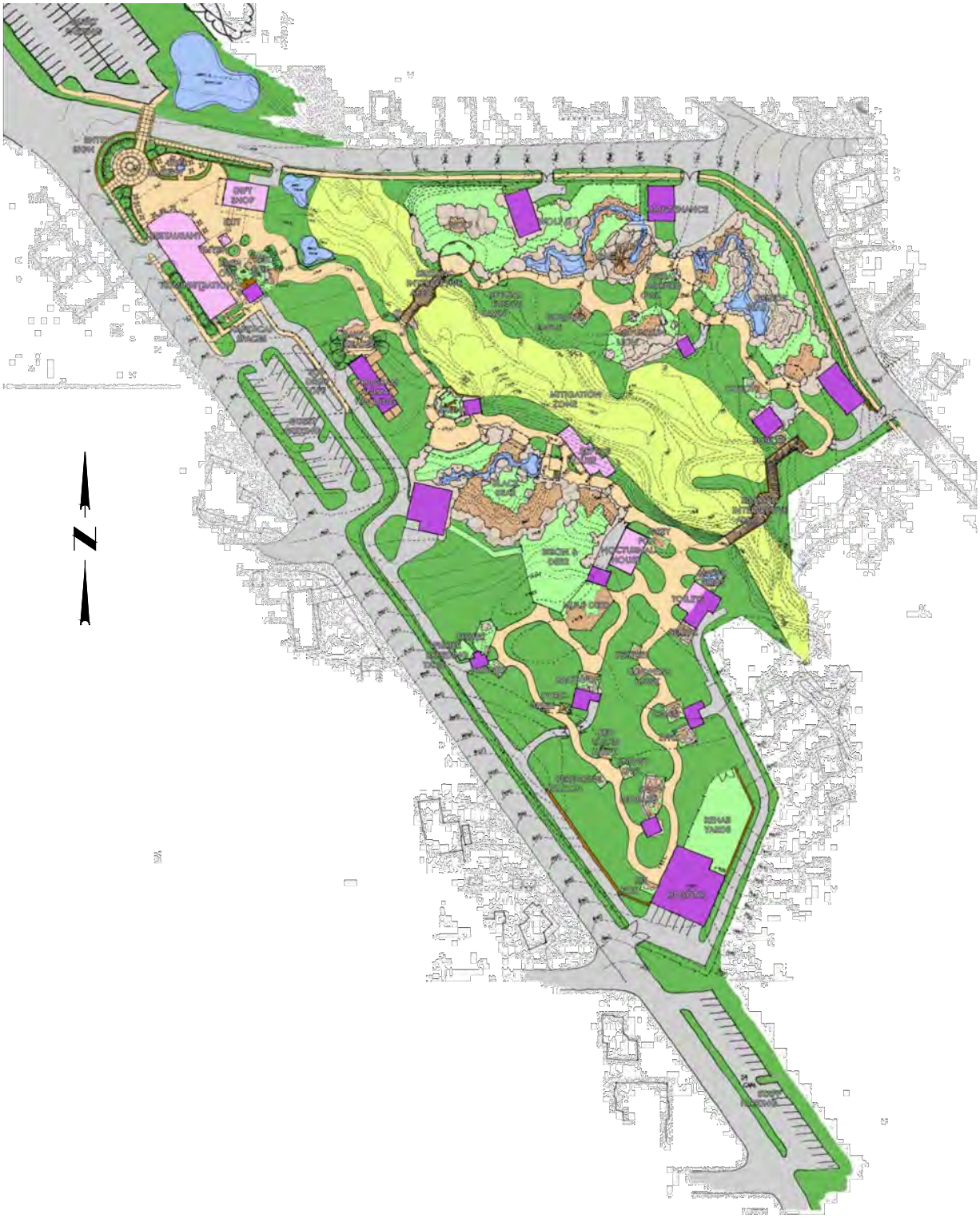
▪ Site Access

As indicated on Figure 2-B, Moonridge Animal Park will have access to Club View Drive southwest of the project and Moonridge Road north of the project. As indicated in the *Moonridge Animal Park Relocation Master Plan*, prepared by PGAV Destination Consulting, July 2011, on-site and off-site parking will be needed to address parking needs for the proposed project. For patrons, thirty-five on-site parking spaces (including 5 handicapped parking) are proposed with access along Club View Drive. Additional parking for patrons will be provided off-site through a partnership with the owners of Big Bear Resort that will allow shared parking use of the unpaved parking lot located directly across from Moonridge Road from the site. The parking lot can be accessed via Fir Street and Elm Street. The proposed site design includes a pedestrian crosswalk between the parking lot to the north and the zoo entry along Moonridge Road. Employees will park in a designated lot to the south in partnership with the golf course. Access for maintenance and operational activities will be via various designated access points located along Moonridge Road and Club View Drive.

▪ Proposed Project Opening Year and Proposed Project Phasing

For analysis purposes, it is assumed that Moonridge Animal Park will be developed in a single phase and full development is anticipated by 2015.

Figure 2-B - Project Site Plan



SECTION 3 - AREA CONDITIONS

■ Study Intersections

The study area includes the following intersections:

1. North Shore Drive (SR-38) (NS) / Big Bear Boulevard (SR-18) (EW)
2. Pine Knot Boulevard (NS) / Big Bear Boulevard (SR-18) (EW)
3. Summit Boulevard (NS) / Big Bear Boulevard (SR-18) (EW)
4. Big Bear Boulevard (SR-18) (NS) / Moonridge Road (EW)
5. Moonridge Road (NS) / Moonridge Way (EW)
6. Big Bear Boulevard (SR-18) (NS) / Moonridge Way (EW)
7. Club View Drive (NS) / Moonridge Road (EW)
8. Big Bear Boulevard (SR-18) (NS) / Fox Farm Road (EW)
9. Stanfield Cutoff (NS) / Big Bear Boulevard (SR-18) (EW)
10. Stanfield Cutoff (NS) / North Shore Drive (SR-38) (EW)

■ Existing Traffic Controls and Intersection Geometrics

The existing roadway system is shown on Figure 3-A. It identifies the existing intersection traffic controls (i.e. signals and signage), intersection geometrics, and the number of through traffic lanes within the study area.

■ Existing Traffic Volumes

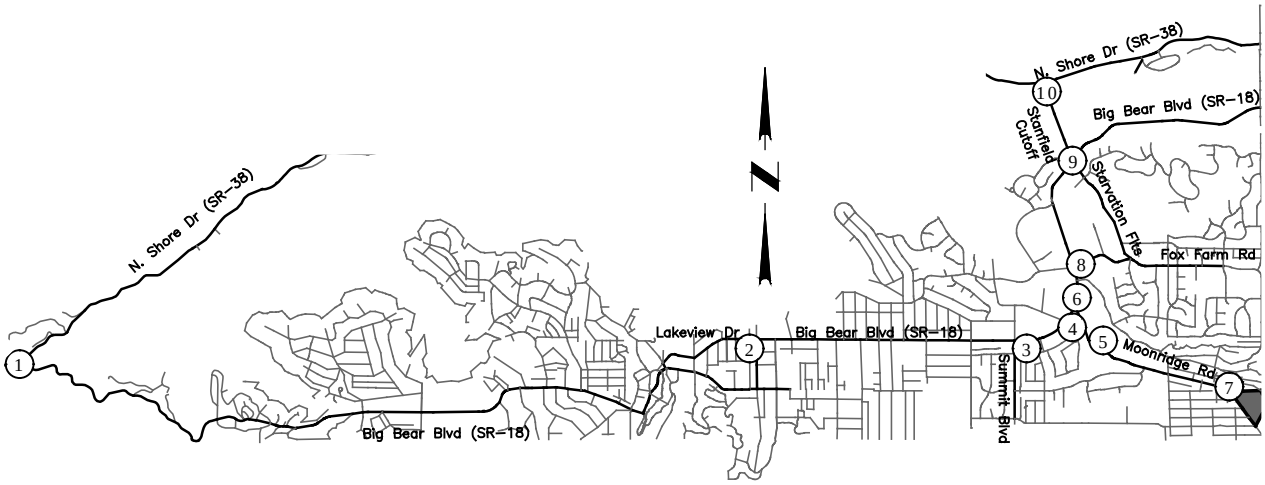
Existing (year 2011) weekday PM peak period and weekend peak period intersection turning movement counts were conducted by Counts Unlimited, Inc. Based on additional traffic counts conducted at two study intersections during summer (year 2012), it was determined that the summer counts were approximately 16% and 8% higher during the weekday and weekend peak hours, respectively. Therefore, in order to address seasonal variation, year 2011 weekday and weekend turning movement volumes were increased by 16% and 8%, respectively. The traffic count worksheets are provided in Appendix C. The weekday PM peak hour and weekend peak hour intersection turning movement volumes are presented on Figure 3-B and Figure 3-C, respectively.

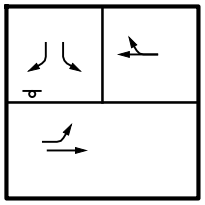
■ Level of Service Methodology

The San Bernardino County Transportation Traffic Division and Caltrans require that the Transportation Research Board Highway Capacity Manual 2000 (HCM 2000) be used to analyze the Level of Service (LOS).

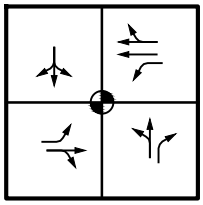
The HCM 2000 evaluates the LOS of intersections based upon the control delay per vehicle. The methodology used to evaluate the intersection level of service differs on whether the intersection is signalized or unsignalized. Levels of service at signalized and unsignalized intersections have been evaluated using Traffix Version 7.9 and Synchro Version 7, which are based upon HCM2000 methodologies.

Figure 3-A – Existing Roadway System

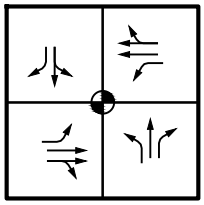




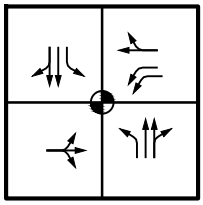
1. North Shore Drive (SR-38) (NS) / Big Bear Boulevard (SR-18) (EW)



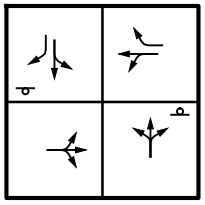
2. Pine Knot Boulevard (NS) / Big Bear Boulevard (SR-18) (EW)



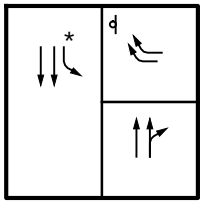
3. Summit Boulevard (NS) / Big Bear Boulevard (SR-18) (EW)



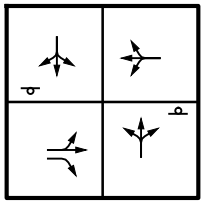
4. Big Bear Boulevard (SR-18) (NS) / Moonridge Road (EW)



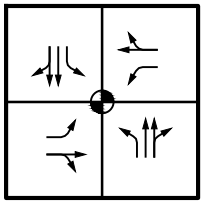
5. Moonridge Way (NS) / Moonridge Road (EW)



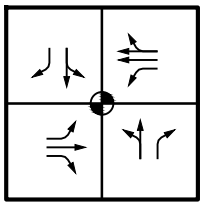
6. Big Bear Boulevard (SR-18) (NS) / Moonridge Way (EW)



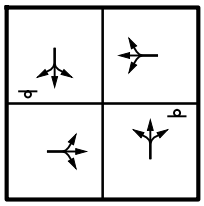
7. Club View Drive (NS) / Moonridge Road (EW)



8. Big Bear Boulevard (SR-18) (NS) / Fox Farm Road (EW)



9. Stanfield Cutoff (NS) / Big Bear Boulevard (SR-18) (EW)



10. Stanfield Cutoff (NS) / North Shore Drive (SR-38) (EW)

LEGEND

- Existing Traffic Signal
- Existing Lane Geometrics
- Existing Stop Sign
- * Two-Way Left-Turn lane

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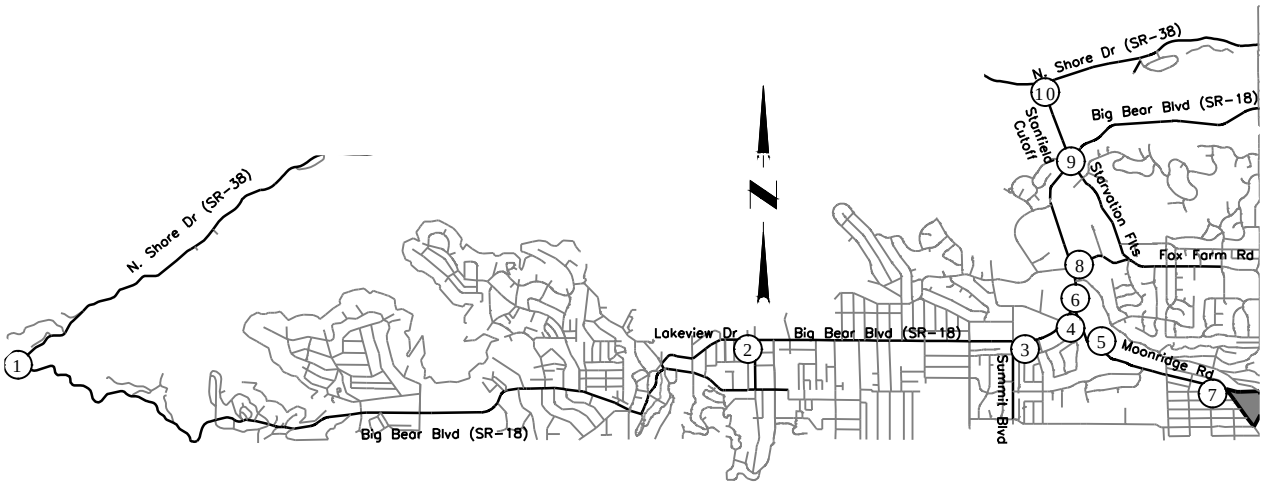
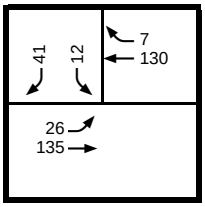
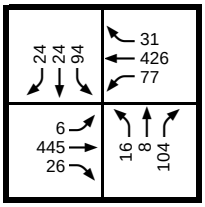
Figure 3-B – Existing PM Weekday Peak Hour Intersection Volumes

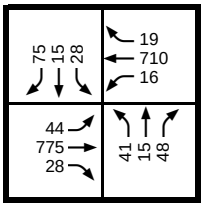




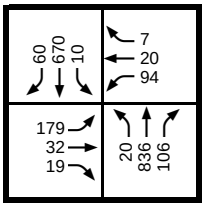
1. North Shore Drive (SR-38) (NS) / Big Bear Boulevard (SR-18) (EW)



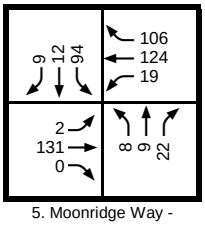
2. Pine Knot Boulevard (NS) / Big Bear Boulevard (SR-18) (EW)



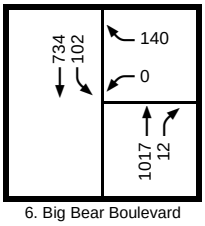
3. Summit Boulevard (NS) / Big Bear Boulevard (SR-18) (EW)



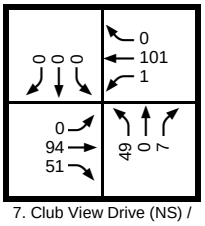
4. Big Bear Boulevard (SR-18) (NS) / Moonridge Road (EW)



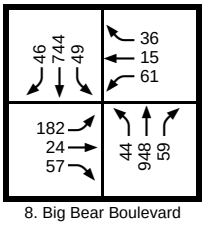
5. Moonridge Way - Brownie Lane (NS) / Moonridge Road (EW)



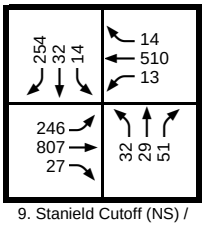
6. Big Bear Boulevard (SR-18) (NS) / Moonridge Way (EW)



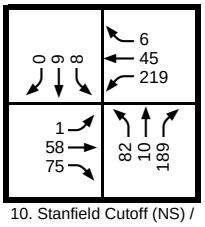
7. Club View Drive (NS) / Moonridge Road (EW)



8. Big Bear Boulevard (SR-18) (NS) / Fox Farm Road (EW)



9. Stanfield Cutoff (NS) / Big Bear Boulevard (SR-18) (EW)



10. Stanfield Cutoff (NS) / North Shore Drive (SR-38) (EW)

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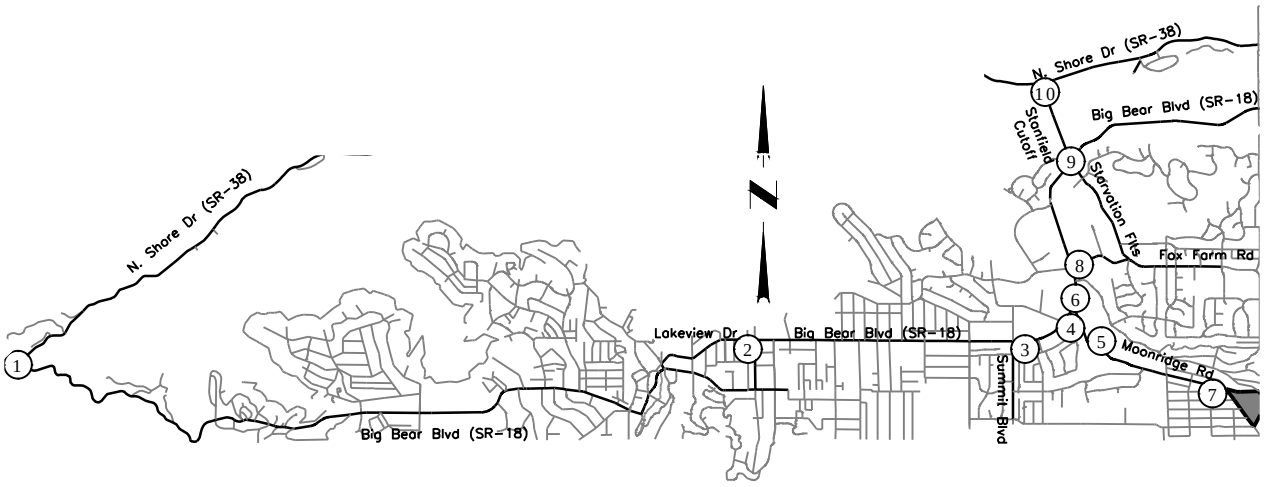
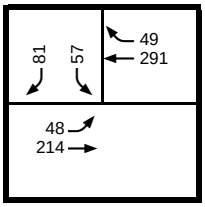
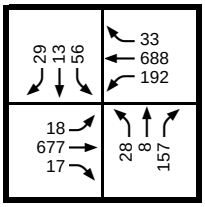
Figure 3-C – Existing PM Weekend Peak Hour Intersection Volumes

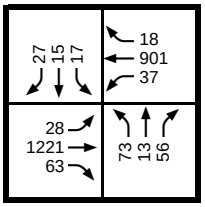




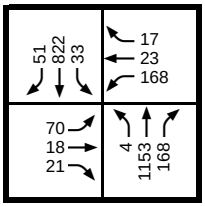
1. North Shore Drive (SR-38) (NS) / Big Bear Boulevard (SR-18) (EW)



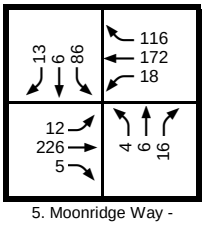
2. Pine Knot Boulevard (NS) / Big Bear Boulevard (SR-18) (EW)



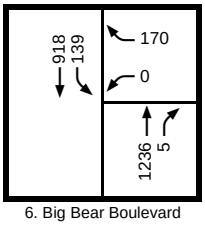
3. Summit Boulevard (NS) / Big Bear Boulevard (SR-18) (EW)



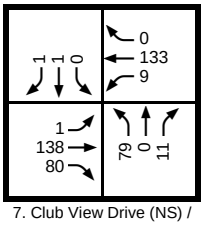
4. Big Bear Boulevard (SR-18) (NS) / Moonridge Road (EW)



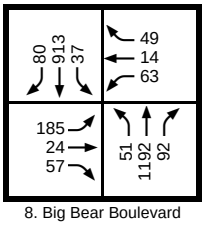
5. Moonridge Way - Brownie Lane (NS) / Moonridge Road (EW)



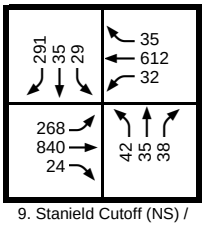
6. Big Bear Boulevard (SR-18) (NS) / Moonridge Way (EW)



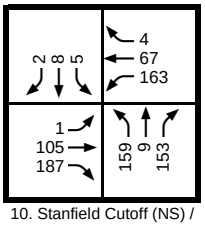
7. Club View Drive (NS) / Moonridge Road (EW)



8. Big Bear Boulevard (SR-18) (NS) / Fox Farm Road (EW)



9. Stanfield Cutoff (NS) / Big Bear Boulevard (SR-18) (EW)



10. Stanfield Cutoff (NS) / North Shore Drive (SR-38) (EW)

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▪ Signalized Intersections

Signalized intersections have been evaluated using the Operational Method as described in Chapter 16, Section II of the HCM2000. According to this methodology, the level of service for signalized intersections is based upon the weighted average control delay, in seconds per vehicle, of all vehicles passing through the intersection. Table 3-1 shows the criteria used to determine the level of service for signalized intersections.

Table 3-1 – Level of Service for Signalized Intersections

Level of Service	Control Delay per Vehicle (sec/veh)
A	≤ 10
B	> 10 and ≤ 20
C	> 20 and ≤ 35
D	> 35 and ≤ 55
E	> 55 and ≤ 80
F	> 80

▪ Unsignalized Intersections

Unsignalized intersections have been evaluated using Chapter 17 of the HCM2000. According to this methodology, the level of service for all-way stop intersections is based upon the weighted average control delay, in seconds per vehicle, of all vehicles passing through the intersection. For two-way stop controlled intersections, the level of service is based on the highest control delay of all controlled movements for the intersection. Table 3-2 shows the criteria used to determine the level of service for unsignalized intersections.

Table 3-2 – Level of Service for Unsignalized Intersections

Level of Service	Average Control Delay (sec/veh)
A	≤ 10
B	> 10 and ≤ 15
C	> 15 and ≤ 25
D	> 25 and ≤ 35
E	> 35 and ≤ 50
F	> 50

■ Required Level of Service

According to the Caltrans Guide for the Preparation of Traffic Impact Studies, Section II:

> *The level of service (LOS) for operating State highway facilities is based upon measures of effectiveness (MOEs). These MOEs describe the measures best suited for analyzing State highway facilities. Caltrans endeavors to maintain a target LOS at the transition between LOS "C" and LOS "D" on State highway facilities, however, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS. If an existing State highway facility is operating at less then the appropriate target LOS, the existing MOE should be maintained.*

According to the County of San Bernardino General Plan, Section III Policy M/CI 1.1:

> *The County shall ensure that all new development proposals do not degrade Levels of Service (LOS) on State Routes and Major Arterials below LOS C during non-peak hours or below LOS D during Peak-hours in the Mountain Region.*

According to the Congestion Management Program (CMP) in the County of San Bernardino General Plan:

> *The CMP's level of service (LOS) standard requires all CMP segments to Operate at LOS E or better.*

■ Levels of Service – Existing Conditions

The intersection levels of service for existing conditions shown on Table 3-3 are based upon the existing roadway system shown on Figure 3-A and the existing weekday PM peak hour and weekend peak hour intersection volumes shown on Figure 3-D and Figure 3-E, respectively. The level of service calculation worksheets are provided in Appendix E.

Table 3-3 – Levels of Service – Existing Conditions

Intersection	Peak Hour	Traffic Control	Delay (sec)	LOS
1. North Shore Drive (SR-38) (NS) / Big Bear Boulevard (SR-18) (EW)	Weekday PM Weekend	OWSC	10.8 15.5	B C
2. Pine Knot Boulevard (NS) / Big Bear Boulevard (SR-18) (EW)	Weekday PM Weekend	Signal	17.8 20.5	B C
3. Summit Boulevard (NS) / Big Bear Boulevard (SR-18) (EW)	Weekday PM Weekend	Signal	11.9 9.9	B A
4. Big Bear Boulevard (SR-18) (NS) / Moonridge Road (EW)	Weekday PM Weekend	Signal	20.9 16.1	C B
5. Moonridge Way (NS) / Moonridge Road (EW)	Weekday PM Weekend	TWSC	12.3 14.7	B B
6. Big Bear Boulevard (SR-18) (NS) / Moonridge Way (EW)	Weekday PM Weekend	OWSC	14.2 16.2	B C
7. Club View Drive (NS) / Moonridge Road (EW)	Weekday PM Weekend	TWSC	10.0 11.4	B B
8. Big Bear Boulevard (SR-18) (NS) / Fox Farm Road (EW)	Weekday PM Weekend	Signal	18.2 16.9	B B
9. Stanfield Cutoff (NS) / Big Bear Boulevard (SR-18) (EW)	Weekday PM Weekend	Signal	32.5 36.5	C ***D***
10. Stanfield Cutoff (NS) / North Shore Drive (SR-38) (EW)	Weekday PM Weekend	TWSC	19.5 17.6	C C

OWSC = One Way Stop Controlled
TWSC = Two Way Stop Controlled

■ Transit Service

Within the study area, bus transit service to the project area is provided by Mountain Area Regional Transit Authority (MARTA).

MARTA operates the following bus transit service:

- Route 1 – Bounder Bay – Bear Mountain Ski Resort – Ervin Lake: Generally operates from 6:15 AM to 6:30 PM (Monday to Saturday) and 8:30 AM to 6:30 PM (on Sundays) with headway of approximately 60 to 75 minutes.
- Route 2 – Mountain Meadows – Big Blvd/Fox Farm Blvd – Gold Mountain: Generally operates from 10:00 AM to 4:00 PM (Monday to Friday) with headway of approximately 60 minutes.
- Off The Mountain – San Bernardino – Fawnskin – Interlaken Shopping Center: Generally, operates from 6:30 AM to 7:00 PM (Monday to Saturday) with headway of approximately 4 hours and 30 minutes.

SECTION 4 - PROJECTED FUTURE TRAFFIC

■ Method of Projection

The method of traffic projection is based on the following criteria:

- Existing traffic conditions;
- Ambient growth projections;
- Project generated traffic; and
- Cumulative project generated traffic.

This report uses a study year of 2015 for analysis purposes.

■ Ambient Growth

In order to evaluate traffic conditions for the study year, area wide growth on existing roadways must be projected. The majority of the anticipated growth within the study area is accounted for with cumulative project traffic. Per discussion with County of San Bernardino staff, this study will utilize a 2 percent per year growth rate.

■ Project Generated Traffic

▪ Project Trip Generation

▫ Trip Generation Rates

Trip generation represents the amount of traffic traveling to and from the proposed project. The traffic generation figures used in this study are based upon the development of a 169 thousand guests per year (TG/Y), 15 employee zoo and a 2.5 TSF gross floor area high-turnover (sit-down) restaurant. Table 4-1 shows the peak hour and daily trip generation rates for the proposed project.

For the zoo, it is assumed that each employee generates 1 trip-end in each of the AM and PM peak hours. For daily trip-ends, it is assumed that all employees enter the site before their shift and leave the site after their shift, that half of the employees leave the site and return once during their shift, and that there is 1 miscellaneous trip to account for deliveries, visitors, etc per employee. Typically, other operational and maintenance activities are scheduled during off-peak hours and therefore, are not included in the trip generation calculation. For guests, estimated yearly ticket sales were extracted from the report entitled *Business Plan for Moonridge Animal Park* prepared for Big Bear Valley Recreation and Park District by the Natelson Dale Group, Inc, July 2012. It is assumed that the zoo will operate seven days a week year round, and that there is an average of two guests per vehicle. The PM peak hour is estimated to be 10% of the daily trips. Table 4-1 shows the peak hour trip generation rates for the proposed project.

The trip generation rates for high-turnover (sit-down) restaurant are based on the weighted average trip generation rates provided in the *Trip Generation Manual (8th Edition)* by the Institute of Transportation

Engineers (ITE), 2008. The inbound and outbound peak hour trip generation rates are calculated by multiplying the total peak hour generation rate by the directional distribution provided in the *Trip Generation Manual*.

Table 4-1 – Trip Generation Rates

Land Use	Unit	Weekday PM Peak Hour			Weekend Peak Hour			Daily
		Total	In	Out	Total	In	Out	
Moonridge Animal Park (25.6 Acre Zoo)	Emp.[1]	1.00	0.80	0.20	1.00	0.20	0.80	4.00
	TG/Y[2]	0.27	0.22	0.05	0.27	0.05	0.22	2.74
High-Turnover (sit-Down Restaurant) Land Use Category : 932	TSF	11.20	6.80	4.40	14.07	7.46	6.61	127.20

Emp. = Employees, TG/Y = Thousand Guests per Year

[1] Trips estimated at 1 trip-end per employee during the AM and PM Peak Hours. In/Out ratio assumed to be 80% in / 20% out for AM Peak Hour and 20% in / 80% out for PM Peak Hour. Daily trip-ends assumes all employees enter site before shift, exit site after shift, and half of employees leave site during lunch plus 1 additional miscellaneous trip per employee (deliveries, visitors, etc.)

[2] Assuming the zoo will operate 7 days a week year round and an average of two guests per vehicle. Weekday and weekend PM Peak Hour is estimated as 10% of daily trips. In/Out ratio assumed to be 80% in / 20% out for Weekday PM Peak Hour and 20% in / 80% out for Weekend PM Peak Hour

- **Project Trip Generation**

Table 4-2 presents the daily and peak hour trip generation for the proposed project. As shown, the proposed project is anticipated to generate approximately 841 weekday daily trip-ends, including 89 trip-ends during the PM peak hour.

Table 4-2 – Project Trip Generation

Land Use	Qty	Unit	Weekday PM Peak Hour			Weekend Peak Hour			Weekday Daily
			Total	In	Out	Total	In	Out	
Moonridge Animal Park	15[1]	Emp.	15	3	12	15	3	12	60
	169[1]	TG/Y	46	9	37	46	9	37	463
High-Turnover (Sit-Down) Restaurant	2.5	TSF	28	17	11	36	19	17	318
Total			89	29	60	97	31	66	841

Emp. = Employees, TG/Y = Thousand Guests per Year, TSF= Thousand Square Feet

[1] According to the *Business Plan for Moonridge Animal Park* by the Natelson Dale Group, Inc, July 2012

[2] From Trip Generation Manual, 8th Ed. by Institute of Transportation Engineers, 2008. (Restaurant Only)

- **Internal Trips**

A key characteristic of a multi-use development is that trips among the various land uses can be made on-site. These internal trips can be made either by walking or by vehicle entirely on internal pathways or internal roadways without using street external to the site. Per discussion with County of San Bernardino Transportation Department staff, this study will utilize a 10 percent internal capture rate for all project land uses. Table 4-3 presents the internal trip discount assumed for the proposed project and

calculates the driveway volume as the total project trip generation minus the internal trip-ends. The driveway volume is the volume that enters or exits the site at the project driveways.

Table 4-3 – Internal Trips

Trips	Weekday PM Peak Hour			Weekend Peak Hour			Weekday Daily
	Total	In	Out	Total	In	Out	
Total Project Trip Generation	89	29	60	97	31	66	841
– Internal Trips[1] (10%)	8	4	4	10	5	5	84
= Driveway Volume	81	25	56	87	26	61	757

[1] Internal trips between Moonridge Animal Park and Restaurant land uses only.

- **Pass-by Trips**

Pass-by trips are trips made as intermediate stops on the way from an origin to a primary trip destination without a route diversion. Pass-by trips are attracted from traffic passing the site on an adjacent street or roadway that offers direct access to the site. Pass-by trips do not add new traffic to the adjacent street system. Pass-by trips are only applicable to trips that enter or exit the site. Per discussion with County of San Bernardino staff, this study will utilize a 43 percent pass-by rate for the High-Turnover (Sit-Down) Restaurant during the peak hours. Table 4-4 presents the pass-by trip discount assumed for the proposed project and calculates the total primary trips as the driveway volume minus the pass-by trip-ends. Primary trips are trips made for the specific purpose of visiting the site.

Table 4-4 – Pass-by Trips

Trips	Weekday PM Peak Hour			Weekend Peak Hour			Weekday Daily
	Total	In	Out	Total	In	Out	
Driveway Volume	81	25	56	87	26	61	757
– Pass-by Trips[1] (43%)	9	6	3	11	6	5	9
= Primary Trip Generation	72	19	53	76	20	56	748

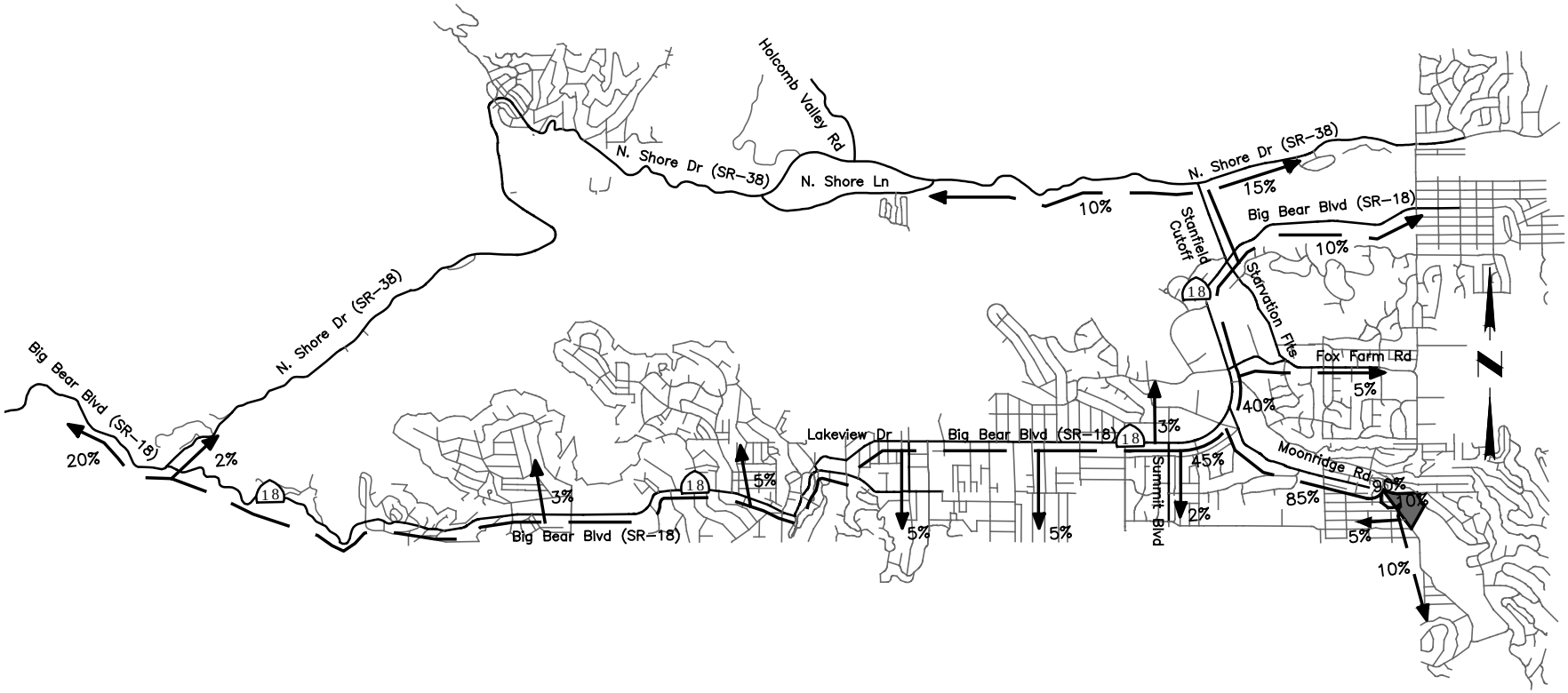
[1] Pass-by trips for Restaurant land uses only. Not applicable to internal trips.

Project Trip Distribution

Trip distribution represents the directional orientation of traffic to and from the project site. Trip distribution is influenced by the geographical location of the site, type of land use in the study area, such as shopping centers and recreational sites, and proximity to the regional freeway system.

The trip directional orientation of traffic for the proposed project was determined based upon the existing roadway system, existing traffic patterns, and existing and future land uses. The directional distribution for the proposed project traffic assumed in this study is shown on Figure 4-A.

Figure 4-A - Directional Distribution of Project Traffic



Site Location

X.X% Directional Distribution To/ From Proposed Project Site

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▪ Project Modal Split

The traffic reducing potential of public transit has not been considered in this study. Therefore, the traffic projections provided in this report are considered conservative since public transit could reduce traffic volumes in the project area.

▪ Project Trip Assignment

Trip assignment is the result of assigning the previously discussed trip generation numbers to the circulation system using the previously discussed trip distribution.

The project related weekday PM peak hour and weekend peak hour intersection turning movement volumes are shown on Figure 4-B and Figure 4-C, respectively.

■ Cumulative Project Generated Traffic

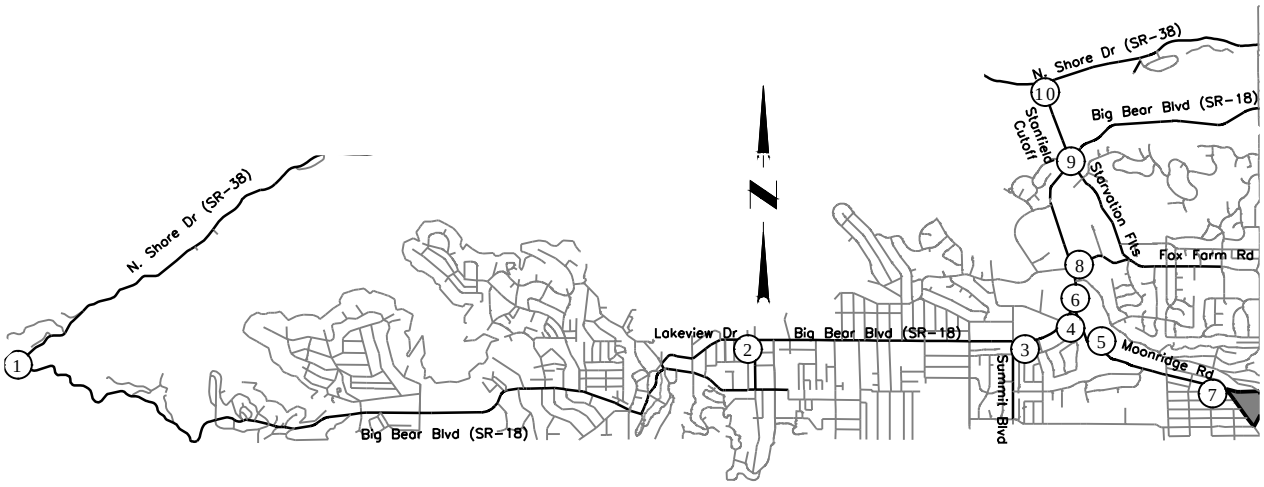
Cumulative project traffic from within the study area is expected to have an impact on levels of service. The cumulative projects within the study area are listed in Table 4-5. These projects were included as per discussion with City of Big Bear Lake and San Bernardino County staff. The location of these projects are shown on Figure 4-D. The weekday PM peak hour and weekend peak hour intersection turning movement volumes for cumulative projects are shown on Figure 4-E and Figure 4-F, respectively.

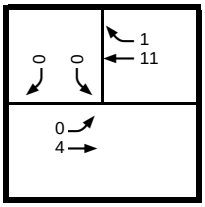
Table 4-5 – Cumulative Projects within the Study Area

Project	Land Use	Qty	Unit	Weekday PM Peak Hour	Weekend Peak Hour	Weekday Daily	Weekend Daily
1. CUP 2009-019 (Knickerbocker 42 Unit Housing)	Apartments	42	DU	28	22	279	268
2. PDR 2011-095 (Community Healthcare)	Hospital	8.4	TSF	12	19	138	86
3. PPR 2011-010 (Big 5)	Sporting Goods Superstore	10.5	TSF	32[2]	70[2]	320	700
4. CUP 2011-139 (BMX Park[3])	BMX Park	10.5	TSF	9	15	18	30
5. TTM 18580 (26 Lot Subdivision)	Single-Family Detached Housing	26	DU	27	24	248	262
TOTAL				**108**	**150**	**1,003**	**1,346**

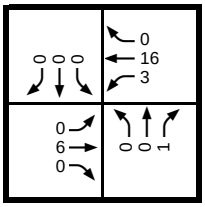
DU = Dwelling Units, TSF = 1,000 Square Feet Gross Floor Area.
[1]AM Peak Hour assumed to be 0 due to Store opening at 10AM
[2]PM Peak Hour Assumed to be 10% of Daily Volume
[3] Trip generation rates taken from *Environmental Statement Annexure 1: Transport Assessment Appendices Volume 13B,* Feburary 2007. AM estimated to be 0 due to students being in school duing morning hours and PM Peak Hour is estimated as 50% of daily trips. In/Out ratio assumed to be 50% in / 50% out for PM Peak Hour

Figure 4-B – Project Only PM Weekday Peak Hour Intersection Volumes

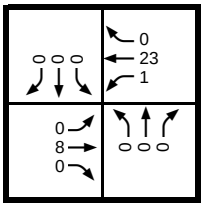




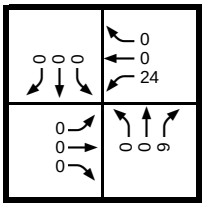
1. North Shore Drive (SR-38) (NS) / Big Bear Boulevard (SR-18) (EW)



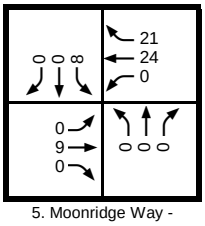
2. Pine Knot Boulevard (NS) / Big Bear Boulevard (SR-18) (EW)



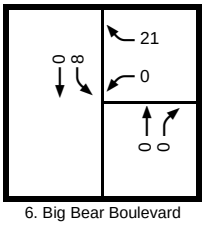
3. Summit Boulevard (NS) / Big Bear Boulevard (SR-18) (EW)



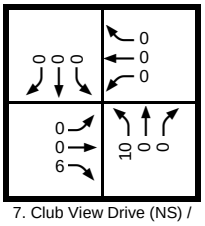
4. Big Bear Boulevard (SR-18) (NS) / Moonridge Road (EW)



5. Moonridge Way - Brownie Lane (NS) / Moonridge Road (EW)



6. Big Bear Boulevard (SR-18) (NS) / Moonridge Way (EW)



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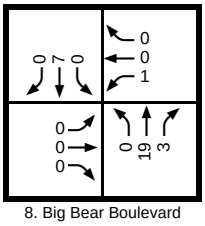

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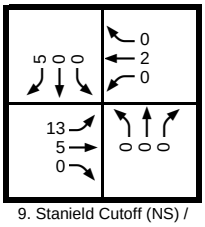
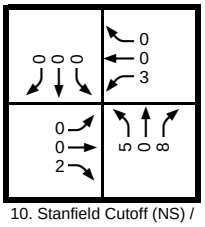


9. Stanfield Cutoff (NS) / Big Bear Boulevard (SR-18) (EW)



10. Stanfield Cutoff (NS) / North Shore Drive (SR-38) (EW)

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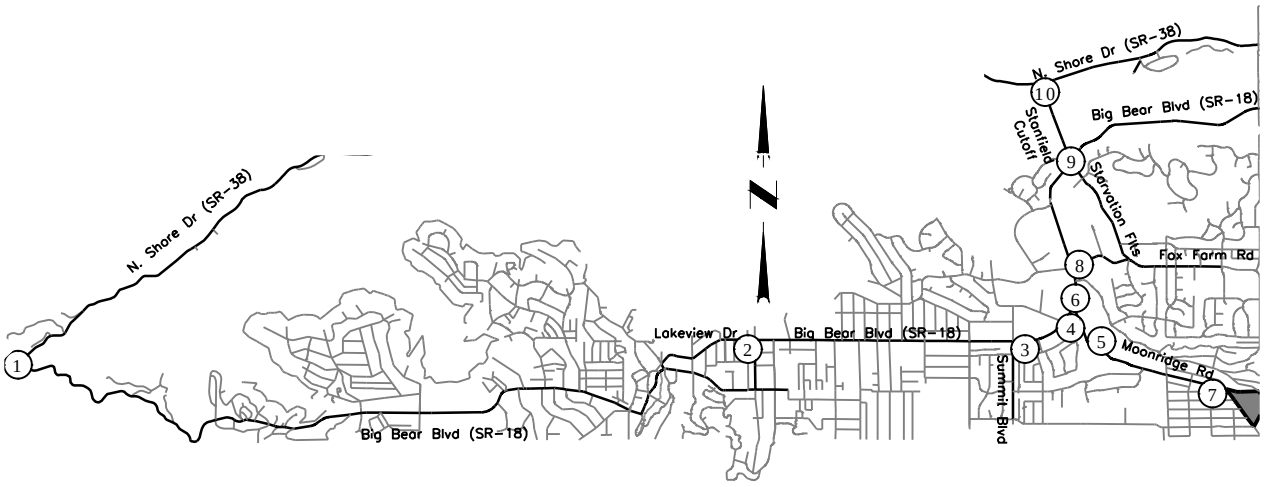
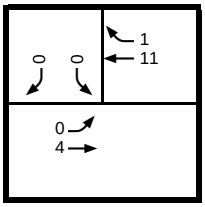
Figure 4-C – Project Only PM Weekend Peak Hour Intersection Volumes





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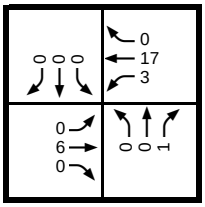
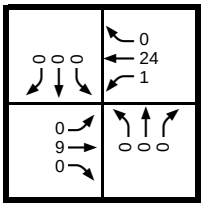
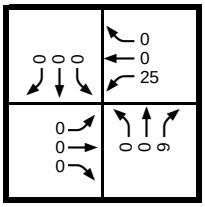


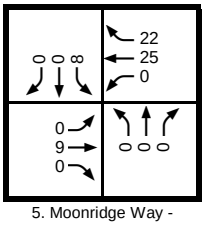
2. Pine Knot Boulevard (NS) / Big Bear Boulevard (SR-18) (EW)



3. Summit Boulevard (NS) / Big Bear Boulevard (SR-18) (EW)



4. Big Bear Boulevard (SR-18) (NS) / Moonridge Road (EW)



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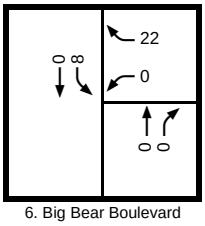
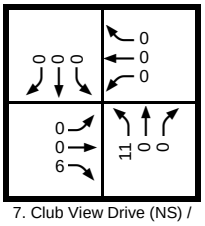
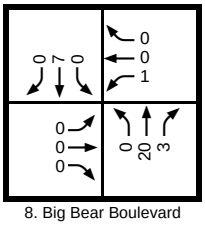


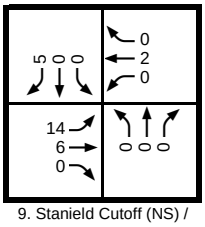
6. Big Bear Boulevard (SR-18) (NS) / Moonridge Way (EW)



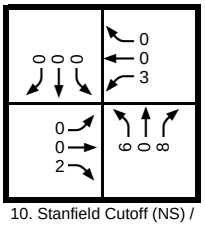
7. Club View Drive (NS) / Moonridge Road (EW)



8. Big Bear Boulevard (SR-18) (NS) / Fox Farm Road (EW)



9. Stanfield Cutoff (NS) / Big Bear Boulevard (SR-18) (EW)



10. Stanfield Cutoff (NS) / North Shore Drive (SR-38) (EW)

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Figure 4-D - Cumulative Projects Within The Study Area

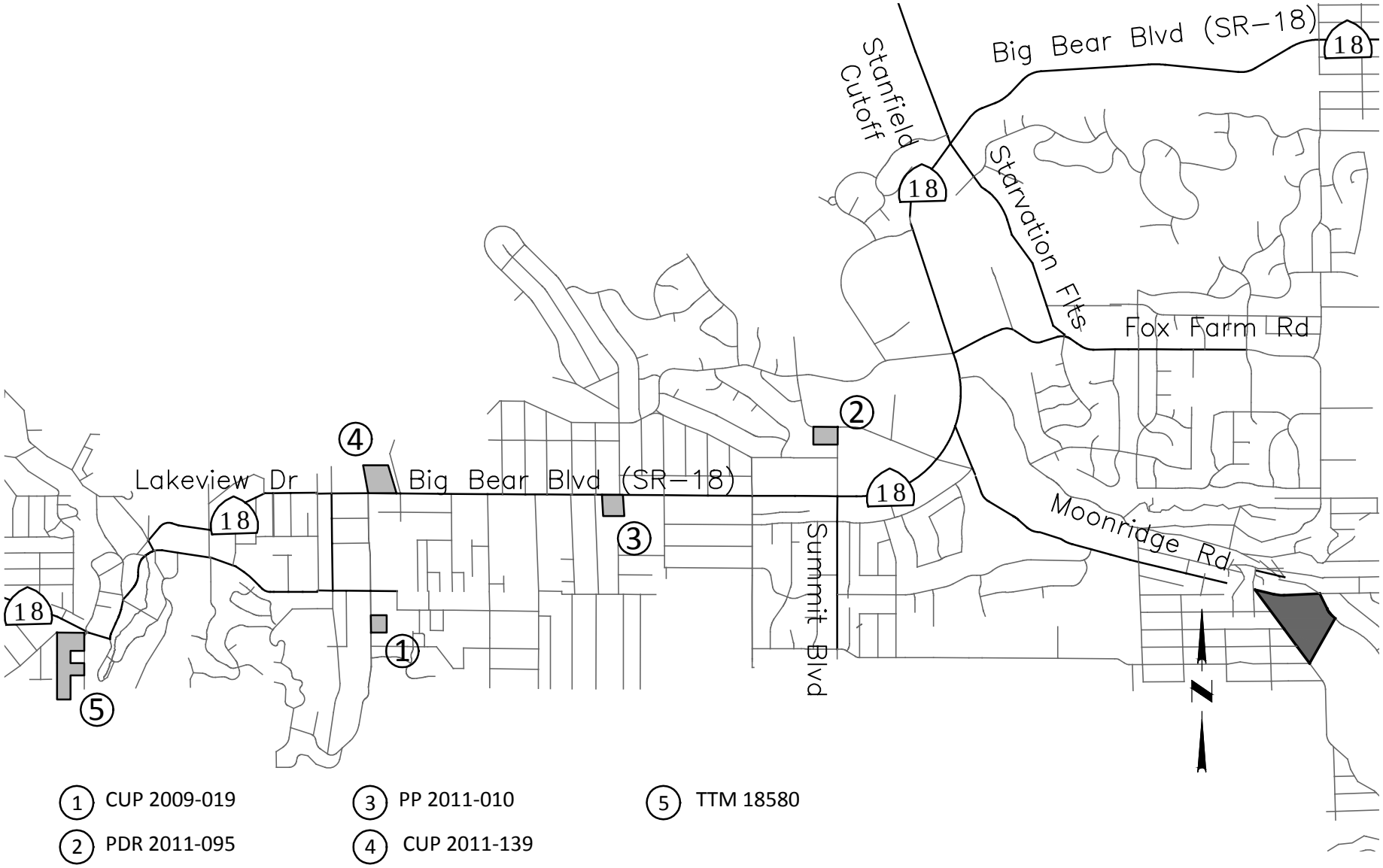

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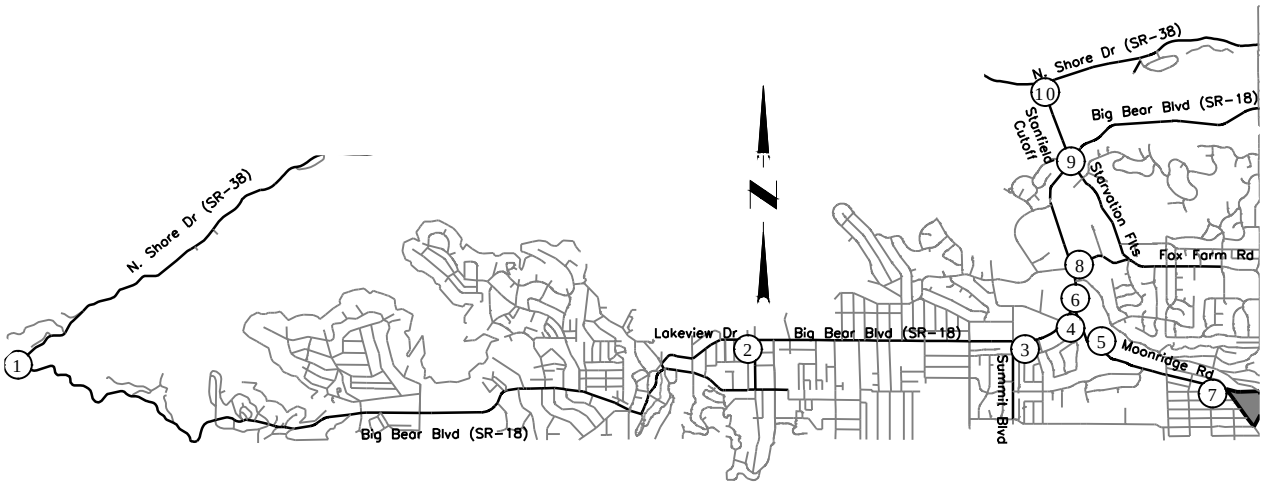
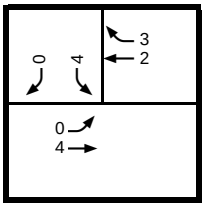
Figure 4-E – Cumulative Projects Only PM Weekday Peak Hour Intersection Volumes





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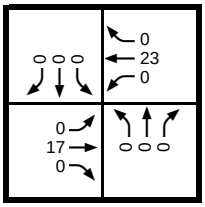
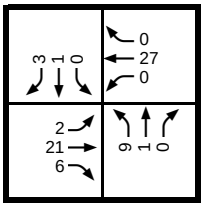


2. Pine Knot Boulevard (NS) / Big Bear Boulevard (SR-18) (EW)



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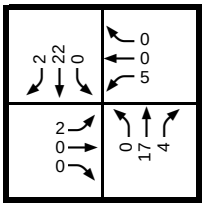
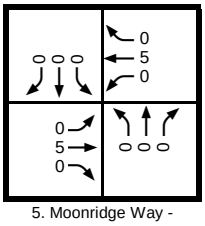
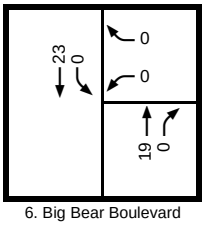


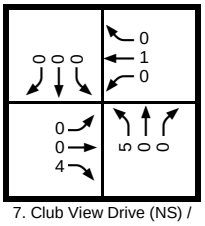
4. Big Bear Boulevard (SR-18) (NS) / Moonridge Road (EW)



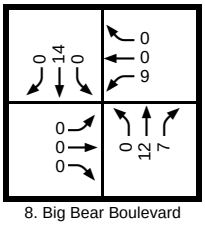
5. Moonridge Way - Brownie Lane (NS) / Moonridge Road (EW)



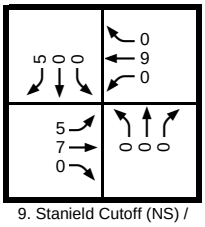
6. Big Bear Boulevard (SR-18) (NS) / Moonridge Way (EW)



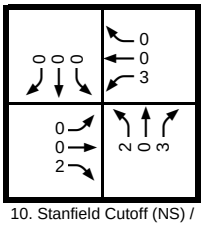
7. Club View Drive (NS) / Moonridge Road (EW)



8. Big Bear Boulevard (SR-18) (NS) / Fox Farm Road (EW)



9. Stanfield Cutoff (NS) / Big Bear Boulevard (SR-18) (EW)



10. Stanfield Cutoff (NS) / North Shore Drive (SR-38) (EW)

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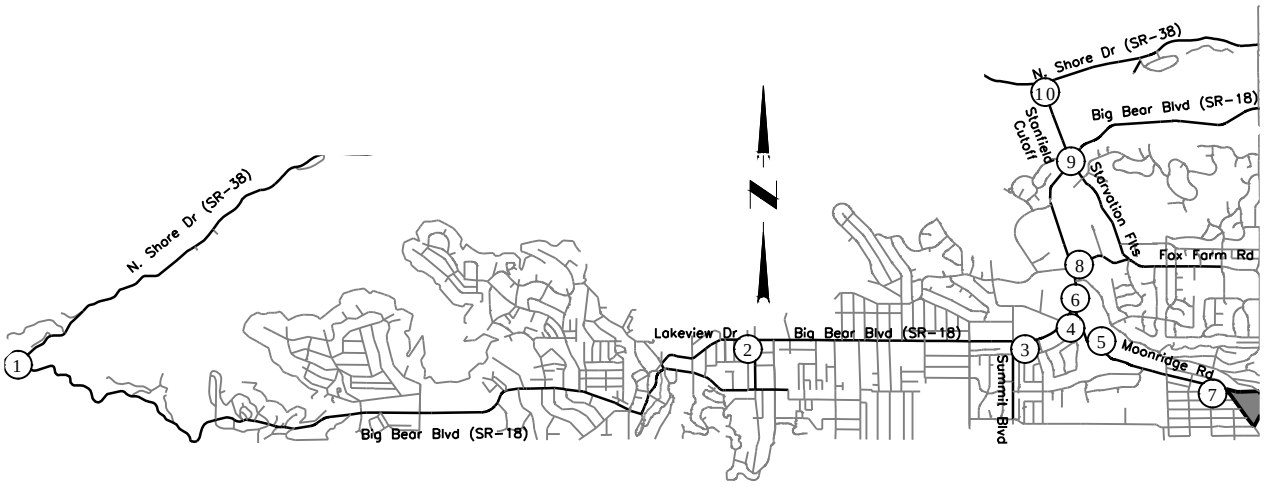
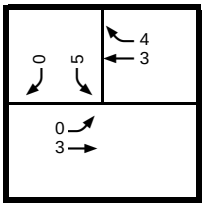
Figure 4-F – Cumulative Projects Only PM Weekend Peak Hour Intersection Volumes





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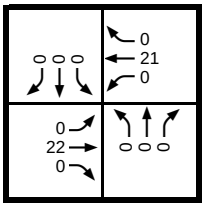
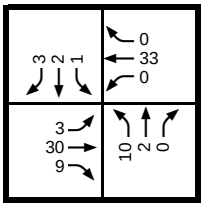
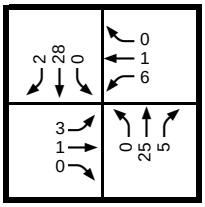


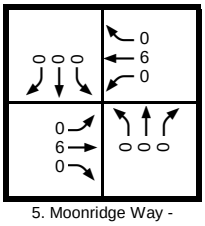
2. Pine Knot Boulevard (NS) / Big Bear Boulevard (SR-18) (EW)



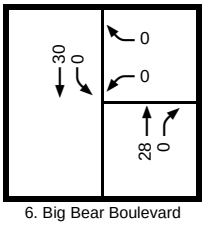
3. Summit Boulevard (NS) / Big Bear Boulevard (SR-18) (EW)



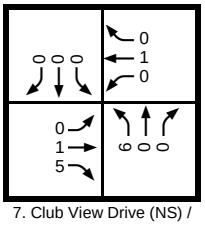
4. Big Bear Boulevard (SR-18) (NS) / Moonridge Road (EW)



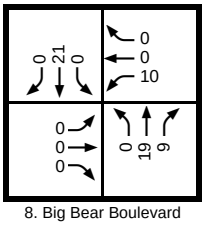
5. Moonridge Way - Brownie Lane (NS) / Moonridge Road (EW)



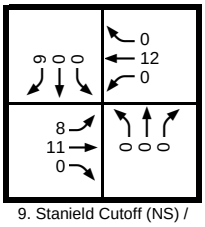
6. Big Bear Boulevard (SR-18) (NS) / Moonridge Way (EW)



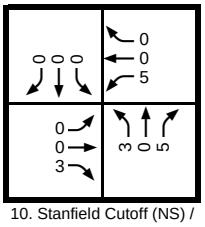
7. Club View Drive (NS) / Moonridge Road (EW)



8. Big Bear Boulevard (SR-18) (NS) / Fox Farm Road (EW)



9. Stanfield Cutoff (NS) / Big Bear Boulevard (SR-18) (EW)



10. Stanfield Cutoff (NS) / North Shore Drive (SR-38) (EW)

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SECTION 5 - TRAFFIC ANALYSIS

■ Capacity and Level of Service and Improvement Analysis

▪ Levels of Service – Existing Plus Ambient Growth Conditions

Table 5-1 provides the projected delay and levels of service at the study intersections under existing plus ambient growth conditions without off-site improvements. These levels of service vary from LOS A to D. The existing plus ambient growth weekday PM peak hour and weekend peak hour intersection turning movement volumes are shown on Figure 5-A and Figure 5-B, respectively. The levels of service are based upon the existing geometrics for the study intersections. The level of service calculation worksheets are provided in Appendix E. The following study intersection is anticipated to operate at an unacceptable LOS:

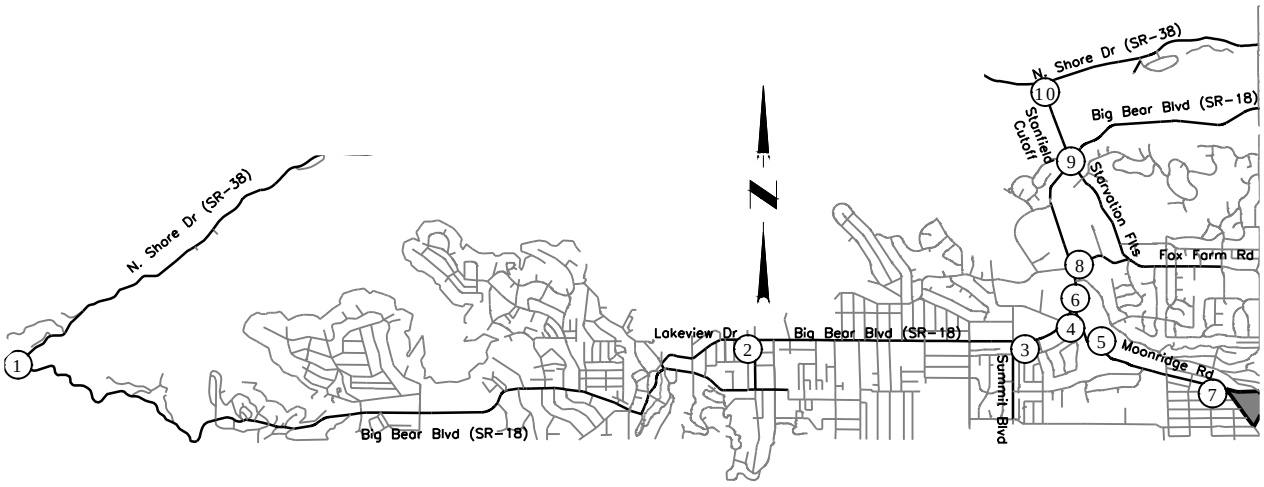
9. Stanfield Cutoff (NS) / Big Bear Boulevard (SR-18) (EW)

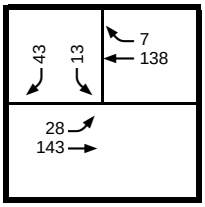
Table 5-1 – Levels of Service – Existing Plus Ambient Growth Conditions

Intersection	Peak Hour	Traffic Control	Delay (sec)	LOS
1. North Shore Drive (SR-38) (NS) / Big Bear Boulevard (SR-18) (EW)	Weekday PM Weekend	OWSC	11.0 16.6	B C
2. Pine Knot Boulevard (NS) / Big Bear Boulevard (SR-18) (EW)	Weekday PM Weekend	Signal	18.1 21.9	B C
3. Summit Boulevard (NS) / Big Bear Boulevard (SR-18) (EW)	Weekday PM Weekend	Signal	12.0 10.3	B B
4. Big Bear Boulevard (SR-18) (NS) / Moonridge Road (EW)	Weekday PM Weekend	Signal	21.5 17.1	C B
5. Moonridge Way (NS) / Moonridge Road (EW)	Weekday PM Weekend	TWSC	12.7 15.6	B C
6. Big Bear Boulevard (SR-18) (NS) / Moonridge Way (EW)	Weekday PM Weekend	OWSC	14.9 17.3	B C
7. Club View Drive (NS) / Moonridge Road (EW)	Weekday PM Weekend	TWSC	10.1 11.7	B B
8. Big Bear Boulevard (SR-18) (NS) / Fox Farm Road (EW)	Weekday PM Weekend	Signal	18.7 17.9	B B
9. Stanfield Cutoff (NS) / Big Bear Boulevard (SR-18) (EW)	Weekday PM Weekend	Signal	35.4 42.6	***D*** ***D***
10. Stanfield Cutoff (NS) / North Shore Drive (SR-38) (EW)	Weekday PM Weekend	TWSC	20.9 18.9	C C

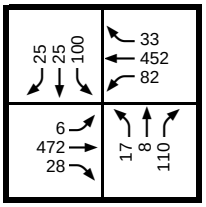
OWSC = One Way Stop Controlled
TWSC = Two Way Stop Controlled

Figure 5-A – Existing Plus Ambient Growth PM Weekday Peak Hour Intersection Volumes

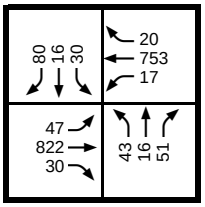




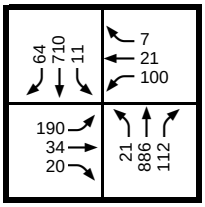
1. North Shore Drive (SR-38) (NS) / Big Bear Boulevard (SR-18) (EW)



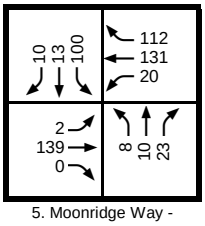
2. Pine Knot Boulevard (NS) / Big Bear Boulevard (SR-18) (EW)



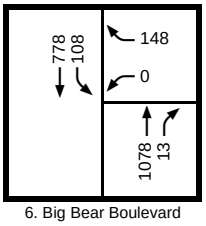
3. Summit Boulevard (NS) / Big Bear Boulevard (SR-18) (EW)



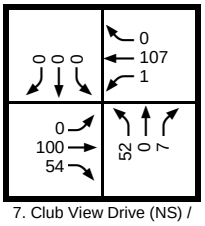
4. Big Bear Boulevard (SR-18) (NS) / Moonridge Road (EW)



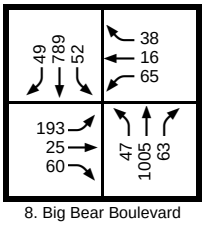
5. Moonridge Way - Brownie Lane (NS) / Moonridge Road (EW)



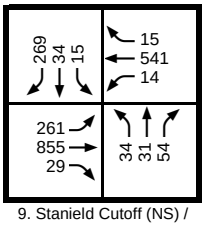
6. Big Bear Boulevard (SR-18) (NS) / Moonridge Way (EW)



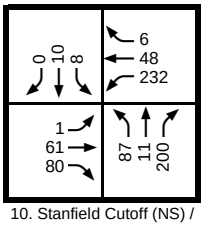
7. Club View Drive (NS) / Moonridge Road (EW)



8. Big Bear Boulevard (SR-18) (NS) / Fox Farm Road (EW)



9. Stanfield Cutoff (NS) / Big Bear Boulevard (SR-18) (EW)



10. Stanfield Cutoff (NS) / North Shore Drive (SR-38) (EW)

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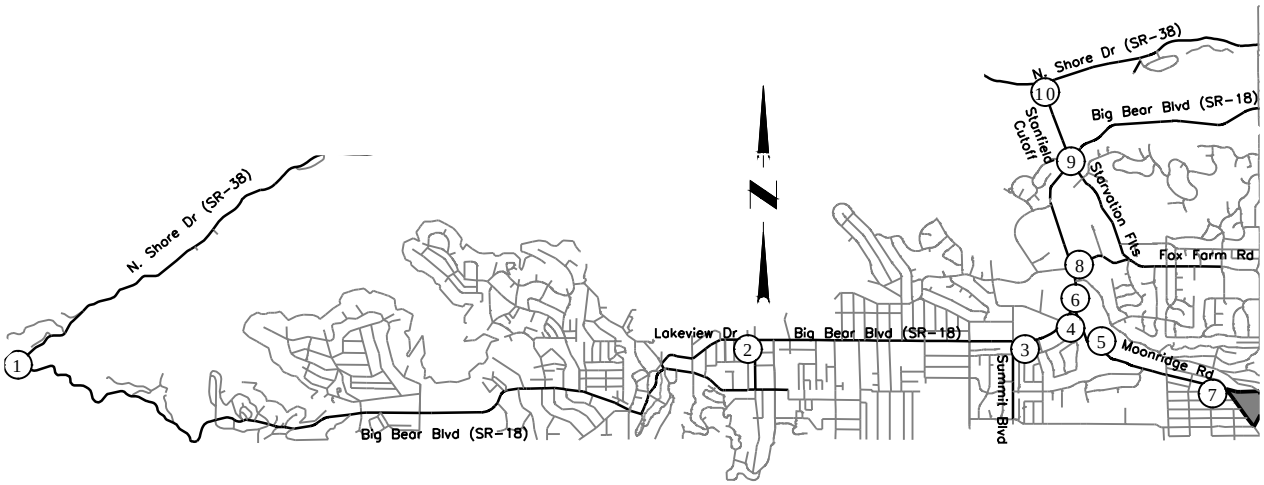
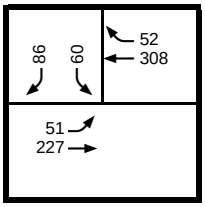
Figure 5-B – Existing Plus Ambient Growth PM Weekend Peak Hour Intersection Volumes





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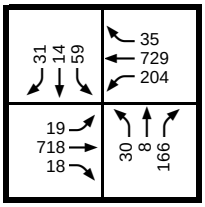
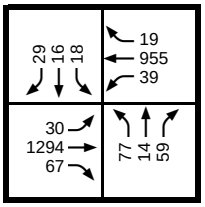
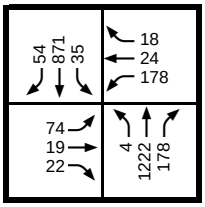


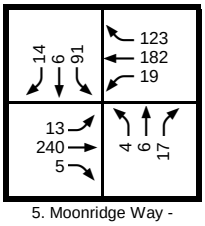
2. Pine Knot Boulevard (NS) / Big Bear Boulevard (SR-18) (EW)



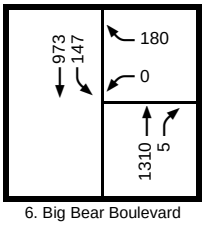
3. Summit Boulevard (NS) / Big Bear Boulevard (SR-18) (EW)



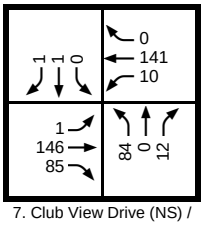
4. Big Bear Boulevard (SR-18) (NS) / Moonridge Road (EW)



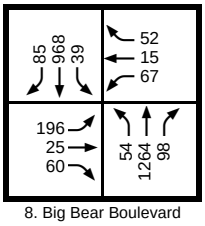
5. Moonridge Way - Brownie Lane (NS) / Moonridge Road (EW)



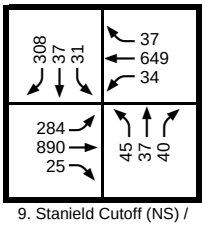
6. Big Bear Boulevard (SR-18) (NS) / Moonridge Way (EW)



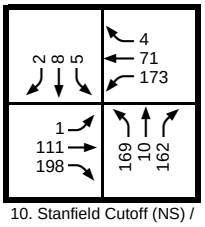
7. Club View Drive (NS) / Moonridge Road (EW)



8. Big Bear Boulevard (SR-18) (NS) / Fox Farm Road (EW)



9. Stanfield Cutoff (NS) / Big Bear Boulevard (SR-18) (EW)



10. Stanfield Cutoff (NS) / North Shore Drive (SR-38) (EW)

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▪ Levels of Service – Existing Plus Ambient Growth Plus Project Conditions

Table 5-2 provides the projected delay and levels of service at the study intersections under existing plus ambient growth plus project conditions without off-site improvements. These levels of service vary from LOS A to D. The existing plus ambient growth plus project weekday PM peak hour and weekend peak hour intersection turning movement volumes are shown on Figure 5-C and Figure 5-D, respectively. The levels of service are based upon the existing geometrics for the study intersections. The level of service calculation worksheets are provided in Appendix E. The following study intersection is anticipated to operate at an unacceptable LOS:

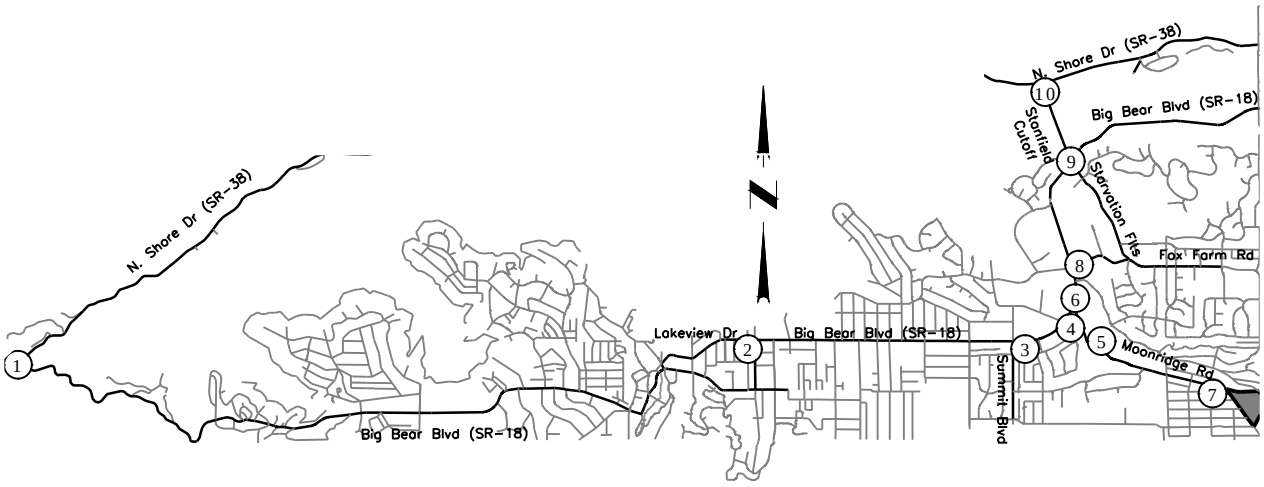
9. Stanfield Cutoff (NS) / Big Bear Boulevard (SR-18) (EW)

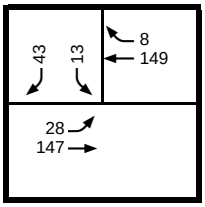
Table 5-2 – Levels of Service – Existing Plus Ambient Growth Plus Project Conditions

Intersection	Peak Hour	Traffic Control	Delay (sec)	LOS
1. North Shore Drive (SR-38) (NS) / Big Bear Boulevard (SR-18) (EW)	Weekday PM Weekend	OWSC	11.2 17.0	B C
2. Pine Knot Boulevard (NS) / Big Bear Boulevard (SR-18) (EW)	Weekday PM Weekend	Signal	18.1 22.0	B C
3. Summit Boulevard (NS) / Big Bear Boulevard (SR-18) (EW)	Weekday PM Weekend	Signal	11.9 10.3	B B
4. Big Bear Boulevard (SR-18) (NS) / Moonridge Road (EW)	Weekday PM Weekend	Signal	22.3 17.9	C B
5. Moonridge Way (NS) / Moonridge Road (EW)	Weekday PM Weekend	TWSC	13.4 16.8	B C
6. Big Bear Boulevard (SR-18) (NS) / Moonridge Way (EW)	Weekday PM Weekend	OWSC	15.2 17.8	C C
7. Club View Drive (NS) / Moonridge Road (EW)	Weekday PM Weekend	TWSC	10.3 11.8	B B
8. Big Bear Boulevard (SR-18) (NS) / Fox Farm Road (EW)	Weekday PM Weekend	Signal	18.7 17.9	B B
9. Stanfield Cutoff (NS) / Big Bear Boulevard (SR-18) (EW)	Weekday PM Weekend	Signal	36.1 43.7	***D*** ***D***
10. Stanfield Cutoff (NS) / North Shore Drive (SR-38) (EW)	Weekday PM Weekend	TWSC	21.4 19.3	C C

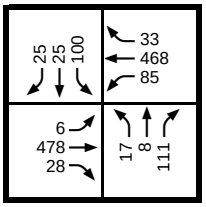
OWSC = One Way Stop Controlled
TWSC = Two Way Stop Controlled

Figure 5-C – Existing Plus Ambient Growth Plus Project PM Weekday Peak Hour Intersection Volumes

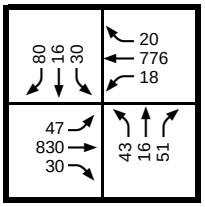




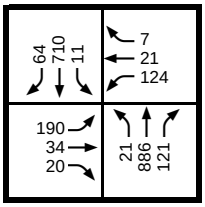
1. North Shore Drive (SR-38) (NS) / Big Bear Boulevard (SR-18) (EW)



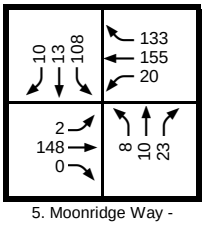
2. Pine Knot Boulevard (NS) / Big Bear Boulevard (SR-18) (EW)



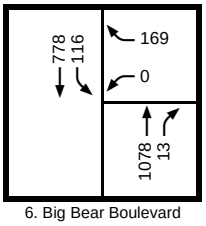
3. Summit Boulevard (NS) / Big Bear Boulevard (SR-18) (EW)



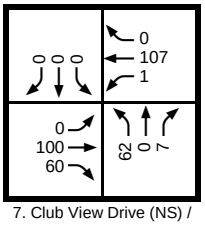
4. Big Bear Boulevard (SR-18) (NS) / Moonridge Road (EW)



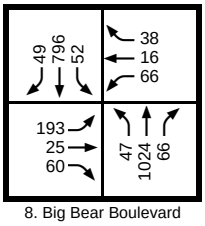
5. Moonridge Way - Brownie Lane (NS) / Moonridge Road (EW)



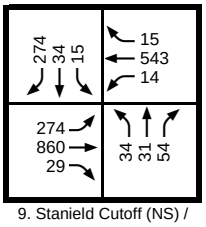
6. Big Bear Boulevard (SR-18) (NS) / Moonridge Way (EW)



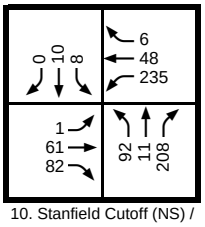
7. Club View Drive (NS) / Moonridge Road (EW)



8. Big Bear Boulevard (SR-18) (NS) / Fox Farm Road (EW)



9. Stanfield Cutoff (NS) / Big Bear Boulevard (SR-18) (EW)



10. Stanfield Cutoff (NS) / North Shore Drive (SR-38) (EW)

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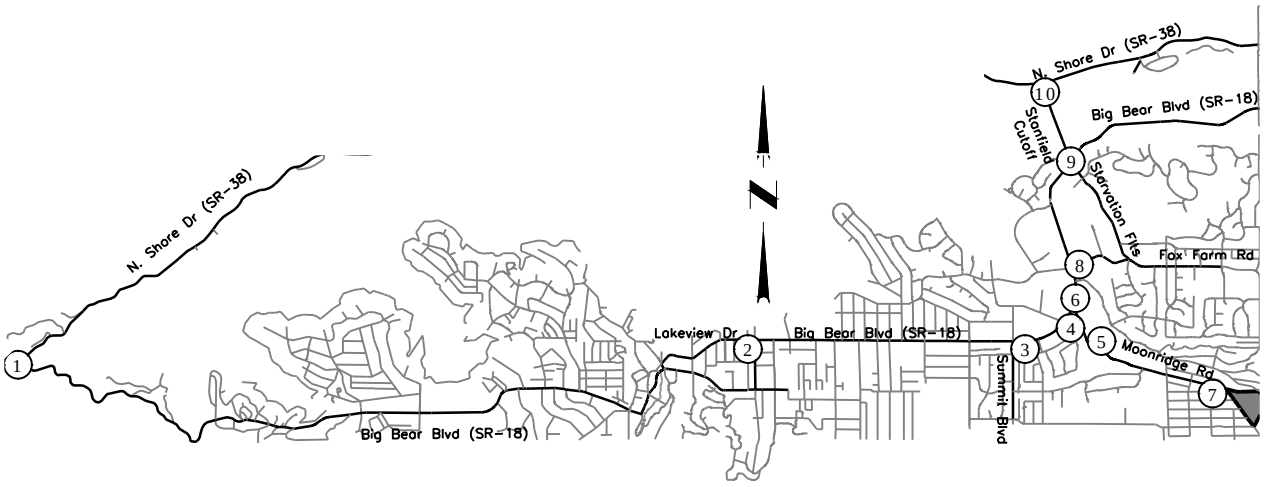
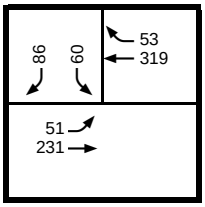
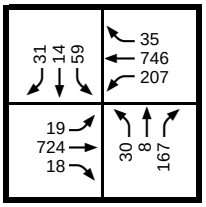
Figure 5-D – Existing Plus Ambient Growth Plus Project Weekend Peak Hour Intersection Volumes

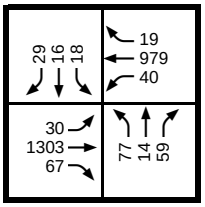




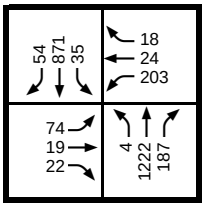
1. North Shore Drive (SR-38) (NS) / Big Bear Boulevard (SR-18) (EW)



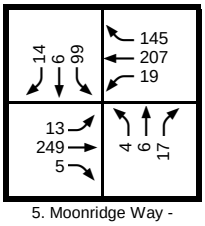
2. Pine Knot Boulevard (NS) / Big Bear Boulevard (SR-18) (EW)



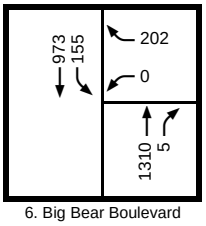
3. Summit Boulevard (NS) / Big Bear Boulevard (SR-18) (EW)



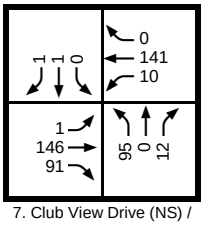
4. Big Bear Boulevard (SR-18) (NS) / Moonridge Road (EW)



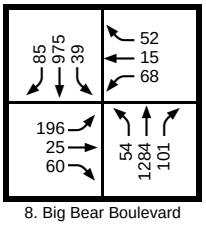
5. Moonridge Way - Brownie Lane (NS) / Moonridge Road (EW)



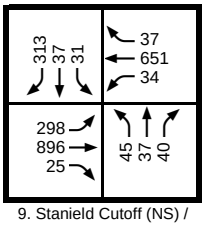
6. Big Bear Boulevard (SR-18) (NS) / Moonridge Way (EW)



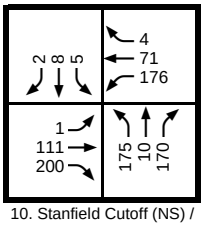
7. Club View Drive (NS) / Moonridge Road (EW)



8. Big Bear Boulevard (SR-18) (NS) / Fox Farm Road (EW)



9. Stanfield Cutoff (NS) / Big Bear Boulevard (SR-18) (EW)



10. Stanfield Cutoff (NS) / North Shore Drive (SR-38) (EW)

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- **Levels of Service – Existing Plus Ambient Growth Plus Project with Improvements**

Table 5-3 provides the projected delay and levels of service at the study intersections under existing plus ambient growth plus project conditions with off-site improvements. With the recommended off-site improvements, the study area intersections would operate at an acceptable LOS C or better. The level of service calculation worksheets are provided in Appendix E.

Table 5-3 – Levels of Service – Existing Plus Ambient Growth Plus Cumulative Conditions

Intersection	Peak Hour	Without Improvements			With Improvements		
		Traffic Control	Delay (sec)	LOS	Traffic Control	Delay (sec)	LOS
9. Stanfield Cutoff (NS) / Big Bear Boulevard (SR-18) (EW)	Weekday PM Weekend	Signal	36.1 43.7	***D*** ***D***	Signal	20.8 23.9	C C

- **Levels of Service – Existing Plus Ambient Growth Plus Cumulative Conditions**

Table 5-4 provides the projected delay and levels of service at the study intersections under existing plus ambient growth plus cumulative conditions without off-site improvements. These levels of service vary from LOS A to D. The existing plus ambient growth plus cumulative weekday PM peak hour and weekend peak hour intersection turning movement volumes are shown on Figure 5-E and Figure 5-F, respectively. The levels of service are based upon the existing geometrics for the study intersections. The level of service calculation worksheets are provided in Appendix E. The following study intersection is anticipated to operate at an unacceptable LOS:

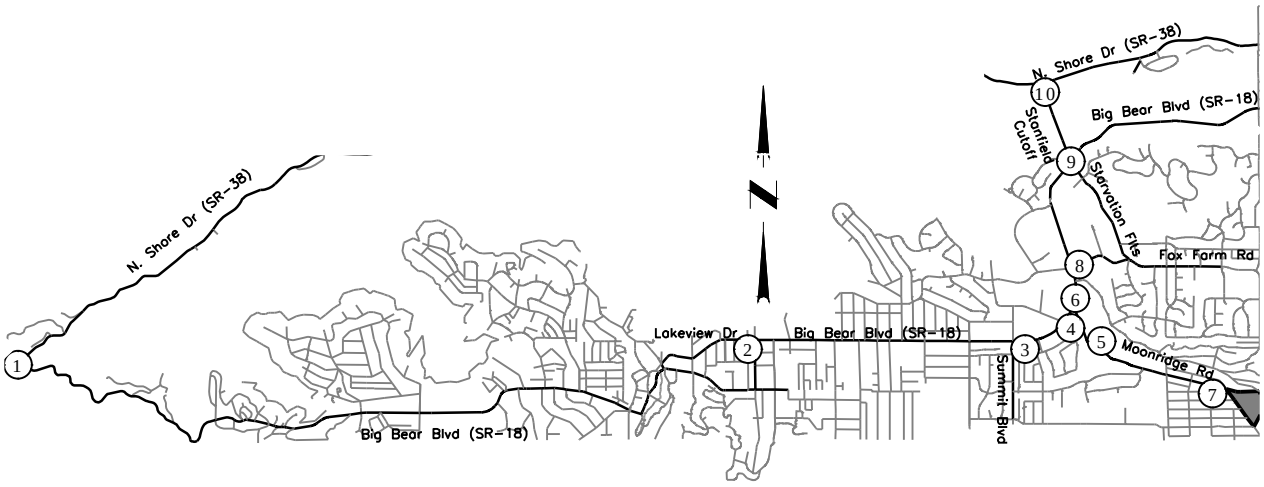
9. Stanfield Cutoff (NS) / Big Bear Boulevard (SR-18) (EW)

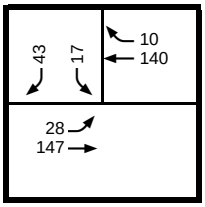
Table 5-4 – Levels of Service – Existing Plus Ambient Growth Plus Cumulative Conditions

Intersection	Peak Hour	Traffic Control	Delay (sec)	LOS
1. North Shore Drive (SR-38) (NS) / Big Bear Boulevard (SR-18) (EW)	Weekday PM Weekend	OWSC	11.2 17.0	B C
2. Pine Knot Boulevard (NS) / Big Bear Boulevard (SR-18) (EW)	Weekday PM Weekend	Signal	17.9 22.1	B C
3. Summit Boulevard (NS) / Big Bear Boulevard (SR-18) (EW)	Weekday PM Weekend	Signal	12.2 10.9	B B
4. Big Bear Boulevard (SR-18) (NS) / Moonridge Road (EW)	Weekday PM Weekend	Signal	21.7 17.6	C B
5. Moonridge Way (NS) / Moonridge Road (EW)	Weekday PM Weekend	TWSC	12.8 15.8	B C
6. Big Bear Boulevard (SR-18) (NS) / Moonridge Way (EW)	Weekday PM Weekend	OWSC	15.1 17.7	C C
7. Club View Drive (NS) / Moonridge Road (EW)	Weekday PM Weekend	TWSC	10.2 11.8	B B
8. Big Bear Boulevard (SR-18) (NS) / Fox Farm Road (EW)	Weekday PM Weekend	Signal	18.7 17.9	B B
9. Stanfield Cutoff (NS) / Big Bear Boulevard (SR-18) (EW)	Weekday PM Weekend	Signal	36.1 44.4	***D*** ***D***
10. Stanfield Cutoff (NS) / North Shore Drive (SR-38) (EW)	Weekday PM Weekend	TWSC	21.3 19.4	C C

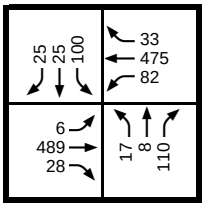
OWSC = One Way Stop Controlled
TWSC = Two Way Stop Controlled

Figure 5-E – Existing Plus Ambient Growth Plus Cumulative PM Weekday Peak Hour Intersection Volumes

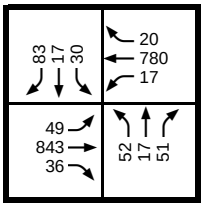




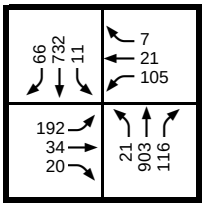
1. North Shore Drive (SR-38) (NS) / Big Bear Boulevard (SR-18) (EW)



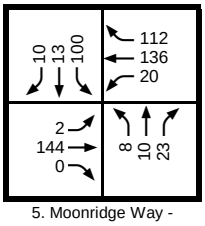
2. Pine Knot Boulevard (NS) / Big Bear Boulevard (SR-18) (EW)



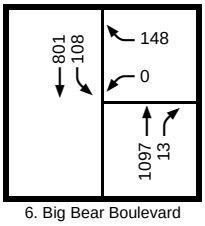
3. Summit Boulevard (NS) / Big Bear Boulevard (SR-18) (EW)



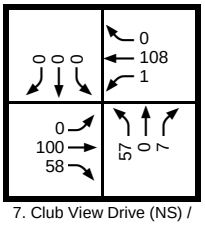
4. Big Bear Boulevard (SR-18) (NS) / Moonridge Road (EW)



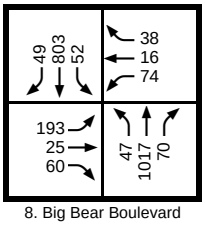
5. Moonridge Way - Brownie Lane (NS) / Moonridge Road (EW)



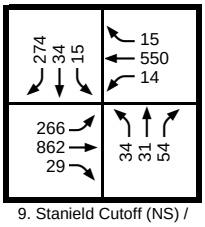
6. Big Bear Boulevard (SR-18) (NS) / Moonridge Way (EW)



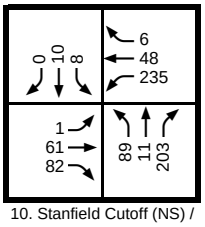
7. Club View Drive (NS) / Moonridge Road (EW)



8. Big Bear Boulevard (SR-18) (NS) / Fox Farm Road (EW)



9. Stanfield Cutoff (NS) / Big Bear Boulevard (SR-18) (EW)



10. Stanfield Cutoff (NS) / North Shore Drive (SR-38) (EW)

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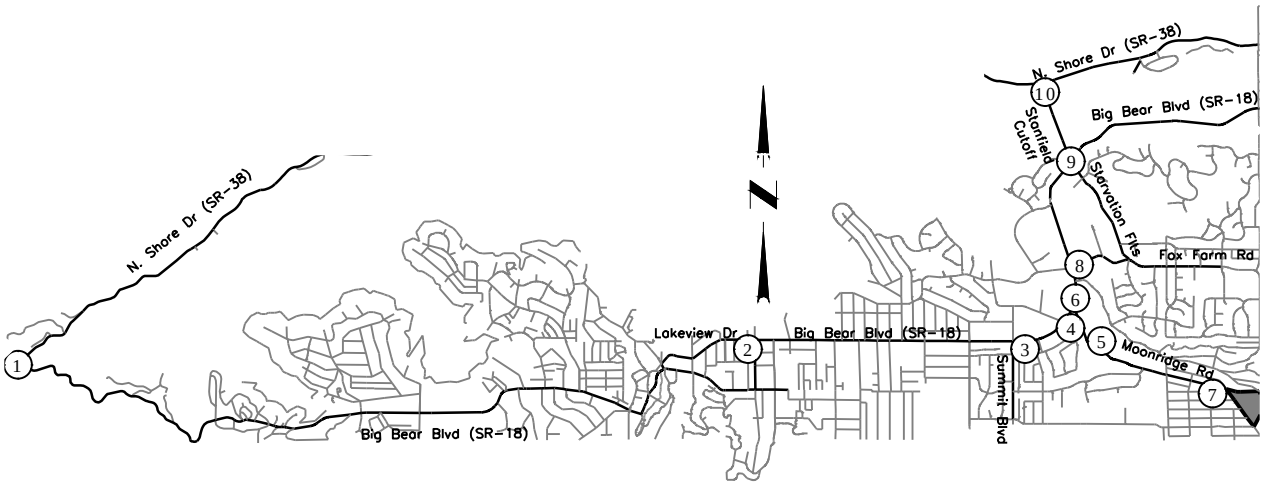
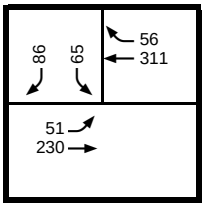
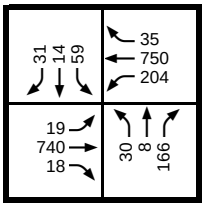
Figure 5-F – Existing Plus Ambient Growth Plus Cumulative Weekend Peak Hour Intersection Volumes

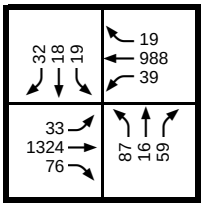




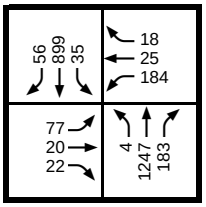
1. North Shore Drive (SR-38) (NS) / Big Bear Boulevard (SR-18) (EW)



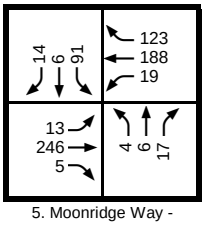
2. Pine Knot Boulevard (NS) / Big Bear Boulevard (SR-18) (EW)



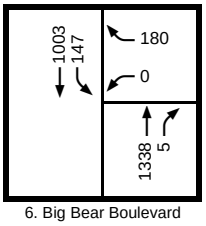
3. Summit Boulevard (NS) / Big Bear Boulevard (SR-18) (EW)



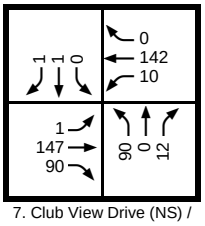
4. Big Bear Boulevard (SR-18) (NS) / Moonridge Road (EW)



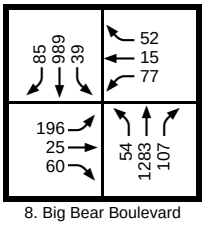
5. Moonridge Way - Brownie Lane (NS) / Moonridge Road (EW)



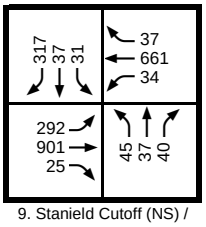
6. Big Bear Boulevard (SR-18) (NS) / Moonridge Way (EW)



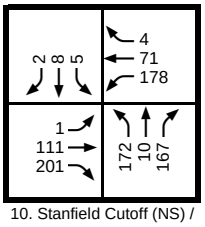
7. Club View Drive (NS) / Moonridge Road (EW)



8. Big Bear Boulevard (SR-18) (NS) / Fox Farm Road (EW)



9. Stanfield Cutoff (NS) / Big Bear Boulevard (SR-18) (EW)



10. Stanfield Cutoff (NS) / North Shore Drive (SR-38) (EW)

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- **Levels of Service – Existing Plus Ambient Growth Plus Cumulative Plus Project Conditions**

Table 5-5 provides the projected delay and levels of service at the study intersections under existing plus ambient growth plus cumulative plus project conditions without off-site improvements. These levels of service vary from LOS B to D. The existing plus ambient growth plus cumulative plus project weekday PM peak hour and weekend peak hour intersection turning movement volumes are shown on Figure 5-G and Figure 5-H, respectively. The levels of service are based upon the existing geometrics for the study intersections. The level of service calculation worksheets are provided in Appendix E. The following study intersection is anticipated to operate at an unacceptable LOS:

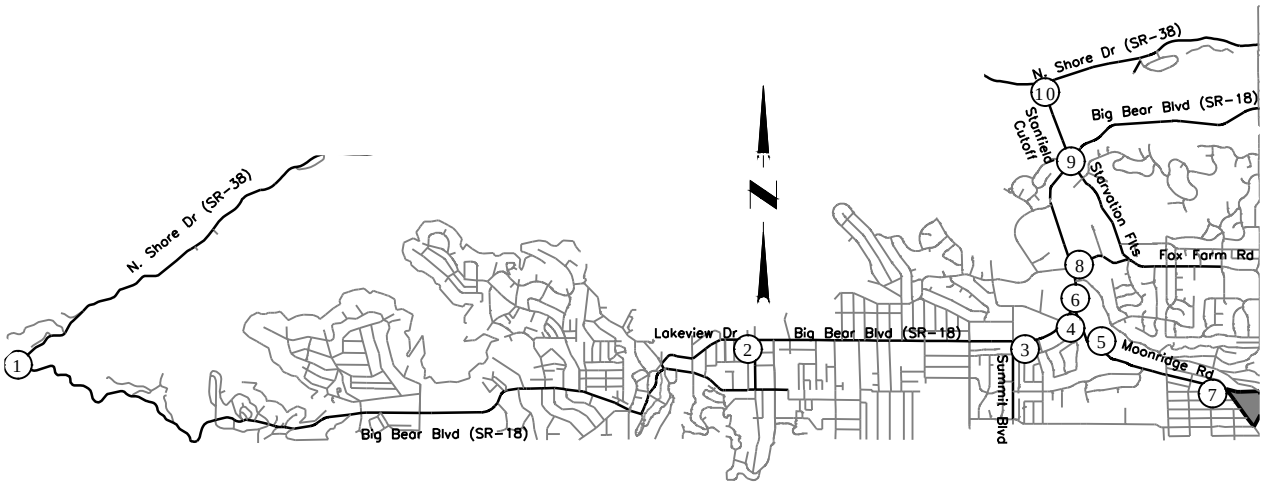
9. Stanfield Cutoff (NS) / Big Bear Boulevard (SR-18) (EW)

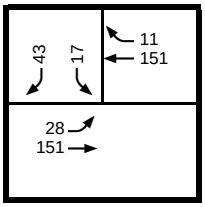
Table 5-5 – Levels of Service – Existing Plus Ambient Growth Plus Cumulative Plus Project Conditions

Intersection	Peak Hour	Traffic Control	Delay (sec)	LOS
1. North Shore Drive (SR-38) (NS) / Big Bear Boulevard (SR-18) (EW)	Weekday PM Weekend	OWSC	11.3 17.4	B C
2. Pine Knot Boulevard (NS) / Big Bear Boulevard (SR-18) (EW)	Weekday PM Weekend	Signal	17.9 22.2	B C
3. Summit Boulevard (NS) / Big Bear Boulevard (SR-18) (EW)	Weekday PM Weekend	Signal	12.1 10.9	B B
4. Big Bear Boulevard (SR-18) (NS) / Moonridge Road (EW)	Weekday PM Weekend	Signal	22.4 18.3	C B
5. Moonridge Way (NS) / Moonridge Road (EW)	Weekday PM Weekend	TWSC	13.5 17.2	B C
6. Big Bear Boulevard (SR-18) (NS) / Moonridge Way (EW)	Weekday PM Weekend	OWSC	15.4 18.2	C C
7. Club View Drive (NS) / Moonridge Road (EW)	Weekday PM Weekend	TWSC	10.3 11.9	B B
8. Big Bear Boulevard (SR-18) (NS) / Fox Farm Road (EW)	Weekday PM Weekend	Signal	18.7 17.9	B B
9. Stanfield Cutoff (NS) / Big Bear Boulevard (SR-18) (EW)	Weekday PM Weekend	Signal	36.8 45.6	***D*** ***D***
10. Stanfield Cutoff (NS) / North Shore Drive (SR-38) (EW)	Weekday PM Weekend	TWSC	21.7 19.8	C C

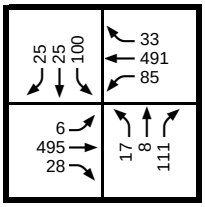
OWSC = One Way Stop Controlled
TWSC = Two Way Stop Controlled

Figure 5-G – Existing Plus Ambient Growth Plus Cumulative Plus Project PM Weekday Peak Hour Intersection Volumes

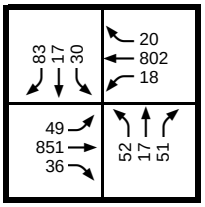




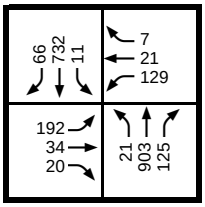
1. North Shore Drive (SR-38) (NS) / Big Bear Boulevard (SR-18) (EW)



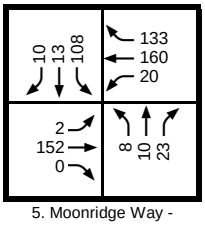
2. Pine Knot Boulevard (NS) / Big Bear Boulevard (SR-18) (EW)



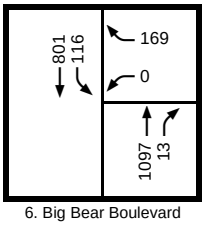
3. Summit Boulevard (NS) / Big Bear Boulevard (SR-18) (EW)



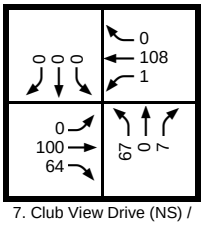
4. Big Bear Boulevard (SR-18) (NS) / Moonridge Road (EW)



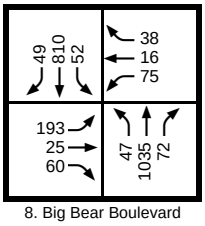
5. Moonridge Way - Brownie Lane (NS) / Moonridge Road (EW)



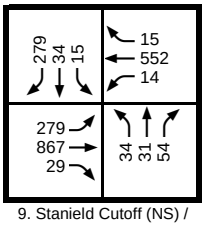
6. Big Bear Boulevard (SR-18) (NS) / Moonridge Way (EW)



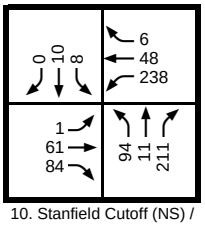
7. Club View Drive (NS) / Moonridge Road (EW)



8. Big Bear Boulevard (SR-18) (NS) / Fox Farm Road (EW)



9. Stanfield Cutoff (NS) / Big Bear Boulevard (SR-18) (EW)



10. Stanfield Cutoff (NS) / North Shore Drive (SR-38) (EW)

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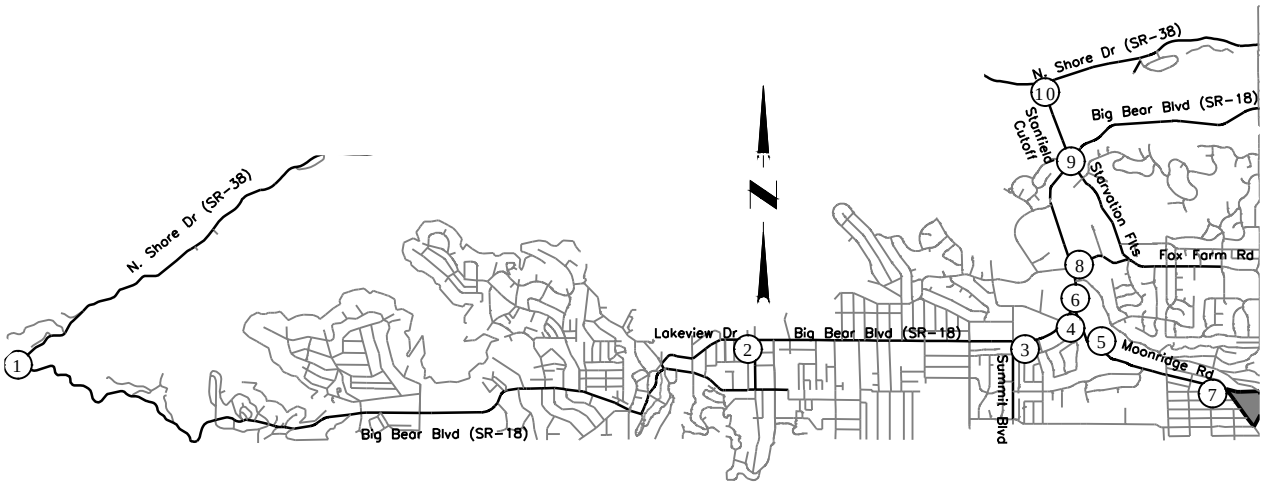
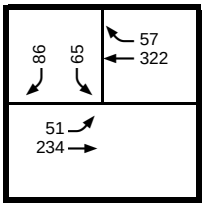
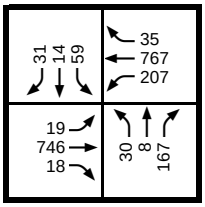
Figure 5-H – Existing Plus Ambient Growth Plus Cumulative Plus Project Weekend Peak Hour Intersection Volumes

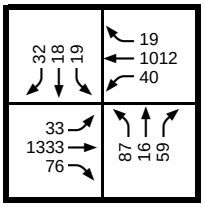




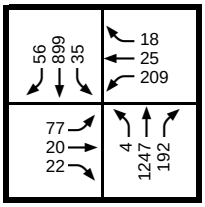
1. North Shore Drive (SR-38) (NS) / Big Bear Boulevard (SR-18) (EW)



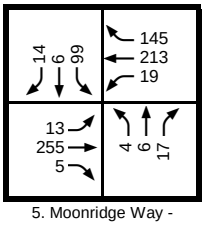
2. Pine Knot Boulevard (NS) / Big Bear Boulevard (SR-18) (EW)



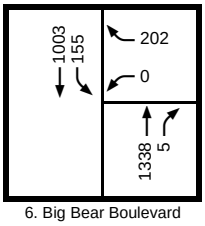
3. Summit Boulevard (NS) / Big Bear Boulevard (SR-18) (EW)



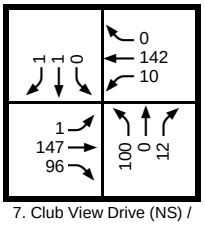
4. Big Bear Boulevard (SR-18) (NS) / Moonridge Road (EW)



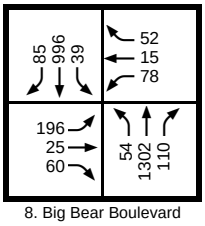
5. Moonridge Way - Brownie Lane (NS) / Moonridge Road (EW)



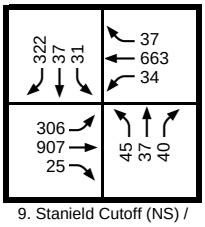
6. Big Bear Boulevard (SR-18) (NS) / Moonridge Way (EW)



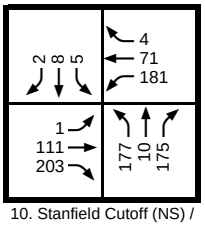
7. Club View Drive (NS) / Moonridge Road (EW)



8. Big Bear Boulevard (SR-18) (NS) / Fox Farm Road (EW)



9. Stanfield Cutoff (NS) / Big Bear Boulevard (SR-18) (EW)



10. Stanfield Cutoff (NS) / North Shore Drive (SR-38) (EW)

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Levels of Service – Existing Plus Ambient Growth Plus Cumulative Plus Project with Improvements

Table 5-6 provides the projected delay and levels of service at the study intersections under existing plus ambient growth plus cumulative projects plus project conditions with off-site improvements. With the recommended off-site improvements, the study area intersection would operate at an acceptable LOS C or better. The level of service calculation worksheets are provided in Appendix E.

Table 5-6 – Levels of Service – Existing Plus Ambient Growth Plus Cumulative Conditions

Intersection	Peak Hour	Without Improvements			With Improvements		
		Traffic Control	Delay (sec)	LOS	Traffic Control	Delay (sec)	LOS
9. Stanfield Cutoff (NS) / Big Bear Boulevard (SR-18) (EW)	Weekday PM	Signal	36.8	***D***	Signal	20.9	C
	Weekend		45.6	***D***		24.1	C

SECTION 6 - FINDINGS AND RECOMMENDATIONS

■ Traffic Impacts and Level of Service Analysis

▪ Proposed Mitigation Measures – Existing Plus Ambient Growth Plus Project Conditions

Table 6-1 and Figure 6-A present the proposed mitigation measures in order to achieve a satisfactory level of service at the study intersections in existing plus ambient growth plus project conditions.

Table 6-1 – Summary of Improvements for Existing Plus Ambient Growth Plus Project Conditions

Intersection	Scenario	Northbound			Southbound			Eastbound			Westbound			Traffic Control
		L	T	R	L	T	R	L	T	R	L	T	R	
9. Stanfield Cutoff (NS) /	Existing	S	1	1	S	1	1	1	1	1	1	2	S	Signal
Big Bear Boulevard (SR-18) (EW)	Improvements	S	1	1	S	1	***1ol***	1	1	1	1	2	S	Signal

S = Lane is shared with through movement

▪ Proposed Mitigation Measures – Existing Plus Ambient Growth Plus Cumulative Plus Project Conditions

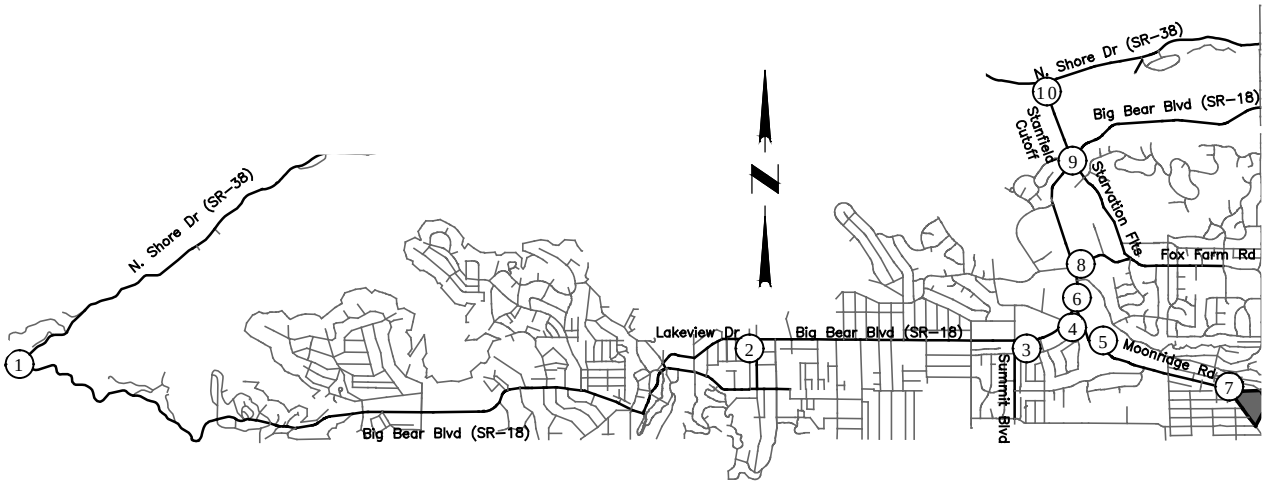
Table 6-2 and Figure 6-A present the proposed mitigation measures in order to achieve a satisfactory level of service at the study intersections in existing plus ambient growth plus project conditions.

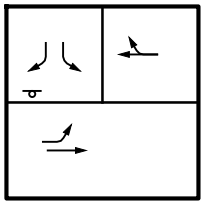
Table 6-2 – Summary of Improvements for Existing Plus Ambient Growth Plus Cumulative Plus Project Conditions

Intersection	Scenario	Northbound			Southbound			Eastbound			Westbound			Traffic Control
		L	T	R	L	T	R	L	T	R	L	T	R	
9. Stanfield Cutoff (NS) /	Existing	S	1	1	S	1	1	1	1	1	1	2	S	Signal
Big Bear Boulevard (SR-18) (EW)	Improvements	S	1	1	S	1	***1ol***	1	1	1	1	2	S	Signal

S = Lane is shared with through movement

Figure 6-A – Summary of Improvements for Existing Plus Ambient Growth Plus Project and Existing Plus Ambient Growth Plus Cumulative Plus Project

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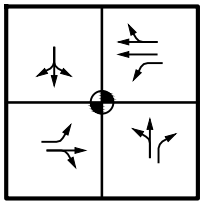
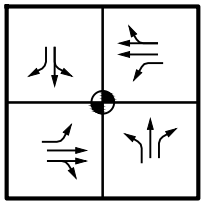
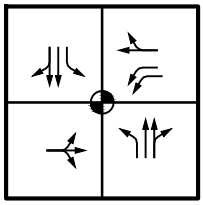
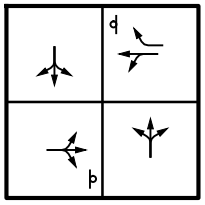
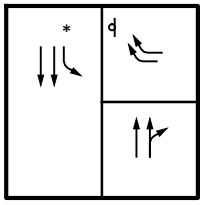
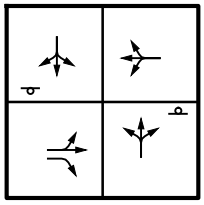

2. Pine Knot Boulevard (NS) / Big Bear Boulevard (SR-18) (EW)

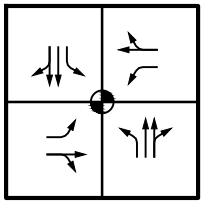

3. Summit Boulevard (NS) / Big Bear Boulevard (SR-18) (EW)


4. Big Bear Boulevard (SR-18) (NS) / Moonridge Road (EW)


5. Moonridge Road (NS) / Moonridge Way (EW)

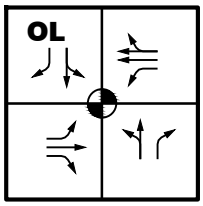

6. Big Bear Boulevard (SR-18) (NS) / Moonridge Way (EW)


7. Club View Drive (NS) / Moonridge Road (EW)

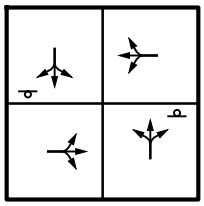

8. Big Bear Boulevard (SR-18) (NS) / Fox Farm Road (EW)

LEGEND

- Existing Traffic Signal
- Proposed Traffic Signal
- Existing Lane Geometrics
- Stop Sign
- * Two-Way Left-Turn Lane
- **OL** Proposed Right-Turn Overlap Phase



9. Stanfield Cutoff (NS) / Big Bear Boulevard (SR-18) (EW)


10. Stanfield Cutoff (NS) / North Shore Drive (SR-38) (EW)

G:\2011\11-3004\Traffic\Moonridge Animal Park 09-17-2012.dwg | 2/24/2011 | 11:42

■ Traffic Signal Warrants

The California MUTCD states that the satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal. Peak hour traffic signal warrant analysis should only be considered as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal. Intersections that exceed the peak hour warrant are more likely to meet one or more of the other volume based signal warrants. The MUTCD also advises that a traffic control signal should not be installed unless:

- One or more of the traffic signal warrants is satisfied;
- An engineering study indicates that installing a traffic control signal will improve the overall safety and/or operation of the intersection; and
- It will not seriously disrupt progressive traffic flow.

For existing traffic conditions, the peak hour traffic control signal warrant is expected to be satisfied for the following study area unsignalized intersections (see Appendix D for technical calculations):

6. Big Bear Boulevard (SR-18) (NS) / Moonridge Way (EW)
10. Stanfield Cutoff (NS) / North Shore Drive (EW)

For existing plus ambient growth traffic conditions, no additional study area unsignalized intersections are expected to meet the peak hour traffic control signal warrant (see Appendix D for technical calculations).

For existing plus ambient growth plus project traffic conditions, no additional study area unsignalized intersections are expected to meet the peak hour traffic control signal warrant (see Appendix D for technical calculations).

For existing plus ambient growth plus other projects traffic conditions, no additional study area unsignalized intersections are expected to meet the peak hour traffic control signal warrant (see Appendix D for technical calculations).

For existing plus ambient growth plus cumulative projects plus project traffic conditions, no additional study area unsignalized intersections are expected to meet the peak hour traffic control signal warrant (see Appendix D for technical calculations).

■ Circulation Recommendations

This traffic impact analysis demonstrates that the direct traffic impacts generated by the Moonridge Animal Park can be mitigated to meet the required level of service if the following recommended improvements are adopted.

▪ Off-Site Recommendations

▫ Intersections

- Modify the signalized intersection of Stanfield Cutoff (NS) and Big Bear Boulevard (SR-18) (EW) to include the following geometrics:
  Northbound: One shared left and through lane. One right-turn lane.
  Southbound: One shared left and through lane. One right-turn lane (overlap phase).
  Eastbound: One left-turn lane. One through lane. One right-turn lane.
  Westbound: One left-turn lane. One through lane. One shared through and right-turn lane.

■ Safety and Operational Improvements

- A flashing beacon should be installed at the pedestrian crosswalk connecting the project site with the parking lot north of Moonridge Road to increase crosswalk visibility and safety.
- An engineering study should be conducted to determine the need for a traffic control signal at the pedestrian crosswalk per California Manual of Uniform Control Devices (California MUTCD)
- Sight distance at the project entrance roadway should be reviewed with respect to standard City of Big Bear Lake sight distance standards at the time of preparation of final grading, landscape and street improvement plans.
- Sight distance at the pedestrian crosswalk should be reviewed with respect to standard City of Big Bear Lake sight distance standards at the time of preparation of final grading, landscape and street improvement plans.
- Participate in the phased construction of off-site traffic signals through payment of project's fair share of traffic signal mitigation fees.
- Signing/striping should be implemented in conjunction with detailed construction plans for the project site.

■ Regional Funding Mechanisms

The project will participate in the cost of off-site improvements through payment of the following mitigation fees:

- Capital Improvement Program (CIP).

These fees should be collected and utilized as needed by City of Big Bear Lake to construct the improvements necessary to maintain the required level of service.

APPENDIX A

Scoping Agreement

SCOPING AGREEMENT FOR TRAFFIC IMPACT STUDY

This letter acknowledges the San Bernardino County requirements for traffic impact analysis of the following project.

Case No. _____
Related Cases –
SP No. _____
EIR No. _____
GPA No. _____
CZ No. _____
Project Name: Moonridge Animal Park
Project Address: South Corner of Moonridge Road and Club View Drive
Road, in the Big Bear Valley
Project Description: 10.4 Acre Zoo

	Consultant	Developer
Name	Albert A. Webb Associates	County of San Bernardino – Special Districts
Address	3788 McCray Street	157 W. 5th Street, 2nd Floor
	Riverside, CA 92506	San Bernardino, CA 92415
Telephone:	(951) 686-1070 Fax: (951) 788-1256	(909) 387-5940 Fax: (909) 387-5542

A. Trip Generation Source: _____

Current GP Land Use: Vacant
Current Zoning: Commercial Visitor (CV)
Open Space (OS)
Proposed Land Use: Animal Park, Restaurant
Proposed Zoning: _____

Internal Trip Allowance ☒ Yes ☐ No (10% Trip Discount)
Pass-By Trip Allowance ☒ Yes ☐ No (43% Trip Discount)

Table 1 – Trip Generation Rates

Land Use	Unit	PM Peak Hour			Weekend Peak			Daily
		Total	In	Out	Total	In	Out	
Moonridge Animal Park (25.6 Acre Zoo)	Emp.[1]	1.00	0.20	0.80	1.00	0.20	0.80	4.00
	TG/Y[2]	0.27	0.05	0.22	0.27	0.05	0.22	2.74
High-Turnover (Sit-Down) Reataurant Land Use Category : 932	TSF	11.20	6.50	4.40	11.20	6.80	4.40	127.20

Emp. = Employees, TG/Y = Thousand Guests per Year TSF = Thousand Square Feet

[1] Trips estimated at 1 trip-end per employee during the AM and PM Peak Hours. In/Out ratio assumed to be 80% in / 20% out for AM Peak Hour and 20% in / 80% out for PM Peak Hour. Daily trip-ends assumes all employees enter site before shift, exit site after shift, and half of employees leave site during lunch plus 1 additional miscellaneous trip per employee (deliveries, visitors, etc.)

[2] Assuming the zoo will operate 7 days a week year round and an average of two guests per vehicle. AM and PM Peak Hour is estimated as 10% of daily trips. In/Out ratio assumed to be 80% in / 20% out for AM Peak Hour and 20% in / 80% out for PM Peak Hour

Table 2 – Trip Generation- Year 2015

Land Use	Qty	Unit	PM Peak Hour			Weekend Peak			Daily
			Total	In	Out	Total	In	Out	
Moonridge Animal Park	15[1]	Emp.	15	3	12	15	3	12	60
	169[1]	TG/Y	46	9	37	46	9	37	463
High-Turnover (Sit-Down) Restaurant	2.5	TSF	28	17	11	28	17	11	318
Total			89	29	60	89	29	60	841
Internal Trips Between Moonridge Animal Park and Resturant (10%)			4	2	2	4	2	2	4
Pass by Trips (43%)[2] PM-Only			10	6	4	10	6	4	10
Primary Trip Total			79	23	56	79	23	56	831

Emp. = Employees, TG/Y = Thousand Guests per Year, TSF= Thousand Square Feet

[1] According to the *Business Plan for Moonridge Animal Park* by the Natelson Company, Inc., February 2003

[2] From Trip Generation Manual, 8th Ed. by Institute of Transportation Engineers, 2008. (Restaurant Only)

Table 3 – Cumulative Projects

Project	Land Use	Qty	Unit	AM Peak Hour	PM Peak Hour	Weekend PM Peak Hour	Weekday Daily	Weekend Daily
1. Knickerbocker 42 Unit Housing	Apartments	42	DU	23	28	22	279	268
2. Community Healthcare	Hospital	8.4	TSF	11	12	19	138	86
3. Big 5	Sporting Goods Superstore	10.5	TSF	0[1]	32	70	320	700
4. BMX Park[3]	BMX Park	10.5	TSF	0	9	15	18	30
5. 26 Lot Subdivision	Single-Family Detached Housing	26	DU	20	27	24	248	262
TOTAL				**54**	**108**	**150**	**1,003**	**1,346**

DU = Dwelling Units, TSF = 1,000 Square Feet Gross Floor Area.

[1] AM Peak Hour assumed to be 0 due to Store opening at 10AM

[2] PM Peak Hour Assumed to be 10% of Daily Volume

[3] Trip Generation Rates Taken from Environmental Statement Annexure 1: Transport Assessment Appendices Volume 13B Feburary 2007. AM estimated to be 0 due to school hours and PM Peak Hour is estimated as 50% of daily trips. In/Out ratio assumed to be 50% in / 50% out for PM Peak Hour

B. Trip Geographic Distribution: N 0% S 0% E 0% W 0%

See attached figure for detailed assignment

C. Background Traffic

Project Build-out Year 2015 Annual Ambient Growth Rate: 2%

Phase Year(s) _____

Other area projects to be analyzed: County and City of Big Bear Lake will provide approved projects in the impact area.

Model/Forecast methodology: _____

D. Study Intersections:

1. Big Bear Boulevard (SR-18) / N. Shore Dr. (SR-38)
2. Big Bear Boulevard (SR-18) / Pine Knot Blvd.
3. Big Bear Boulevard (SR-18) / Summit Blvd.
4. Big Bear Boulevard (SR-18) / Moonridge Rd.
5. Moonridge Rd. / Moonridge Way
6. Big Bear Boulevard (SR-18) / Moonridge Way
7. Moonridge Rd. / Club View Dr.
8. Big Bear Boulevard (SR-18) / Fox Farm Rd.
9. Big Bear Boulevard (SR-18) / Stanfield Cutoff

10. Stanfield Cutoff / N. Shore Dr. (SR-38)

E. Study Roadway Segments:

1. _____

F. Other Jurisdictional Impacts:

Is this project within a city's sphere of influence or one mile radius of city boundaries? ☒ Yes ☐ No

If so, name of City Jurisdiction: City of Big Bear Lake

G. Site Plan (see attached figure)

H. Specific issues to be addressed in the Study (in addition to the standard analysis described in the Guidelines)

_____

I. Existing Conditions

Traffic count data must be new or recent. Provide traffic count dates if using other than new counts.
Date of counts: _____

Recommended by:

Dilett Shutt — 9-16-11

Consultant's Representative — Date

Scoping Agreement Submitted on — 9-16-11 — Date

Revised on — 9-19-11 — Date

Approved Scoping Agreement:

_____ — _____

Date

Figure A - Directional Distribution of Project Traffic

MOONRIDGE ANIMAL PARK, SAN BERNARDINO COUNTY, CALIFORNIA

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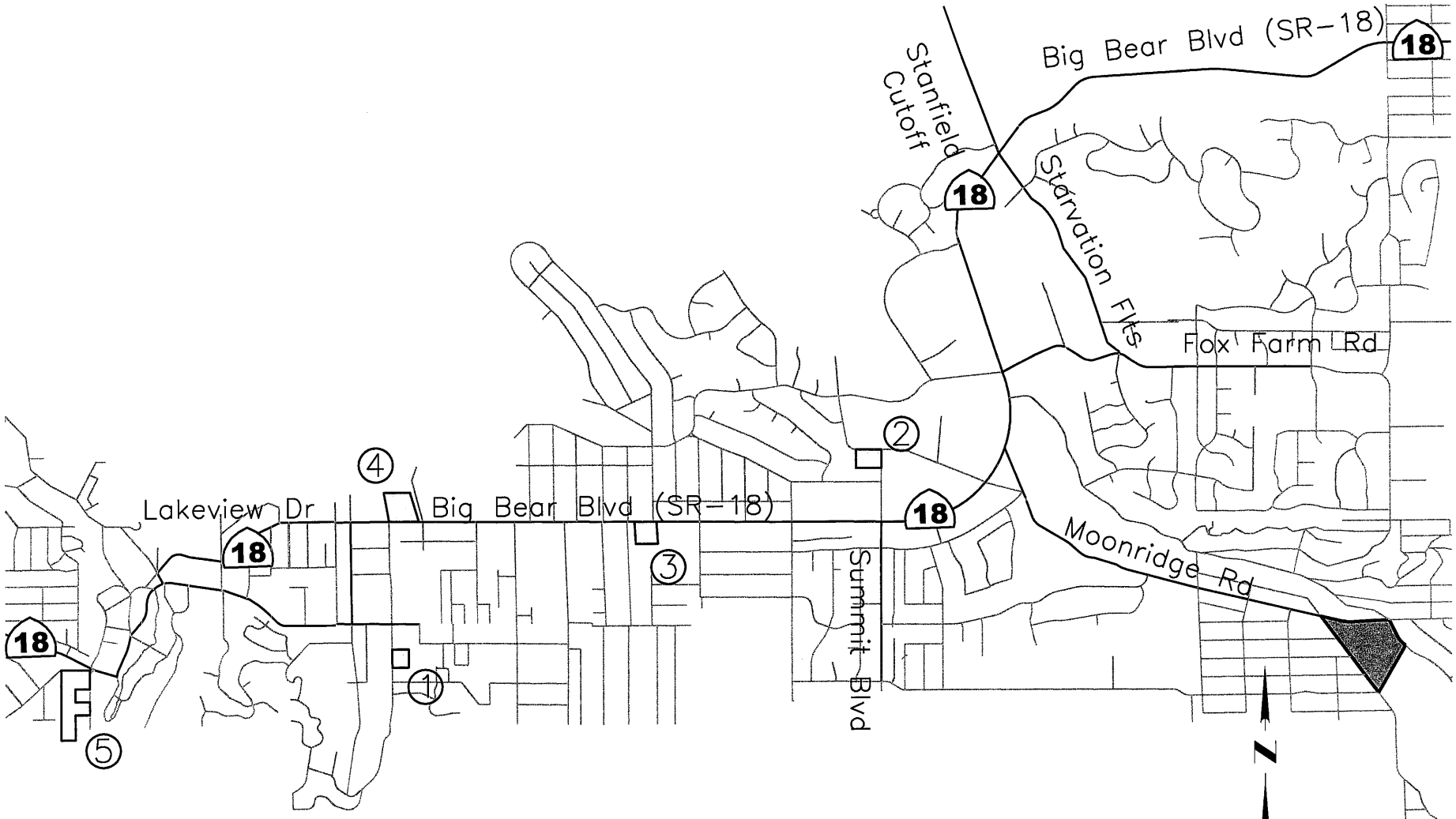
Figure B - Cumulative Projects



MOONRIDGE ANIMAL PARK, SAN BERNARDINO COUNTY, CALIFORNIA

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APPENDIX B

Cumulative Project Information

Michael Sampson

From: Laura Hudson
Sent: Tuesday, September 13, 2011 4:24 PM
To: Dilesh Sheth
Cc: Michael Sampson; Myung Choo
Subject: FW: Cumulative Projects for Moon Ridge TIA

See below

Laura Hudson
Project Coordinator
Albert A. **WEBB** Associates
T. 951.320.6040

From: Laura Hudson [mailto:laura.hudson@webbassociates.com]
Sent: Tuesday, September 13, 2011 3:20 PM
To: Andrew Mellon
Subject: Cumulative Projects for Moon Ridge TIA

Hi Andrew –
When you have a moment, can you please fill in a few gaps for me on these Big Bear projects?

Big 5 – ~~9,000~~ S.F. (10,500 S.F.) – Can you please provide a location or APN(s)? Also, is there a City project number associated with this?

Plot Plan Review 2011-010
APN: 0309-145-22
Address: 41385 Big Bear Blvd
Approved: April 6, 2011 and Building Elevations re-approved May 4, 2011

TTM18580 – (I found this DEIR on the City's website) 26 SFR on 6.69 acres, APN's 0307-172-36, 39, 40 & 43 – Is this project approved for construction?

This project has MAJOR opposition to it. Hence the 2005-240 project number. It means it was the 240th project submitted in 2005. This was originally a Mitigated Negative Declaration. Project got sued and now it's an EIR! Lol only in Big Bear would a 26 lot subdivision require an EIR. This project should hopefully be over soon, but no way to tell.

3,600 S.F. BMX Park – Is there a City project number or CUP for this? By any chance did they prepare a traffic study?

Conditional Use Permit 2011-139
APN: 0309-011-029, 30
Address: 40906 and 40946 Big Bear Blvd

No traffic study that I can see, project is exempt from CEQA- Section 15303, Class 3
Project is going to Planning Commission next week and staff recommends approval. We don't anticipate any public opposition.

http://www.bigbeargrizzly.net/news/article_036988f8-c308-11e0-9803-001cc4c03286.html

8,400 S.F. Health Clinic – City project number? And location...?

Pre-Development Review 2011-095
Bear Valley Community Healthcare District
APN: 2328-034-04
Address: 41870 Garstin Drive

Knickerbocker 42 Unit Housing Urban Housing communities
CUP 2009-019
Address: 773 Knickerbocker Road

Four apartment buildings containing 42 dwelling units on two parcels of 2.6 acres, zoned R-3

This project is probably the newest project where in house staff reviewed the traffic study. Units will be ready to open Project will be open/available VERY soon.
http://rotwnews.com/area/big_bear/crossing/7398

Southwest Gas Corporation also submitted a CUP application (2011-133) on August 19, 2011 for a new office building and maintenance yard located at 140 Business Center Drive. This project has not been approved yet but they are very serious about moving forward and staff has had many discussions with applicants design team and consultants.

Also – If the project is located on Big Bear Boulevard, which is owned by Cal Trans, then they will review the traffic study. If the project is on an interior street or main ingress and egress points are not located on Big Bear Boulevard then our Engineering staff will review them.

Thanks again!

You're Welcome!

Laura Hudson
Project Coordinator
Albert A. **WEBB** Associates
T. 951.320.6040

ALBERT A. WEBB ASSOCIATES

Corporate Office
3788 McCray Street | Riverside, CA 92506
T. 951.320.6040 | F. 951.788.1256
laura.hudson@webbassociates.com

Desert Region
36-951 Cook St #103 | Palm Desert, CA 92211
T. 760.568.5005 | F. 760.568.3443
www.webbassociates.com

History. Consistency. Progress.

APPENDIX C

Traffic Count Worksheets

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Big Bear Lake
N/S: North Shore Drive (SR-38)
E/W: Big Bear Boulevard (SR-18)
Weather: Sunny

File Name : BBLNSBBPM
Site Code : 00000001
Start Date : 9/28/2011
Page No : 1

Groups Printed- Total Volume

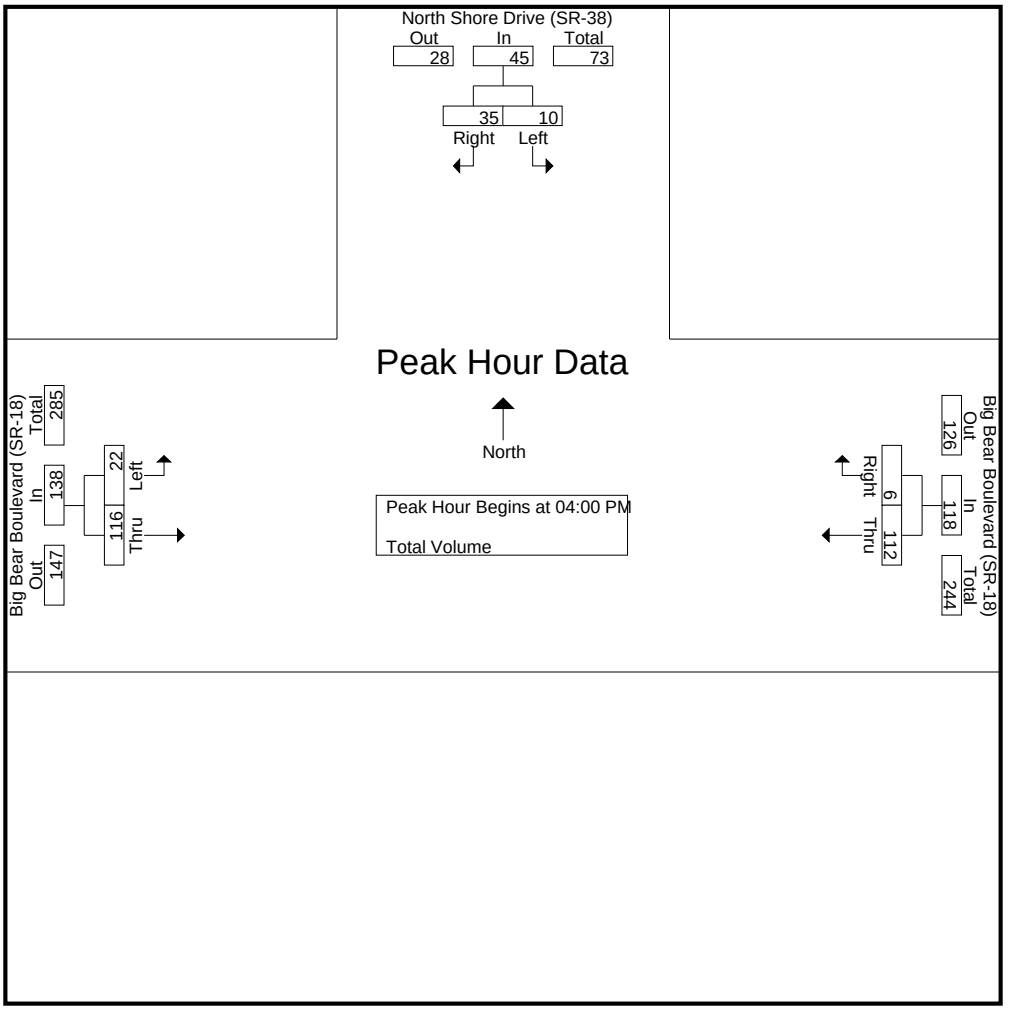
	North Shore Drive (SR-38) Southbound			Big Bear Boulevard (SR-18) Westbound			Big Bear Boulevard (SR-18) Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
04:00 PM	2	9	11	27	3	30	3	30	33	74
04:15 PM	2	13	15	23	2	25	6	22	28	68
04:30 PM	3	8	11	34	1	35	4	35	39	85
04:45 PM	3	5	8	28	0	28	9	29	38	74
Total	10	35	45	112	6	118	22	116	138	301
05:00 PM	2	8	10	21	0	21	4	26	30	61
05:15 PM	2	13	15	26	4	30	8	9	17	62
05:30 PM	4	11	15	40	3	43	14	24	38	96
05:45 PM	0	6	6	12	0	12	6	20	26	44
Total	8	38	46	99	7	106	32	79	111	263
Grand Total	18	73	91	211	13	224	54	195	249	564
Apprch %	19.8	80.2		94.2	5.8		21.7	78.3		
Total %	3.2	12.9	16.1	37.4	2.3	39.7	9.6	34.6	44.1	

	North Shore Drive (SR-38) Southbound			Big Bear Boulevard (SR-18) Westbound			Big Bear Boulevard (SR-18) Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	2	9	11	27	**3**	30	3	30	33	74
04:15 PM	2	**13**	**15**	23	2	25	6	22	28	68
04:30 PM	**3**	8	11	**34**	1	**35**	4	**35**	**39**	**85**
04:45 PM	3	5	8	28	0	28	**9**	29	38	74
Total Volume	10	35	45	112	6	118	22	116	138	301
% App. Total	22.2	77.8		94.9	5.1		15.9	84.1		
PHF	.833	.673	.750	.824	.500	.843	.611	.829	.885	.885

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Big Bear Lake
N/S: North Shore Drive (SR-38)
E/W: Big Bear Boulevard (SR-18)
Weather: Sunny

File Name : BBLNSBBPM
Site Code : 00000001
Start Date : 9/28/2011
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:45 PM			04:45 PM			04:00 PM		
+0 mins.	3	5	8	28	0	28	3	30	33
+15 mins.	2	8	10	21	0	21	6	22	28
+30 mins.	2	**13**	**15**	26	**4**	30	4	**35**	**39**
+45 mins.	**4**	11	15	**40**	3	**43**	**9**	29	38
Total Volume	11	37	48	115	7	122	22	116	138
% App. Total	22.9	77.1		94.3	5.7		15.9	84.1	
PHF	.688	.712	.800	.719	.438	.709	.611	.829	.885

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Big Bear Lake
N/S: North Shore Drive (SR-38)
E/W: Big Bear Boulevard (SR-18)
Weather: Sunny

File Name : BBLNSBBSAT
Site Code : 00000001
Start Date : 10/1/2011
Page No : 1

Groups Printed- Total Volume

	North Shore Drive (SR-38) Southbound			Big Bear Boulevard (SR-18) Westbound			Big Bear Boulevard (SR-18) Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
03:00 PM	8	15	23	46	9	55	11	76	87	165
03:15 PM	13	15	28	33	7	40	10	61	71	139
03:30 PM	6	13	19	45	11	56	18	55	73	148
03:45 PM	20	20	40	68	9	77	12	58	70	187
Total	47	63	110	192	36	228	51	250	301	639
04:00 PM	15	17	32	86	14	100	10	45	55	187
04:15 PM	10	15	25	60	11	71	10	47	57	153
04:30 PM	8	23	31	55	11	66	12	48	60	157
04:45 PM	7	12	19	51	10	61	11	42	53	133
Total	40	67	107	252	46	298	43	182	225	630
Grand Total	87	130	217	444	82	526	94	432	526	1269
Apprch %	40.1	59.9		84.4	15.6		17.9	82.1		
Total %	6.9	10.2	17.1	35	6.5	41.4	7.4	34	41.4	

	North Shore Drive (SR-38) Southbound			Big Bear Boulevard (SR-18) Westbound			Big Bear Boulevard (SR-18) Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 04:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 03:45 PM										
03:45 PM	**20**	20	**40**	68	9	77	**12**	**58**	**70**	**187**
04:00 PM	15	17	32	**86**	**14**	**100**	10	45	55	187
04:15 PM	10	15	25	60	11	71	10	47	57	153
04:30 PM	8	**23**	31	55	11	66	12	48	60	157
Total Volume	53	75	128	269	45	314	44	198	242	684
% App. Total	41.4	58.6		85.7	14.3		18.2	81.8		
PHF	.663	.815	.800	.782	.804	.785	.917	.853	.864	.914

Counts Unlimited, Inc.
PO Box 1178
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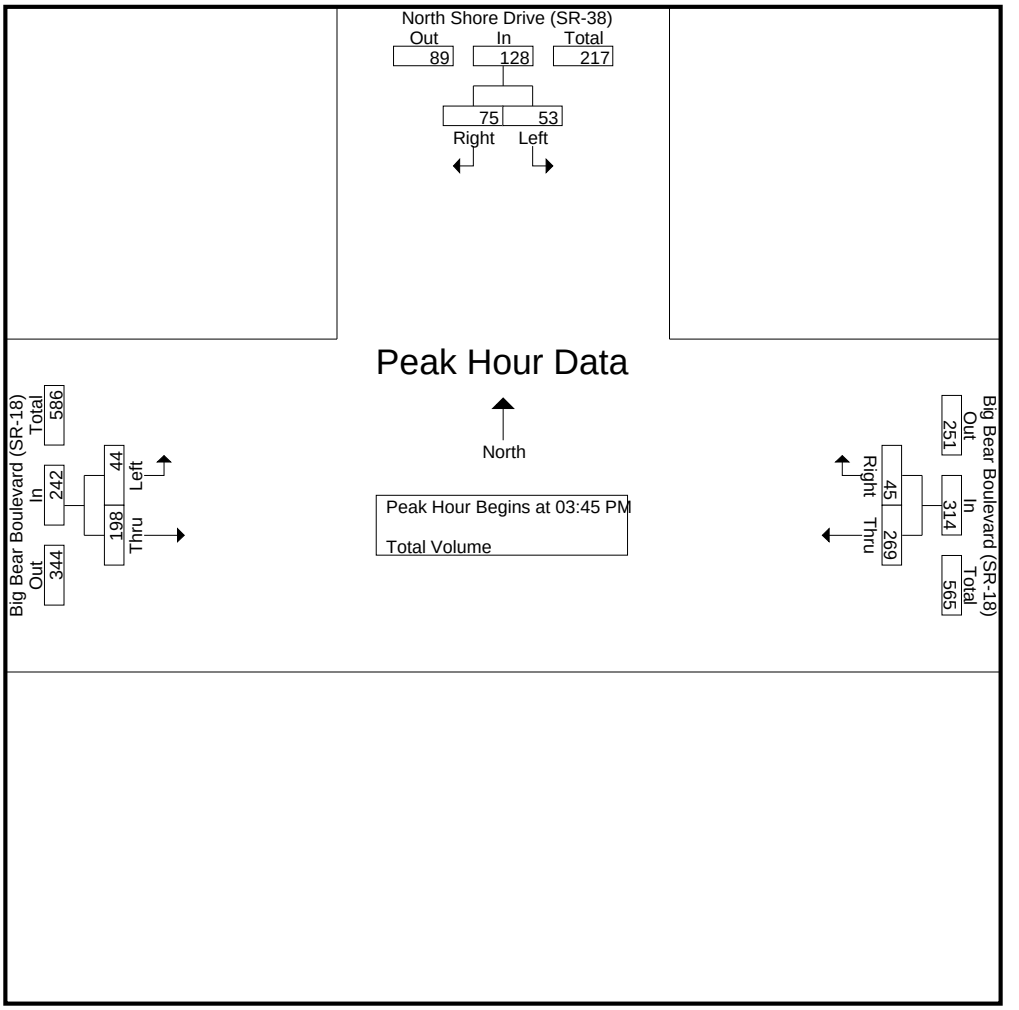
City of Big Bear Lake
N/S: North Shore Drive (SR-38)
E/W: Big Bear Boulevard (SR-18)
Weather: Sunny

File Name : BBLNSBBSAT
Site Code : 00000001
Start Date : 10/1/2011
Page No : 2



Peak Hour Analysis From 03:00 PM to 04:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	03:45 PM			03:45 PM			03:00 PM		
+0 mins.	**20**	20	**40**	68	9	77	11	**76**	**87**
+15 mins.	15	17	32	**86**	**14**	**100**	10	61	71
+30 mins.	10	15	25	60	11	71	**18**	55	73
+45 mins.	8	**23**	31	55	11	66	12	58	70
Total Volume	53	75	128	269	45	314	51	250	301
% App. Total	41.4	58.6		85.7	14.3		16.9	83.1	
PHF	.663	.815	.800	.782	.804	.785	.708	.822	.865

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Big Bear Lake
N/S: Pine Knot Avenue
E/W: Big Bear Boulevard (SR-18)
Weather: Sunny

File Name : BBLPKBBPM
Site Code : 00000013
Start Date : 9/28/2011
Page No : 1

Groups Printed- Total Volume

	Pine Knot Avenue Southbound				Big Bear Boulevard (SR-18) Westbound				Pine Knot Avenue Northbound				Big Bear Boulevard (SR-18) Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	27	4	7	38	19	78	8	105	1	2	23	26	2	53	2	57	226
04:15 PM	26	6	6	38	13	108	10	131	3	0	29	32	2	90	4	96	297
04:30 PM	19	3	6	28	12	81	10	103	3	4	17	24	0	102	5	107	262
04:45 PM	21	9	9	39	26	83	5	114	4	3	18	25	2	89	8	99	277
Total	93	22	28	143	70	350	33	453	11	9	87	107	6	334	19	359	1062
05:00 PM	15	3	0	18	15	95	2	112	4	0	26	30	1	103	5	109	269
05:15 PM	10	0	7	17	33	83	4	120	2	0	20	22	2	104	0	106	265
05:30 PM	7	3	2	12	16	77	3	96	5	0	16	21	2	67	1	70	199
05:45 PM	5	2	4	11	8	69	3	80	5	1	16	22	1	83	3	87	200
Total	37	8	13	58	72	324	12	408	16	1	78	95	6	357	9	372	933
Grand Total	130	30	41	201	142	674	45	861	27	10	165	202	12	691	28	731	1995
Apprch %	64.7	14.9	20.4		16.5	78.3	5.2		13.4	5	81.7		1.6	94.5	3.8		
Total %	6.5	1.5	2.1	10.1	7.1	33.8	2.3	43.2	1.4	0.5	8.3	10.1	0.6	34.6	1.4	36.6	

	Pine Knot Avenue Southbound				Big Bear Boulevard (SR-18) Westbound				Pine Knot Avenue Northbound				Big Bear Boulevard (SR-18) Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	**26**	6	6	38	13	**108**	**10**	**131**	3	0	**29**	**32**	**2**	90	4	96	**297**
04:30 PM	19	3	6	28	12	81	10	103	3	**4**	17	24	0	102	5	107	262
04:45 PM	21	**9**	**9**	**39**	**26**	83	5	114	**4**	3	18	25	2	89	**8**	99	277
05:00 PM	15	3	0	18	15	95	2	112	4	0	26	30	1	**103**	5	**109**	269
Total Volume	81	21	21	123	66	367	27	460	14	7	90	111	5	384	22	411	1105
% App. Total	65.9	17.1	17.1		14.3	79.8	5.9		12.6	6.3	81.1		1.2	93.4	5.4		
PHF	.779	.583	.583	.788	.635	.850	.675	.878	.875	.438	.776	.867	.625	.932	.688	.943	.930

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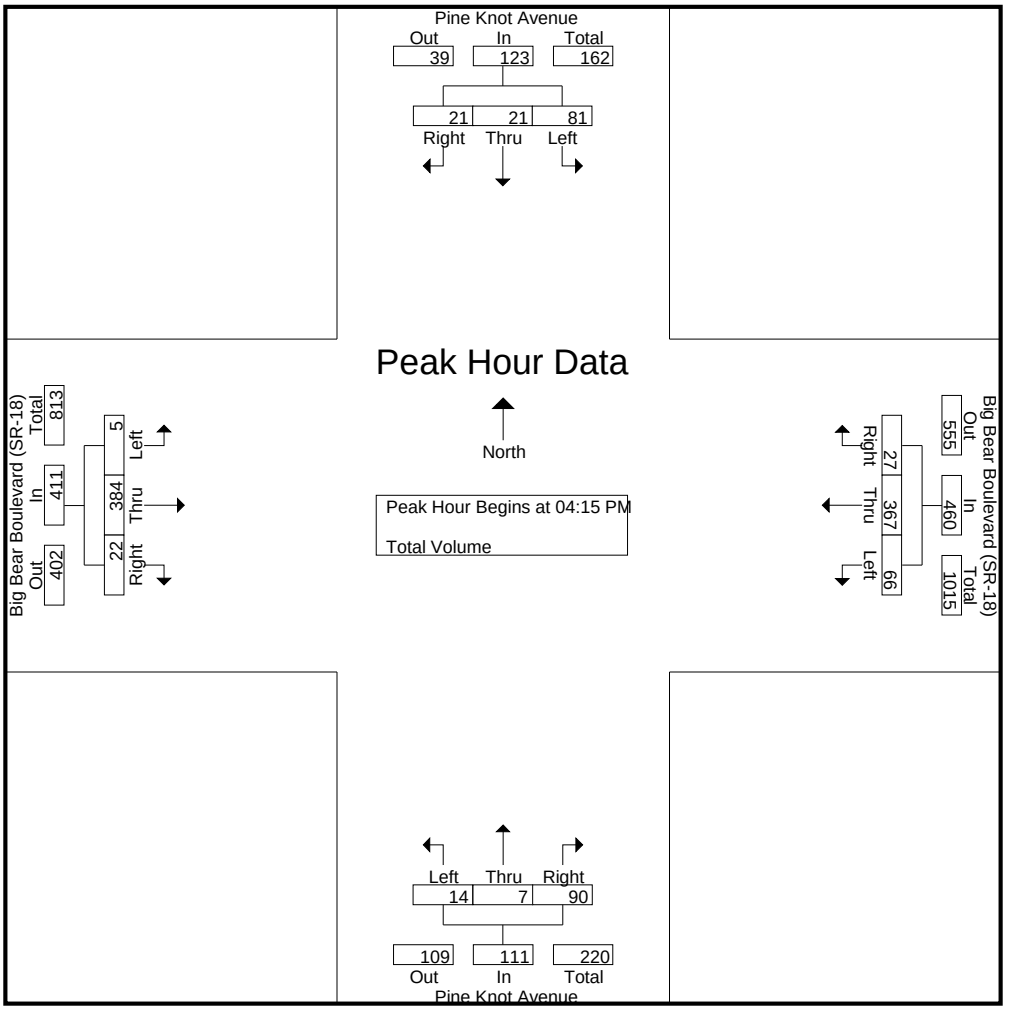
City of Big Bear Lake
N/S: Pine Knot Avenue
E/W: Big Bear Boulevard (SR-18)
Weather: Sunny

File Name : BBLPKBBPM
Site Code : 00000013
Start Date : 9/28/2011
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:00 PM				04:15 PM				04:15 PM				04:30 PM			
+0 mins.	**27**	4	7	38	13	**108**	**10**	**131**	3	0	**29**	**32**	0	102	5	107
+15 mins.	26	6	6	38	12	81	10	103	3	**4**	17	24	**2**	89	**8**	99
+30 mins.	19	3	6	28	**26**	83	5	114	**4**	3	18	25	1	103	5	**109**
+45 mins.	21	**9**	**9**	**39**	15	95	2	112	4	0	26	30	2	**104**	0	106
Total Volume	93	22	28	143	66	367	27	460	14	7	90	111	5	398	18	421
% App. Total	65	15.4	19.6		14.3	79.8	5.9		12.6	6.3	81.1		1.2	94.5	4.3	
PHF	.861	.611	.778	.917	.635	.850	.675	.878	.875	.438	.776	.867	.625	.957	.563	.966

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City of Big Bear Lake
N/S: Pine Knot Avenue
E/W: Big Bear Boulevard (SR-18)
Weather: Sunny

File Name : BBLPKBBSAT
Site Code : 00000013
Start Date : 10/1/2011
Page No : 1

Groups Printed- Total Volume

	Pine Knot Avenue Southbound				Big Bear Boulevard (SR-18) Westbound				Pine Knot Avenue Northbound				Big Bear Boulevard (SR-18) Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
03:00 PM	17	7	6	30	38	138	7	183	10	2	30	42	6	171	4	181	436
03:15 PM	16	6	14	36	41	139	10	190	7	3	35	45	10	139	7	156	427
03:30 PM	18	8	11	37	34	116	4	154	7	2	41	50	9	152	2	163	404
03:45 PM	6	5	11	22	46	177	8	231	6	1	33	40	6	174	1	181	474
Total	57	26	42	125	159	570	29	758	30	8	139	177	31	636	14	681	1741
04:00 PM	14	2	5	21	49	162	9	220	8	2	41	51	4	148	7	159	451
04:15 PM	12	4	8	24	46	154	7	207	2	3	39	44	3	156	3	162	437
04:30 PM	20	1	3	24	37	144	7	188	10	1	32	43	4	149	5	158	413
04:45 PM	15	2	5	22	33	151	5	189	4	3	38	45	2	171	2	175	431
Total	61	9	21	91	165	611	28	804	24	9	150	183	13	624	17	654	1732
Grand Total	118	35	63	216	324	1181	57	1562	54	17	289	360	44	1260	31	1335	3473
Apprch %	54.6	16.2	29.2		20.7	75.6	3.6		15	4.7	80.3		3.3	94.4	2.3		
Total %	3.4	1	1.8	6.2	9.3	34	1.6	45	1.6	0.5	8.3	10.4	1.3	36.3	0.9	38.4	

	Pine Knot Avenue Southbound				Big Bear Boulevard (SR-18) Westbound				Pine Knot Avenue Northbound				Big Bear Boulevard (SR-18) Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 03:45 PM																	
03:45 PM	6	**5**	**11**	22	46	**177**	8	**231**	6	1	33	40	**6**	**174**	1	**181**	**474**
04:00 PM	14	2	5	21	**49**	162	**9**	220	8	2	**41**	**51**	4	148	**7**	159	451
04:15 PM	12	4	8	**24**	46	154	7	207	2	**3**	39	44	3	156	3	162	437
04:30 PM	**20**	1	3	24	37	144	7	188	**10**	1	32	43	4	149	5	158	413
Total Volume	52	12	27	91	178	637	31	846	26	7	145	178	17	627	16	660	1775
% App. Total	57.1	13.2	29.7		21	75.3	3.7		14.6	3.9	81.5		2.6	95	2.4		
PHF	.650	.600	.614	.948	.908	.900	.861	.916	.650	.583	.884	.873	.708	.901	.571	.912	.936

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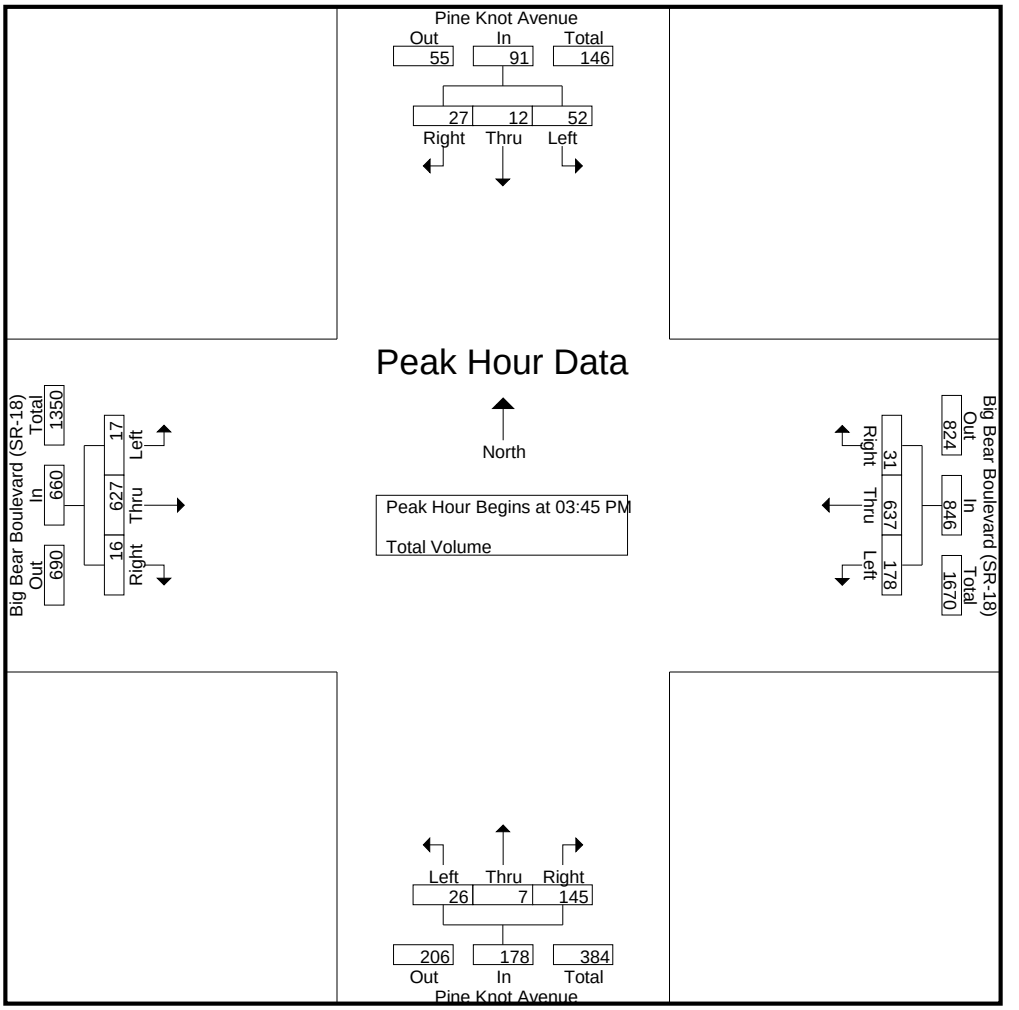
City of Big Bear Lake
N/S: Pine Knot Avenue
E/W: Big Bear Boulevard (SR-18)
Weather: Sunny

File Name : BBLPKBBSAT
Site Code : 00000013
Start Date : 10/1/2011



Peak Hour Analysis From 03:00 PM to 04:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	03:00 PM				03:45 PM				03:15 PM				03:00 PM			
+0 mins.	17	7	6	30	46	**177**	8	**231**	7	**3**	35	45	6	171	4	**181**
+15 mins.	16	6	**14**	36	**49**	162	**9**	220	7	2	**41**	50	**10**	139	**7**	156
+30 mins.	**18**	**8**	11	**37**	46	154	7	207	6	1	33	40	9	152	2	163
+45 mins.	6	5	11	22	37	144	7	188	**8**	2	41	**51**	6	**174**	1	181
Total Volume	57	26	42	125	178	637	31	846	28	8	150	186	31	636	14	681
% App. Total	45.6	20.8	33.6		21	75.3	3.7		15.1	4.3	80.6		4.6	93.4	2.1	
PHF	.792	.813	.750	.845	.908	.900	.861	.916	.875	.667	.915	.912	.775	.914	.500	.941

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City of Big Bear Lake
N/S: Summit Boulevard
E/W: Big Bear Boulevard (SR-18)
Weather: Sunny

File Name : BBLSUBBPM
Site Code : 00000066
Start Date : 9/28/2011
Page No : 1

Groups Printed- Total Volume

	Summit Boulevard Southbound				Big Bear Boulevard (SR-18) Westbound				Summit Boulevard Northbound				Big Bear Boulevard (SR-18) Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	7	4	10	21	5	126	7	138	14	6	10	30	10	207	9	226	415
04:15 PM	7	4	13	24	2	140	3	145	12	3	11	26	5	160	12	177	372
04:30 PM	7	4	13	24	4	137	4	145	8	4	22	34	10	162	6	178	381
04:45 PM	8	3	14	25	2	159	7	168	11	2	6	19	9	160	7	176	388
Total	29	15	50	94	13	562	21	596	45	15	49	109	34	689	34	757	1556
05:00 PM	7	3	7	17	5	155	3	163	8	4	9	21	9	182	5	196	397
05:15 PM	2	3	31	36	3	161	2	166	8	3	4	15	10	164	6	180	397
05:30 PM	6	1	5	12	3	148	3	154	6	1	8	15	7	149	11	167	348
05:45 PM	3	2	4	9	9	149	3	161	10	1	4	15	7	155	9	171	356
Total	18	9	47	74	20	613	11	644	32	9	25	66	33	650	31	714	1498
Grand Total	47	24	97	168	33	1175	32	1240	77	24	74	175	67	1339	65	1471	3054
Apprch %	28	14.3	57.7		2.7	94.8	2.6		44	13.7	42.3		4.6	91	4.4		
Total %	1.5	0.8	3.2	5.5	1.1	38.5	1	40.6	2.5	0.8	2.4	5.7	2.2	43.8	2.1	48.2	

	Summit Boulevard Southbound				Big Bear Boulevard (SR-18) Westbound				Summit Boulevard Northbound				Big Bear Boulevard (SR-18) Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	7	**4**	13	24	4	137	4	145	8	**4**	**22**	**34**	**10**	162	6	178	381
04:45 PM	**8**	3	14	25	2	159	**7**	**168**	**11**	2	6	19	9	160	**7**	176	388
05:00 PM	7	3	7	17	**5**	155	3	163	8	4	9	21	9	**182**	5	**196**	**397**
05:15 PM	2	3	**31**	**36**	3	**161**	2	166	8	3	4	15	10	164	6	180	397
Total Volume	24	13	65	102	14	612	16	642	35	13	41	89	38	668	24	730	1563
% App. Total	23.5	12.7	63.7		2.2	95.3	2.5		39.3	14.6	46.1		5.2	91.5	3.3		
PHF	.750	.813	.524	.708	.700	.950	.571	.955	.795	.813	.466	.654	.950	.918	.857	.931	.984

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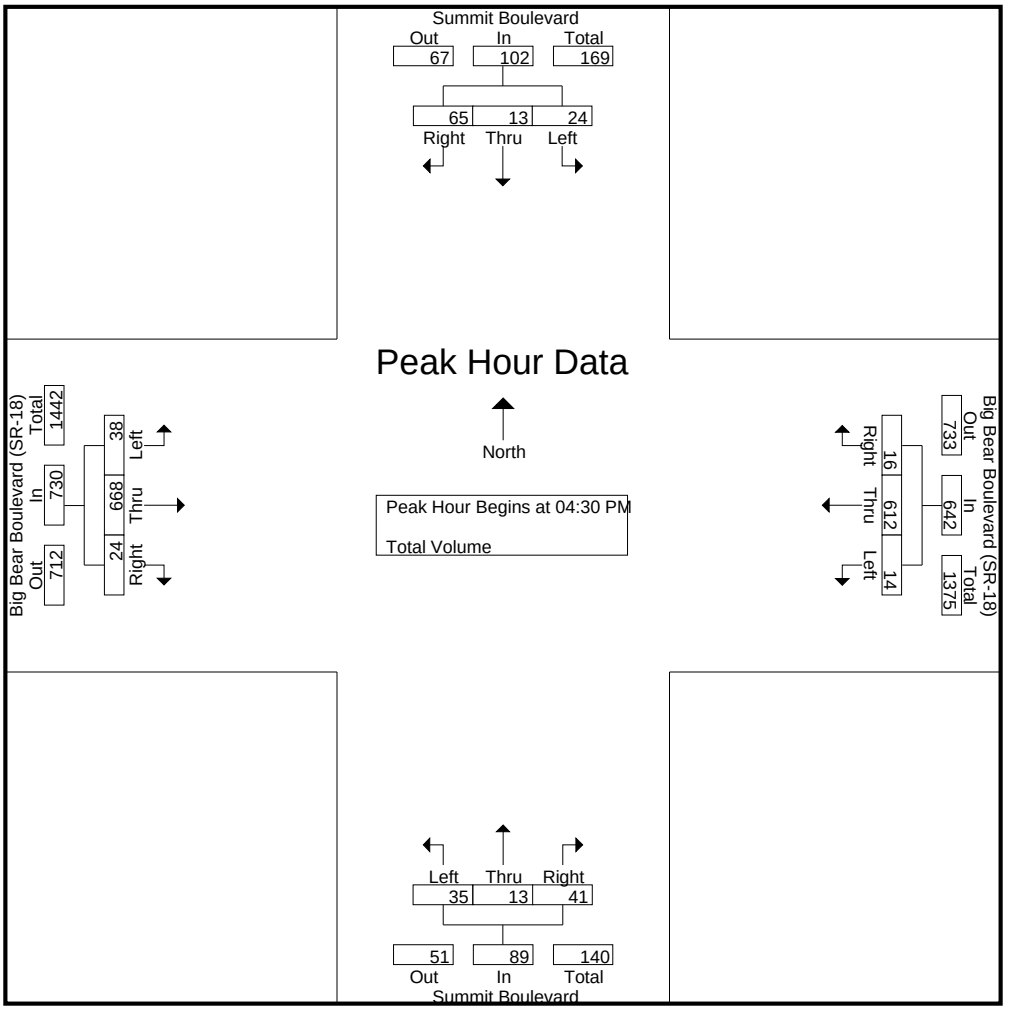
City of Big Bear Lake
N/S: Summit Boulevard
E/W: Big Bear Boulevard (SR-18)
Weather: Sunny

File Name : BBLSUBBPM
Site Code : 00000066
Start Date : 9/28/2011
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:45 PM				04:00 PM				04:00 PM			
+0 mins.	7	**4**	13	24	2	159	**7**	**168**	**14**	**6**	10	30	**10**	**207**	9	**226**
+15 mins.	**8**	3	14	25	**5**	155	3	163	12	3	11	26	5	160	**12**	177
+30 mins.	7	3	7	17	3	**161**	2	166	8	4	**22**	**34**	10	162	6	178
+45 mins.	2	3	**31**	**36**	3	148	3	154	11	2	6	19	9	160	7	176
Total Volume	24	13	65	102	13	623	15	651	45	15	49	109	34	689	34	757
% App. Total	23.5	12.7	63.7		2	95.7	2.3		41.3	13.8	45		4.5	91	4.5	
PHF	.750	.813	.524	.708	.650	.967	.536	.969	.804	.625	.557	.801	.850	.832	.708	.837

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City of Big Bear Lake
N/S: Summit Boulevard
E/W: Big Bear Boulevard (SR-18)
Weather: Sunny

File Name : BBLSUBBSAT
Site Code : 00000066
Start Date : 10/1/2011
Page No : 1

Groups Printed- Total Volume

	Summit Boulevard Southbound				Big Bear Boulevard (SR-18) Westbound				Summit Boulevard Northbound				Big Bear Boulevard (SR-18) Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
03:00 PM	8	4	10	22	7	197	11	215	19	2	9	30	7	245	16	268	535
03:15 PM	6	0	12	18	7	210	7	224	16	0	9	25	4	230	19	253	520
03:30 PM	6	3	9	18	8	179	8	195	17	2	14	33	5	236	13	254	500
03:45 PM	5	3	8	16	5	188	5	198	13	2	12	27	6	305	16	327	568
Total	25	10	39	74	27	774	31	832	65	6	44	115	22	1016	64	1102	2123
04:00 PM	8	2	2	12	12	223	4	239	17	1	9	27	6	320	9	335	613
04:15 PM	9	8	7	24	6	207	4	217	14	7	13	34	5	281	21	307	582
04:30 PM	4	1	8	13	11	216	4	231	24	2	18	44	9	225	12	246	534
04:45 PM	3	1	7	11	10	213	3	226	14	1	24	39	4	259	19	282	558
Total	24	12	24	60	39	859	15	913	69	11	64	144	24	1085	61	1170	2287
Grand Total	49	22	63	134	66	1633	46	1745	134	17	108	259	46	2101	125	2272	4410
Apprch %	36.6	16.4	47		3.8	93.6	2.6		51.7	6.6	41.7		2	92.5	5.5		
Total %	1.1	0.5	1.4	3	1.5	37	1	39.6	3	0.4	2.4	5.9	1	47.6	2.8	51.5	

	Summit Boulevard Southbound				Big Bear Boulevard (SR-18) Westbound				Summit Boulevard Northbound				Big Bear Boulevard (SR-18) Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 03:45 PM																	
03:45 PM	5	3	**8**	16	5	188	**5**	198	13	2	12	27	6	305	16	327	568
04:00 PM	8	2	2	12	**12**	**223**	4	**239**	17	1	9	27	6	**320**	9	**335**	**613**
04:15 PM	**9**	**8**	7	**24**	6	207	4	217	14	**7**	13	34	5	281	**21**	307	582
04:30 PM	4	1	8	13	11	216	4	231	**24**	2	**18**	**44**	**9**	225	12	246	534
Total Volume	26	14	25	65	34	834	17	885	68	12	52	132	26	1131	58	1215	2297
% App. Total	40	21.5	38.5		3.8	94.2	1.9		51.5	9.1	39.4		2.1	93.1	4.8		
PHF	.722	.438	.781	.677	.708	.935	.850	.926	.708	.429	.722	.750	.722	.884	.690	.907	.937

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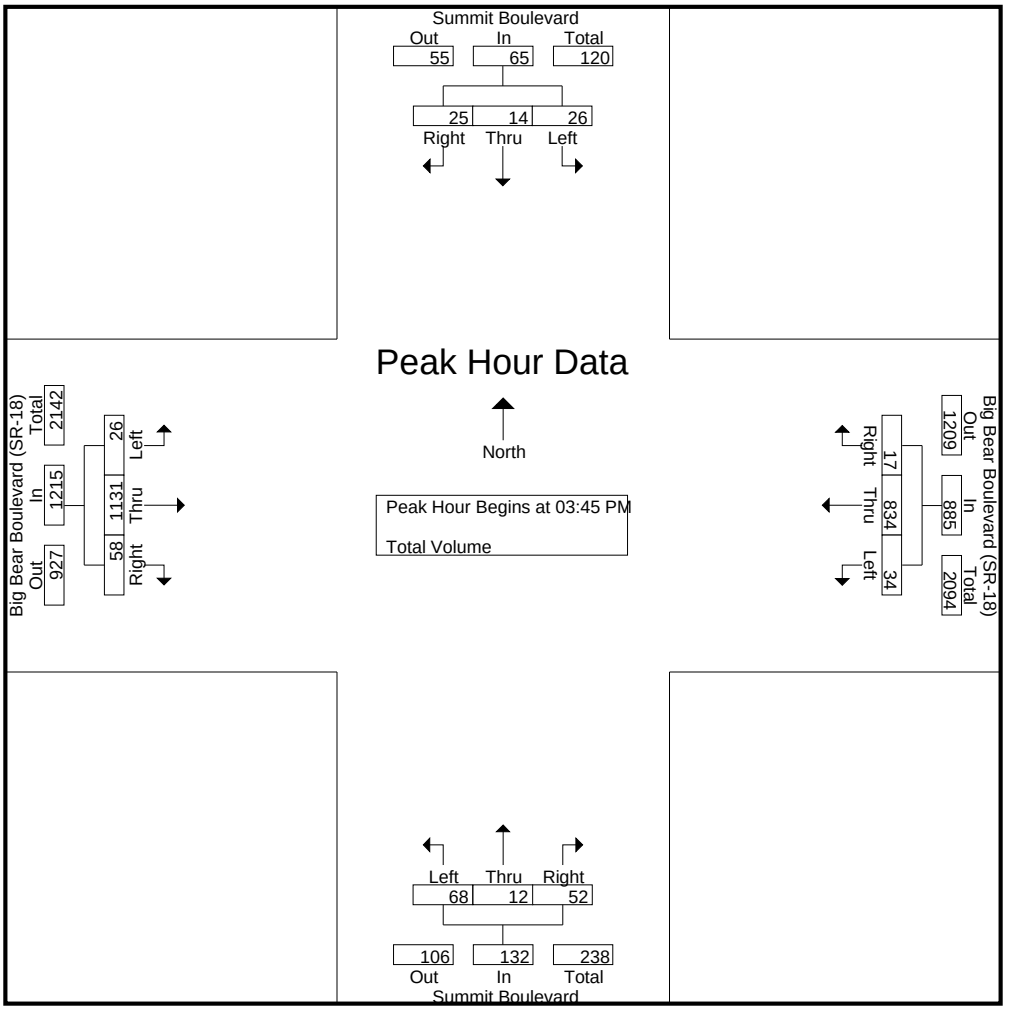
City of Big Bear Lake
N/S: Summit Boulevard
E/W: Big Bear Boulevard (SR-18)
Weather: Sunny

File Name : BBLSUBBSAT
Site Code : 00000066
Start Date : 10/1/2011
Page No : 2



Peak Hour Analysis From 03:00 PM to 04:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	03:00 PM				04:00 PM				04:00 PM				03:30 PM			
+0 mins.	**8**	**4**	10	**22**	**12**	**223**	**4**	**239**	17	1	9	27	5	236	13	254
+15 mins.	6	0	**12**	18	6	207	4	217	14	**7**	13	34	**6**	305	16	327
+30 mins.	6	3	9	18	11	216	4	231	**24**	2	18	**44**	6	**320**	9	**335**
+45 mins.	5	3	8	16	10	213	3	226	14	1	**24**	39	5	281	**21**	307
Total Volume	25	10	39	74	39	859	15	913	69	11	64	144	22	1142	59	1223
% App. Total	33.8	13.5	52.7		4.3	94.1	1.6		47.9	7.6	44.4		1.8	93.4	4.8	
PHF	.781	.625	.813	.841	.813	.963	.938	.955	.719	.393	.667	.818	.917	.892	.702	.913

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City of Big Bear Lake
N/S: Big Bear Boulevard (SR-18)
E/W: Moonridge Road
Weather: Sunny

File Name : BBLBBMOPM
Site Code : 00000001
Start Date : 9/28/2011
Page No : 1

Groups Printed- Total Volume

	Big Bear Boulevard (SR-18) Southbound				Moonridge Road Westbound				Big Bear Boulevard (SR-18) Northbound				Moonridge Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	2	134	13	149	19	3	2	24	6	216	22	244	55	10	4	69	486
04:15 PM	0	129	16	145	18	6	2	26	2	170	22	194	28	6	6	40	405
04:30 PM	4	140	11	155	25	3	2	30	7	171	26	204	48	6	2	56	445
04:45 PM	3	175	12	190	19	5	0	24	2	164	21	187	23	6	4	33	434
Total	9	578	52	639	81	17	6	104	17	721	91	829	154	28	16	198	1770
05:00 PM	5	146	13	164	23	6	2	31	1	187	19	207	59	1	2	62	464
05:15 PM	5	145	14	164	19	3	3	25	1	175	23	199	19	1	3	23	411
05:30 PM	2	141	5	148	25	2	1	28	0	172	19	191	22	3	1	26	393
05:45 PM	2	136	8	146	22	2	0	24	0	168	16	184	19	0	0	19	373
Total	14	568	40	622	89	13	6	108	2	702	77	781	119	5	6	130	1641
Grand Total	23	1146	92	1261	170	30	12	212	19	1423	168	1610	273	33	22	328	3411
Apprch %	1.8	90.9	7.3		80.2	14.2	5.7		1.2	88.4	10.4		83.2	10.1	6.7		
Total %	0.7	33.6	2.7	37	5	0.9	0.4	6.2	0.6	41.7	4.9	47.2	8	1	0.6	9.6	

	Big Bear Boulevard (SR-18) Southbound				Moonridge Road Westbound				Big Bear Boulevard (SR-18) Northbound				Moonridge Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	2	134	13	149	19	3	**2**	24	6	**216**	22	**244**	**55**	**10**	4	**69**	**486**
04:15 PM	0	129	**16**	145	18	**6**	2	26	2	170	22	194	28	6	**6**	40	405
04:30 PM	**4**	140	11	155	**25**	3	2	**30**	**7**	171	**26**	204	48	6	2	56	445
04:45 PM	3	**175**	12	**190**	19	5	0	24	2	164	21	187	23	6	4	33	434
Total Volume	9	578	52	639	81	17	6	104	17	721	91	829	154	28	16	198	1770
% App. Total	1.4	90.5	8.1		77.9	16.3	5.8		2.1	87	11		77.8	14.1	8.1		
PHF	.563	.826	.813	.841	.810	.708	.750	.867	.607	.834	.875	.849	.700	.700	.667	.717	.910

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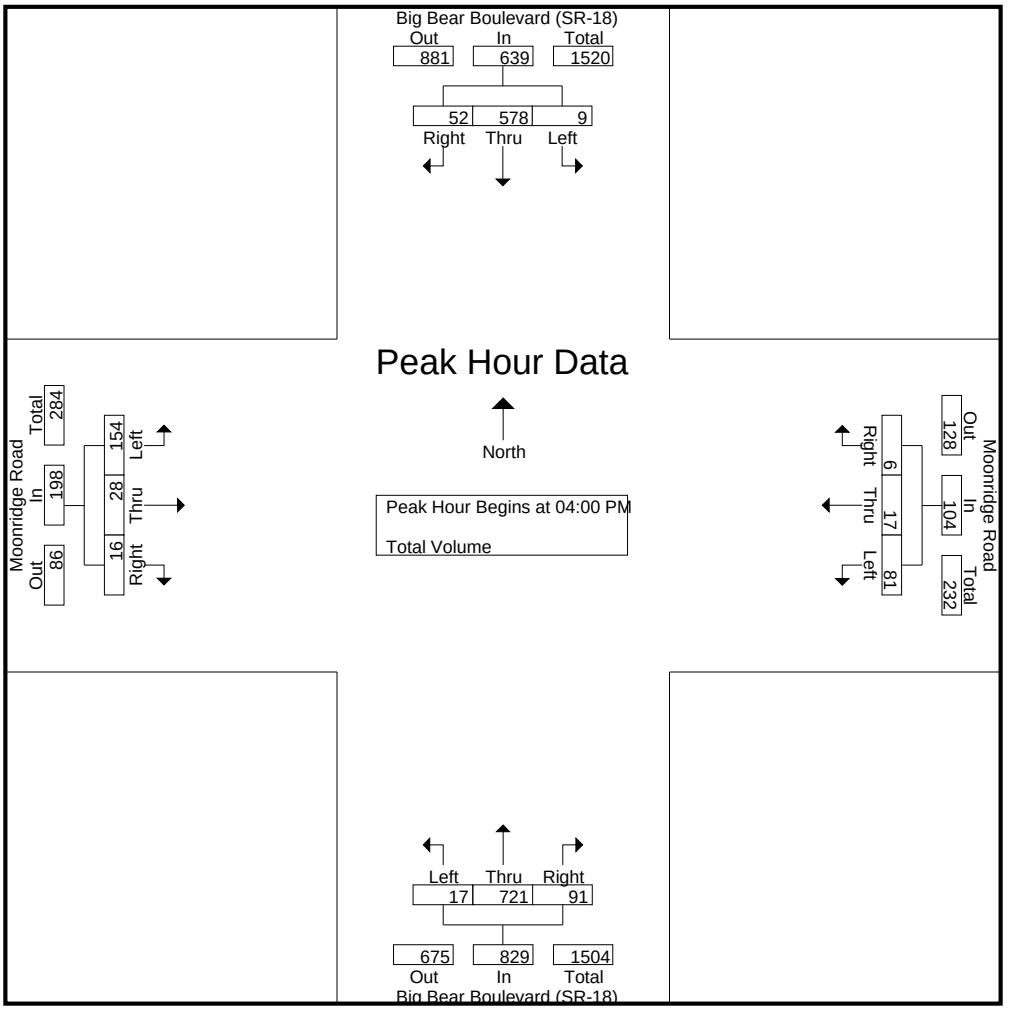
City of Big Bear Lake
N/S: Big Bear Boulevard (SR-18)
E/W: Moonridge Road
Weather: Sunny

File Name : BBLBBMOPM
Site Code : 00000001
Start Date : 9/28/2011
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:30 PM				04:15 PM				04:00 PM				04:00 PM			
+0 mins.	4	140	11	155	18	**6**	**2**	26	6	**216**	22	**244**	**55**	**10**	4	**69**
+15 mins.	3	**175**	12	**190**	**25**	3	2	30	2	170	22	194	28	6	**6**	40
+30 mins.	**5**	146	13	164	19	5	0	24	**7**	171	**26**	204	48	6	2	56
+45 mins.	5	145	**14**	164	23	6	2	**31**	2	164	21	187	23	6	4	33
Total Volume	17	606	50	673	85	20	6	111	17	721	91	829	154	28	16	198
% App. Total	2.5	90	7.4		76.6	18	5.4		2.1	87	11		77.8	14.1	8.1	
PHF	.850	.866	.893	.886	.850	.833	.750	.895	.607	.834	.875	.849	.700	.700	.667	.717

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City of Big Bear Lake
N/S: Big Bear Boulevard (SR-18)
E/W: Moonridge Road
Weather: Sunny

File Name : BBLBBMOSAT
Site Code : 00000001
Start Date : 10/1/2011
Page No : 1

Groups Printed- Total Volume

	Big Bear Boulevard (SR-18) Southbound				Moonridge Road Westbound				Big Bear Boulevard (SR-18) Northbound				Moonridge Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
03:00 PM	9	179	11	199	31	6	1	38	4	217	41	262	20	5	1	26	525
03:15 PM	6	193	11	210	42	2	1	45	2	205	43	250	22	4	2	28	533
03:30 PM	12	174	10	196	29	4	3	36	1	219	41	261	15	4	3	22	515
03:45 PM	8	173	10	191	50	7	2	59	1	290	34	325	14	4	2	20	595
Total	35	719	42	796	152	19	7	178	8	931	159	1098	71	17	8	96	2168
04:00 PM	4	187	12	203	41	1	5	47	2	304	39	345	15	6	3	24	619
04:15 PM	4	190	11	205	32	5	4	41	1	251	54	306	18	4	9	31	583
04:30 PM	15	211	14	240	33	8	5	46	0	223	29	252	18	3	5	26	564
04:45 PM	5	183	7	195	37	2	2	41	1	249	37	287	18	6	4	28	551
Total	28	771	44	843	143	16	16	175	4	1027	159	1190	69	19	21	109	2317
Grand Total	63	1490	86	1639	295	35	23	353	12	1958	318	2288	140	36	29	205	4485
Apprch %	3.8	90.9	5.2		83.6	9.9	6.5		0.5	85.6	13.9		68.3	17.6	14.1		
Total %	1.4	33.2	1.9	36.5	6.6	0.8	0.5	7.9	0.3	43.7	7.1	51	3.1	0.8	0.6	4.6	

	Big Bear Boulevard (SR-18) Southbound				Moonridge Road Westbound				Big Bear Boulevard (SR-18) Northbound				Moonridge Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 03:45 PM																	
03:45 PM	8	173	10	191	**50**	7	2	**59**	1	290	34	325	14	4	2	20	595
04:00 PM	4	187	12	203	41	1	**5**	47	**2**	**304**	39	**345**	15	**6**	3	24	**619**
04:15 PM	4	190	11	205	32	5	4	41	1	251	**54**	306	**18**	4	**9**	**31**	583
04:30 PM	**15**	**211**	**14**	**240**	33	**8**	5	46	0	223	29	252	18	3	5	26	564
Total Volume	31	761	47	839	156	21	16	193	4	1068	156	1228	65	17	19	101	2361
% App. Total	3.7	90.7	5.6		80.8	10.9	8.3		0.3	87	12.7		64.4	16.8	18.8		
PHF	.517	.902	.839	.874	.780	.656	.800	.818	.500	.878	.722	.890	.903	.708	.528	.815	.954

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City of Big Bear Lake
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File Name : BBLBBMOSAT
Site Code : 00000001
Start Date : 10/1/2011
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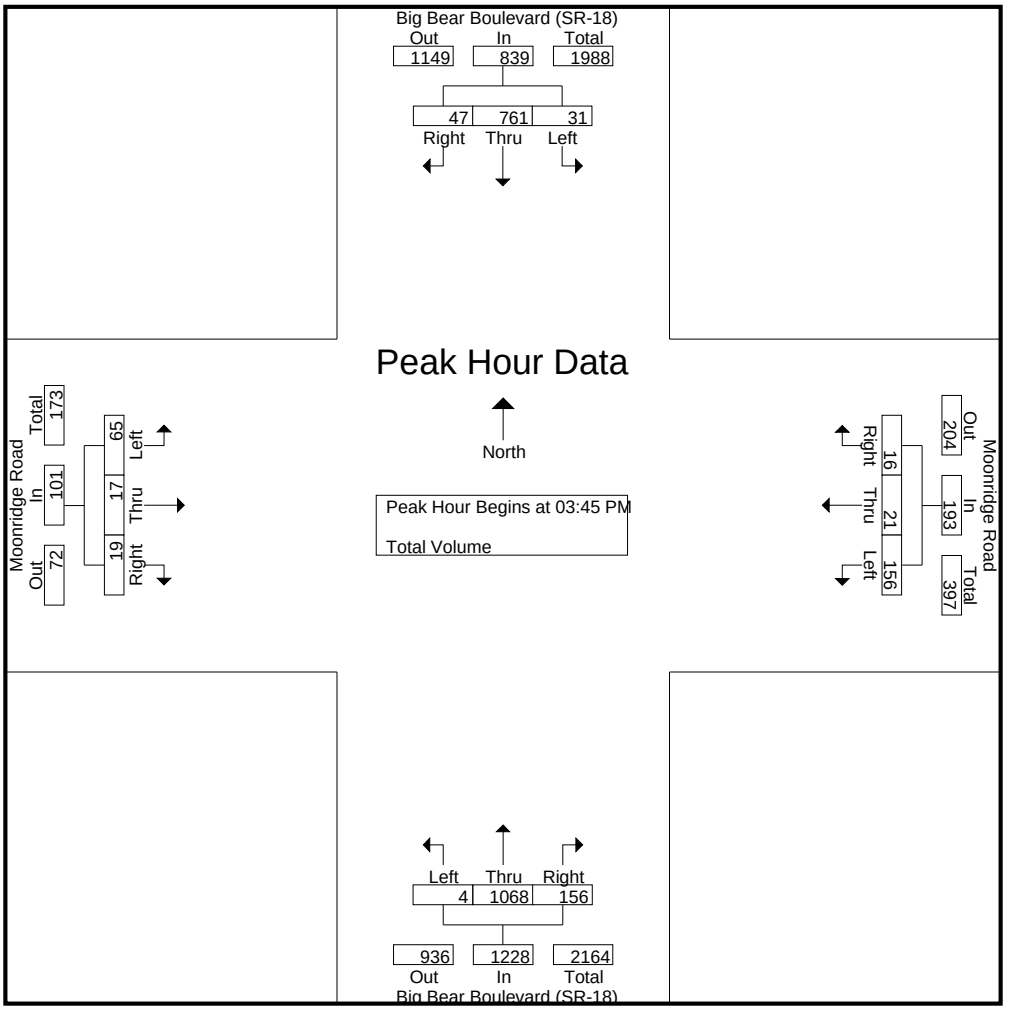

Peak Hour Analysis From 03:00 PM to 04:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:00 PM				03:45 PM				03:30 PM				04:00 PM			
+0 mins.	4	187	12	203	**50**	7	2	**59**	1	219	41	261	15	**6**	3	24
+15 mins.	4	190	11	205	41	1	**5**	47	1	290	34	325	**18**	4	**9**	**31**
+30 mins.	**15**	**211**	**14**	**240**	32	5	4	41	**2**	**304**	39	**345**	18	3	5	26
+45 mins.	5	183	7	195	33	**8**	5	46	1	251	**54**	306	18	6	4	28
Total Volume	28	771	44	843	156	21	16	193	5	1064	168	1237	69	19	21	109
% App. Total	3.3	91.5	5.2		80.8	10.9	8.3		0.4	86	13.6		63.3	17.4	19.3	
PHF	.467	.914	.786	.878	.780	.656	.800	.818	.625	.875	.778	.896	.958	.792	.583	.879

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City of Big Bear Lake
N/S: Moonridge Way / Brownie Lane
E/W: Moonridge Road
Weather: Sunny

File Name : BBLMOMYPM
Site Code : 00000001
Start Date : 9/28/2011
Page No : 1

Groups Printed- Total Volume

	Moonridge Way Southbound				Moonridge Road Westbound				Brownie Lane Northbound				Moonridge Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	20	5	2	27	4	28	23	55	4	2	3	9	2	30	0	32	123
04:15 PM	25	4	2	31	4	27	19	50	2	2	6	10	0	26	0	26	117
04:30 PM	16	0	2	18	4	28	25	57	1	3	5	9	0	28	0	28	112
04:45 PM	20	1	2	23	4	24	24	52	0	1	5	6	0	29	0	29	110
Total	81	10	8	99	16	107	91	214	7	8	19	34	2	113	0	115	462
05:00 PM	18	4	2	24	3	24	21	48	0	3	6	9	0	30	0	30	111
05:15 PM	22	5	0	27	3	25	20	48	0	0	6	6	0	20	0	20	101
05:30 PM	20	2	5	27	3	33	20	56	2	5	3	10	3	21	2	26	119
05:45 PM	17	1	5	23	0	18	14	32	0	2	1	3	0	23	0	23	81
Total	77	12	12	101	9	100	75	184	2	10	16	28	3	94	2	99	412
Grand Total	158	22	20	200	25	207	166	398	9	18	35	62	5	207	2	214	874
Apprch %	79	11	10		6.3	52	41.7		14.5	29	56.5		2.3	96.7	0.9		
Total %	18.1	2.5	2.3	22.9	2.9	23.7	19	45.5	1	2.1	4	7.1	0.6	23.7	0.2	24.5	

	Moonridge Way Southbound				Moonridge Road Westbound				Brownie Lane Northbound				Moonridge Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	20	**5**	**2**	27	**4**	**28**	23	55	**4**	2	3	9	**2**	**30**	0	**32**	**123**
04:15 PM	**25**	4	2	**31**	4	27	19	50	2	2	**6**	**10**	0	26	0	26	117
04:30 PM	16	0	2	18	4	28	**25**	**57**	1	**3**	5	9	0	28	0	28	112
04:45 PM	20	1	2	23	4	24	24	52	0	1	5	6	0	29	0	29	110
Total Volume	81	10	8	99	16	107	91	214	7	8	19	34	2	113	0	115	462
% App. Total	81.8	10.1	8.1		7.5	50	42.5		20.6	23.5	55.9		1.7	98.3	0		
PHF	.810	.500	1.00	.798	1.00	.955	.910	.939	.438	.667	.792	.850	.250	.942	.000	.898	.939

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City of Big Bear Lake
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File Name : BBLMOMYPM
Site Code : 00000001
Start Date : 9/28/2011
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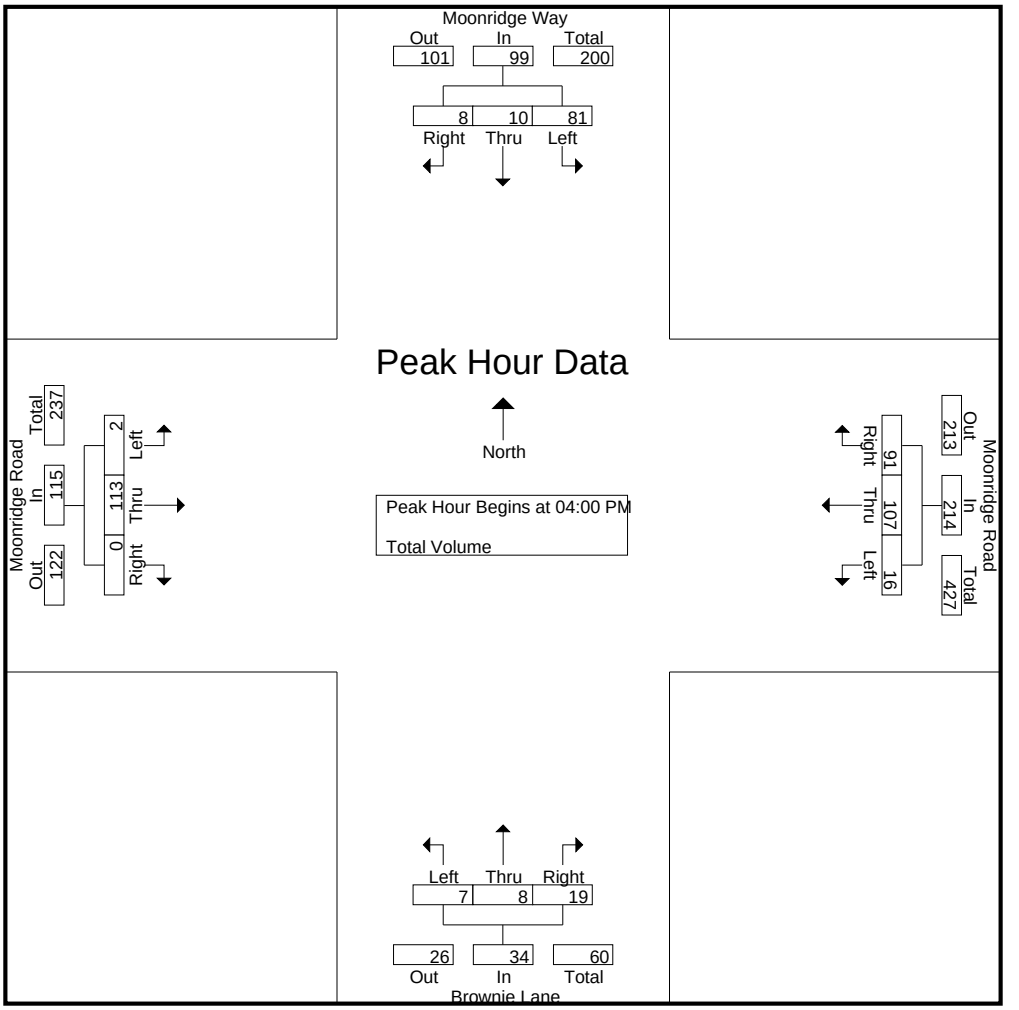

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:45 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	20	1	2	23	**4**	**28**	23	55	**4**	2	3	9	**2**	**30**	0	**32**
+15 mins.	18	4	2	24	4	27	19	50	2	2	**6**	**10**	0	26	0	26
+30 mins.	**22**	**5**	0	**27**	4	28	**25**	**57**	1	**3**	5	9	0	28	0	28
+45 mins.	20	2	**5**	27	4	24	24	52	0	1	5	6	0	29	0	29
Total Volume	80	12	9	101	16	107	91	214	7	8	19	34	2	113	0	115
% App. Total	79.2	11.9	8.9		7.5	50	42.5		20.6	23.5	55.9		1.7	98.3	0	
PHF	.909	.600	.450	.935	1.000	.955	.910	.939	.438	.667	.792	.850	.250	.942	.000	.898

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City of Big Bear Lake
N/S: Moonridge Way / Brownie Lane
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Weather: Sunny

File Name : BBLMOMYSAT
Site Code : 00000001
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Page No : 1

Groups Printed- Total Volume

	Moonridge Way Southbound				Moonridge Road Westbound				Brownie Lane Northbound				Moonridge Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
03:00 PM	36	1	0	37	1	34	26	61	0	0	5	5	2	50	0	52	155
03:15 PM	22	1	2	25	2	41	27	70	0	2	4	6	0	50	2	52	153
03:30 PM	13	0	3	16	5	35	26	66	0	0	2	2	8	57	3	68	152
03:45 PM	24	1	0	25	6	55	26	87	1	3	3	7	2	42	1	45	164
Total	95	3	5	103	14	165	105	284	1	5	14	20	12	199	6	217	624
04:00 PM	18	3	3	24	2	34	24	60	2	2	7	11	0	47	0	47	142
04:15 PM	25	2	6	33	4	35	31	70	1	1	3	5	1	63	1	65	173
04:30 PM	24	3	2	29	5	44	23	72	2	7	4	13	0	37	0	37	151
04:45 PM	17	1	3	21	3	32	34	69	2	3	0	5	3	44	1	48	143
Total	84	9	14	107	14	145	112	271	7	13	14	34	4	191	2	197	609
Grand Total	179	12	19	210	28	310	217	555	8	18	28	54	16	390	8	414	1233
Apprch %	85.2	5.7	9		5	55.9	39.1		14.8	33.3	51.9		3.9	94.2	1.9		
Total %	14.5	1	1.5	17	2.3	25.1	17.6	45	0.6	1.5	2.3	4.4	1.3	31.6	0.6	33.6	

	Moonridge Way Southbound				Moonridge Road Westbound				Brownie Lane Northbound				Moonridge Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 03:30 PM																	
03:30 PM	13	0	3	16	5	35	26	66	0	0	2	2	**8**	57	**3**	**68**	152
03:45 PM	24	1	0	25	**6**	**55**	26	**87**	1	**3**	3	7	2	42	1	45	164
04:00 PM	18	**3**	3	24	2	34	24	60	**2**	2	**7**	**11**	0	47	0	47	142
04:15 PM	**25**	2	**6**	**33**	4	35	**31**	70	1	1	3	5	1	**63**	1	65	**173**
Total Volume	80	6	12	98	17	159	107	283	4	6	15	25	11	209	5	225	631
% App. Total	81.6	6.1	12.2		6	56.2	37.8		16	24	60		4.9	92.9	2.2		
PHF	.800	.500	.500	.742	.708	.723	.863	.813	.500	.500	.536	.568	.344	.829	.417	.827	.912

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City of Big Bear Lake
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File Name : BBLMOMYSAT
Site Code : 00000001
Start Date : 10/1/2011
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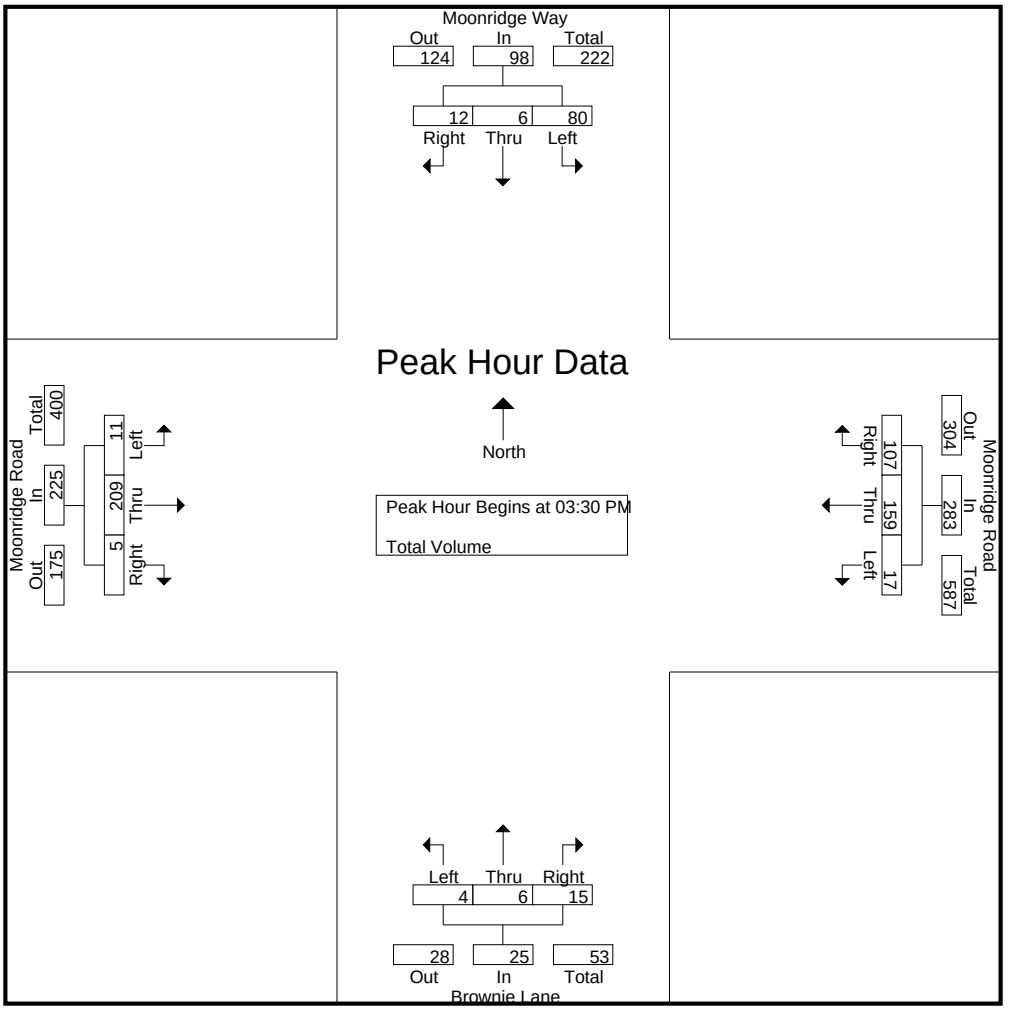

Peak Hour Analysis From 03:00 PM to 04:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	03:45 PM				03:45 PM				03:45 PM				03:30 PM			
+0 mins.	24	1	0	25	**6**	**55**	26	**87**	1	3	3	7	**8**	57	**3**	**68**
+15 mins.	18	**3**	3	24	2	34	24	60	**2**	2	**7**	11	2	42	1	45
+30 mins.	**25**	2	**6**	**33**	4	35	**31**	70	1	1	3	5	0	47	0	47
+45 mins.	24	3	2	29	5	44	23	72	2	**7**	4	**13**	1	**63**	1	65
Total Volume	91	9	11	111	17	168	104	289	6	13	17	36	11	209	5	225
% App. Total	82	8.1	9.9		5.9	58.1	36		16.7	36.1	47.2		4.9	92.9	2.2	
PHF	.910	.750	.458	.841	.708	.764	.839	.830	.750	.464	.607	.692	.344	.829	.417	.827

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City of Big Bear Lake
N/S: Big Bear Boulevard (SR-18)
E/W: Moonridge Way
Weather: Sunny

File Name : BBLBBMWPM
Site Code : 00000001
Start Date : 9/28/2011
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Groups Printed- Total Volume

	Big Bear Boulevard (SR-18) Southbound			Moonridge Way Westbound			Big Bear Boulevard (SR-18) Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	23	142	165	2	35	37	275	1	276	478
04:15 PM	21	146	167	0	24	24	201	4	205	396
04:30 PM	17	152	169	0	33	33	212	1	213	415
04:45 PM	27	193	220	0	29	29	189	4	193	442
Total	88	633	721	2	121	123	877	10	887	1731
05:00 PM	25	168	193	0	28	28	235	2	237	458
05:15 PM	32	162	194	0	25	25	191	3	194	413
05:30 PM	25	151	176	0	29	29	189	2	191	396
05:45 PM	22	148	170	0	25	25	181	0	181	376
Total	104	629	733	0	107	107	796	7	803	1643
Grand Total	192	1262	1454	2	228	230	1673	17	1690	3374
Apprch %	13.2	86.8		0.9	99.1		99	1		
Total %	5.7	37.4	43.1	0.1	6.8	6.8	49.6	0.5	50.1	

	Big Bear Boulevard (SR-18) Southbound			Moonridge Way Westbound			Big Bear Boulevard (SR-18) Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	23	142	165	**2**	**35**	**37**	**275**	1	**276**	**478**
04:15 PM	21	146	167	0	24	24	201	**4**	205	396
04:30 PM	17	152	169	0	33	33	212	1	213	415
04:45 PM	**27**	**193**	**220**	0	29	29	189	4	193	442
Total Volume	88	633	721	2	121	123	877	10	887	1731
% App. Total	12.2	87.8		1.6	98.4		98.9	1.1		
PHF	.815	.820	.819	.250	.864	.831	.797	.625	.803	.905

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City of Big Bear Lake
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File Name : BBLBBMWPM
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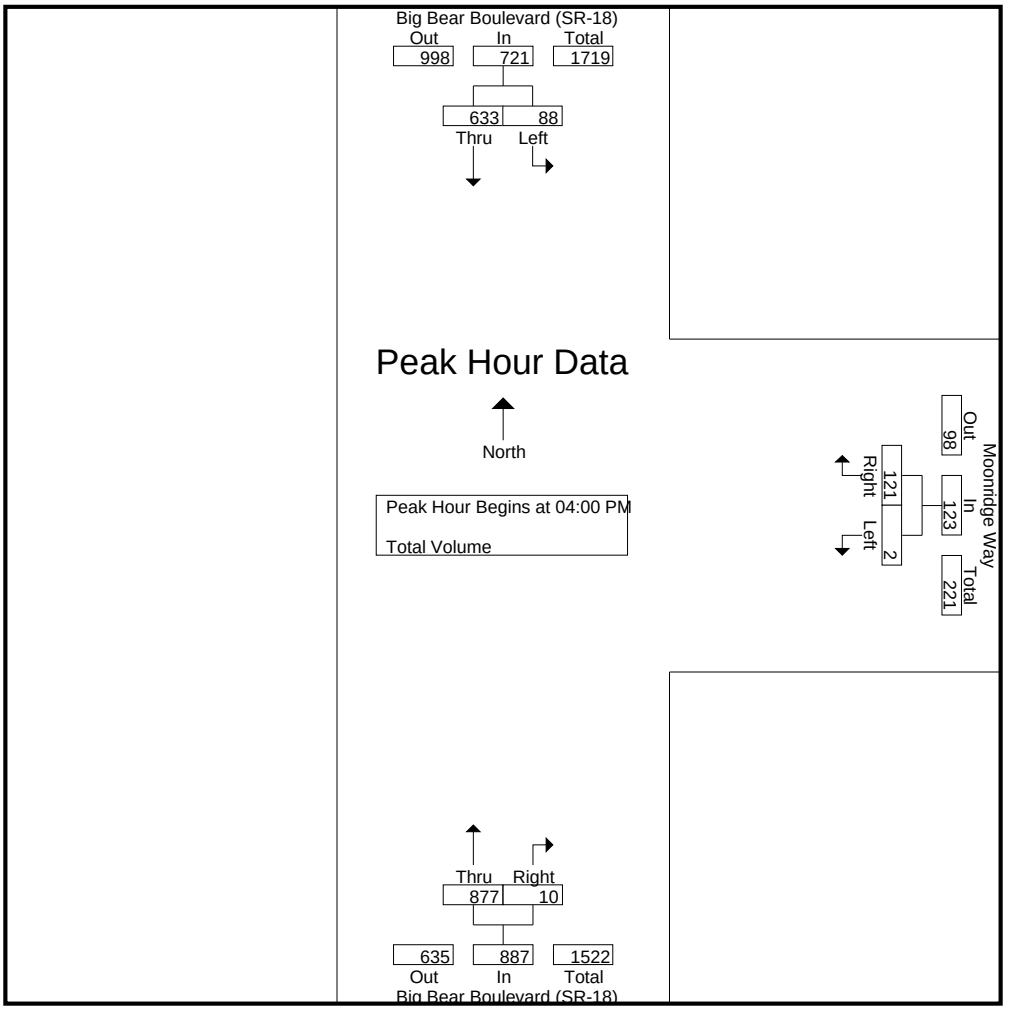

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:45 PM			04:00 PM			04:00 PM		
+0 mins.	27	**193**	**220**	**2**	**35**	**37**	**275**	1	**276**
+15 mins.	25	168	193	0	24	24	201	**4**	205
+30 mins.	**32**	162	194	0	33	33	212	1	213
+45 mins.	25	151	176	0	29	29	189	4	193
Total Volume	109	674	783	2	121	123	877	10	887
% App. Total	13.9	86.1		1.6	98.4		98.9	1.1	
PHF	.852	.873	.890	.250	.864	.831	.797	.625	.803

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City of Big Bear Lake
N/S: Big Bear Boulevard (SR-18)
E/W: Moonridge Way
Weather: Sunny

File Name : BBLBBMWSAT
Site Code : 00000001
Start Date : 10/1/2011
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Groups Printed- Total Volume

	Big Bear Boulevard (SR-18) Southbound			Moonridge Way Westbound			Big Bear Boulevard (SR-18) Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
03:00 PM	34	183	217	0	44	44	238	1	239	500
03:15 PM	30	223	253	0	34	34	215	2	217	504
03:30 PM	22	187	209	0	36	36	236	3	239	484
03:45 PM	33	190	223	0	38	38	300	0	300	561
Total	119	783	902	0	152	152	989	6	995	2049
04:00 PM	33	209	242	0	33	33	327	1	328	603
04:15 PM	36	220	256	0	51	51	267	4	271	578
04:30 PM	27	231	258	0	35	35	250	0	250	543
04:45 PM	24	197	221	0	36	36	264	2	266	523
Total	120	857	977	0	155	155	1108	7	1115	2247
Grand Total	239	1640	1879	0	307	307	2097	13	2110	4296
Apprch %	12.7	87.3		0	100		99.4	0.6		
Total %	5.6	38.2	43.7	0	7.1	7.1	48.8	0.3	49.1	

	Big Bear Boulevard (SR-18) Southbound			Moonridge Way Westbound			Big Bear Boulevard (SR-18) Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 04:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 03:45 PM										
03:45 PM	33	190	223	0	38	38	300	0	300	561
04:00 PM	33	209	242	0	33	33	**327**	1	**328**	**603**
04:15 PM	**36**	220	256	0	**51**	**51**	267	**4**	271	578
04:30 PM	27	**231**	**258**	0	35	35	250	0	250	543
Total Volume	129	850	979	0	157	157	1144	5	1149	2285
% App. Total	13.2	86.8		0	100		99.6	0.4		
PHF	.896	.920	.949	.000	.770	.770	.875	.313	.876	.947

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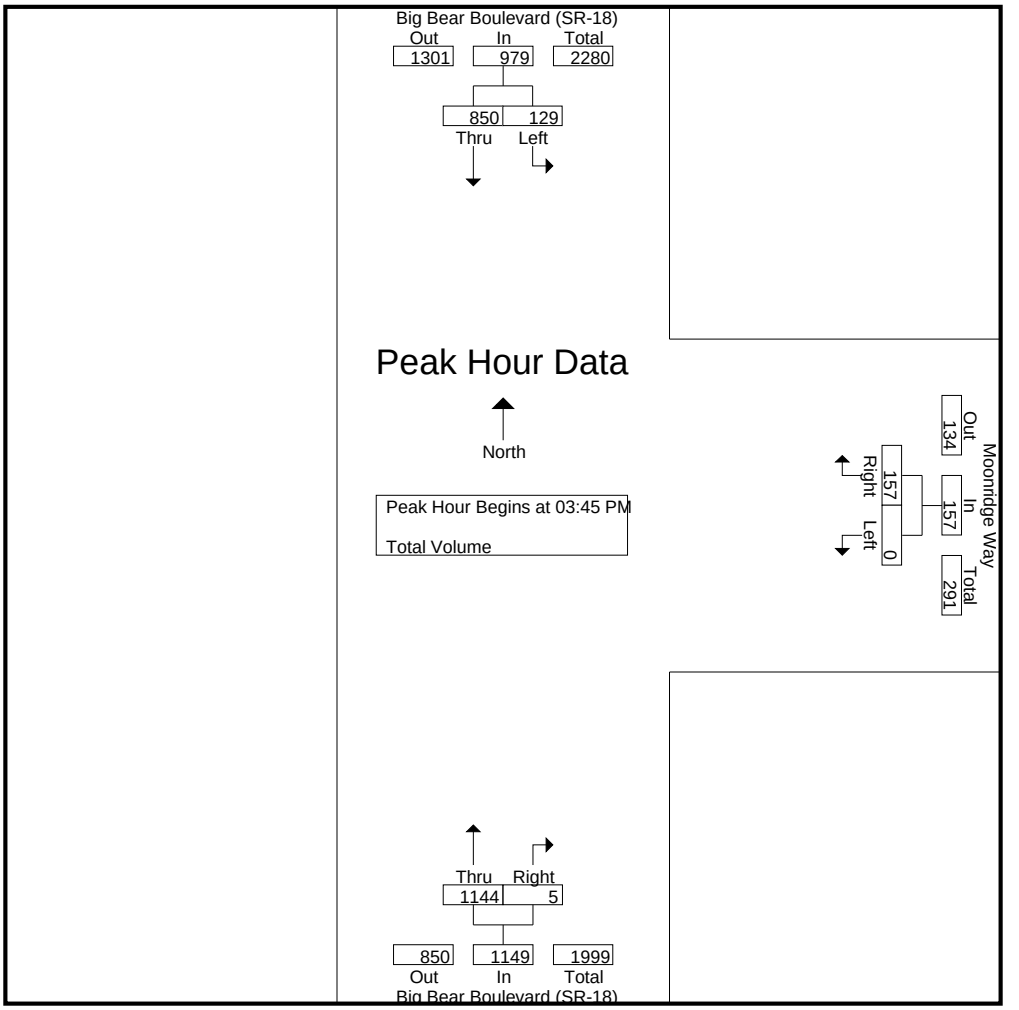
Corona, CA 92878
(951) 268-6268

City of Big Bear Lake
N/S: Big Bear Boulevard (SR-18)
E/W: Moonridge Way
Weather: Sunny

File Name : BBLBBMWSAT
Site Code : 00000001
Start Date : 10/1/2011
Page No : 2



Peak Hour Analysis From 03:00 PM to 04:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	03:45 PM			03:30 PM			03:45 PM		
+0 mins.	33	190	223	0	36	36	300	0	300
+15 mins.	33	209	242	0	38	38	**327**	1	**328**
+30 mins.	**36**	220	256	0	33	33	267	**4**	271
+45 mins.	27	**231**	**258**	0	**51**	**51**	250	0	250
Total Volume	129	850	979	0	158	158	1144	5	1149
% App. Total	13.2	86.8		0	100		99.6	0.4	
PHF	.896	.920	.949	.000	.775	.775	.875	.313	.876

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City of Big Bear Lake
N/S: Club View Drive
E/W: Moonridge Road
Weather: Sunny

File Name : BBLCVMOPM
Site Code : 00000001
Start Date : 9/28/2011
Page No : 1

Groups Printed- Total Volume

	Private Drive Southbound				Moonridge Road Westbound				Club View Drive Northbound				Moonridge Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	1	19	1	21	5	0	4	9	2	21	8	31	61
04:15 PM	0	0	0	0	0	16	0	16	17	0	3	20	1	19	15	35	71
04:30 PM	0	0	0	0	0	18	0	18	19	0	0	19	0	17	13	30	67
04:45 PM	0	0	0	0	0	21	0	21	9	0	3	12	0	18	9	27	60
Total	0	0	0	0	1	74	1	76	50	0	10	60	3	75	45	123	259
05:00 PM	0	0	0	0	1	19	0	20	6	0	1	7	0	20	12	32	59
05:15 PM	0	0	0	0	0	29	0	29	8	0	2	10	0	26	10	36	75
05:30 PM	0	0	0	0	0	19	0	19	8	0	1	9	0	10	8	18	46
05:45 PM	0	0	0	0	1	20	0	21	7	0	0	7	0	20	9	29	57
Total	0	0	0	0	2	87	0	89	29	0	4	33	0	76	39	115	237
Grand Total	0	0	0	0	3	161	1	165	79	0	14	93	3	151	84	238	496
Apprch %	0	0	0		1.8	97.6	0.6		84.9	0	15.1		1.3	63.4	35.3		
Total %	0	0	0	0	0.6	32.5	0.2	33.3	15.9	0	2.8	18.8	0.6	30.4	16.9	48	

	Private Drive Southbound				Moonridge Road Westbound				Club View Drive Northbound				Moonridge Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	0	0	0	0	0	18	0	18	**19**	0	0	**19**	0	17	**13**	30	67
04:45 PM	0	0	0	0	0	21	0	21	9	0	**3**	12	0	18	9	27	60
05:00 PM	0	0	0	0	**1**	19	0	20	6	0	1	7	0	20	12	32	59
05:15 PM	0	0	0	0	0	**29**	0	**29**	8	0	2	10	0	**26**	10	**36**	**75**
Total Volume	0	0	0	0	1	87	0	88	42	0	6	48	0	81	44	125	261
% App. Total	0	0	0		1.1	98.9	0		87.5	0	12.5		0	64.8	35.2		
PHF	.000	.000	.000	.000	.250	.750	.000	.759	.553	.000	.500	.632	.000	.779	.846	.868	.870

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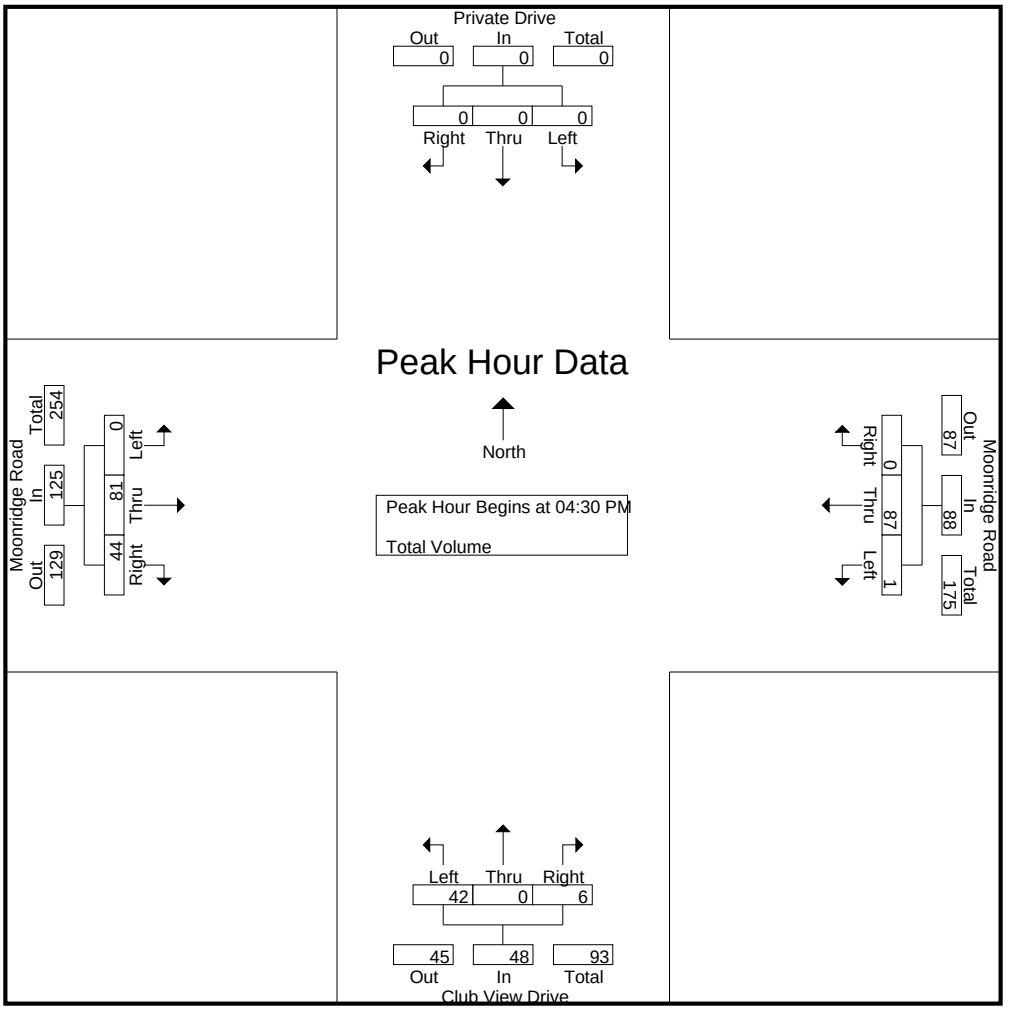
City of Big Bear Lake
N/S: Club View Drive
E/W: Moonridge Road
Weather: Sunny

File Name : BBLCVMOPM
Site Code : 00000001
Start Date : 9/28/2011
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:00 PM				04:45 PM				04:00 PM				04:30 PM			
+0 mins.	0	0	0	0	0	21	0	21	5	0	**4**	9	0	17	**13**	30
+15 mins.	0	0	0	0	**1**	19	0	20	17	0	3	**20**	0	18	9	27
+30 mins.	0	0	0	0	0	**29**	0	**29**	**19**	0	0	19	0	20	12	32
+45 mins.	0	0	0	0	0	19	0	19	9	0	3	12	0	**26**	10	**36**
Total Volume	0	0	0	0	1	88	0	89	50	0	10	60	0	81	44	125
% App. Total	0	0	0		1.1	98.9	0		83.3	0	16.7		0	64.8	35.2	
PHF	.000	.000	.000	.000	.250	.759	.000	.767	.658	.000	.625	.750	.000	.779	.846	.868

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City of Big Bear Lake
N/S: Club View Drive
E/W: Moonridge Road
Weather: Sunny

File Name : BBLCVMOSAT
Site Code : 00000001
Start Date : 10/1/2011
Page No : 1

Groups Printed- Total Volume

	Private Drive Southbound				Moonridge Road Westbound				Club View Drive Northbound				Moonridge Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
03:00 PM	0	0	1	1	2	18	1	21	18	0	3	21	0	39	24	63	106
03:15 PM	0	0	1	1	1	37	0	38	18	0	3	21	0	32	21	53	113
03:30 PM	0	0	0	0	3	25	0	28	15	0	2	17	0	25	19	44	89
03:45 PM	0	0	0	0	1	39	0	40	21	0	4	25	0	30	10	40	105
Total	0	0	2	2	7	119	1	127	72	0	12	84	0	126	74	200	413
04:00 PM	0	1	0	1	2	29	0	31	22	0	3	25	0	33	19	52	109
04:15 PM	0	0	0	0	1	42	0	43	12	0	3	15	0	36	18	54	112
04:30 PM	0	0	0	0	1	26	0	27	14	0	0	14	1	31	13	45	86
04:45 PM	0	0	1	1	4	26	0	30	25	0	4	29	0	28	24	52	112
Total	0	1	1	2	8	123	0	131	73	0	10	83	1	128	74	203	419
Grand Total	0	1	3	4	15	242	1	258	145	0	22	167	1	254	148	403	832
Apprch %	0	25	75		5.8	93.8	0.4		86.8	0	13.2		0.2	63	36.7		
Total %	0	0.1	0.4	0.5	1.8	29.1	0.1	31	17.4	0	2.6	20.1	0.1	30.5	17.8	48.4	

	Private Drive Southbound				Moonridge Road Westbound				Club View Drive Northbound				Moonridge Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	**1**	0	**1**	2	29	0	31	22	0	3	25	0	33	19	52	109
04:15 PM	0	0	0	0	1	**42**	0	**43**	12	0	3	15	0	**36**	18	**54**	**112**
04:30 PM	0	0	0	0	1	26	0	27	14	0	0	14	**1**	31	13	45	86
04:45 PM	0	0	**1**	1	**4**	26	0	30	**25**	0	**4**	**29**	0	28	**24**	52	112
Total Volume	0	1	1	2	8	123	0	131	73	0	10	83	1	128	74	203	419
% App. Total	0	50	50		6.1	93.9	0		88	0	12		0.5	63.1	36.5		
PHF	.000	.250	.250	.500	.500	.732	.000	.762	.730	.000	.625	.716	.250	.889	.771	.940	.935

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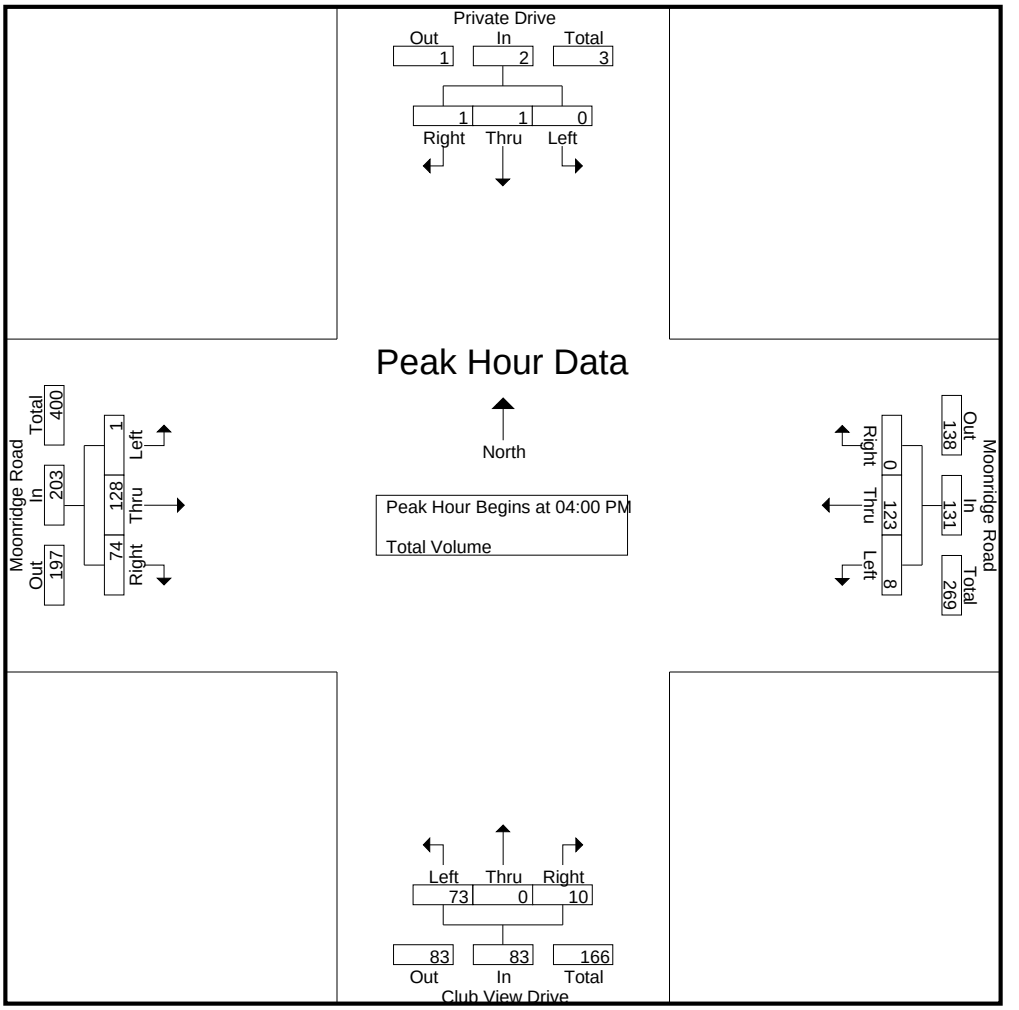
City of Big Bear Lake
N/S: Club View Drive
E/W: Moonridge Road
Weather: Sunny

File Name : BBLCVMOSAT
Site Code : 00000001
Start Date : 10/1/2011
Page No : 2



Peak Hour Analysis From 03:00 PM to 04:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	03:00 PM				03:30 PM				03:15 PM				04:00 PM			
+0 mins.	0	0	**1**	**1**	**3**	25	0	28	18	0	3	21	0	33	19	52
+15 mins.	0	0	1	1	1	39	0	40	15	0	2	17	0	**36**	18	**54**
+30 mins.	0	0	0	0	2	29	0	31	21	0	**4**	**25**	**1**	31	13	45
+45 mins.	0	0	0	0	1	**42**	0	**43**	**22**	0	3	25	0	28	**24**	52
Total Volume	0	0	2	2	7	135	0	142	76	0	12	88	1	128	74	203
% App. Total	0	0	100		4.9	95.1	0		86.4	0	13.6		0.5	63.1	36.5	
PHF	.000	.000	.500	.500	.583	.804	.000	.826	.864	.000	.750	.880	.250	.889	.771	.940

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City of Big Bear Lake
N/S: Big Bear Boulevard (SR-18)
E/W: Fox Farm Road
Weather: Sunny

File Name : BBLBBFFPM
Site Code : 00000035
Start Date : 9/28/2011
Page No : 1

Groups Printed- Total Volume

	Big Bear Boulevard (SR-18) Southbound				Fox Farm Road Westbound				Big Bear Boulevard (SR-18) Northbound				Fox Farm Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	9	142	14	165	13	8	8	29	14	254	21	289	44	8	13	65	548
04:15 PM	6	137	19	162	10	4	18	32	10	170	20	200	37	7	13	57	451
04:30 PM	9	145	18	172	11	3	7	21	7	213	5	225	43	3	12	58	476
04:45 PM	10	182	9	201	13	2	10	25	3	183	20	206	19	8	9	36	468
Total	34	606	60	700	47	17	43	107	34	820	66	920	143	26	47	216	1943
05:00 PM	16	160	8	184	14	2	7	23	14	231	18	263	37	4	19	60	530
05:15 PM	7	154	5	166	15	6	7	28	14	190	8	212	58	6	9	73	479
05:30 PM	7	155	9	171	13	2	7	22	7	180	19	206	24	3	11	38	437
05:45 PM	6	157	12	175	6	4	7	17	11	155	8	174	22	7	12	41	407
Total	36	626	34	696	48	14	28	90	46	756	53	855	141	20	51	212	1853
Grand Total	70	1232	94	1396	95	31	71	197	80	1576	119	1775	284	46	98	428	3796
Apprch %	5	88.3	6.7		48.2	15.7	36		4.5	88.8	6.7		66.4	10.7	22.9		
Total %	1.8	32.5	2.5	36.8	2.5	0.8	1.9	5.2	2.1	41.5	3.1	46.8	7.5	1.2	2.6	11.3	

	Big Bear Boulevard (SR-18) Southbound				Fox Farm Road Westbound				Big Bear Boulevard (SR-18) Northbound				Fox Farm Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	9	145	**18**	172	11	3	7	21	7	213	5	225	43	3	12	58	476
04:45 PM	10	**182**	9	**201**	13	2	**10**	25	3	183	**20**	206	19	**8**	9	36	468
05:00 PM	**16**	160	8	184	14	2	7	23	**14**	**231**	18	**263**	37	4	**19**	60	**530**
05:15 PM	7	154	5	166	**15**	**6**	7	**28**	14	190	8	212	**58**	6	9	**73**	479
Total Volume	42	641	40	723	53	13	31	97	38	817	51	906	157	21	49	227	1953
% App. Total	5.8	88.7	5.5		54.6	13.4	32		4.2	90.2	5.6		69.2	9.3	21.6		
PHF	.656	.880	.556	.899	.883	.542	.775	.866	.679	.884	.638	.861	.677	.656	.645	.777	.921

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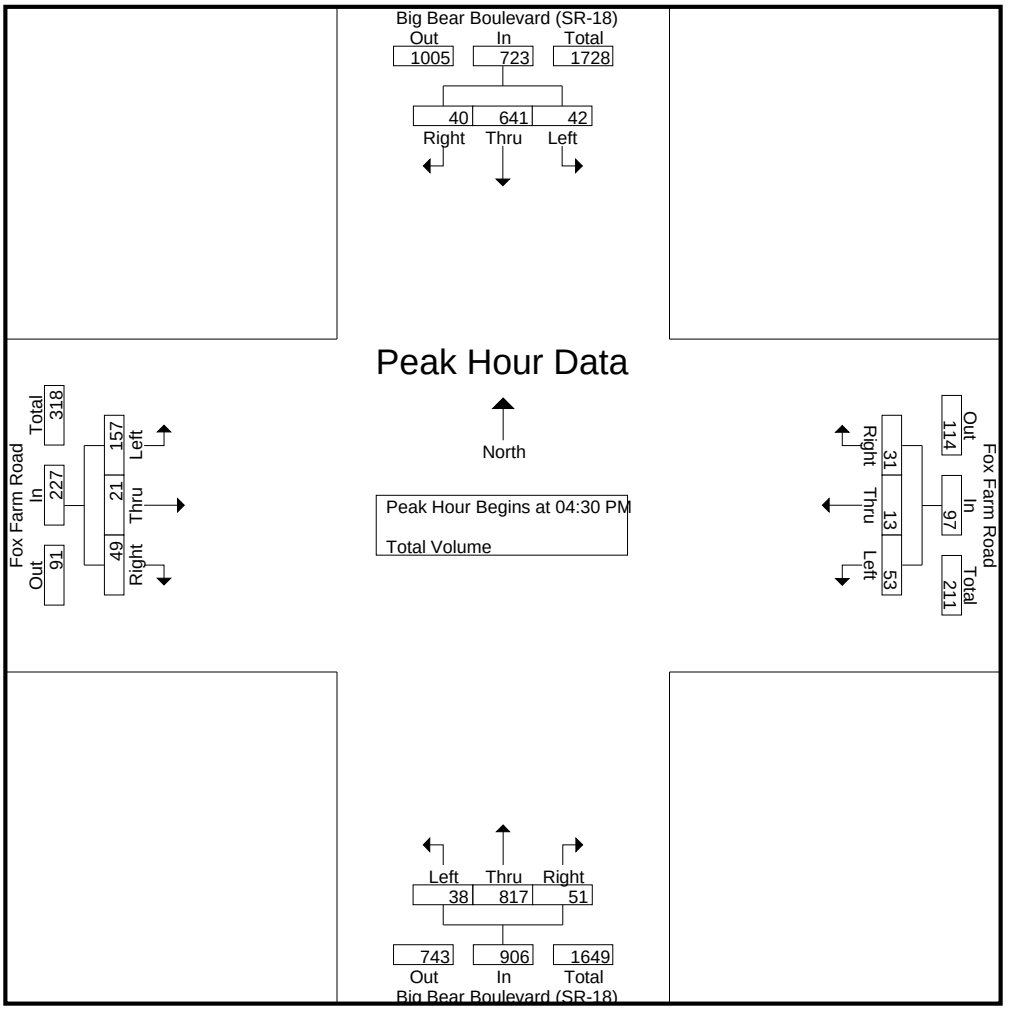
City of Big Bear Lake
N/S: Big Bear Boulevard (SR-18)
E/W: Fox Farm Road
Weather: Sunny

File Name : BBLBBFFPM
Site Code : 00000035
Start Date : 9/28/2011
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:00 PM				04:00 PM				04:30 PM			
+0 mins.	9	145	**18**	172	**13**	**8**	8	29	**14**	**254**	**21**	**289**	43	3	12	58
+15 mins.	10	**182**	9	**201**	10	4	**18**	**32**	10	170	20	200	19	**8**	9	36
+30 mins.	**16**	160	8	184	11	3	7	21	7	213	5	225	37	4	**19**	60
+45 mins.	7	154	5	166	13	2	10	25	3	183	20	206	**58**	6	9	**73**
Total Volume	42	641	40	723	47	17	43	107	34	820	66	920	157	21	49	227
% App. Total	5.8	88.7	5.5		43.9	15.9	40.2		3.7	89.1	7.2		69.2	9.3	21.6	
PHF	.656	.880	.556	.899	.904	.531	.597	.836	.607	.807	.786	.796	.677	.656	.645	.777

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City of Big Bear Lake
N/S: Big Bear Boulevard (SR-18)
E/W: Fox Farm Road
Weather: Sunny

File Name : BBLBBFFSAT
Site Code : 00000035
Start Date : 10/1/2011
Page No : 1

Groups Printed- Total Volume

	Big Bear Boulevard (SR-18) Southbound				Fox Farm Road Westbound				Big Bear Boulevard (SR-18) Northbound				Fox Farm Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
03:00 PM	8	183	16	207	12	10	15	37	16	217	25	258	49	12	13	74	576
03:15 PM	8	219	20	247	20	5	9	34	13	204	14	231	51	7	23	81	593
03:30 PM	7	186	12	205	13	3	13	29	19	206	16	241	43	8	12	63	538
03:45 PM	7	198	23	228	9	5	11	25	14	284	21	319	34	6	15	55	627
Total	30	786	71	887	54	23	48	125	62	911	76	1049	177	33	63	273	2334
04:00 PM	7	211	17	235	17	4	10	31	15	298	22	335	47	3	18	68	669
04:15 PM	8	209	21	238	14	2	10	26	9	288	18	315	40	8	12	60	639
04:30 PM	12	227	13	252	18	2	14	34	9	234	24	267	50	5	8	63	616
04:45 PM	7	204	19	230	8	3	12	23	4	252	25	281	48	8	13	69	603
Total	34	851	70	955	57	11	46	114	37	1072	89	1198	185	24	51	260	2527
Grand Total	64	1637	141	1842	111	34	94	239	99	1983	165	2247	362	57	114	533	4861
Apprch %	3.5	88.9	7.7		46.4	14.2	39.3		4.4	88.3	7.3		67.9	10.7	21.4		
Total %	1.3	33.7	2.9	37.9	2.3	0.7	1.9	4.9	2	40.8	3.4	46.2	7.4	1.2	2.3	11	

	Big Bear Boulevard (SR-18) Southbound				Fox Farm Road Westbound				Big Bear Boulevard (SR-18) Northbound				Fox Farm Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 03:45 PM																	
03:45 PM	7	198	**23**	228	9	**5**	11	25	14	284	21	319	34	6	15	55	627
04:00 PM	7	211	17	235	17	4	10	31	**15**	**298**	22	**335**	47	3	**18**	**68**	**669**
04:15 PM	8	209	21	238	14	2	10	26	9	288	18	315	40	**8**	12	60	639
04:30 PM	**12**	**227**	13	**252**	**18**	2	**14**	**34**	9	234	**24**	267	**50**	5	8	63	616
Total Volume	34	845	74	953	58	13	45	116	47	1104	85	1236	171	22	53	246	2551
% App. Total	3.6	88.7	7.8		50	11.2	38.8		3.8	89.3	6.9		69.5	8.9	21.5		
PHF	.708	.931	.804	.945	.806	.650	.804	.853	.783	.926	.885	.922	.855	.688	.736	.904	.953

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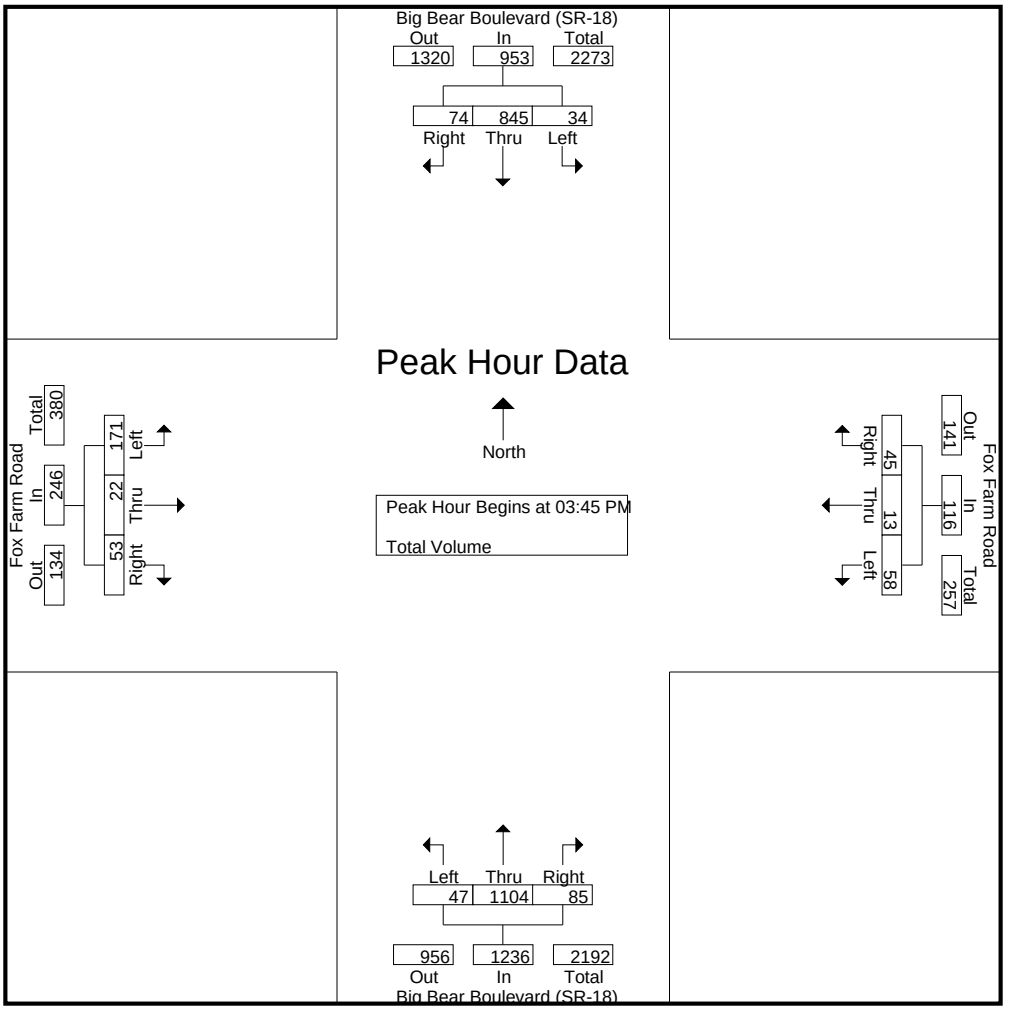
City of Big Bear Lake
N/S: Big Bear Boulevard (SR-18)
E/W: Fox Farm Road
Weather: Sunny

File Name : BBLBBFFSAT
Site Code : 00000035
Start Date : 10/1/2011
Page No : 2



Peak Hour Analysis From 03:00 PM to 04:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				03:00 PM				03:45 PM				03:00 PM			
+0 mins.	7	211	17	235	12	**10**	**15**	**37**	14	284	21	319	49	**12**	13	74
+15 mins.	8	209	**21**	238	**20**	5	9	34	**15**	**298**	22	**335**	**51**	7	**23**	**81**
+30 mins.	**12**	**227**	13	**252**	13	3	13	29	9	288	18	315	43	8	12	63
+45 mins.	7	204	19	230	9	5	11	25	9	234	**24**	267	34	6	15	55
Total Volume	34	851	70	955	54	23	48	125	47	1104	85	1236	177	33	63	273
% App. Total	3.6	89.1	7.3		43.2	18.4	38.4		3.8	89.3	6.9		64.8	12.1	23.1	
PHF	.708	.937	.833	.947	.675	.575	.800	.845	.783	.926	.885	.922	.868	.688	.685	.843

Counts Unlimited, Inc.
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City of Big Bear Lake
N/S: Stanfield Cutoff
E/W: Big Bear Boulevard (SR-18)
Weather: Sunny

File Name : BBLSCBBPM
Site Code : 00000063
Start Date : 9/28/2011
Page No : 1

Groups Printed- Total Volume

	Stanfield Cutoff Southbound				Big Bear Boulevard (SR-18) Westbound				Stanfield Cutoff Northbound				Big Bear Boulevard (SR-18) Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	3	9	47	59	5	100	1	106	5	8	7	20	61	199	5	265	450
04:15 PM	4	4	51	59	8	109	1	118	4	6	14	24	48	183	4	235	436
04:30 PM	1	7	48	56	0	113	5	118	11	7	5	23	53	167	2	222	419
04:45 PM	3	13	69	85	1	118	1	120	7	7	11	25	53	143	10	206	436
Total	11	33	215	259	14	440	8	462	27	28	37	92	215	692	21	928	1741
05:00 PM	4	4	51	59	2	100	5	107	6	5	14	25	58	203	7	268	459
05:15 PM	3	4	52	59	3	101	4	108	9	7	12	28	51	179	8	238	433
05:30 PM	1	4	58	63	4	99	2	105	9	10	12	31	44	130	4	178	377
05:45 PM	2	3	38	43	1	107	1	109	16	6	11	33	31	152	2	185	370
Total	10	15	199	224	10	407	12	429	40	28	49	117	184	664	21	869	1639
Grand Total	21	48	414	483	24	847	20	891	67	56	86	209	399	1356	42	1797	3380
Apprch %	4.3	9.9	85.7		2.7	95.1	2.2		32.1	26.8	41.1		22.2	75.5	2.3		
Total %	0.6	1.4	12.2	14.3	0.7	25.1	0.6	26.4	2	1.7	2.5	6.2	11.8	40.1	1.2	53.2	

	Stanfield Cutoff Southbound				Big Bear Boulevard (SR-18) Westbound				Stanfield Cutoff Northbound				Big Bear Boulevard (SR-18) Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	**4**	4	51	59	**8**	109	1	118	4	6	**14**	24	48	183	4	235	436
04:30 PM	1	7	48	56	0	113	**5**	118	**11**	**7**	5	23	53	167	2	222	419
04:45 PM	3	**13**	**69**	**85**	1	**118**	1	**120**	7	7	11	**25**	53	143	**10**	206	436
05:00 PM	4	4	51	59	2	100	5	107	6	5	14	25	**58**	**203**	7	**268**	**459**
Total Volume	12	28	219	259	11	440	12	463	28	25	44	97	212	696	23	931	1750
% App. Total	4.6	10.8	84.6		2.4	95	2.6		28.9	25.8	45.4		22.8	74.8	2.5		
PHF	.750	.538	.793	.762	.344	.932	.600	.965	.636	.893	.786	.970	.914	.857	.575	.868	.953

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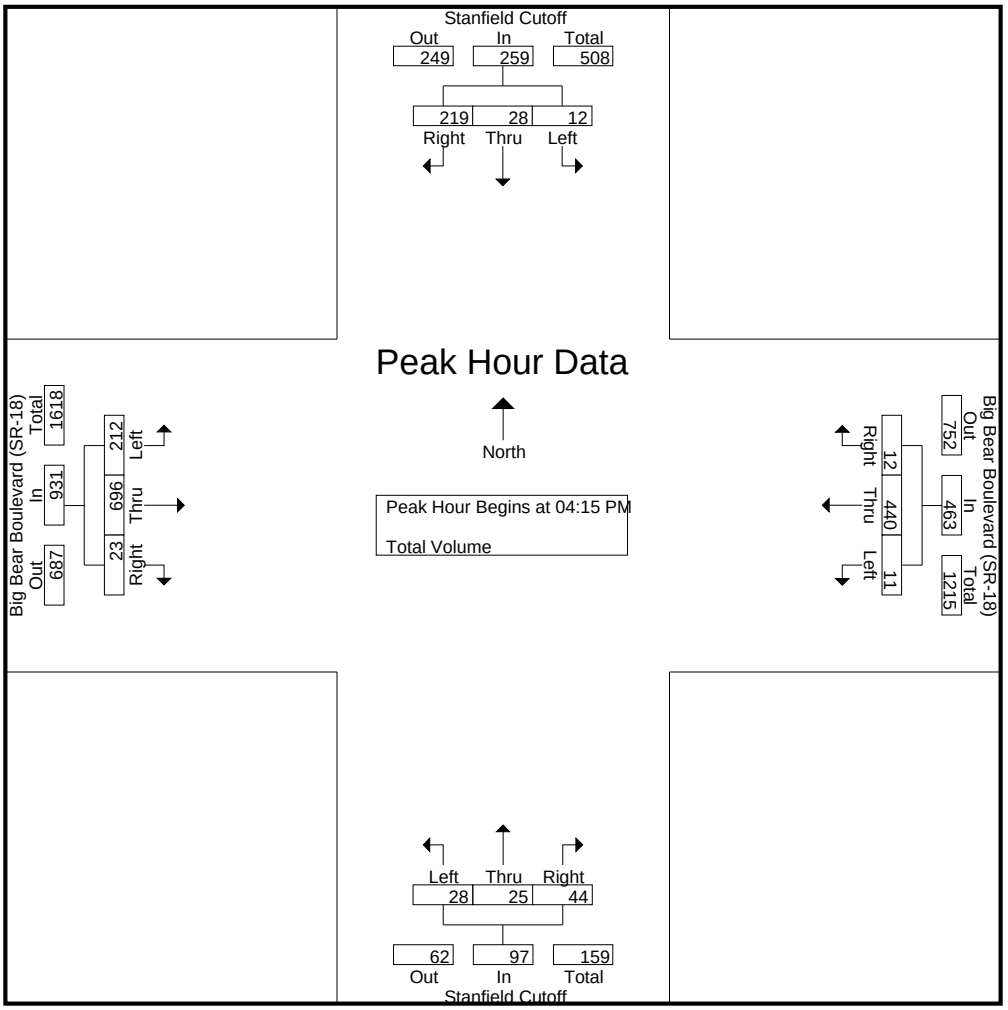
City of Big Bear Lake
N/S: Stanfield Cutoff
E/W: Big Bear Boulevard (SR-18)
Weather: Sunny

File Name : BBLSCBBPM
Site Code : 00000063
Start Date : 9/28/2011
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:15 PM				05:00 PM				04:30 PM			
+0 mins.	3	**13**	**69**	**85**	**8**	109	1	118	6	5	**14**	25	53	167	2	222
+15 mins.	**4**	4	51	59	0	113	**5**	118	9	7	12	28	53	143	**10**	206
+30 mins.	3	4	52	59	1	**118**	1	**120**	9	**10**	12	31	**58**	**203**	7	**268**
+45 mins.	1	4	58	63	2	100	5	107	**16**	6	11	**33**	51	179	8	238
Total Volume	11	25	230	266	11	440	12	463	40	28	49	117	215	692	27	934
% App. Total	4.1	9.4	86.5		2.4	95	2.6		34.2	23.9	41.9		23	74.1	2.9	
PHF	.688	.481	.833	.782	.344	.932	.600	.965	.625	.700	.875	.886	.927	.852	.675	.871

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City of Big Bear Lake
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Weather: Sunny

File Name : BBLSCBBSAT
Site Code : 00000063
Start Date : 10/1/2011
Page No : 1

Groups Printed- Total Volume

	Stanfield Cutoff Southbound				Big Bear Boulevard (SR-18) Westbound				Stanfield Cutoff Northbound				Big Bear Boulevard (SR-18) Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
03:00 PM	6	3	66	75	8	152	3	163	12	9	15	36	50	194	12	256	530
03:15 PM	5	8	54	67	4	133	8	145	7	6	11	24	48	191	7	246	482
03:30 PM	6	13	68	87	11	119	7	137	11	8	8	27	53	162	5	220	471
03:45 PM	9	6	77	92	10	146	9	165	13	11	7	31	51	198	3	252	540
Total	26	30	265	321	33	550	27	610	43	34	41	118	202	745	27	974	2023
04:00 PM	9	6	56	71	4	140	9	153	9	9	12	30	84	213	5	302	556
04:15 PM	3	7	68	78	5	162	7	174	6	4	8	18	60	205	9	274	544
04:30 PM	9	3	67	79	8	126	6	140	8	6	12	26	55	161	10	226	471
04:45 PM	4	10	59	73	7	128	9	144	7	3	18	28	65	196	13	274	519
Total	25	26	250	301	24	556	31	611	30	22	50	102	264	775	37	1076	2090
Grand Total	51	56	515	622	57	1106	58	1221	73	56	91	220	466	1520	64	2050	4113
Apprch %	8.2	9	82.8		4.7	90.6	4.8		33.2	25.5	41.4		22.7	74.1	3.1		
Total %	1.2	1.4	12.5	15.1	1.4	26.9	1.4	29.7	1.8	1.4	2.2	5.3	11.3	37	1.6	49.8	

	Stanfield Cutoff Southbound				Big Bear Boulevard (SR-18) Westbound				Stanfield Cutoff Northbound				Big Bear Boulevard (SR-18) Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 03:30 PM																	
03:30 PM	6	**13**	68	87	**11**	119	7	137	11	8	8	27	53	162	5	220	471
03:45 PM	**9**	6	**77**	**92**	10	146	**9**	165	**13**	**11**	7	**31**	51	198	3	252	540
04:00 PM	9	6	56	71	4	140	9	153	9	9	**12**	30	**84**	**213**	5	**302**	**556**
04:15 PM	3	7	68	78	5	**162**	7	**174**	6	4	8	18	60	205	**9**	274	544
Total Volume	27	32	269	328	30	567	32	629	39	32	35	106	248	778	22	1048	2111
% App. Total	8.2	9.8	82		4.8	90.1	5.1		36.8	30.2	33		23.7	74.2	2.1		
PHF	.750	.615	.873	.891	.682	.875	.889	.904	.750	.727	.729	.855	.738	.913	.611	.868	.949

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City of Big Bear Lake
N/S: Stanfield Cutoff
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Weather: Sunny

File Name : BBLSCBBSAT
Site Code : 00000063
Start Date : 10/1/2011
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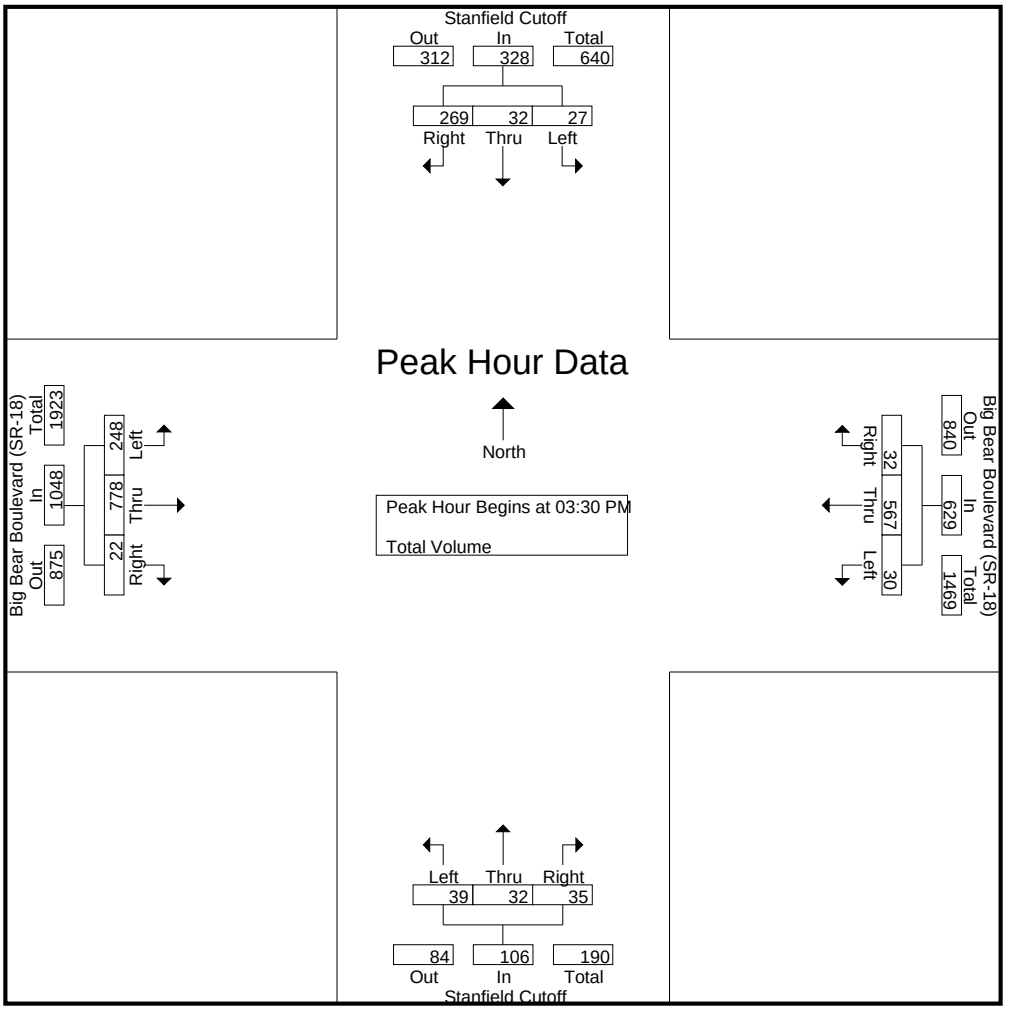

Peak Hour Analysis From 03:00 PM to 04:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	03:30 PM				03:45 PM				03:00 PM				04:00 PM			
+0 mins.	6	**13**	68	87	**10**	146	**9**	165	12	9	**15**	**36**	**84**	**213**	5	**302**
+15 mins.	**9**	6	**77**	**92**	4	140	9	153	7	6	11	24	60	205	9	274
+30 mins.	9	6	56	71	5	**162**	7	**174**	11	8	8	27	55	161	10	226
+45 mins.	3	7	68	78	8	126	6	140	**13**	**11**	7	31	65	196	**13**	274
Total Volume	27	32	269	328	27	574	31	632	43	34	41	118	264	775	37	1076
% App. Total	8.2	9.8	82		4.3	90.8	4.9		36.4	28.8	34.7		24.5	72	3.4	
PHF	.750	.615	.873	.891	.675	.886	.861	.908	.827	.773	.683	.819	.786	.910	.712	.891

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City of Big Bear Lake
N/S: Stanfield Cutoff / Private Drive
E/W: North Shore Drive (SR-38)
Weather: Sunny

File Name : BBLSCNSPM
Site Code : 00000051
Start Date : 9/28/2011
Page No : 1

Groups Printed- Total Volume

	Private Drive Southbound				North Shore Drive (SR-38) Westbound				Stanfield Cutoff Northbound				North Shore Drive (SR-38) Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	2	3	2	7	35	13	3	51	13	0	49	62	0	16	18	34	154
04:15 PM	1	2	0	3	33	8	1	42	20	0	31	51	3	8	23	34	130
04:30 PM	5	1	0	6	45	5	1	51	19	2	45	66	0	19	18	37	160
04:45 PM	1	2	0	3	56	9	2	67	22	2	29	53	0	9	21	30	153
Total	9	8	2	19	169	35	7	211	74	4	154	232	3	52	80	135	597
05:00 PM	0	2	0	2	45	12	0	57	11	2	49	62	1	14	12	27	148
05:15 PM	1	3	0	4	43	13	2	58	19	3	40	62	0	8	14	22	146
05:30 PM	0	0	0	0	43	9	3	55	16	0	34	50	0	17	17	34	139
05:45 PM	0	2	0	2	25	7	2	34	9	0	23	32	0	9	10	19	87
Total	1	7	0	8	156	41	7	204	55	5	146	206	1	48	53	102	520
Grand Total	10	15	2	27	325	76	14	415	129	9	300	438	4	100	133	237	1117
Apprch %	37	55.6	7.4		78.3	18.3	3.4		29.5	2.1	68.5		1.7	42.2	56.1		
Total %	0.9	1.3	0.2	2.4	29.1	6.8	1.3	37.2	11.5	0.8	26.9	39.2	0.4	9	11.9	21.2	

	Private Drive Southbound				North Shore Drive (SR-38) Westbound				Stanfield Cutoff Northbound				North Shore Drive (SR-38) Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	**5**	1	0	**6**	45	5	1	51	19	2	45	**66**	0	**19**	18	**37**	**160**
04:45 PM	1	2	0	3	**56**	9	**2**	**67**	**22**	2	29	53	0	9	**21**	30	153
05:00 PM	0	2	0	2	45	12	0	57	11	2	**49**	62	**1**	14	12	27	148
05:15 PM	1	**3**	0	4	43	**13**	2	58	19	**3**	40	62	0	8	14	22	146
Total Volume	7	8	0	15	189	39	5	233	71	9	163	243	1	50	65	116	607
% App. Total	46.7	53.3	0		81.1	16.7	2.1		29.2	3.7	67.1		0.9	43.1	56		
PHF	.350	.667	.000	.625	.844	.750	.625	.869	.807	.750	.832	.920	.250	.658	.774	.784	.948

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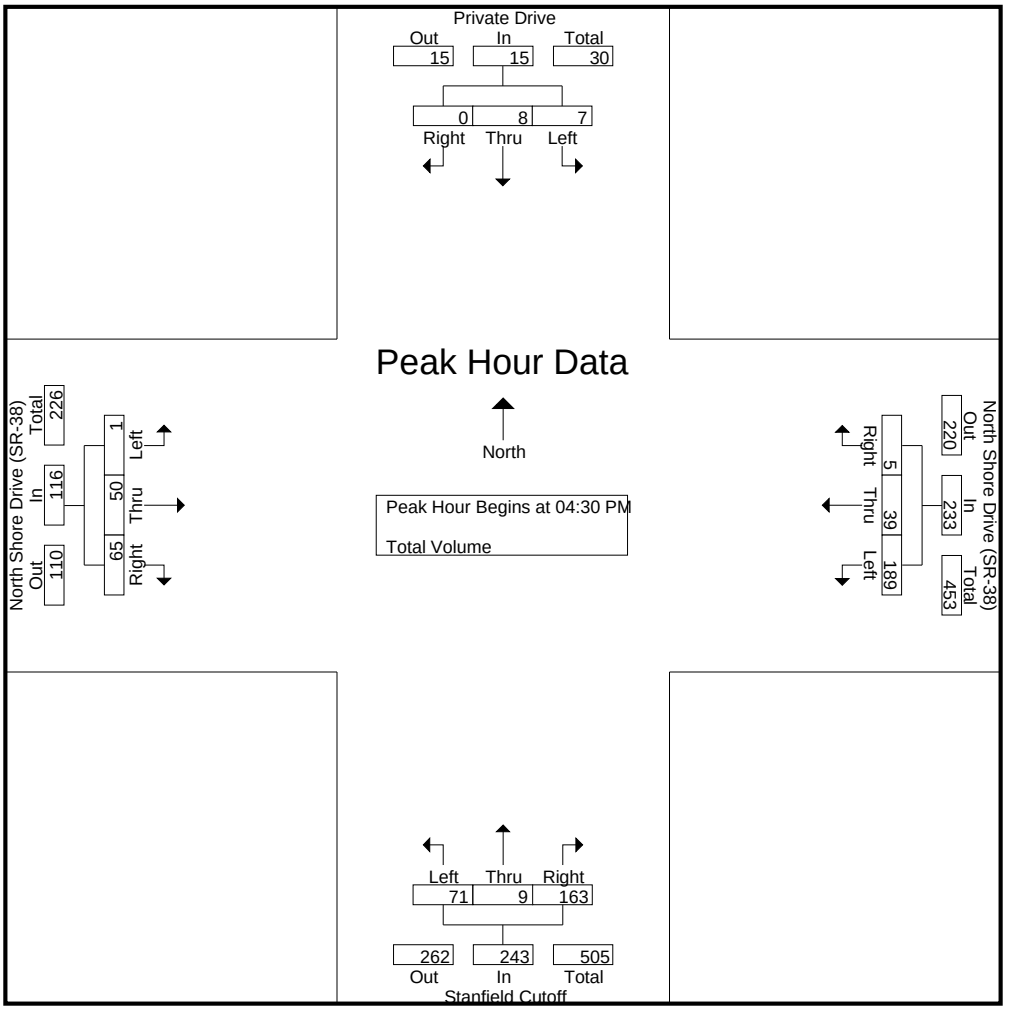
City of Big Bear Lake
N/S: Stanfield Cutoff / Private Drive
E/W: North Shore Drive (SR-38)
Weather: Sunny

File Name : BBLSCNSPM
Site Code : 00000051
Start Date : 9/28/2011
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:45 PM				04:30 PM				04:00 PM			
+0 mins.	2	**3**	**2**	**7**	**56**	9	2	**67**	19	2	45	**66**	0	16	18	34
+15 mins.	1	2	0	3	45	12	0	57	**22**	2	29	53	**3**	8	**23**	34
+30 mins.	**5**	1	0	6	43	**13**	2	58	11	2	**49**	62	0	**19**	18	**37**
+45 mins.	1	2	0	3	43	9	**3**	55	19	**3**	40	62	0	9	21	30
Total Volume	9	8	2	19	187	43	7	237	71	9	163	243	3	52	80	135
% App. Total	47.4	42.1	10.5		78.9	18.1	3		29.2	3.7	67.1		2.2	38.5	59.3	
PHF	.450	.667	.250	.679	.835	.827	.583	.884	.807	.750	.832	.920	.250	.684	.870	.912

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City of Big Bear Lake
N/S: Stanfield Cutoff / Private Drive
E/W: North Shore Drive (SR-38)
Weather: Sunny

File Name : BBLSCNSSAT
Site Code : 00000051
Start Date : 10/1/2011
Page No : 1

Groups Printed- Total Volume

	Private Drive Southbound				North Shore Drive (SR-38) Westbound				Stanfield Cutoff Northbound				North Shore Drive (SR-38) Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
03:00 PM	1	1	0	2	26	13	1	40	34	2	20	56	0	19	41	60	158
03:15 PM	1	1	1	3	23	18	1	42	40	2	26	68	0	19	38	57	170
03:30 PM	1	3	1	5	35	10	1	46	37	2	32	71	1	19	53	73	195
03:45 PM	1	0	0	1	44	18	1	63	34	0	26	60	0	19	44	63	187
Total	4	5	2	11	128	59	4	191	145	6	104	255	1	76	176	253	710
04:00 PM	2	1	1	4	32	13	1	46	40	3	49	92	0	33	37	70	212
04:15 PM	1	3	0	4	40	21	1	62	36	3	35	74	0	26	39	65	205
04:30 PM	0	1	1	2	36	12	1	49	30	0	42	72	0	25	34	59	182
04:45 PM	1	1	0	2	30	8	0	38	31	2	46	79	0	25	42	67	186
Total	4	6	2	12	138	54	3	195	137	8	172	317	0	109	152	261	785
Grand Total	8	11	4	23	266	113	7	386	282	14	276	572	1	185	328	514	1495
Apprch %	34.8	47.8	17.4		68.9	29.3	1.8		49.3	2.4	48.3		0.2	36	63.8		
Total %	0.5	0.7	0.3	1.5	17.8	7.6	0.5	25.8	18.9	0.9	18.5	38.3	0.1	12.4	21.9	34.4	

	Private Drive Southbound				North Shore Drive (SR-38) Westbound				Stanfield Cutoff Northbound				North Shore Drive (SR-38) Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 03:30 PM																	
03:30 PM	1	**3**	**1**	**5**	35	10	**1**	46	37	2	32	71	**1**	19	**53**	**73**	195
03:45 PM	1	0	0	1	**44**	18	1	**63**	34	0	26	60	0	19	44	63	187
04:00 PM	**2**	1	1	4	32	13	1	46	**40**	**3**	**49**	**92**	0	**33**	37	70	**212**
04:15 PM	1	3	0	4	40	**21**	1	62	36	3	35	74	0	26	39	65	205
Total Volume	5	7	2	14	151	62	4	217	147	8	142	297	1	97	173	271	799
% App. Total	35.7	50	14.3		69.6	28.6	1.8		49.5	2.7	47.8		0.4	35.8	63.8		
PHF	.625	.583	.500	.700	.858	.738	1.00	.861	.919	.667	.724	.807	.250	.735	.816	.928	.942

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City of Big Bear Lake
N/S: Stanfield Cutoff / Private Drive
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Weather: Sunny

File Name : BBLSCNSSAT
Site Code : 00000051
Start Date : 10/1/2011
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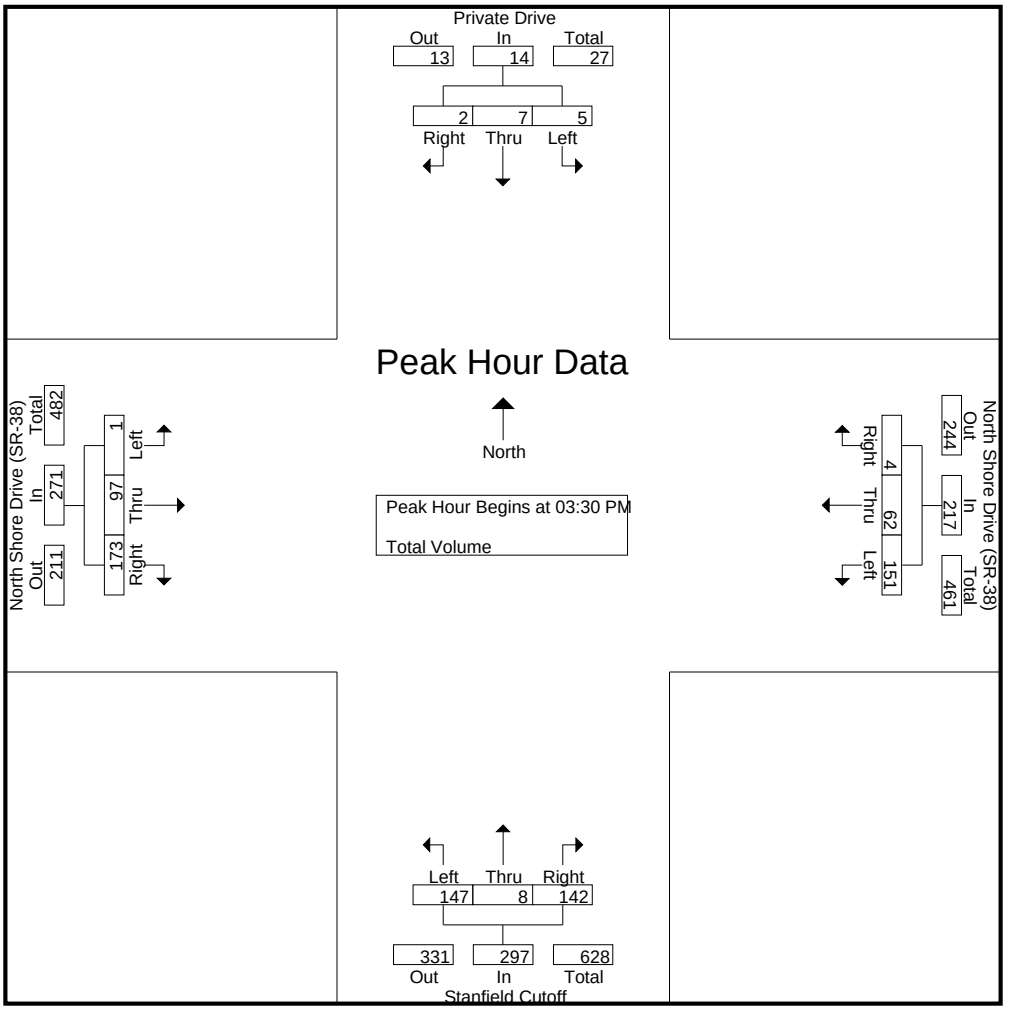

Peak Hour Analysis From 03:00 PM to 04:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	03:30 PM				03:45 PM				04:00 PM				03:30 PM			
+0 mins.	1	**3**	**1**	**5**	**44**	18	**1**	**63**	**40**	**3**	**49**	**92**	**1**	19	**53**	**73**
+15 mins.	1	0	0	1	32	13	1	46	36	3	35	74	0	19	44	63
+30 mins.	**2**	1	1	4	40	**21**	1	62	30	0	42	72	0	**33**	37	70
+45 mins.	1	3	0	4	36	12	1	49	31	2	46	79	0	26	39	65
Total Volume	5	7	2	14	152	64	4	220	137	8	172	317	1	97	173	271
% App. Total	35.7	50	14.3		69.1	29.1	1.8		43.2	2.5	54.3		0.4	35.8	63.8	
PHF	.625	.583	.500	.700	.864	.762	1.000	.873	.856	.667	.878	.861	.250	.735	.816	.928

APPENDIX D

Signal Warrant Worksheets

Moonridge Animal Park
W/O 11-3004
Existing

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #1 North Shore Drive (NS) at Big Bear Boulevard (SR-18) (EW)

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0	0	0	1	0	0	1	0	1	0	1	0
Initial Vol:	0	0	0	57	0	81	48	214	0	0	291	49

Major Street Volume: 600
Minor Approach Volume: 138
Minor Approach Volume Threshold: 310

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Moonridge Animal Park
W/O 11-3004
Existing

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #5 Moonridge Way - Brownie Lane (NS) at Moonridge Road (EW)

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 1!	0	0	0 1	0	0 1	0 0 1!	0	0	0 1	0	0 1
Initial Vol:	4	6	16	86	6	13	12	226	5	18	172	116

Major Street Volume: 549
Minor Approach Volume: 106
Minor Approach Volume Threshold: 338

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Moonridge Animal Park
W/O 11-3004
Existing

Peak Hour Volume Signal Warrant Report [Rural]

****

Intersection #6 Big Bear Boulevard (SR-18) (NS) at Moonridge Way (EW)

****

Base Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0 1	1	0	1 0 2	0	0	0 0 0	0	0	0 0 0	0	2
Initial Vol:	0 1236		5	139 918		0	0 0 0		0	0 0		170

Major Street Volume: 2298
Minor Approach Volume: 170
Minor Approach Volume Threshold: -94 [less than minimum of 100]

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Moonridge Animal Park
W/O 11-3004
Existing

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #7 Club View Drive (NS) at Moonridge Road (EW)

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound				West Bound			
Movement:	L	T	R	L	T	R	L	T	R		L	T	R	
Control:	Stop Sign			Stop Sign			Uncontrolled				Uncontrolled			
Lanes:	0 0 1!	0	0	0 0	0	1 0	0 1	0	0	1	0 1	0	0	0
Initial Vol:	79	0	11	0	1	1	1	138	80		9	133		0

Major Street Volume: 361
Minor Approach Volume: 90
Minor Approach Volume Threshold: 357

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Moonridge Animal Park
W/O 11-3004
Existing

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #10 Stanfield Cutoff (NS) at North Shore Drive (SR-38)(EW)

Base Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0	1!	0 0	0 0	1!	0 0	0 0	1!	0 0	0 0	1!	0 0
Initial Vol:	159	9	153	5	8	2	1	105	187	163	67	4

Major Street Volume: 527
Minor Approach Volume: 321
Minor Approach Volume Threshold: 201

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Moonridge Animal Park
W/O 11-3004
Existing

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #1 North Shore Drive (NS) at Big Bear Boulevard (SR-18) (EW)

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0	0	0	1	0	0	1	0	1	0	1	0
Initial Vol:	0	0	0	57	0	81	48	214	0	0	291	49

Major Street Volume: 600
Minor Approach Volume: 138
Minor Approach Volume Threshold: 310

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Moonridge Animal Park
W/O 11-3004
Existing

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #5 Moonridge Way - Brownie Lane (NS) at Moonridge Road (EW)

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 1!	0	0	0 1	0	0 1	0 0 1!	0	0	0 1	0	0 1
Initial Vol:	4	6	16	86	6	13	12	226	5	18	172	116

Major Street Volume: 549
Minor Approach Volume: 106
Minor Approach Volume Threshold: 338

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Moonridge Animal Park
W/O 11-3004
Existing

Peak Hour Volume Signal Warrant Report [Rural]

****

Intersection #6 Big Bear Boulevard (SR-18) (NS) at Moonridge Way (EW)

****

Base Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0 1	1	0	1 0 2	0	0	0 0 0	0	0	0 0 0	0	2
Initial Vol:	0 1236		5	139 918		0	0 0 0		0	0 0		170

Major Street Volume: 2298
Minor Approach Volume: 170
Minor Approach Volume Threshold: -94 [less than minimum of 100]

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Moonridge Animal Park
W/O 11-3004
Existing

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #7 Club View Drive (NS) at Moonridge Road (EW)

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound				West Bound			
Movement:	L	T	R	L	T	R	L	T	R		L	T	R	
Control:	Stop Sign			Stop Sign			Uncontrolled				Uncontrolled			
Lanes:	0 0 1!	0	0	0 0	0	1 0	0 1	0	0	1	0 1	0	0	0
Initial Vol:	79	0	11	0	1	1	1	138	80		9	133		0

Major Street Volume: 361
Minor Approach Volume: 90
Minor Approach Volume Threshold: 357

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Moonridge Animal Park
W/O 11-3004
Existing

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #10 Stanfield Cutoff (NS) at North Shore Drive (SR-38)(EW)

Base Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0	1!	0 0	0 0	1!	0 0	0 0	1!	0 0	0 0	1!	0 0
Initial Vol:	159	9	153	5	8	2	1	105	187	163	67	4

Major Street Volume: 527
Minor Approach Volume: 321
Minor Approach Volume Threshold: 201

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Moonridge Animal Park
W/O 11-3004
Existing + Ambient

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #1 North Shore Drive (NS) at Big Bear Boulevard (SR-18) (EW)

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0	0 0	0	1 0	0 0	1	1 0	1 0	0	0 0	0 1	0
Initial Vol:	0	0	0	13	0	43	28	143	0	0	138	7

Major Street Volume: 316
Minor Approach Volume: 56
Minor Approach Volume Threshold: 504

SIGNAL WARRANT DISCLAIMER

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Moonridge Animal Park
W/O 11-3004
Existing + Ambient

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #1 North Shore Drive (NS) at Big Bear Boulevard (SR-18) (EW)

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0	0 0	0	1 0 0	0 1		1 0 1	0 0		0 0 0	1 0	
Initial Vol:	0	0	0	13	0	43	28	143	0	0	138	7

Major Street Volume: 316
Minor Approach Volume: 56
Minor Approach Volume Threshold: 504

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Moonridge Animal Park
W/O 11-3004
Existing + Ambient

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #5 Moonridge Way - Brownie Lane (NS) at Moonridge Road (EW)

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0	1! 0	0	0 1	0 0	1	0 1	0 0	0	0 1	0 0	1
Initial Vol:	8	10	23	100	13	10	2	139	0	20	131	112

Major Street Volume: 405
Minor Approach Volume: 122
Minor Approach Volume Threshold: 429

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Moonridge Animal Park
W/O 11-3004
Existing + Ambient

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #6 Big Bear Boulevard (SR-18) (NS) at Moonridge Way (EW)

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0 1	1	0	1 0 2	0	0	0 0 0	0	0	0 0 0	0	2
Initial Vol:	0	1078	13	108	778	0	0	0	0	0	0	148

Major Street Volume: 1977
Minor Approach Volume: 148
Minor Approach Volume Threshold: -48 [less than minimum of 100]

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Moonridge Animal Park
W/O 11-3004
Existing + Ambient

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #7 Club View Drive (NS) at Moonridge Road (EW)

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0	1! 0	0	0 0	0 0	0	0 1	0 0	1	0 1	0 0	0
Initial Vol:	52	0	7	0	0	0	0	100	54	1	107	0

Major Street Volume: 262
Minor Approach Volume: 59
Minor Approach Volume Threshold: 430

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Moonridge Animal Park
W/O 11-3004
Existing + Ambient

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #10 Stanfield Cutoff (NS) at North Shore Drive (SR-38)(EW)

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 1!	0	0	0 1	0	0 0	0 0 1!	0	0	0 0 1!	0	0
Initial Vol:	87	11	200	8	10	0	1	61	80	232	48	6

Major Street Volume: 428
Minor Approach Volume: 298
Minor Approach Volume Threshold: 235

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Moonridge Animal Park
W/O 11-3004
Existing + Ambient

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #1 North Shore Drive (NS) at Big Bear Boulevard (SR-18) (EW)

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0	0 0	0	1 0	0 0	1	1 0	1 0	0	0 0	0 1	0
Initial Vol:	0	0	0	60	0	86	51	227	0	0	308	52

Major Street Volume: 638
Minor Approach Volume: 146
Minor Approach Volume Threshold: 292

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Moonridge Animal Park
W/O 11-3004
Existing + Ambient

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #5 Moonridge Way - Brownie Lane (NS) at Moonridge Road (EW)

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 1!	0	0	0 1	0	0 1	0 0 1!	0	0	0 1	0	0 1
Initial Vol:	4	6	17	91	6	14	13	240	5	19	182	123

Major Street Volume: 582
Minor Approach Volume: 111
Minor Approach Volume Threshold: 320

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Moonridge Animal Park
W/O 11-3004
Existing + Ambient

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #6 Big Bear Boulevard (SR-18) (NS) at Moonridge Way (EW)

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0 1	1	0	1 0 2	0	0	0 0 0	0	0	0 0 0	0	2
Initial Vol:	0	1310	5	147	973	0	0	0	0	0	0	180

Major Street Volume: 2436
Minor Approach Volume: 180
Minor Approach Volume Threshold: -111 [less than minimum of 100]

SIGNAL WARRANT DISCLAIMER

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Moonridge Animal Park
W/O 11-3004
Existing + Ambient

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #7 Club View Drive (NS) at Moonridge Road (EW)

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 1!	0	0	0 0 0	1	0	0 1 0	0	1	0 1 0	0	0
Initial Vol:	84	0	12	0	1	1	1	146	85	10	141	0

Major Street Volume: 383
Minor Approach Volume: 95
Minor Approach Volume Threshold: 343

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Moonridge Animal Park
W/O 11-3004
Existing + Ambient

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #10 Stanfield Cutoff (NS) at North Shore Drive (SR-38)(EW)

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 1!	0	0	0 0 1!	0	0	0 0 1!	0	0	0 0 1!	0	0
Initial Vol:	169	10	162	5	8	2	1	111	198	173	71	4

Major Street Volume: 559
Minor Approach Volume: 340
Minor Approach Volume Threshold: 191

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Moonridge Animal Park
W/O 11-3004
Existing + Ambient + Project

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #1 North Shore Drive (NS) at Big Bear Boulevard (SR-18) (EW)

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0	0 0	0	1 0	0 0	1	1 0	1 0	0	0 0	0 1	0
Initial Vol:	0	0	0	13	0	43	28	147	0	0	149	8

Major Street Volume: 332
Minor Approach Volume: 56
Minor Approach Volume Threshold: 489

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Moonridge Animal Park
W/O 11-3004
Existing + Ambient + Project

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #5 Moonridge Way - Brownie Lane (NS) at Moonridge Road (EW)

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0	1! 0	0	0 1	0 0	1	0 1	0 0	0	0 1	0 0	1
Initial Vol:	8	10	23	108	13	10	2	148	0	20	155	133

Major Street Volume: 459
Minor Approach Volume: 130
Minor Approach Volume Threshold: 391

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Moonridge Animal Park
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Peak Hour Volume Signal Warrant Report [Rural]

Intersection #6 Big Bear Boulevard (SR-18) (NS) at Moonridge Way (EW)

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0 1	1	0	1 0 2	0	0	0 0 0	0	0	0 0 0	0	2
Initial Vol:	0	1078	13	116	778	0	0	0	0	0	0	169

Major Street Volume: 1985
Minor Approach Volume: 169
Minor Approach Volume Threshold: -50 [less than minimum of 100]

SIGNAL WARRANT DISCLAIMER

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Moonridge Animal Park
W/O 11-3004
Existing + Ambient + Project

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #7 Club View Drive (NS) at Moonridge Road (EW)

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 1!	0	0	0 0	0	0	0 1	0	1	0 1	0	0
Initial Vol:	62	0	7	0	0	0	0 100	60		1 107		0

Major Street Volume: 268
Minor Approach Volume: 69
Minor Approach Volume Threshold: 425

SIGNAL WARRANT DISCLAIMER

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Moonridge Animal Park
W/O 11-3004
Existing + Ambient + Project

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #10 Stanfield Cutoff (NS) at North Shore Drive (SR-38)(EW)

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 1!	0	0	0 1	0	0 0	0 0 1!	0	0	0 0 1!	0	0
Initial Vol:	92	11	208	8	10	0	1	61	82	235	48	6

Major Street Volume: 433
Minor Approach Volume: 311
Minor Approach Volume Threshold: 233

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Volume Signal Warrant Report [Rural]

Intersection #1 North Shore Drive (NS) at Big Bear Boulevard (SR-18) (EW)

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0	0 0	0	1 0	0 0	1	1 0	1 0	0	0 0	0 1	0
Initial Vol:	0	0	0	60	0	86	51	231	0	0	319	53

Major Street Volume: 654
Minor Approach Volume: 146
Minor Approach Volume Threshold: 285

SIGNAL WARRANT DISCLAIMER

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Existing + Ambient + Project

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #5 Moonridge Way - Brownie Lane (NS) at Moonridge Road (EW)

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 1!	0	0	0 1	0	0 1	0 0 1!	0	0	0 1	0	0 1
Initial Vol:	4	6	17	99	6	14	13	249	5	19	207	145

Major Street Volume: 638
Minor Approach Volume: 119
Minor Approach Volume Threshold: 292

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Volume Signal Warrant Report [Rural]

Intersection #6 Big Bear Boulevard (SR-18) (NS) at Moonridge Way (EW)

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0 1	1	0	1 0 2	0	0	0 0 0	0	0	0 0 0	0	2
Initial Vol:	0	1310	5	155	973	0	0	0	0	0	0	202

Major Street Volume: 2444
Minor Approach Volume: 202
Minor Approach Volume Threshold: -112 [less than minimum of 100]

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Existing + Ambient + Project

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #7 Club View Drive (NS) at Moonridge Road (EW)

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 1!	0	0	0 0 0	1	0	0 1 0	0	1	0 1 0	0	0
Initial Vol:	95	0	12	0	1	1	1	146	91	10	141	0

Major Street Volume: 389
Minor Approach Volume: 106
Minor Approach Volume Threshold: 339

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Volume Signal Warrant Report [Rural]

Intersection #10 Stanfield Cutoff (NS) at North Shore Drive (SR-38)(EW)

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0
Initial Vol:	175	10	170	5	8	2	1	111	200	176	71	4

Major Street Volume: 564
Minor Approach Volume: 354
Minor Approach Volume Threshold: 190

SIGNAL WARRANT DISCLAIMER

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Existing + Ambient + Cumulative

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #1 North Shore Drive (NS) at Big Bear Boulevard (SR-18) (EW)

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0	0 0	0	1 0	0 0	1	1 0	1 0	0	0 0	0 1	0
Initial Vol:	0	0	0	17	0	43	28	147	0	0	140	10

Major Street Volume: 325
Minor Approach Volume: 60
Minor Approach Volume Threshold: 495

SIGNAL WARRANT DISCLAIMER

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Peak Hour Volume Signal Warrant Report [Rural]

Intersection #5 Moonridge Way - Brownie Lane (NS) at Moonridge Road (EW)

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 1!	0	0	0 1	0	0 1	0 1	0	0 0	0 1	0	0 1
Initial Vol:	8	10	23	100	13	10	2	144	0	20	136	112

Major Street Volume: 415
Minor Approach Volume: 122
Minor Approach Volume Threshold: 422

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Volume Signal Warrant Report [Rural]

Intersection #6 Big Bear Boulevard (SR-18) (NS) at Moonridge Way (EW)

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0 1	1	0	1 0 2	0	0	0 0 0	0	0	0 0 0	0	2
Initial Vol:	0	1097	13	108	801	0	0	0	0	0	0	148

Major Street Volume: 2019
Minor Approach Volume: 148
Minor Approach Volume Threshold: -55 [less than minimum of 100]

SIGNAL WARRANT DISCLAIMER

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Existing + Ambient + Cumulative

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #7 Club View Drive (NS) at Moonridge Road (EW)

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 1!	0	0	0 0 0	0	0	0 1 0	0	1	0 1 0	0	0
Initial Vol:	57	0	7	0	0	0	0 100		58	1 108		0

Major Street Volume: 267
Minor Approach Volume: 64
Minor Approach Volume Threshold: 426

SIGNAL WARRANT DISCLAIMER

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Existing + Ambient + Cumulative

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #10 Stanfield Cutoff (NS) at North Shore Drive (SR-38)(EW)

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 1!	0	0	0 1	0	0 0	0 0 1!	0	0	0 0 1!	0	0
Initial Vol:	89	11	203	8	10	0	1	61	82	235	48	6

Major Street Volume: 433
Minor Approach Volume: 303
Minor Approach Volume Threshold: 233

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Moonridge Animal Park
W/O 11-3004
Existing + Ambient + Cumulative

Peak Hour Volume Signal Warrant Report [Rural]

****

Intersection #1 North Shore Drive (NS) at Big Bear Boulevard (SR-18) (EW)

****

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0	0 0	0	1 0	0 0	1	1 0	1 0	0	0 0	0 1	0
Initial Vol:	0	0	0	65	0	86	51	230	0	0	311	56

Major Street Volume: 648
Minor Approach Volume: 151
Minor Approach Volume Threshold: 287

SIGNAL WARRANT DISCLAIMER

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Moonridge Animal Park
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Existing + Ambient + Cumulative

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #5 Moonridge Way - Brownie Lane (NS) at Moonridge Road (EW)

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 1!	0	0	0 1	0	0 1	0 0 1!	0	0	0 1	0	0 1
Initial Vol:	4	6	17	91	6	14	13	246	5	19	188	123

Major Street Volume: 594
Minor Approach Volume: 111
Minor Approach Volume Threshold: 314

SIGNAL WARRANT DISCLAIMER

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Moonridge Animal Park
W/O 11-3004
Existing + Ambient + Cumulative

Peak Hour Volume Signal Warrant Report [Rural]

****

Intersection #6 Big Bear Boulevard (SR-18) (NS) at Moonridge Way (EW)

****

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound						South Bound						East Bound						West Bound					
Movement:	L	-	T	-	R		L	-	T	-	R		L	-	T	-	R		L	-	T	-	R	
Control:	Uncontrolled						Uncontrolled						Stop Sign						Stop Sign					
Lanes:	0	0	1	1	0		1	0	2	0	0		0	0	0	0	0		0	0	0	0	2	
Initial Vol:	0	1338		5			147	1003		0			0		0		0		0		0		180	

Major Street Volume: 2494
Minor Approach Volume: 180
Minor Approach Volume Threshold: -118 [less than minimum of 100]

SIGNAL WARRANT DISCLAIMER

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Existing + Ambient + Cumulative

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #7 Club View Drive (NS) at Moonridge Road (EW)

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound				West Bound			
Movement:	L	T	R	L	T	R	L	T	R		L	T	R	
Control:	Stop Sign			Stop Sign			Uncontrolled				Uncontrolled			
Lanes:	0 0 1!	0	0	0 0 0	1	0	0 1 0	0	1		0 1 0	0	0	
Initial Vol:	90	0	12	0	1	1	1	147	90		10	142	0	

Major Street Volume: 390
Minor Approach Volume: 101
Minor Approach Volume Threshold: 339

SIGNAL WARRANT DISCLAIMER

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Peak Hour Volume Signal Warrant Report [Rural]

Intersection #10 Stanfield Cutoff (NS) at North Shore Drive (SR-38)(EW)

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 1!	0	0	0 0 1!	0	0	0 0 1!	0	0	0 0 1!	0	0
Initial Vol:	172	10	167	5	8	2	1	111	201	178	71	4

Major Street Volume: 567
Minor Approach Volume: 348
Minor Approach Volume Threshold: 189

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Volume Signal Warrant Report [Rural]

Intersection #1 North Shore Drive (NS) at Big Bear Boulevard (SR-18) (EW)

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0	0 0	0	1 0	0 0	1	1 0	1 0	0	0 0	0 1	0
Initial Vol:	0	0	0	17	0	43	28	151	0	0	151	11

Major Street Volume: 341
Minor Approach Volume: 60
Minor Approach Volume Threshold: 481

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Volume Signal Warrant Report [Rural]

Intersection #5 Moonridge Way - Brownie Lane (NS) at Moonridge Road (EW)

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0	1! 0	0	0 1	0 0	1	0 1	0 0	0	0 1	0 0	1
Initial Vol:	8	10	23	108	13	10	2	152	0	20	160	133

Major Street Volume: 468
Minor Approach Volume: 130
Minor Approach Volume Threshold: 386

SIGNAL WARRANT DISCLAIMER

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Peak Hour Volume Signal Warrant Report [Rural]

Intersection #6 Big Bear Boulevard (SR-18) (NS) at Moonridge Way (EW)

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0 1	1	0	1 0 2	0	0	0 0 0	0	0	0 0 0	0	2
Initial Vol:	0	1097	13	116	801	0	0	0	0	0	0	169

Major Street Volume: 2027
Minor Approach Volume: 169
Minor Approach Volume Threshold: -56 [less than minimum of 100]

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Moonridge Animal Park
W/O 11-3004
Existing + Ambient + Cumulative + Project

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #7 Club View Drive (NS) at Moonridge Road (EW)

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0	1! 0	0	0 0	0 0	0	0 1	0 0	1	0 1	0 0	0
Initial Vol:	67	0	7	0	0	0	0	100	64	1	108	0

Major Street Volume: 273
Minor Approach Volume: 74
Minor Approach Volume Threshold: 421

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Moonridge Animal Park
W/O 11-3004
Existing + Ambient + Cumulative + Project

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #10 Stanfield Cutoff (NS) at North Shore Drive (SR-38)(EW)

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 1!	0	0	0 1	0	0 0	0 0 1!	0	0	0 0 1!	0	0
Initial Vol:	94	11	211	8	10	0	1	61	84	238	48	6

Major Street Volume: 438
Minor Approach Volume: 316
Minor Approach Volume Threshold: 231

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Moonridge Animal Park
W/O 11-3004
Existing + Ambient + Cumulative + Project

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #1 North Shore Drive (NS) at Big Bear Boulevard (SR-18) (EW)

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0	0 0	0	1 0	0 0	1	1 0	1 0	0	0 0	0 1	0
Initial Vol:	0	0	0	65	0	86	51	234	0	0	322	57

Major Street Volume: 664
Minor Approach Volume: 151
Minor Approach Volume Threshold: 280

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Moonridge Animal Park
W/O 11-3004
Existing + Ambient + Cumulative + Project

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #5 Moonridge Way - Brownie Lane (NS) at Moonridge Road (EW)

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 1!	0	0	0 1	0	0 1	0 0 1!	0	0	0 1	0	0 1
Initial Vol:	4	6	17	99	6	14	13	255	5	19	213	145

Major Street Volume: 650
Minor Approach Volume: 119
Minor Approach Volume Threshold: 287

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Moonridge Animal Park
W/O 11-3004
Existing + Ambient + Cumulative + Project

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #6 Big Bear Boulevard (SR-18) (NS) at Moonridge Way (EW)

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0 1	1	0	1 0 2	0	0	0 0 0	0	0	0 0 0	0	2
Initial Vol:	0	1338	5	155	1003	0	0	0	0	0	0	202

Major Street Volume: 2502
Minor Approach Volume: 202
Minor Approach Volume Threshold: -119 [less than minimum of 100]

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Moonridge Animal Park
W/O 11-3004
Existing + Ambient + Cumulative + Project

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #7 Club View Drive (NS) at Moonridge Road (EW)

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 1!	0	0	0 0	0	1 0	0 1	0	0 1	0 1	0	0 0
Initial Vol:	100	0	12	0	1	1	1 147		96	10 142		0

Major Street Volume: 396
Minor Approach Volume: 111
Minor Approach Volume Threshold: 335

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Moonridge Animal Park
W/O 11-3004
Existing + Ambient + Cumulative + Project

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #10 Stanfield Cutoff (NS) at North Shore Drive (SR-38)(EW)

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 1!	0	0	0 0 1!	0	0	0 0 1!	0	0	0 0 1!	0	0
Initial Vol:	177	10	175	5	8	2	1	111	203	181	71	4

Major Street Volume: 572
Minor Approach Volume: 361
Minor Approach Volume Threshold: 187

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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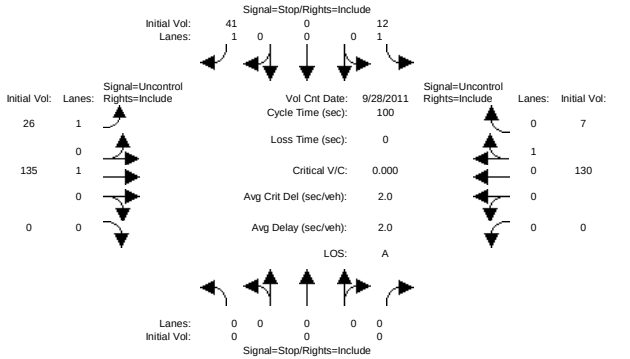
APPENDIX E

Existing
Level of Service Calculations

Moonridge Animal Park
W/O 11-3004
Existing

Level Of Service Computation Report
2000 HCM Unsignalized (Base Volume Alternative)
E-Weekday PM

Intersection #1: North Shore Drive (NS) at Big Bear Boulevard (SR-18) (EW)



Street Name:	North Shore Drive (SR-38) (NS)						Big Bear Boulevard (SR-18) (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Volume Module: >> Count Date: 28 Sep 2011 << 4:00-6:00 PM												
Base Vol:	0	0	0	10	0	35	22	116	0	0	112	6
Growth Adj:	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16
Initial Bse:	0	0	0	12	0	41	26	135	0	0	130	7
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
PHF Volume:	0	0	0	13	0	46	29	152	0	0	147	8
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	13	0	46	29	152	0	0	147	8
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	xxxx	6.2	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	xxxx	3.3	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	360	xxxx	151	155	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	638	xxxx	896	1426	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	629	xxxx	896	1426	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.02	xxxx	0.05	0.02	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.1	xxxx	0.2	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	10.8	xxxx	9.2	7.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	B	*	A	A	*	*	*	*	*
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			9.6			xxxxxx			xxxxxx		
ApproachLOS:	*			A			*			*		

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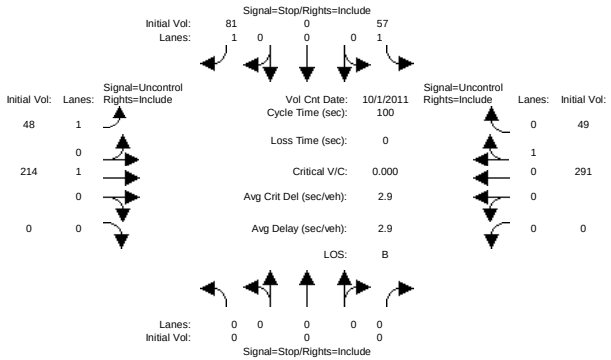
Moonridge Animal Park
W/O 11-3004
Existing

Level Of Service Computation Report
2000 HCM Unsignalized (Base Volume Alternative)
E-Weekend PM

Intersection #1: North Shore Drive (NS) at Big Bear Boulevard (SR-18) (EW)



Street Name:	North Shore Drive (SR-38) (NS)						Big Bear Boulevard (SR-18) (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Volume Module: >> Count Date: 1 Oct 2011 << 3:00-5:00 PM												
Base Vol:	0	0	0	53	0	75	44	198	0	0	269	45
Growth Adj:	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08
Initial Bse:	0	0	0	57	0	81	48	214	0	0	291	49
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
PHF Volume:	0	0	0	63	0	89	52	234	0	0	318	53
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	63	0	89	52	234	0	0	318	53
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	xxxx	6.2	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	xxxx	3.3	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	682	xxxx	344	371	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	418	xxxx	703	1199	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	404	xxxx	703	1199	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.15	xxxx	0.13	0.04	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.5	xxxx	0.4	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	15.5	xxxx	10.9	8.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	C	*	B	A	*	*	*	*	*
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			12.8			xxxxxx			xxxxxx		
ApproachLOS:	*			B			*			*		

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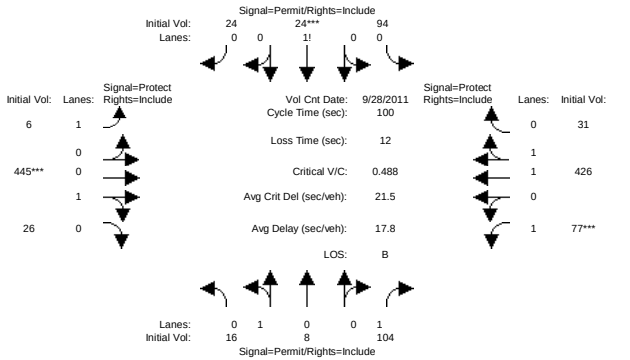
Moonridge Animal Park
W/O 11-3004
Existing

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
E-Weekday PM

Intersection #2: Pine Knot Boulevard (NS) at Big Bear Boulevard (SR-18) (EW)



Street Name:	Pine Knot Boulevard (NS)						Big Bear Boulevard (SR-18) (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module: >> Count Date: 28 Sep 2011 << 4:00-6:00 PM												
Base Vol:	14	7	90	81	21	21	5	384	22	66	367	27
Growth Adj:	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16
Initial Bse:	16	8	104	94	24	24	6	445	26	77	426	31
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
PHF Volume:	17	9	112	101	26	26	6	479	27	82	458	34
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	17	9	112	101	26	26	6	479	27	82	458	34
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	17	9	112	101	26	26	6	479	27	82	458	34
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.81	0.81	0.83	0.74	0.74	0.74	0.93	0.97	0.97	0.93	0.92	0.92
Lanes:	0.67	0.33	1.00	0.66	0.17	0.17	1.00	0.95	0.05	1.00	1.86	0.14
Final Sat.:	1025	513	1583	932	242	242	1769	1747	100	1769	3262	240
Capacity Analysis Module:												
Vol/Sat:	0.02	0.02	0.07	0.11	0.11	0.11	0.00	0.27	0.27	0.05	0.14	0.14
Crit Moves:					****			****		****		
Green/Cycle:	0.22	0.22	0.22	0.22	0.22	0.22	0.02	0.56	0.56	0.10	0.64	0.64
Volume/Cap:	0.08	0.08	0.32	0.49	0.49	0.49	0.22	0.49	0.49	0.49	0.22	0.22
Delay/Veh:	30.9	30.9	33.1	35.1	35.1	35.1	52.4	13.6	13.6	45.1	7.5	7.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	30.9	30.9	33.1	35.1	35.1	35.1	52.4	13.6	13.6	45.1	7.5	7.5
LOS by Move:	C	C	C	D	D	D	D	B	B	D	A	A
HCM2kAvgQ:	1	1	3	5	5	5	0	6	6	3	2	2

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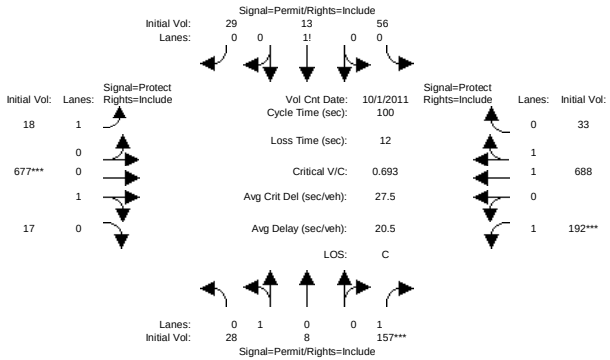
Moonridge Animal Park
W/O 11-3004
Existing

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
E-Weekend PM

Intersection #2: Pine Knot Boulevard (NS) at Big Bear Boulevard (SR-18) (EW)



Street Name:	Pine Knot Boulevard (NS)						Big Bear Boulevard (SR-18) (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module: >> Count Date: 1 Oct 2011 << 3:00-5:00 PM												
Base Vol:	26	7	145	52	12	27	17	627	16	178	637	31
Growth Adj:	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08
Initial Bse:	28	8	157	56	13	29	18	677	17	192	688	33
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
PHF Volume:	30	8	167	60	14	31	20	723	18	205	735	36
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	30	8	167	60	14	31	20	723	18	205	735	36
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	30	8	167	60	14	31	20	723	18	205	735	36
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.79	0.79	0.85	0.77	0.77	0.77	0.95	1.00	1.00	0.95	0.94	0.94
Lanes:	0.79	0.21	1.00	0.57	0.13	0.30	1.00	0.98	0.02	1.00	1.91	0.09
Final Sat.:	1178	317	1615	835	193	433	1805	1845	47	1805	3418	166
Capacity Analysis Module:												
Vol/Sat:	0.03	0.03	0.10	0.07	0.07	0.07	0.01	0.39	0.39	0.11	0.22	0.22
Crit Moves:								****		****		
Green/Cycle:	0.15	0.15	0.15	0.15	0.15	0.15	0.04	0.57	0.57	0.16	0.70	0.70
Volume/Cap:	0.17	0.17	0.69	0.48	0.48	0.48	0.31	0.69	0.69	0.69	0.31	0.31
Delay/Veh:	37.5	37.5	48.7	40.6	40.6	40.6	49.8	17.5	17.5	46.3	6.0	6.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	37.5	37.5	48.7	40.6	40.6	40.6	49.8	17.5	17.5	46.3	6.0	6.0
LOS by Move:	D	D	D	D	D	D	D	B	B	D	A	A
HCM2kAvgQ:	1	1	6	4	4	4	1	13	13	7	2	2

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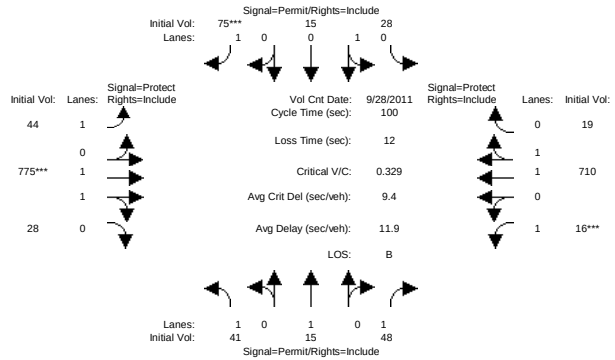
Moonridge Animal Park
W/O 11-3004
Existing

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
E-Weekday PM

Intersection #3: Summit Boulevard (NS) at Big Bear Boulevard (SR-18) (EW)



Street Name:	Summit Boulevard (NS)						Big Bear Boulevard (SR-18) (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module: >> Count Date: 28 Sep 2011 << 4:00-6:00 PM												
Base Vol:	35	13	41	24	13	65	38	668	24	14	612	16
Growth Adj:	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16
Initial Bse:	41	15	48	28	15	75	44	775	28	16	710	19
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
PHF Volume:	41	15	48	28	15	77	45	787	28	17	721	19
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	41	15	48	28	15	77	45	787	28	17	721	19
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	41	15	48	28	15	77	45	787	28	17	721	19
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.72	0.98	0.83	0.81	0.81	0.83	0.93	0.93	0.93	0.93	0.93	0.93
Lanes:	1.00	1.00	1.00	0.65	0.35	1.00	1.00	1.93	0.07	1.00	1.95	0.05
Final Sat.:	1363	1862	1583	1001	542	1583	1769	3398	122	1769	3434	90
Capacity Analysis Module:												
Vol/Sat:	0.03	0.01	0.03	0.03	0.03	0.05	0.03	0.23	0.23	0.01	0.21	0.21
Crit Moves:						****		****		****		
Green/Cycle:	0.15	0.15	0.15	0.15	0.15	0.15	0.08	0.70	0.70	0.03	0.65	0.65
Volume/Cap:	0.21	0.06	0.21	0.19	0.19	0.33	0.32	0.33	0.33	0.33	0.32	0.32
Delay/Veh:	38.0	36.8	38.0	37.8	37.8	39.0	44.9	5.8	5.8	51.5	7.7	7.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	38.0	36.8	38.0	37.8	37.8	39.0	44.9	5.8	5.8	51.5	7.7	7.7
LOS by Move:	D	D	D	D	D	D	D	A	A	D	A	A
HCM2kAvgQ:	1	0	1	1	1	2	2	2	2	1	2	2

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Moonridge Animal Park
W/O 11-3004
Existing

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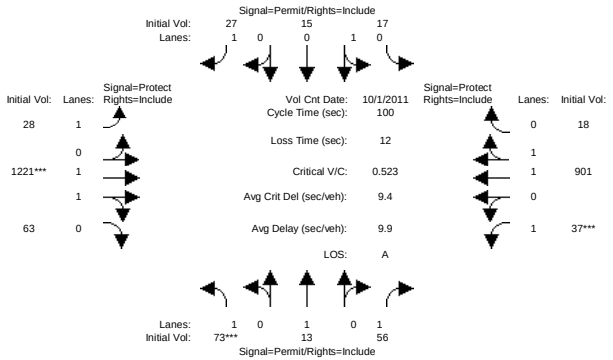
2000 HCM Operations (Base Volume Alternative)
E-Weekend PM

Intersection #3: Summit Boulevard (NS) at Big Bear Boulevard (SR-18) (EW)



Street Name:	Summit Boulevard (NS)						Big Bear Boulevard (SR-18) (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module: >> Count Date: 1 Oct 2011 << 3:00-5:00 PM												
Base Vol:	68	12	52	16	14	25	26	1131	58	34	834	17
Growth Adj:	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08
Initial Bse:	73	13	56	17	15	27	28	1221	63	37	901	18
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
PHF Volume:	78	14	60	18	16	29	30	1304	67	39	961	20
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	78	14	60	18	16	29	30	1304	67	39	961	20
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	78	14	60	18	16	29	30	1304	67	39	961	20
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.74	1.00	0.85	0.86	0.86	0.85	0.95	0.94	0.94	0.95	0.95	0.95
Lanes:	1.00	1.00	1.00	0.53	0.47	1.00	1.00	1.90	0.10	1.00	1.96	0.04
Final Sat.:	1404	1900	1615	866	758	1615	1805	3410	175	1805	3527	72
Capacity Analysis Module:												
Vol/Sat:	0.06	0.01	0.04	0.02	0.02	0.02	0.02	0.38	0.38	0.02	0.27	0.27
Crit Moves:	****							****		****		
Green/Cycle:	0.11	0.11	0.11	0.11	0.11	0.11	0.04	0.73	0.73	0.04	0.73	0.73
Volume/Cap:	0.52	0.07	0.35	0.20	0.20	0.17	0.37	0.52	0.52	0.52	0.37	0.37
Delay/Veh:	45.6	40.3	42.6	41.3	41.3	41.1	49.4	6.0	6.0	53.5	5.1	5.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	45.6	40.3	42.6	41.3	41.3	41.1	49.4	6.0	6.0	53.5	5.1	5.1
LOS by Move:	D	D	D	D	D	D	D	A	A	D	A	A
HCM2kAvgQ:	3	0	2	1	1	1	1	2	2	2	1	1

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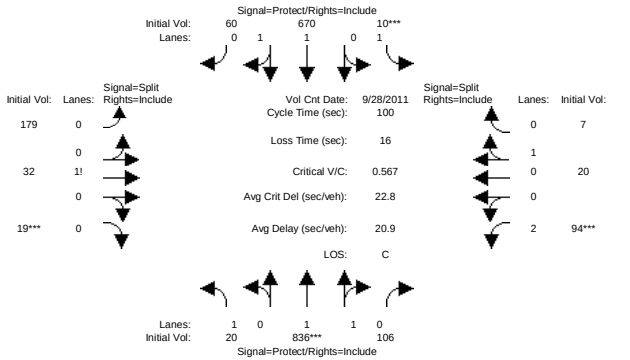
Moonridge Animal Park
W/O 11-3004
Existing

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
E-Weekday PM

Intersection #4: Big Bear Boulevard (SR-18) (NS) at Moonridge Road (EW)




```
Street Name: Big Bear Boulevard (SR-18) (NS)         Moonridge Road (EW)
Approach:       North Bound      South Bound      East Bound      West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 28 Sep 2011 << 4:00-6:00 PM
Base Vol:      17  721    91     9  578    52   154   28    16    81   17     6
Growth Adj:  1.16 1.16  1.16  1.16 1.16  1.16  1.16 1.16  1.16  1.16 1.16  1.16
Initial Bse:   20  836   106    10  670    60   179   32    19    94   20     7
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.91 0.91  0.91  0.91 0.91  0.91  0.91 0.91  0.91  0.91 0.91  0.91
PHF Volume:    22  919   116    11  737    66   196   36    20   103   22     8
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   22  919   116    11  737    66   196   36    20   103   22     8
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   22  919   116    11  737    66   196   36    20   103   22     8
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.93 0.92  0.92  0.93 0.92  0.92  0.93 0.93  0.93  0.90 0.94  0.94
Lanes:       1.00 1.78  0.22  1.00 1.83  0.17  0.78 0.14  0.08  2.00 0.74  0.26
Final Sat.:  1769 3088   390  1769 3207   289  1379  251   143  3432 1323   467
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.01 0.30  0.30  0.01 0.23  0.23  0.14 0.14  0.14  0.03 0.02  0.02
Crit Moves:       ****             ****                 ****  ****
Green/Cycle: 0.03 0.52  0.52  0.01 0.51  0.51  0.25 0.25  0.25  0.05 0.05  0.05
Volume/Cap:  0.45 0.57  0.57  0.57 0.45  0.45  0.57 0.57  0.57  0.57 0.31  0.31
Delay/Veh:   54.5 16.5  16.5  81.9 15.8  15.8  34.4 34.4  34.4  50.4 47.4  47.4
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  54.5 16.5  16.5  81.9 15.8  15.8  34.4 34.4  34.4  50.4 47.4  47.4
LOS by Move:   D    B     B     F    B     B     C    C     C     D    D     D
HCM2kAvgQ:     1    9     9     1    6     6     7    7     7     3    1     1
```

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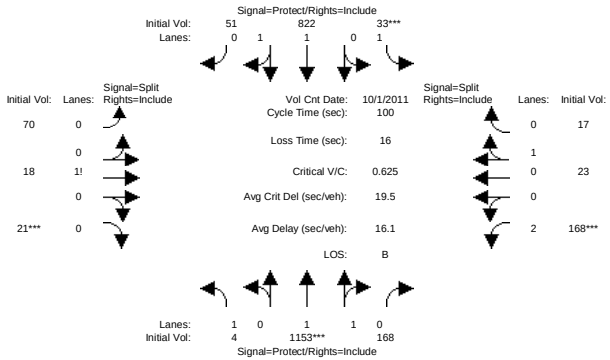
Moonridge Animal Park
W/O 11-3004
Existing

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
E-Weekend PM

Intersection #4: Big Bear Boulevard (SR-18) (NS) at Moonridge Road (EW)




```
Street Name: Big Bear Boulevard (SR-18) (NS)         Moonridge Road (EW)
Approach:       North Bound      South Bound      East Bound      West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 1 Oct 2011 << 3:00-5:00 PM
Base Vol:       4 1068   156    31  761    47    65   17    19   156   21    16
Growth Adj:  1.08 1.08  1.08  1.08 1.08  1.08  1.08 1.08  1.08  1.08 1.08  1.08
Initial Bse:    4 1153   168    33  822    51    70   18    21   168   23    17
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.95 0.95  0.95  0.95 0.95  0.95  0.95 0.95  0.95  0.95 0.95  0.95
PHF Volume:     5 1209   177    35  862    53    74   19    22   177   24    18
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    5 1209   177    35  862    53    74   19    22   177   24    18
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    5 1209   177    35  862    53    74   19    22   177   24    18
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 0.93  0.93  0.95 0.94  0.94  0.94 0.94  0.94  0.92 0.94  0.94
Lanes:       1.00 1.75  0.25  1.00 1.88  0.12  0.64 0.17  0.19  2.00 0.57  0.43
Final Sat.:  1805 3090   451  1805 3369   208  1155  302   338  3502 1008   768
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.39  0.39  0.02 0.26  0.26  0.06 0.06  0.06  0.05 0.02  0.02
Crit Moves:       ****             ****                 ****  ****
Green/Cycle: 0.01 0.63  0.63  0.03 0.65  0.65  0.10 0.10  0.10  0.08 0.08  0.08
Volume/Cap:  0.39 0.62  0.62  0.62 0.39  0.39  0.62 0.62  0.62  0.62 0.29  0.29
Delay/Veh:   70.1 12.0  12.0  67.9  8.3   8.3  49.7 49.7  49.7  48.8 44.4  44.4
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  70.1 12.0  12.0  67.9  8.3   8.3  49.7 49.7  49.7  48.8 44.4  44.4
LOS by Move:   E    B     B     E    A     A     D    D     D     D    D     D
HCM2kAvgQ:     1    9     9     2    3     3     4    4     4     4    1     1
```

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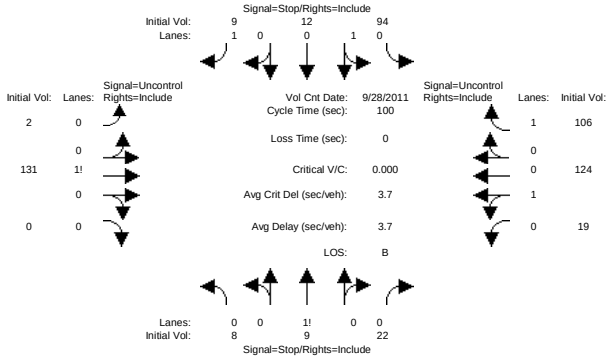
Moonridge Animal Park
W/O 11-3004
Existing

Level Of Service Computation Report
2000 HCM Unsignalized (Base Volume Alternative)
E-Weekday PM

Intersection #5: Moonridge Way - Brownie Lane (NS) at Moonridge Road (EW)




```
Street Name:Moonridge Way - Brownie Lane (NS)        Moonridge Road (EW)
Approach:      North Bound      South Bound      East Bound      West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 28 Sep 2011 << 4:00-6:00 PM
Base Vol:       7    8    19    81   10    8     2  113    0    16  107   91
Growth Adj:  1.16 1.16  1.16  1.16 1.16 1.16  1.16 1.16 1.16  1.16 1.16 1.16
Initial Bse:    8    9    22    94   12    9     2  131    0    19  124  106
User Adj:    1.00 1.00  1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Adj:     0.94 0.94  0.94  0.94 0.94 0.94  0.94 0.94 0.94  0.94 0.94 0.94
PHF Volume:     9   10    23   100   12   10     2  140    0    20  132  112
Reduct Vol:     0    0     0     0    0    0     0    0    0     0    0    0
FinalVolume:    9   10    23   100   12   10     2  140    0    20  132  112
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.1  6.5   6.2   7.1  6.5   6.2   4.1 xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3   3.5  4.0   3.3   2.2 xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  384  429   140   333  316   132   245 xxxx xxxxx   140 xxxx xxxxx
Potent Cap.:  575  519   908   621  600   917  1322 xxxx xxxxx  1444 xxxx xxxxx
Move Cap.:    553  511   908   588  590   917  1322 xxxx xxxxx  1444 xxxx xxxxx
Volume/Cap:  0.02 0.02  0.03  0.17 0.02  0.01  0.00 xxxx  xxxx  0.01 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx   0.0   0.0 xxxx xxxxx   0.0 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx   9.0   7.7 xxxx xxxxx   7.5 xxxx xxxxx
LOS by Move:    *    *     *     *    *     A     A    *    *     A    *    *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx  690 xxxxx   589 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.2 xxxxx   0.7 xxxx xxxxx   0.0 xxxx xxxxx   0.0 xxxx xxxxx
Shrd ConDel:xxxxx 10.6 xxxxx  12.6 xxxx xxxxx   7.7 xxxx xxxxx   7.5 xxxx xxxxx
Shared LOS:     *    B     *     B    *    *     A    *    *     A    *    *
ApproachDel:       10.6             12.3           xxxxxx          xxxxxx
ApproachLOS:         B                B               *               *
```

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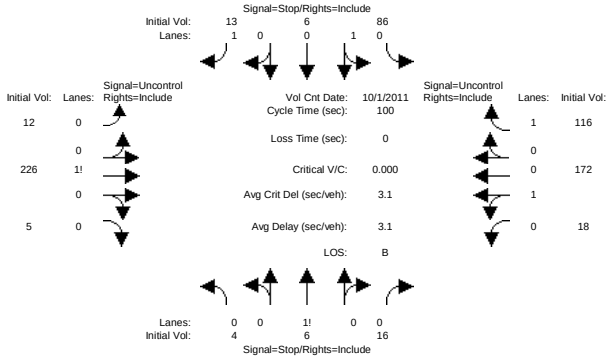
Moonridge Animal Park
W/O 11-3004
Existing

Level Of Service Computation Report
2000 HCM Unsignalized (Base Volume Alternative)
E-Weekend PM

Intersection #5: Moonridge Way - Brownie Lane (NS) at Moonridge Road (EW)




```
Street Name:Moonridge Way - Brownie Lane (NS)        Moonridge Road (EW)
Approach:      North Bound      South Bound      East Bound      West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 1 Oct 2011 << 3:00-5:00 PM
Base Vol:       4    6    15    80    6    12    11  209     5    17  159  107
Growth Adj:  1.08 1.08  1.08  1.08 1.08  1.08  1.08 1.08  1.08  1.08 1.08 1.08
Initial Bse:    4    6    16    86    6    13    12  226     5    18  172  116
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00 1.00
PHF Adj:     0.91 0.91  0.91  0.91 0.91  0.91  0.91 0.91  0.91  0.91 0.91 0.91
PHF Volume:     5    7    18    95    7    14    13  248     6    20  188  127
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0    0
FinalVolume:    5    7    18    95    7    14    13  248     6    20  188  127
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.1  6.5   6.2   7.1  6.5   6.2   4.1 xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3   3.5  4.0   3.3   2.2 xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  579  632   250   518  508   188   315 xxxx xxxxx   253 xxxx xxxxx
Potent Cap.:  429  400   793   472  471   859  1257 xxxx xxxxx  1324 xxxx xxxxx
Move Cap.:    409  390   793   446  459   859  1257 xxxx xxxxx  1324 xxxx xxxxx
Volume/Cap:  0.01 0.02  0.02  0.21 0.02  0.02  0.01 xxxx  xxxx  0.02 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx   0.1   0.0 xxxx xxxxx   0.0 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx   9.3   7.9 xxxx xxxxx   7.8 xxxx xxxxx
LOS by Move:    *    *     *     *    *     A     A    *    *     A    *    *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx  567 xxxxx   447 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.2 xxxxx   0.9 xxxx xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx
Shrd ConDel:xxxxx 11.7 xxxxx  15.4 xxxx xxxxx xxxxx xxxx xxxxx   7.8 xxxx xxxxx
Shared LOS:     *    B     *     C    *    *     *    *    *     A    *    *
ApproachDel:       11.7             14.7           xxxxxx          xxxxxx
ApproachLOS:         B                B               *               *
```

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HCM Unsignalized Intersection Capacity Analysis
6: Moonridge Way & Big Bear Boulevard (SR-18) 9/26/2012

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	140	1017	12	102	734
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	154	1118	13	112	807
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1752	565			1131	
vC1, stage 1 conf vol	1124					
vC2, stage 2 conf vol	627					
vCu, unblocked vol	1752	565			1131	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	67			82	
cM capacity (veh/h)	227	468			614	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	77	77	745	386	112	403	403
Volume Left	0	0	0	0	112	0	0
Volume Right	77	77	0	13	0	0	0
cSH	468	468	1700	1700	614	1700	1700
Volume to Capacity	0.16	0.16	0.44	0.23	0.18	0.24	0.24
Queue Length 95th (ft)	15	15	0	0	17	0	0
Control Delay (s)	14.2	14.2	0.0	0.0	12.2	0.0	0.0
Lane LOS	B	B			B		
Approach Delay (s)	14.2		0.0		1.5		
Approach LOS	B						

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	42.7%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
6: Moonridge Way & Big Bear Boulevard (SR-18) 9/26/2012

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	170	1236	5	139	918
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	179	1301	5	146	966
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2079	653			1306	
vC1, stage 1 conf vol	1304					
vC2, stage 2 conf vol	776					
vCu, unblocked vol	2079	653			1306	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	56			72	
cM capacity (veh/h)	173	410			526	

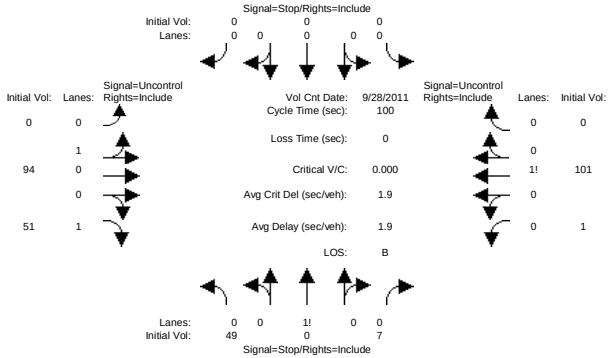
Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	89	89	867	439	146	483	483
Volume Left	0	0	0	0	146	0	0
Volume Right	89	89	0	5	0	0	0
cSH	410	410	1700	1700	526	1700	1700
Volume to Capacity	0.22	0.22	0.51	0.26	0.28	0.28	0.28
Queue Length 95th (ft)	21	21	0	0	28	0	0
Control Delay (s)	16.2	16.2	0.0	0.0	14.5	0.0	0.0
Lane LOS	C	C			B		
Approach Delay (s)	16.2		0.0		1.9		
Approach LOS	C						

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	51.0%	ICU Level of Service	A
Analysis Period (min)	15		

Moonridge Animal Park
W/O 11-3004
Existing

Level Of Service Computation Report
2000 HCM Unsignalized (Base Volume Alternative)
E-Weekday PM

Intersection #7: Club View Drive (NS) at Moonridge Road (EW)



Street Name:	Club View Drive (NS)						Moonridge Road (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Volume Module: >> Count Date: 28 Sep 2011 << 4:00-6:00 PM												
Base Vol:	42	0	6	0	0	0	0	81	44	1	87	0
Growth Adj:	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16
Initial Bse:	49	0	7	0	0	0	0	94	51	1	101	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
PHF Volume:	56	0	8	0	0	0	0	108	59	1	116	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	56	0	8	0	0	0	0	108	59	1	116	0
Critical Gap Module:												
Critical Gp:	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	227	227	108	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	167	xxxx	xxxxx
Potent Cap.:	761	673	946	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1411	xxxx	xxxxx
Move Cap.:	761	672	946	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1411	xxxx	xxxxx
Volume/Cap:	0.07	0.00	0.01	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.00	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.6	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	A	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	780	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	0.3	xxxxx	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	0.0	xxxx	xxxxx
Shrd ConDel:	xxxxx	10.0	xxxxx	xxxxx	xxxx	xxxxx	9.0	xxxx	xxxxx	7.6	xxxx	xxxxx
Shared LOS:	*	B	*	*	*	*	A	*	*	A	*	*
ApproachDel:		10.0			xxxxxx			xxxxxx			xxxxxx	
ApproachLOS:		B			*			*			*	

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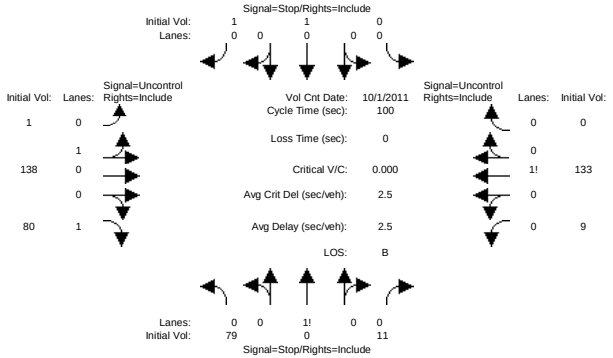
Moonridge Animal Park
W/O 11-3004
Existing

Level Of Service Computation Report
2000 HCM Unsignalized (Base Volume Alternative)
E-Weekend PM

Intersection #7: Club View Drive (NS) at Moonridge Road (EW)



Street Name:	Club View Drive (NS)						Moonridge Road (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Volume Module: >> Count Date: 1 Oct 2011 << 3:00-5:00 PM												
Base Vol:	73	0	10	0	1	1	1	128	74	8	123	0
Growth Adj:	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08
Initial Bse:	79	0	11	0	1	1	1	138	80	9	133	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
PHF Volume:	84	0	12	0	1	1	1	148	85	9	142	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	84	0	12	0	1	1	1	148	85	9	142	0
Critical Gap Module:												
Critical Gp:	7.1	6.5	6.2	xxxxx	6.5	6.2	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	xxxxx	4.0	3.3	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	312	311	148	xxxx	396	142	142	xxxx	xxxxx	233	xxxx	xxxxx
Potent Cap.:	645	607	904	xxxx	544	911	1453	xxxx	xxxxx	1346	xxxx	xxxxx
Move Cap.:	639	603	904	xxxx	540	911	1453	xxxx	xxxxx	1346	xxxx	xxxxx
Volume/Cap:	0.13	0.00	0.01	xxxx	0.00	0.00	0.00	xxxx	xxxx	0.01	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.5	xxxx	xxxxx	7.7	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	A	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	662	xxxxx	xxxx	xxxx	678	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	0.5	xxxxx	xxxxx	xxxx	0.0	0.0	xxxx	xxxxx	0.0	xxxx	xxxxx
Shrd ConDel:	xxxxx	11.4	xxxxx	xxxxx	xxxx	10.3	7.5	xxxx	xxxxx	7.7	xxxx	xxxxx
Shared LOS:	*	B	*	*	*	B	A	*	*	A	*	*
ApproachDel:		11.4			10.3			xxxxxx			xxxxxx	
ApproachLOS:		B			B			*			*	

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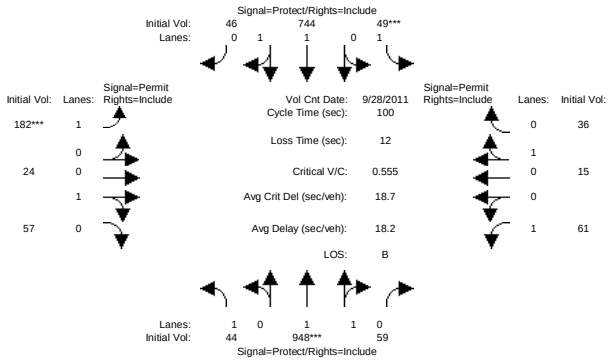
Moonridge Animal Park
W/O 11-3004
Existing

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
E-Weekday PM

Intersection #8: Big Bear Boulevard (SR-18) (NS) at Fox Farm Road (EW)



Street Name:	Big Bear Boulevard (SR-18) (NS)						Fox Farm Road (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module: >> Count Date: 28 Sep 2011 << 4:00-6:00 PM												
Base Vol:	38	817	51	42	641	40	157	21	49	53	13	31
Growth Adj:	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16
Initial Bse:	44	948	59	49	744	46	182	24	57	61	15	36
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
PHF Volume:	48	1029	64	53	807	50	198	26	62	67	16	39
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	48	1029	64	53	807	50	198	26	62	67	16	39
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	48	1029	64	53	807	50	198	26	62	67	16	39
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.93	0.92	0.92	0.93	0.92	0.92	0.71	0.88	0.88	0.68	0.88	0.88
Lanes:	1.00	1.88	0.12	1.00	1.88	0.12	1.00	0.30	0.70	1.00	0.30	0.70
Final Sat.:	1769	3300	206	1769	3300	206	1346	500	1167	1300	492	1173
Capacity Analysis Module:												
Vol/Sat:	0.03	0.31	0.31	0.03	0.24	0.24	0.15	0.05	0.05	0.05	0.03	0.03
Crit Moves:		****		****			****					
Green/Cycle:	0.06	0.56	0.56	0.05	0.55	0.55	0.26	0.26	0.26	0.26	0.26	0.26
Volume/Cap:	0.44	0.56	0.56	0.56	0.44	0.44	0.56	0.20	0.20	0.19	0.13	0.13
Delay/Veh:	48.1	14.3	14.3	53.2	13.3	13.3	33.6	28.8	28.8	28.8	28.1	28.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	48.1	14.3	14.3	53.2	13.3	13.3	33.6	28.8	28.8	28.8	28.1	28.1
LOS by Move:	D	B	B	D	B	B	C	C	C	C	C	C
HCM2kAvgQ:	2	8	8	2	6	6	6	2	2	2	1	1

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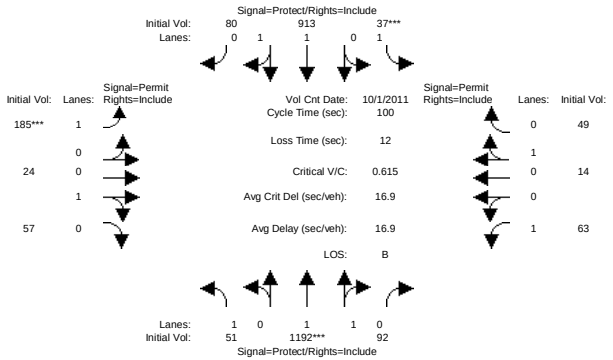
Moonridge Animal Park
W/O 11-3004
Existing

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
E-Weekend PM

Intersection #8: Big Bear Boulevard (SR-18) (NS) at Fox Farm Road (EW)



Street Name:	Big Bear Boulevard (SR-18) (NS)						Fox Farm Road (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module: >> Count Date: 1 Oct 2011 << 3:00-5:00 PM												
Base Vol:	47	1104	85	34	845	74	171	22	53	58	13	45
Growth Adj:	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08
Initial Bse:	51	1192	92	37	913	80	185	24	57	63	14	49
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	53	1251	96	39	958	84	194	25	60	66	15	51
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	53	1251	96	39	958	84	194	25	60	66	15	51
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	53	1251	96	39	958	84	194	25	60	66	15	51
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.94	0.94	0.95	0.94	0.94	0.72	0.89	0.89	0.70	0.88	0.88
Lanes:	1.00	1.86	0.14	1.00	1.84	0.16	1.00	0.29	0.71	1.00	0.22	0.78
Final Sat.:	1805	3315	255	1805	3279	287	1359	498	1200	1332	376	1303
Capacity Analysis Module:												
Vol/Sat:	0.03	0.38	0.38	0.02	0.29	0.29	0.14	0.05	0.05	0.05	0.04	0.04
Crit Moves:		****		****			****					
Green/Cycle:	0.06	0.61	0.61	0.03	0.59	0.59	0.23	0.23	0.23	0.23	0.23	0.23
Volume/Cap:	0.50	0.62	0.62	0.62	0.50	0.50	0.62	0.22	0.22	0.21	0.17	0.17
Delay/Veh:	49.1	12.5	12.5	64.5	12.1	12.1	38.0	31.3	31.3	31.4	30.9	30.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	49.1	12.5	12.5	64.5	12.1	12.1	38.0	31.3	31.3	31.4	30.9	30.9
LOS by Move:	D	B	B	E	B	B	D	C	C	C	C	C
HCM2kAvgQ:	2	9	9	2	6	6	6	2	2	2	2	2

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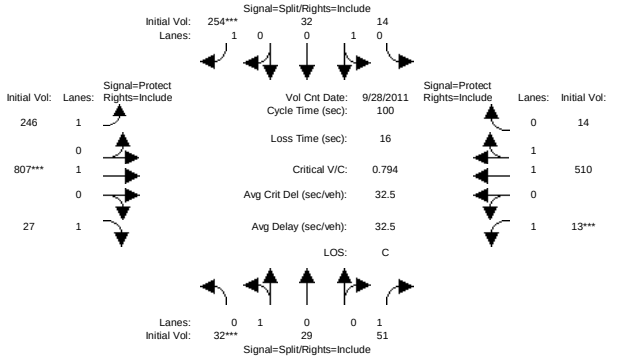
Moonridge Animal Park
W/O 11-3004
Existing

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
E-Weekday PM

Intersection #9: Stanield Cutoff (NS) at Big Bear Boulevard (SR-18) (EW)



Street Name:	Stanield Cutoff (NS)						Big Bear Boulevard (SR-18) (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module: >> Count Date: 28 Sep 2011 << 4:00-6:00 PM												
Base Vol:	28	25	44	12	28	219	212	696	23	11	440	12
Growth Adj:	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16
Initial Bse:	32	29	51	14	32	254	246	807	27	13	510	14
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	34	30	54	15	34	267	258	847	28	13	536	15
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	34	30	54	15	34	267	258	847	28	13	536	15
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	34	30	54	15	34	267	258	847	28	13	536	15
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.95	0.83	0.97	0.97	0.83	0.93	0.98	0.83	0.93	0.93	0.93
Lanes:	0.53	0.47	1.00	0.30	0.70	1.00	1.00	1.00	1.00	1.00	1.95	0.05
Final Sat.:	958	855	1583	550	1284	1583	1769	1862	1583	1769	3430	94
Capacity Analysis Module:												
Vol/Sat:	0.04	0.04	0.03	0.03	0.03	0.17	0.15	0.45	0.02	0.01	0.16	0.16
Crit Moves:	****					****		****		****		
Green/Cycle:	0.04	0.04	0.04	0.21	0.21	0.21	0.28	0.57	0.57	0.01	0.30	0.30
Volume/Cap:	0.79	0.79	0.75	0.13	0.13	0.79	0.52	0.79	0.03	0.79	0.52	0.52
Delay/Veh:	87.2	87.2	83.5	32.0	32.0	49.5	31.2	20.9	9.3	169.4	29.4	29.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	87.2	87.2	83.5	32.0	32.0	49.5	31.2	20.9	9.3	169.4	29.4	29.4
LOS by Move:	F	F	F	F	C	C	D	C	C	A	F	C	C
HCM2kAvgQ:	4	4	3	1	1	10	7	22	0	1	8	8

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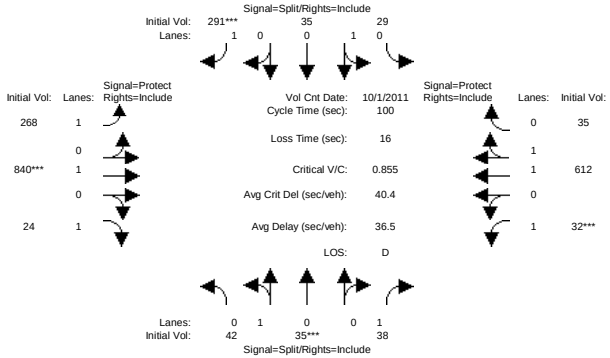
Moonridge Animal Park
W/O 11-3004
Existing

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
E-Weekend PM

Intersection #9: Stanield Cutoff (NS) at Big Bear Boulevard (SR-18) (EW)



Street Name:	Stanield Cutoff (NS)						Big Bear Boulevard (SR-18) (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module: >> Count Date: 1 Oct 2011 << 3:00-5:00 PM												
Base Vol:	39	32	35	27	32	269	248	778	22	30	567	32
Growth Adj:	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08
Initial Bse:	42	35	38	29	35	291	268	840	24	32	612	35
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	44	36	40	31	36	306	282	885	25	34	645	36
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	44	36	40	31	36	306	282	885	25	34	645	36
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	44	36	40	31	36	306	282	885	25	34	645	36
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.97	0.97	0.85	0.98	0.98	0.85	0.95	1.00	0.85	0.95	0.94	0.94
Lanes:	0.55	0.45	1.00	0.46	0.54	1.00	1.00	1.00	1.00	1.00	1.89	0.11
Final Sat.:	1015	833	1615	850	1008	1615	1805	1900	1615	1805	3390	191
Capacity Analysis Module:												
Vol/Sat:	0.04	0.04	0.02	0.04	0.04	0.19	0.16	0.47	0.02	0.02	0.19	0.19
Crit Moves:		****				****		****		****		
Green/Cycle:	0.05	0.05	0.05	0.22	0.22	0.22	0.26	0.55	0.55	0.02	0.31	0.31
Volume/Cap:	0.85	0.85	0.48	0.16	0.16	0.85	0.61	0.85	0.03	0.85	0.61	0.61
Delay/Veh:	96.3	96.3	50.5	31.6	31.6	55.2	35.2	26.5	10.5	136.0	30.3	30.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	96.3	96.3	50.5	31.6	31.6	55.2	35.2	26.5	10.5	136.0	30.3	30.3
LOS by Move:	F	F	D	C	C	E	D	C	B	F	C	C
HCM2kAvgQ:	5	5	2	2	2	12	8	26	0	3	10	10

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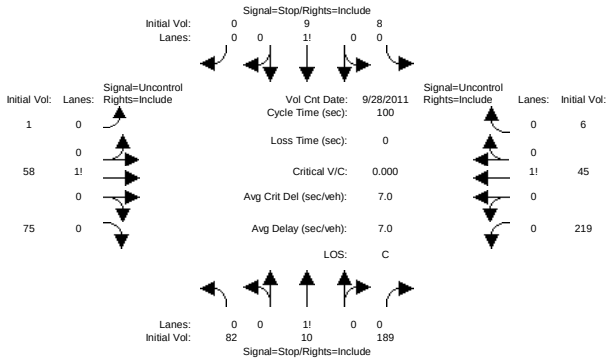
Moonridge Animal Park
W/O 11-3004
Existing

Level Of Service Computation Report
2000 HCM Unsignalized (Base Volume Alternative)
E-Weekday PM

Intersection #10: Stanfield Cutoff (NS) at North Shore Drive (SR-38)(EW)



Street Name:	Stanfield Cutoff (NS)						North Shore Drive (SR-38) (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Volume Module: >> Count Date: 28 Sep 2011 << 4:00-6:00 PM												
Base Vol:	71	9	163	7	8	0	1	50	65	189	39	5
Growth Adj:	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16
Initial Bse:	82	10	189	8	9	0	1	58	75	219	45	6
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	87	11	199	9	10	0	1	61	80	231	48	6
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	87	11	199	9	10	0	1	61	80	231	48	6
Critical Gap Module:												
Critical Gp:	7.1	6.5	6.2	7.1	6.5	xxxxx	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	3.5	4.0	xxxxx	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	622	620	101	722	656	xxxxx	54	xxxx	xxxxx	141	xxxx	xxxxx
Potent Cap.:	399	404	954	342	385	xxxxx	1552	xxxx	xxxxx	1442	xxxx	xxxxx
Move Cap.:	335	329	954	226	314	xxxxx	1552	xxxx	xxxxx	1442	xxxx	xxxxx
Volume/Cap:	0.26	0.03	0.21	0.04	0.03	xxxx	0.00	xxxx	xxxx	0.16	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	0.6	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.3	xxxx	xxxxx	8.0	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	A	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	1008	xxxxx	266	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	1.2	xxxxx	0.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	10.1	xxxxx	19.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	B	*	C	*	*	*	*	*	*	*	*
ApproachDel:	10.1			19.5			xxxxxx			xxxxxx		
ApproachLOS:	B			C			*			*		

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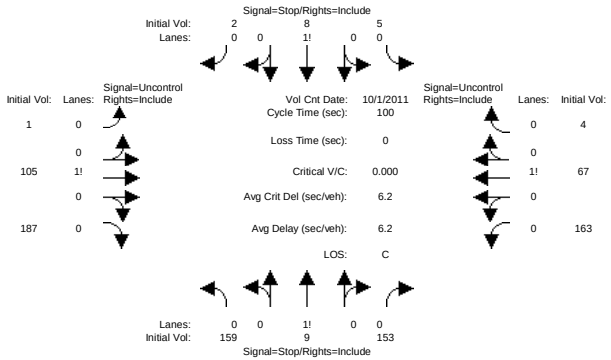
Moonridge Animal Park
W/O 11-3004
Existing

Level Of Service Computation Report
2000 HCM Unsignalized (Base Volume Alternative)
E-Weekend PM

Intersection #10: Stanfield Cutoff (NS) at North Shore Drive (SR-38)(EW)



Street Name:	Stanfield Cutoff (NS)						North Shore Drive (SR-38) (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Volume Module: >> Count Date: 1 Oct 2011 << 3:00-5:00 PM												
Base Vol:	147	8	142	5	7	2	1	97	173	151	62	4
Growth Adj:	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08
Initial Bse:	159	9	153	5	8	2	1	105	187	163	67	4
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
PHF Volume:	169	9	163	6	8	2	1	111	198	173	71	5
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	169	9	163	6	8	2	1	111	198	173	71	5
Critical Gap Module:												
Critical Gp:	7.1	6.5	6.2	7.1	6.5	6.2	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	3.5	4.0	3.3	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	637	635	210	718	731	73	76	xxxx	xxxxx	310	xxxx	xxxxx
Potent Cap.:	393	399	835	347	351	994	1536	xxxx	xxxxx	1262	xxxx	xxxxx
Move Cap.:	339	338	835	241	297	994	1536	xxxx	xxxxx	1262	xxxx	xxxxx
Volume/Cap:	0.50	0.03	0.19	0.02	0.03	0.00	0.00	xxxx	xxxx	0.14	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	0.5	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.3	xxxx	xxxxx	8.3	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	A	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	885	xxxxx	xxxx	303	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	1.8	xxxxx	xxxxx	0.2	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	11.6	xxxxx	xxxxx	17.6	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	B	*	*	C	*	*	*	*	*	*	*
ApproachDel:	11.6			17.6			xxxxxx			xxxxxx		
ApproachLOS:	B			C			*			*		

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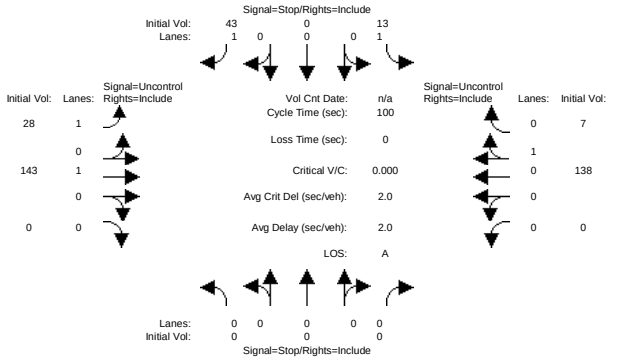
Existing plus Ambient Growth
Level of Service Calculations

Moonridge Animal Park
W/O 11-3004
Existing + Ambient

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
EA-Weekday

Intersection #1: North Shore Drive (NS) at Big Bear Boulevard (SR-18) (EW)



Street Name:	North Shore Drive (SR-38) (NS)						Big Bear Boulevard (SR-18) (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Volume Module:												
Base Vol:	0	0	0	12	0	41	26	135	0	0	130	7
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	0	0	0	13	0	43	28	143	0	0	138	7
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	13	0	43	28	143	0	0	138	7
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
PHF Volume:	0	0	0	14	0	49	31	161	0	0	155	8
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	14	0	49	31	161	0	0	155	8
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	xxxx	6.2	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	xxxx	3.3	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	382	xxxx	159	163	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	621	xxxx	886	1415	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	610	xxxx	886	1415	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.02	xxxx	0.06	0.02	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.1	xxxx	0.2	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	11.0	xxxx	9.3	7.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	B	*	A	A	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			9.7			xxxxxx			xxxxxx		
ApproachLOS:	*			A			*			*		

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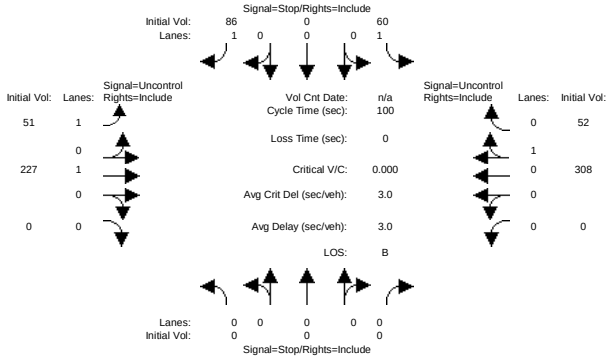
Moonridge Animal Park
W/O 11-3004
Existing + Ambient

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
EA-Weekend

Intersection #1: North Shore Drive (NS) at Big Bear Boulevard (SR-18) (EW)



Street Name:	North Shore Drive (SR-38) (NS)						Big Bear Boulevard (SR-18) (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Volume Module:												
Base Vol:	0	0	0	57	0	81	48	214	0	0	291	49
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	0	0	0	60	0	86	51	227	0	0	308	52
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	60	0	86	51	227	0	0	308	52
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
PHF Volume:	0	0	0	66	0	94	56	249	0	0	339	57
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	66	0	94	56	249	0	0	339	57
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	xxxx	6.2	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	xxxx	3.3	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	729	xxxx	368	396	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	390	xxxx	678	1163	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	376	xxxx	678	1163	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.18	xxxx	0.14	0.05	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.6	xxxx	0.5	0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	16.6	xxxx	11.2	8.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	C	*	B	A	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			13.4			xxxxxx			xxxxxx		
ApproachLOS:	*			B			*			*		

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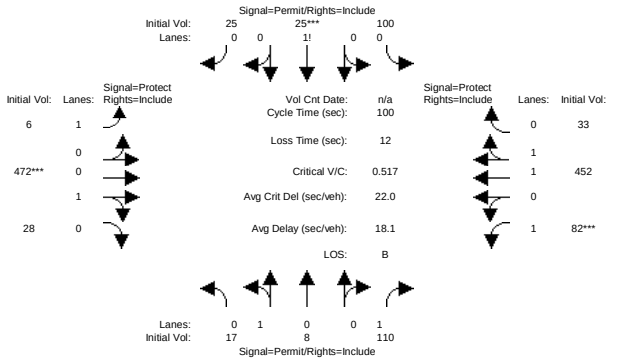
Moonridge Animal Park
W/O 11-3004
Existing + Ambient

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
EA-Weekday

Intersection #2: Pine Knot Boulevard (NS) at Big Bear Boulevard (SR-18) (EW)



Street Name:	Pine Knot Boulevard (NS)						Big Bear Boulevard (SR-18) (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module:												
Base Vol:	16	8	104	94	24	24	6	445	26	77	426	31
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	17	8	110	100	25	25	6	472	28	82	452	33
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	17	8	110	100	25	25	6	472	28	82	452	33
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
PHF Volume:	18	9	119	107	27	27	7	507	30	88	486	35
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	18	9	119	107	27	27	7	507	30	88	486	35
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	18	9	119	107	27	27	7	507	30	88	486	35
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.80	0.80	0.83	0.74	0.74	0.74	0.93	0.97	0.97	0.93	0.92	0.92
Lanes:	0.67	0.33	1.00	0.66	0.17	0.17	1.00	0.94	0.06	1.00	1.86	0.14
Final Sat.:	1018	509	1583	933	238	238	1769	1745	102	1769	3265	238
Capacity Analysis Module:												
Vol/Sat:	0.02	0.02	0.07	0.11	0.11	0.11	0.00	0.29	0.29	0.05	0.15	0.15
Crit Moves:					****			****		****		
Green/Cycle:	0.22	0.22	0.22	0.22	0.22	0.22	0.02	0.56	0.56	0.10	0.64	0.64
Volume/Cap:	0.08	0.08	0.34	0.52	0.52	0.52	0.23	0.52	0.52	0.52	0.23	0.23
Delay/Veh:	30.9	30.9	33.3	35.7	35.7	35.7	52.5	14.0	14.0	45.8	7.6	7.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	30.9	30.9	33.3	35.7	35.7	35.7	52.5	14.0	14.0	45.8	7.6	7.6
LOS by Move:	C	C	C	D	D	D	D	B	B	D	A	A
HCM2kAvgQ:	1	1	3	5	5	5	0	7	7	3	2	2

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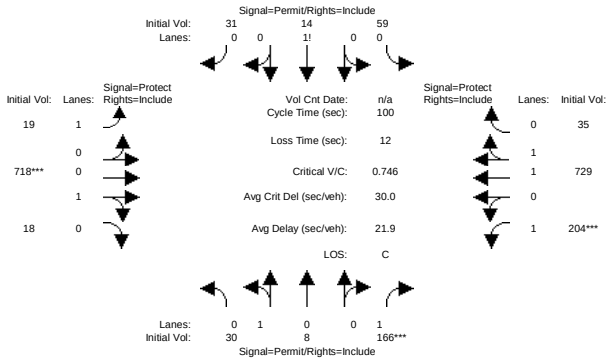
Moonridge Animal Park
W/O 11-3004
Existing + Ambient

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
EA-Weekend

Intersection #2: Pine Knot Boulevard (NS) at Big Bear Boulevard (SR-18) (EW)



Street Name:	Pine Knot Boulevard (NS)						Big Bear Boulevard (SR-18) (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module:												
Base Vol:	28	8	157	56	13	29	18	677	17	192	688	33
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	30	8	166	59	14	31	19	718	18	204	729	35
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	30	8	166	59	14	31	19	718	18	204	729	35
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
PHF Volume:	32	9	177	63	15	33	20	763	19	217	776	37
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	32	9	177	63	15	33	20	763	19	217	776	37
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	32	9	177	63	15	33	20	763	19	217	776	37
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.76	0.76	0.83	0.75	0.75	0.75	0.93	0.98	0.98	0.93	0.92	0.92
Lanes:	0.78	0.22	1.00	0.57	0.13	0.30	1.00	0.98	0.02	1.00	1.91	0.09
Final Sat.:	1124	321	1583	814	189	422	1769	1809	45	1769	3352	161
Capacity Analysis Module:												
Vol/Sat:	0.03	0.03	0.11	0.08	0.08	0.08	0.01	0.42	0.42	0.12	0.23	0.23
Crit Moves:			****					****		****		
Green/Cycle:	0.15	0.15	0.15	0.15	0.15	0.15	0.03	0.57	0.57	0.16	0.70	0.70
Volume/Cap:	0.19	0.19	0.75	0.52	0.52	0.52	0.33	0.75	0.75	0.75	0.33	0.33
Delay/Veh:	37.6	37.6	52.8	41.4	41.4	41.4	50.4	19.3	19.3	49.9	6.1	6.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	37.6	37.6	52.8	41.4	41.4	41.4	50.4	19.3	19.3	49.9	6.1	6.1
LOS by Move:	D	D	D	D	D	D	D	B	B	D	A	A
HCM2kAvgQ:	1	1	7	4	4	4	1	15	15	8	2	2

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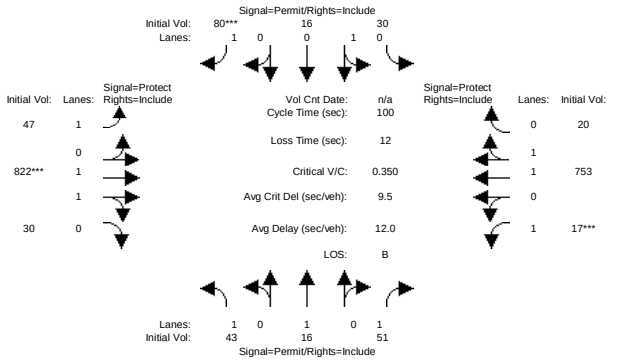
Moonridge Animal Park
W/O 11-3004
Existing + Ambient

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
EA-Weekday

Intersection #3: Summit Boulevard (NS) at Big Bear Boulevard (SR-18) (EW)



Street Name:	Summit Boulevard (NS)						Big Bear Boulevard (SR-18) (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module:												
Base Vol:	41	15	48	28	15	75	44	775	28	16	710	19
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	43	16	51	30	16	80	47	822	30	17	753	20
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	43	16	51	30	16	80	47	822	30	17	753	20
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
PHF Volume:	44	16	52	30	16	81	48	838	30	17	768	21
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	44	16	52	30	16	81	48	838	30	17	768	21
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	44	16	52	30	16	81	48	838	30	17	768	21
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.72	0.98	0.83	0.81	0.81	0.83	0.93	0.93	0.93	0.93	0.93	0.93
Lanes:	1.00	1.00	1.00	0.65	0.35	1.00	1.00	1.93	0.07	1.00	1.95	0.05
Final Sat.:	1359	1862	1583	999	535	1583	1769	3397	123	1769	3432	92
Capacity Analysis Module:												
Vol/Sat:	0.03	0.01	0.03	0.03	0.03	0.05	0.03	0.25	0.25	0.01	0.22	0.22
Crit Moves:						****		****		****		
Green/Cycle:	0.15	0.15	0.15	0.15	0.15	0.15	0.08	0.71	0.71	0.03	0.65	0.65
Volume/Cap:	0.22	0.06	0.22	0.21	0.21	0.35	0.34	0.35	0.35	0.35	0.34	0.34
Delay/Veh:	38.2	36.8	38.1	38.0	38.0	39.3	45.1	5.8	5.8	52.0	7.8	7.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	38.2	36.8	38.1	38.0	38.0	39.3	45.1	5.8	5.8	52.0	7.8	7.8
LOS by Move:	D	D	D	D	D	D	D	A	A	D	A	A
HCM2kAvgQ:	1	0	2	1	1	3	2	2	2	1	3	3

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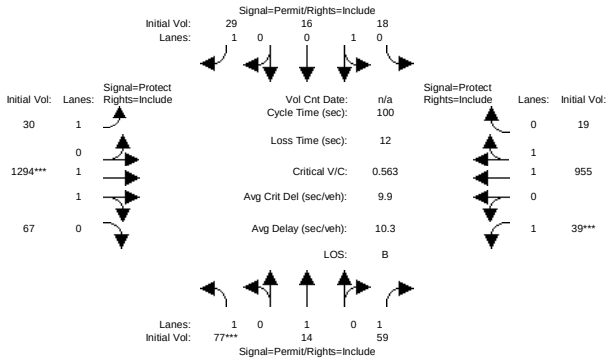
Moonridge Animal Park
W/O 11-3004
Existing + Ambient

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
EA-Weekend

Intersection #3: Summit Boulevard (NS) at Big Bear Boulevard (SR-18) (EW)



Street Name:	Summit Boulevard (NS)						Big Bear Boulevard (SR-18) (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module:												
Base Vol:	73	13	56	17	15	27	28	1221	63	37	901	18
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	77	14	59	18	16	29	30	1294	67	39	955	19
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	77	14	59	18	16	29	30	1294	67	39	955	19
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
PHF Volume:	82	15	63	19	17	30	32	1377	71	42	1016	20
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	82	15	63	19	17	30	32	1377	71	42	1016	20
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	82	15	63	19	17	30	32	1377	71	42	1016	20
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.72	0.98	0.83	0.83	0.83	0.83	0.93	0.92	0.92	0.93	0.93	0.93
Lanes:	1.00	1.00	1.00	0.53	0.47	1.00	1.00	1.90	0.10	1.00	1.96	0.04
Final Sat.:	1376	1862	1583	843	744	1583	1769	3341	172	1769	3458	69
Capacity Analysis Module:												
Vol/Sat:	0.06	0.01	0.04	0.02	0.02	0.02	0.02	0.41	0.41	0.02	0.29	0.29
Crit Moves:	****							****		****		
Green/Cycle:	0.11	0.11	0.11	0.11	0.11	0.11	0.04	0.73	0.73	0.04	0.73	0.73
Volume/Cap:	0.56	0.07	0.38	0.21	0.21	0.18	0.40	0.56	0.56	0.56	0.40	0.40
Delay/Veh:	47.5	40.4	43.0	41.5	41.5	41.2	49.9	6.4	6.4	56.6	5.3	5.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	47.5	40.4	43.0	41.5	41.5	41.2	49.9	6.4	6.4	56.6	5.3	5.3
LOS by Move:	D	D	D	D	D	D	D	A	A	E	A	A
HCM2kAvgQ:	3	0	2	1	1	1	1	2	2	2	1	1

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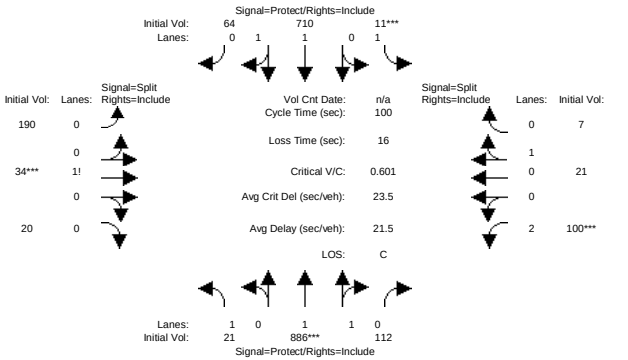
Moonridge Animal Park
W/O 11-3004
Existing + Ambient

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
EA-Weekday

Intersection #4: Big Bear Boulevard (SR-18) (NS) at Moonridge Road (EW)



Street Name: Big Bear Boulevard (SR-18) (NS) Moonridge Road (EW)

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module:												
Base Vol:	20	836	106	10	670	60	179	32	19	94	20	7
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	21	886	112	11	710	64	190	34	20	100	21	7
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	21	886	112	11	710	64	190	34	20	100	21	7
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
PHF Volume:	23	974	123	12	780	70	209	37	22	109	23	8
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	23	974	123	12	780	70	209	37	22	109	23	8
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	23	974	123	12	780	70	209	37	22	109	23	8
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.93	0.92	0.92	0.93	0.92	0.92	0.93	0.93	0.93	0.90	0.94	0.94
Lanes:	1.00	1.77	0.23	1.00	1.84	0.16	0.78	0.14	0.08	2.00	0.74	0.26
Final Sat.:	1769	3086	391	1769	3208	287	1380	247	146	3432	1325	464
Capacity Analysis Module:												
Vol/Sat:	0.01	0.32	0.32	0.01	0.24	0.24	0.15	0.15	0.15	0.03	0.02	0.02
Crit Moves:		****		****				****		****		
Green/Cycle:	0.03	0.52	0.52	0.01	0.51	0.51	0.25	0.25	0.25	0.05	0.05	0.05
Volume/Cap:	0.48	0.60	0.60	0.60	0.48	0.48	0.60	0.60	0.60	0.60	0.33	0.33
Delay/Veh:	55.2	17.1	17.1	92.4	16.2	16.2	35.3	35.3	35.3	51.8	47.7	47.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	55.2	17.1	17.1	92.4	16.2	16.2	35.3	35.3	35.3	51.8	47.7	47.7
LOS by Move:	E	B	B	F	B	B	D	D	D	D	D	D
HCM2kAvgQ:	1	10	10	1	7	7	8	8	8	3	1	1

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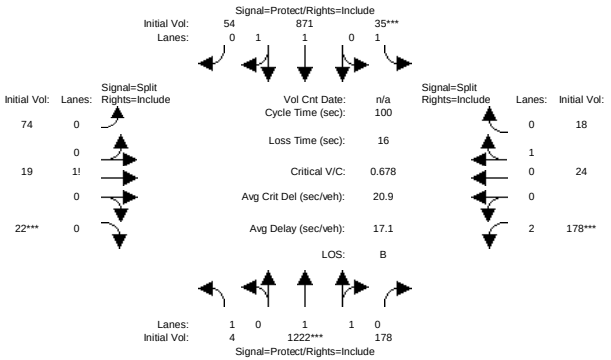
Moonridge Animal Park
W/O 11-3004
Existing + Ambient

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
EA-Weekend

Intersection #4: Big Bear Boulevard (SR-18) (NS) at Moonridge Road (EW)



Street Name: Big Bear Boulevard (SR-18) (NS) Moonridge Road (EW)

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module:												
Base Vol:	4	1153	168	33	822	51	70	18	21	168	23	17
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	4	1222	178	35	871	54	74	19	22	178	24	18
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	4	1222	178	35	871	54	74	19	22	178	24	18
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	4	1287	187	37	917	57	78	20	23	187	26	19
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	4	1287	187	37	917	57	78	20	23	187	26	19
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	4	1287	187	37	917	57	78	20	23	187	26	19
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.93	0.91	0.91	0.93	0.92	0.92	0.92	0.92	0.92	0.90	0.92	0.92
Lanes:	1.00	1.75	0.25	1.00	1.88	0.12	0.64	0.17	0.19	2.00	0.58	0.42
Final Sat.:	1769	3029	441	1769	3301	205	1129	290	339	3432	1002	741
Capacity Analysis Module:												
Vol/Sat:	0.00	0.42	0.42	0.02	0.28	0.28	0.07	0.07	0.07	0.05	0.03	0.03
Crit Moves:		****		****						****	****	
Green/Cycle:	0.01	0.63	0.63	0.03	0.65	0.65	0.10	0.10	0.10	0.08	0.08	0.08
Volume/Cap:	0.43	0.68	0.68	0.68	0.43	0.43	0.68	0.68	0.68	0.68	0.32	0.32
Delay/Veh:	75.1	13.0	13.0	77.2	8.5	8.5	53.3	53.3	53.3	51.3	44.7	44.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	75.1	13.0	13.0	77.2	8.5	8.5	53.3	53.3	53.3	51.3	44.7	44.7
LOS by Move:	E	B	B	E	A	A	D	D	D	D	D	D
HCM2kAvgQ:	1	10	10	2	4	4	5	5	5	4	2	2

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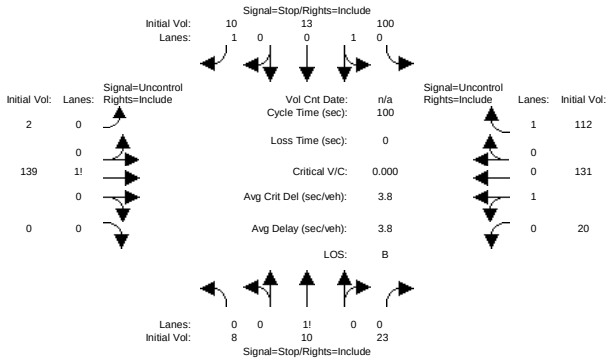
Moonridge Animal Park
W/O 11-3004
Existing + Ambient

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
EA-Weekday

Intersection #5: Moonridge Way - Brownie Lane (NS) at Moonridge Road (EW)



Street Name:	Moonridge Way - Brownie Lane (NS)						Moonridge Road (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Volume Module:												
Base Vol:	8	9	22	94	12	9	2	131	0	19	124	106
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	8	10	23	100	13	10	2	139	0	20	131	112
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	8	10	23	100	13	10	2	139	0	20	131	112
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
PHF Volume:	9	10	25	106	14	10	2	148	0	21	140	120
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	9	10	25	106	14	10	2	148	0	21	140	120
Critical Gap Module:												
Critical Gp:	7.1	6.5	6.2	7.1	6.5	6.2	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	3.5	4.0	3.3	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	407	454	148	352	335	140	259	xxxx	xxxxx	148	xxxx	xxxxx
Potent Cap.:	555	502	899	602	585	908	1305	xxxx	xxxxx	1434	xxxx	xxxxx
Move Cap.:	532	493	899	569	576	908	1305	xxxx	xxxxx	1434	xxxx	xxxxx
Volume/Cap:	0.02	0.02	0.03	0.19	0.02	0.01	0.00	xxxx	xxxx	0.01	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	0.0	0.0	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	9.0	7.8	xxxx	xxxxx	7.5	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	A	A	*	*	A	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	675	xxxxx	570	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	0.2	xxxxx	0.8	xxxx	xxxxx	0.0	xxxx	xxxxx	0.0	xxxx	xxxxx
Shrd ConDel:	xxxxx	10.7	xxxxx	13.0	xxxx	xxxxx	7.8	xxxx	xxxxx	7.5	xxxx	xxxxx
Shared LOS:	*	B	*	B	*	*	A	*	*	A	*	*
ApproachDel:		10.7			12.7			xxxxxx			xxxxxx	
ApproachLOS:		B			B			*			*	

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Moonridge Animal Park
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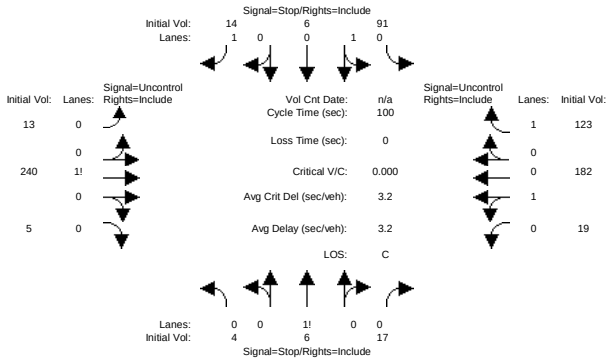
Existing + Ambient

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
EA-Weekend

Intersection #5: Moonridge Way - Brownie Lane (NS) at Moonridge Road (EW)



Street Name:	Moonridge Way - Brownie Lane (NS)						Moonridge Road (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Volume Module:												
Base Vol:	4	6	16	86	6	13	12	226	5	18	172	116
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	4	6	17	91	6	14	13	240	5	19	182	123
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	4	6	17	91	6	14	13	240	5	19	182	123
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
PHF Volume:	5	7	19	100	7	15	14	263	6	21	200	135
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	5	7	19	100	7	15	14	263	6	21	200	135
Critical Gap Module:												
Critical Gp:	7.1	6.5	6.2	7.1	6.5	6.2	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	3.5	4.0	3.3	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	615	672	266	549	539	200	335	xxxx	xxxxx	269	xxxx	xxxxx
Potent Cap.:	403	377	772	446	449	841	1224	xxxx	xxxxx	1295	xxxx	xxxxx
Move Cap.:	383	367	772	420	437	841	1224	xxxx	xxxxx	1295	xxxx	xxxxx
Volume/Cap:	0.01	0.02	0.02	0.24	0.02	0.02	0.01	xxxx	xxxx	0.02	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	0.1	0.0	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	9.4	8.0	xxxx	xxxxx	7.8	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	A	A	*	*	A	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	547	xxxxx	421	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	0.2	xxxxx	1.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Shrd ConDel:	xxxxx	12.0	xxxxx	16.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.8	xxxx	xxxxx
Shared LOS:	*	B	*	C	*	*	*	*	*	A	*	*
ApproachDel:		12.0			15.6			xxxxxx			xxxxxx	
ApproachLOS:		B			C			*			*	

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HCM Unsignalized Intersection Capacity Analysis
6: Moonridge Way & Big Bear Boulevard (SR-18) 9/26/2012

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	148	1078	13	108	778
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	163	1185	14	119	855
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1857	599			1199	
vC1, stage 1 conf vol	1192					
vC2, stage 2 conf vol	665					
vCu, unblocked vol	1857	599			1199	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	63			79	
cM capacity (veh/h)	208	444			578	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	81	81	790	409	119	427	427
Volume Left	0	0	0	0	119	0	0
Volume Right	81	81	0	14	0	0	0
cSH	444	444	1700	1700	578	1700	1700
Volume to Capacity	0.18	0.18	0.46	0.24	0.21	0.25	0.25
Queue Length 95th (ft)	17	17	0	0	19	0	0
Control Delay (s)	14.9	14.9	0.0	0.0	12.8	0.0	0.0
Lane LOS	B	B			B		
Approach Delay (s)	14.9		0.0		1.6		
Approach LOS	B						

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	44.9%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
6: Moonridge Way & Big Bear Boulevard (SR-18) 9/26/2012

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	180	1310	5	147	973
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	189	1379	5	155	1024
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2203	692			1384	
vC1, stage 1 conf vol	1382					
vC2, stage 2 conf vol	822					
vCu, unblocked vol	2203	692			1384	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	51			68	
cM capacity (veh/h)	155	386			491	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	95	95	919	465	155	512	512
Volume Left	0	0	0	0	155	0	0
Volume Right	95	95	0	5	0	0	0
cSH	386	386	1700	1700	491	1700	1700
Volume to Capacity	0.25	0.25	0.54	0.27	0.32	0.30	0.30
Queue Length 95th (ft)	24	24	0	0	33	0	0
Control Delay (s)	17.3	17.3	0.0	0.0	15.7	0.0	0.0
Lane LOS	C	C			C		
Approach Delay (s)	17.3		0.0		2.1		
Approach LOS	C						

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	53.7%	ICU Level of Service	A
Analysis Period (min)	15		

Moonridge Animal Park
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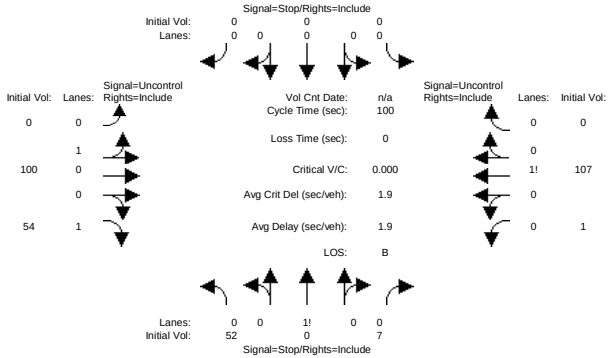
Existing + Ambient

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
EA-Weekday

Intersection #7: Club View Drive (NS) at Moonridge Road (EW)



Street Name:	Club View Drive (NS)						Moonridge Road (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Volume Module:												
Base Vol:	49	0	7	0	0	0	0	94	51	1	101	0
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	52	0	7	0	0	0	0	100	54	1	107	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	52	0	7	0	0	0	0	100	54	1	107	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
PHF Volume:	60	0	9	0	0	0	0	115	62	1	123	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	60	0	9	0	0	0	0	115	62	1	123	0
Critical Gap Module:												
Critical Gp:	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	240	240	115	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	177	xxxx	xxxxx
Potent Cap.:	748	661	938	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1399	xxxx	xxxxx
Move Cap.:	748	661	938	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1399	xxxx	xxxxx
Volume/Cap:	0.08	0.00	0.01	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.00	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.6	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	A	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	767	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	0.3	xxxxx	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	0.0	xxxx	xxxxx
Shrd ConDel:	xxxxx	10.1	xxxxx	xxxxx	xxxx	xxxxx	9.0	xxxx	xxxxx	7.6	xxxx	xxxxx
Shared LOS:	*	B	*	*	*	*	A	*	*	A	*	*
ApproachDel:	10.1			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	B			*			*			*		

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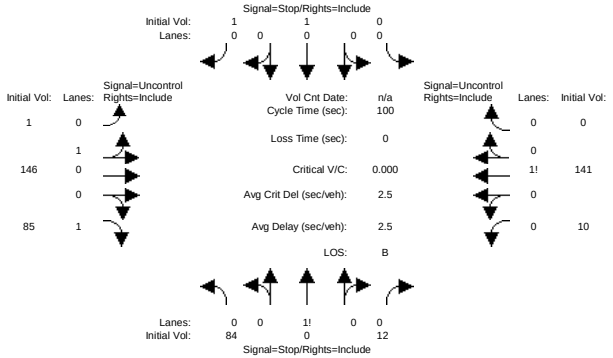
Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
EA-Weekend

Intersection #7: Club View Drive (NS) at Moonridge Road (EW)



Street Name:	Club View Drive (NS)						Moonridge Road (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Volume Module:												
Base Vol:	79	0	11	0	1	1	1	138	80	9	133	0
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	84	0	12	0	1	1	1	146	85	10	141	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	84	0	12	0	1	1	1	146	85	10	141	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
PHF Volume:	89	0	12	0	1	1	1	156	90	10	150	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	89	0	12	0	1	1	1	156	90	10	150	0
Critical Gap Module:												
Critical Gp:	7.1	6.5	6.2	xxxxx	6.5	6.2	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	xxxxx	4.0	3.3	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	329	328	156	xxxx	418	150	150	xxxx	xxxxx	246	xxxx	xxxxx
Potent Cap.:	624	591	890	xxxx	526	897	1431	xxxx	xxxxx	1320	xxxx	xxxxx
Move Cap.:	618	586	890	xxxx	521	897	1431	xxxx	xxxxx	1320	xxxx	xxxxx
Volume/Cap:	0.14	0.00	0.01	xxxx	0.00	0.00	0.00	xxxx	xxxx	0.01	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.5	xxxx	xxxxx	7.7	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	A	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	642	xxxxx	xxxx	xxxx	659	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	0.6	xxxxx	xxxxx	xxxx	0.0	0.0	xxxx	xxxxx	0.0	xxxx	xxxxx
Shrd ConDel:	xxxxx	11.7	xxxxx	xxxxx	xxxx	10.5	7.5	xxxx	xxxxx	7.7	xxxx	xxxxx
Shared LOS:	*	B	*	*	*	B	A	*	*	A	*	*
ApproachDel:	11.7			10.5			xxxxxx			xxxxxx		
ApproachLOS:	B			B			*			*		

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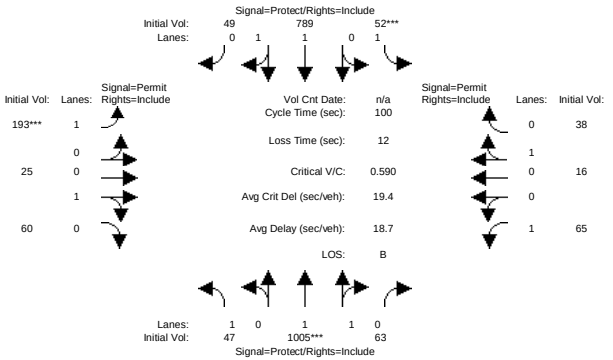
Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
EA-Weekday

Intersection #8: Big Bear Boulevard (SR-18) (NS) at Fox Farm Road (EW)



Street Name:	Big Bear Boulevard (SR-18) (NS)						Fox Farm Road (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module:												
Base Vol:	44	948	59	49	744	46	182	24	57	61	15	36
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	47	1005	63	52	789	49	193	25	60	65	16	38
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	47	1005	63	52	789	49	193	25	60	65	16	38
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
PHF Volume:	51	1092	68	56	857	53	210	28	66	70	17	41
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	51	1092	68	56	857	53	210	28	66	70	17	41
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	51	1092	68	56	857	53	210	28	66	70	17	41
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.93	0.92	0.92	0.93	0.92	0.92	0.71	0.88	0.88	0.68	0.88	0.88
Lanes:	1.00	1.88	0.12	1.00	1.88	0.12	1.00	0.30	0.70	1.00	0.29	0.71
Final Sat.:	1769	3301	205	1769	3302	204	1341	493	1171	1294	490	1175
Capacity Analysis Module:												
Vol/Sat:	0.03	0.33	0.33	0.03	0.26	0.26	0.16	0.06	0.06	0.05	0.04	0.04
Crit Moves:		****		****			****					
Green/Cycle:	0.06	0.56	0.56	0.05	0.55	0.55	0.27	0.27	0.27	0.27	0.27	0.27
Volume/Cap:	0.47	0.59	0.59	0.59	0.47	0.47	0.59	0.21	0.21	0.20	0.13	0.13
Delay/Veh:	48.6	14.9	14.9	55.6	13.6	13.6	34.6	28.9	28.9	28.9	28.1	28.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	48.6	14.9	14.9	55.6	13.6	13.6	34.6	28.9	28.9	28.9	28.1	28.1
LOS by Move:	D	B	B	E	B	B	C	C	C	C	C	C
HCM2kAvgQ:	2	9	9	3	6	6	6	2	2	2	1	1

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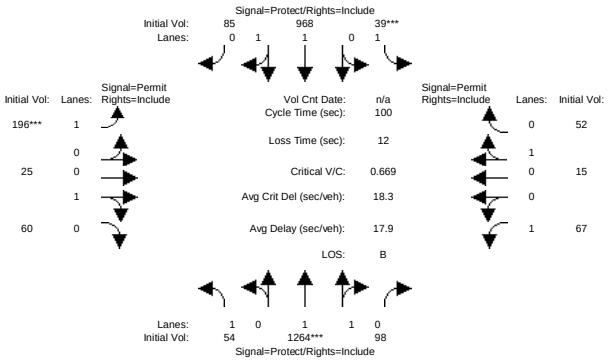
W/O 11-3004
Existing + Ambient

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
EA-Weekend

Intersection #8: Big Bear Boulevard (SR-18) (NS) at Fox Farm Road (EW)



Street Name:	Big Bear Boulevard (SR-18) (NS)						Fox Farm Road (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module:												
Base Vol:	51	1192	92	37	913	80	185	24	57	63	14	49
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	54	1264	98	39	968	85	196	25	60	67	15	52
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	54	1264	98	39	968	85	196	25	60	67	15	52
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	57	1330	103	41	1019	89	206	27	64	70	16	55
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	57	1330	103	41	1019	89	206	27	64	70	16	55
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	57	1330	103	41	1019	89	206	27	64	70	16	55
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.93	0.92	0.92	0.93	0.92	0.92	0.70	0.88	0.88	0.68	0.87	0.87
Lanes:	1.00	1.86	0.14	1.00	1.84	0.16	1.00	0.30	0.70	1.00	0.22	0.78
Final Sat.:	1769	3248	251	1769	3214	282	1326	493	1171	1296	365	1279
Capacity Analysis Module:												
Vol/Sat:	0.03	0.41	0.41	0.02	0.32	0.32	0.16	0.05	0.05	0.05	0.04	0.04
Crit Moves:		****		****			****					
Green/Cycle:	0.06	0.61	0.61	0.03	0.59	0.59	0.23	0.23	0.23	0.23	0.23	0.23
Volume/Cap:	0.54	0.67	0.67	0.67	0.54	0.54	0.67	0.23	0.23	0.23	0.18	0.18
Delay/Veh:	51.2	13.6	13.6	72.4	12.7	12.7	40.4	31.4	31.4	31.5	31.0	31.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	51.2	13.6	13.6	72.4	12.7	12.7	40.4	31.4	31.4	31.5	31.0	31.0
LOS by Move:	D	B	B	E	B	B	D	C	C	C	C	C
HCM2kAvgQ:	3	10	10	2	7	7	7	2	2	2	2	2

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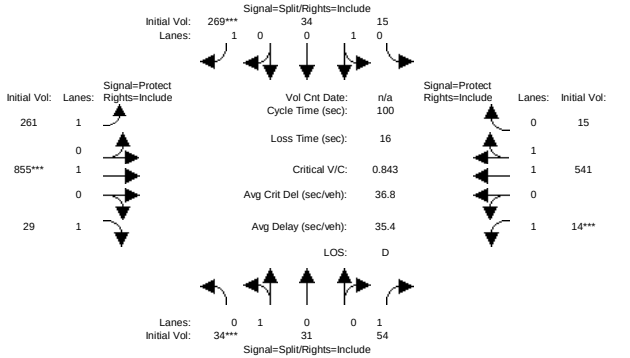
Moonridge Animal Park
W/O 11-3004
Existing + Ambient

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
EA-Weekday

Intersection #9: Stanield Cutoff (NS) at Big Bear Boulevard (SR-18) (EW)



Street Name:	Stanield Cutoff (NS)						Big Bear Boulevard (SR-18) (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module:												
Base Vol:	32	29	51	14	32	254	246	807	27	13	510	14
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	34	31	54	15	34	269	261	855	29	14	541	15
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	34	31	54	15	34	269	261	855	29	14	541	15
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	36	32	57	16	36	283	274	900	30	15	569	16
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	36	32	57	16	36	283	274	900	30	15	569	16
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	36	32	57	16	36	283	274	900	30	15	569	16
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.95	0.83	0.97	0.97	0.83	0.93	0.98	0.83	0.93	0.93	0.93
Lanes:	0.52	0.48	1.00	0.30	0.70	1.00	1.00	1.00	1.00	1.00	1.95	0.05
Final Sat.:	951	862	1583	558	1276	1583	1769	1862	1583	1769	3430	94
Capacity Analysis Module:												
Vol/Sat:	0.04	0.04	0.04	0.03	0.03	0.18	0.16	0.48	0.02	0.01	0.17	0.17
Crit Moves:	****					****		****		****		
Green/Cycle:	0.04	0.04	0.04	0.21	0.21	0.21	0.28	0.57	0.57	0.01	0.30	0.30
Volume/Cap:	0.84	0.84	0.81	0.13	0.13	0.84	0.55	0.84	0.03	0.84	0.55	0.55
Delay/Veh:	99.3	99.3	95.3	32.1	32.1	55.1	31.8	23.9	9.3	190.3	29.9	29.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	99.3	99.3	95.3	32.1	32.1	55.1	31.8	23.9	9.3	190.3	29.9	29.9
LOS by Move:	F	F	F	C	C	E	C	C	A	F	C	C
HCM2kAvgQ:	4	4	4	1	1	11	8	25	0	2	8	8

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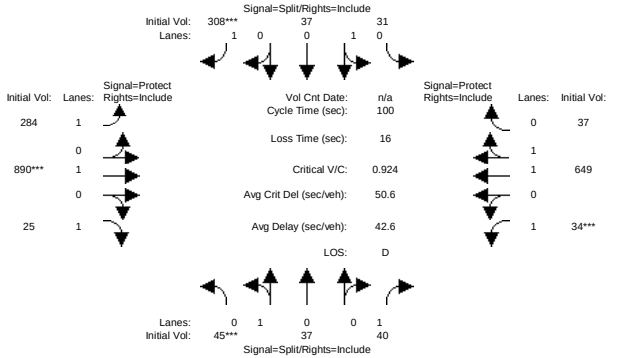
Moonridge Animal Park
W/O 11-3004
Existing + Ambient

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
EA-Weekend

Intersection #9: Stanield Cutoff (NS) at Big Bear Boulevard (SR-18) (EW)



Street Name:	Stanield Cutoff (NS)						Big Bear Boulevard (SR-18) (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module:												
Base Vol:	42	35	38	29	35	291	268	840	24	32	612	35
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	45	37	40	31	37	308	284	890	25	34	649	37
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	45	37	40	31	37	308	284	890	25	34	649	37
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	47	39	42	32	39	325	299	937	27	36	683	39
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	47	39	42	32	39	325	299	937	27	36	683	39
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	47	39	42	32	39	325	299	937	27	36	683	39
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.95	0.83	0.96	0.96	0.83	0.93	0.98	0.83	0.93	0.92	0.92
Lanes:	0.55	0.45	1.00	0.45	0.55	1.00	1.00	1.00	1.00	1.00	1.89	0.11
Final Sat.:	988	824	1583	825	996	1583	1769	1862	1583	1769	3320	190
Capacity Analysis Module:												
Vol/Sat:	0.05	0.05	0.03	0.04	0.04	0.21	0.17	0.50	0.02	0.02	0.21	0.21
Crit Moves:	****					****		****		****		
Green/Cycle:	0.05	0.05	0.05	0.22	0.22	0.22	0.26	0.54	0.54	0.02	0.31	0.31
Volume/Cap:	0.92	0.92	0.52	0.18	0.18	0.92	0.66	0.92	0.03	0.92	0.66	0.66
Delay/Veh:	115.9	116	52.2	31.7	31.7	67.5	37.0	34.4	10.6	163.3	31.4	31.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	115.9	116	52.2	31.7	31.7	67.5	37.0	34.4	10.6	163.3	31.4	31.4
LOS by Move:	F	F	D	C	C	E	D	C	B	F	C	C
HCM2kAvgQ:	5	5	2	2	2	14	9	31	0	3	11	11

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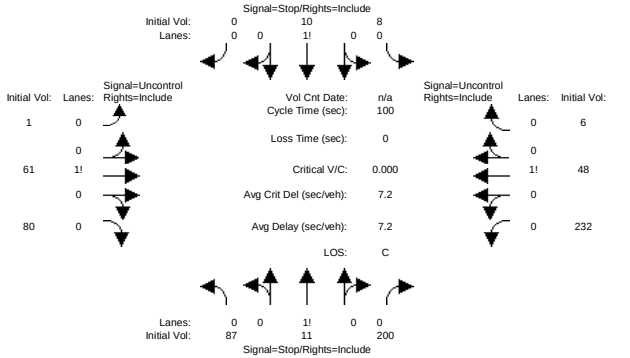
Moonridge Animal Park
W/O 11-3004
Existing + Ambient

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
EA-Weekday

Intersection #10: Stanfield Cutoff (NS) at North Shore Drive (SR-38)(EW)



Street Name:	Stanfield Cutoff (NS)						North Shore Drive (SR-38) (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Volume Module:												
Base Vol:	82	10	189	8	9	0	1	58	75	219	45	6
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	87	11	200	8	10	0	1	61	80	232	48	6
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	87	11	200	8	10	0	1	61	80	232	48	6
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	91	11	211	9	10	0	1	65	84	244	50	7
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	91	11	211	9	10	0	1	65	84	244	50	7
Critical Gap Module:												
Critical Gp:	7.1	6.5	6.2	7.1	6.5	xxxxx	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	3.5	4.0	xxxxx	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	656	654	107	762	693	xxxxx	57	xxxx	xxxxx	148	xxxx	xxxxx
Potent Cap.:	379	386	948	321	367	xxxxx	1548	xxxx	xxxxx	1433	xxxx	xxxxx
Move Cap.:	313	310	948	206	294	xxxxx	1548	xxxx	xxxxx	1433	xxxx	xxxxx
Volume/Cap:	0.29	0.04	0.22	0.04	0.03	xxxx	0.00	xxxx	xxxx	0.17	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	0.6	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.3	xxxx	xxxxx	8.0	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	A	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	989	xxxxx	245	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	1.4	xxxxx	0.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	10.3	xxxxx	20.9	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	B	*	C	*	*	*	*	*	*	*	*
ApproachDel:		10.3			20.9			xxxxxx			xxxxxx	
ApproachLOS:		B			C			*			*	

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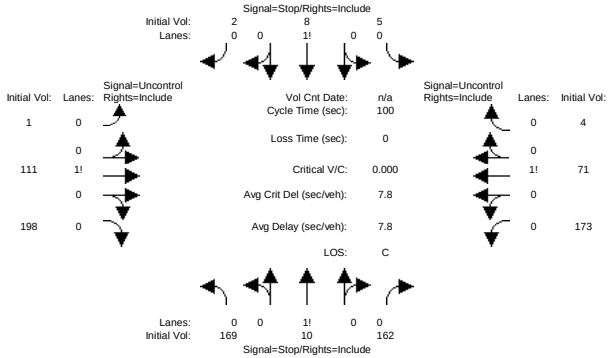
Moonridge Animal Park
W/O 11-3004
Existing + Ambient

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
EA-Weekend

Intersection #10: Stanfield Cutoff (NS) at North Shore Drive (SR-38)(EW)



Street Name:	Stanfield Cutoff (NS)						North Shore Drive (SR-38) (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Volume Module:												
Base Vol:	159	9	153	5	8	2	1	105	187	163	67	4
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	169	10	162	5	8	2	1	111	198	173	71	4
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	169	10	162	5	8	2	1	111	198	173	71	4
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
PHF Volume:	179	10	173	6	9	2	1	118	211	184	76	5
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	179	10	173	6	9	2	1	118	211	184	76	5
Critical Gap Module:												
Critical Gp:	7.1	6.5	6.2	7.1	6.5	6.2	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	3.5	4.0	3.3	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	677	674	224	763	777	78	80	xxxx	xxxxx	329	xxxx	xxxxx
Potent Cap.:	367	376	816	321	328	983	1518	xxxx	xxxxx	1230	xxxx	xxxxx
Move Cap.:	311	313	816	215	273	983	1518	xxxx	xxxxx	1230	xxxx	xxxxx
Volume/Cap:	0.58	0.03	0.21	0.03	0.03	0.00	0.00	xxxx	xxxx	0.15	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	0.5	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.4	xxxx	xxxxx	8.4	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	A	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	692	xxxxx	xxxx	275	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	3.1	xxxxx	xxxxx	0.2	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	15.8	xxxxx	xxxxx	18.9	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	C	*	*	C	*	*	*	*	*	*	*
ApproachDel:		15.8			18.9			xxxxxx			xxxxxx	
ApproachLOS:		C			C			*			*	

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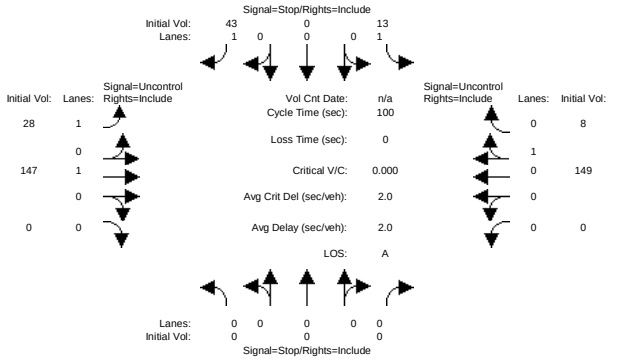
Existing plus Ambient Growth plus Project
Level of Service Calculations

Moonridge Animal Park
W/O 11-3004
Existing + Ambient + Project

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
EAP-Weekday

Intersection #1: North Shore Drive (NS) at Big Bear Boulevard (SR-18) (EW)



Street Name:	North Shore Drive (SR-38) (NS)						Big Bear Boulevard (SR-18) (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Volume Module:												
Base Vol:	0	0	0	12	0	41	26	135	0	0	130	7
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	0	0	0	13	0	43	28	143	0	0	138	7
Added Vol:	0	0	0	0	0	0	0	4	0	0	11	1
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	13	0	43	28	147	0	0	149	8
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
PHF Volume:	0	0	0	14	0	49	31	165	0	0	167	9
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	14	0	49	31	165	0	0	167	9
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	xxxx	6.2	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	xxxx	3.3	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	399	xxxx	172	177	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	606	xxxx	872	1399	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	596	xxxx	872	1399	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.02	xxxx	0.06	0.02	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.1	xxxx	0.2	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	11.2	xxxx	9.4	7.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	B	*	A	A	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			9.8			xxxxxx			xxxxxx		
ApproachLOS:	*			A			*			*		

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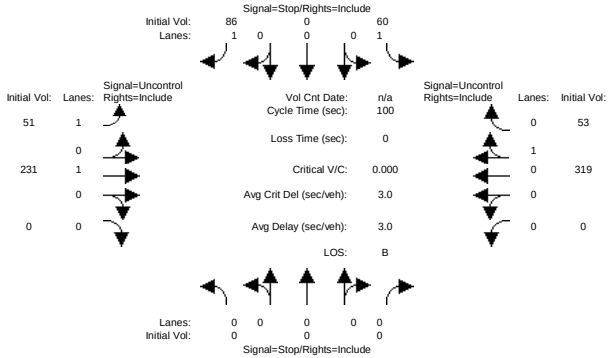
Moonridge Animal Park
W/O 11-3004
Existing + Ambient + Project

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
EAP-Weekend

Intersection #1: North Shore Drive (NS) at Big Bear Boulevard (SR-18) (EW)



Street Name:	North Shore Drive (SR-38) (NS)						Big Bear Boulevard (SR-18) (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Volume Module:												
Base Vol:	0	0	0	57	0	81	48	214	0	0	291	49
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	0	0	0	60	0	86	51	227	0	0	308	52
Added Vol:	0	0	0	0	0	0	0	4	0	0	11	1
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	60	0	86	51	231	0	0	319	53
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
PHF Volume:	0	0	0	66	0	94	56	254	0	0	351	58
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	66	0	94	56	254	0	0	351	58
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	xxxx	6.2	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	xxxx	3.3	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	746	xxxx	380	409	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	381	xxxx	667	1150	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	367	xxxx	667	1150	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.18	xxxx	0.14	0.05	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.7	xxxx	0.5	0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	17.0	xxxx	11.3	8.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	C	*	B	A	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			13.6			xxxxxx			xxxxxx		
ApproachLOS:	*			B			*			*		

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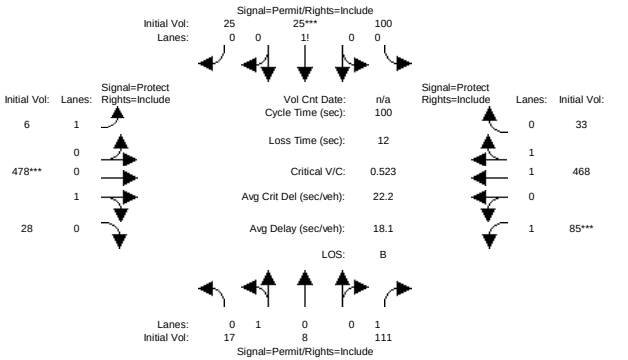
Moonridge Animal Park
W/O 11-3004
Existing + Ambient + Project

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
EAP-Weekday

Intersection #2: Pine Knot Boulevard (NS) at Big Bear Boulevard (SR-18) (EW)



Street Name:	Pine Knot Boulevard (NS)						Big Bear Boulevard (SR-18) (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module:												
Base Vol:	16	8	104	94	24	24	6	445	26	77	426	31
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	17	8	110	100	25	25	6	472	28	82	452	33
Added Vol:	0	0	1	0	0	0	0	6	0	3	16	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	17	8	111	100	25	25	6	478	28	85	468	33
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
PHF Volume:	18	9	120	107	27	27	7	514	30	91	503	35
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	18	9	120	107	27	27	7	514	30	91	503	35
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	18	9	120	107	27	27	7	514	30	91	503	35
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.80	0.80	0.83	0.74	0.74	0.74	0.93	0.97	0.97	0.93	0.92	0.92
Lanes:	0.67	0.33	1.00	0.66	0.17	0.17	1.00	0.95	0.05	1.00	1.87	0.13
Final Sat.:	1017	508	1583	933	238	238	1769	1746	101	1769	3272	230
Capacity Analysis Module:												
Vol/Sat:	0.02	0.02	0.08	0.11	0.11	0.11	0.00	0.29	0.29	0.05	0.15	0.15
Crit Moves:					****			****		****		
Green/Cycle:	0.22	0.22	0.22	0.22	0.22	0.22	0.02	0.56	0.56	0.10	0.64	0.64
Volume/Cap:	0.08	0.08	0.34	0.52	0.52	0.52	0.24	0.52	0.52	0.52	0.24	0.24
Delay/Veh:	31.1	31.1	33.6	36.0	36.0	36.0	52.8	14.1	14.1	45.7	7.5	7.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	31.1	31.1	33.6	36.0	36.0	36.0	52.8	14.1	14.1	45.7	7.5	7.5
LOS by Move:	C	C	C	D	D	D	D	B	B	D	A	A
HCM2kAvgQ:	1	1	3	5	5	5	0	7	7	3	2	2

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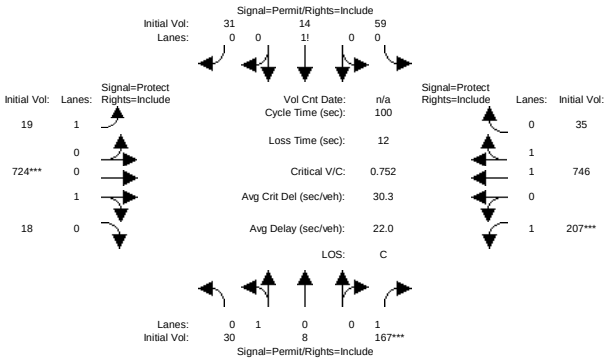
Moonridge Animal Park
W/O 11-3004
Existing + Ambient + Project

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
EAP-Weekend

Intersection #2: Pine Knot Boulevard (NS) at Big Bear Boulevard (SR-18) (EW)



Street Name:	Pine Knot Boulevard (NS)						Big Bear Boulevard (SR-18) (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module:												
Base Vol:	28	8	157	56	13	29	18	677	17	192	688	33
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	30	8	166	59	14	31	19	718	18	204	729	35
Added Vol:	0	0	1	0	0	0	0	6	0	3	17	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	30	8	167	59	14	31	19	724	18	207	746	35
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
PHF Volume:	32	9	178	63	15	33	20	770	19	220	794	37
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	32	9	178	63	15	33	20	770	19	220	794	37
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	32	9	178	63	15	33	20	770	19	220	794	37
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.76	0.76	0.83	0.75	0.75	0.75	0.93	0.98	0.98	0.93	0.92	0.92
Lanes:	0.78	0.22	1.00	0.57	0.13	0.30	1.00	0.98	0.02	1.00	1.91	0.09
Final Sat.:	1122	321	1583	814	189	422	1769	1809	45	1769	3356	157
Capacity Analysis Module:												
Vol/Sat:	0.03	0.03	0.11	0.08	0.08	0.08	0.01	0.43	0.43	0.12	0.24	0.24
Crit Moves:			****					****		****		
Green/Cycle:	0.15	0.15	0.15	0.15	0.15	0.15	0.03	0.57	0.57	0.17	0.70	0.70
Volume/Cap:	0.19	0.19	0.75	0.52	0.52	0.52	0.34	0.75	0.75	0.75	0.34	0.34
Delay/Veh:	37.6	37.6	53.5	41.5	41.5	41.5	50.6	19.6	19.6	50.3	6.1	6.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	37.6	37.6	53.5	41.5	41.5	41.5	50.6	19.6	19.6	50.3	6.1	6.1
LOS by Move:	D	D	D	D	D	D	D	B	B	D	A	A
HCM2kAvgQ:	1	1	7	4	4	4	1	15	15	8	2	2

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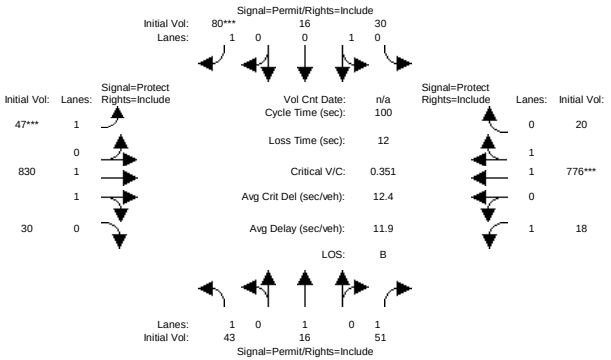
Moonridge Animal Park
W/O 11-3004
Existing + Ambient + Project

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
EAP-Weekday

Intersection #3: Summit Boulevard (NS) at Big Bear Boulevard (SR-18) (EW)



Street Name:	Summit Boulevard (NS)						Big Bear Boulevard (SR-18) (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module:												
Base Vol:	41	15	48	28	15	75	44	775	28	16	710	19
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	43	16	51	30	16	80	47	822	30	17	753	20
Added Vol:	0	0	0	0	0	0	0	8	0	1	23	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	43	16	51	30	16	80	47	830	30	18	776	20
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
PHF Volume:	44	16	52	30	16	81	48	846	30	18	791	21
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	44	16	52	30	16	81	48	846	30	18	791	21
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	44	16	52	30	16	81	48	846	30	18	791	21
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.72	0.98	0.83	0.81	0.81	0.83	0.93	0.93	0.93	0.93	0.93	0.93
Lanes:	1.00	1.00	1.00	0.65	0.35	1.00	1.00	1.93	0.07	1.00	1.95	0.05
Final Sat.:	1359	1862	1583	999	535	1583	1769	3399	122	1769	3434	89
Capacity Analysis Module:												
Vol/Sat:	0.03	0.01	0.03	0.03	0.03	0.05	0.03	0.25	0.25	0.01	0.23	0.23
Crit Moves:						****	****				****	
Green/Cycle:	0.15	0.15	0.15	0.15	0.15	0.15	0.08	0.70	0.70	0.03	0.66	0.66
Volume/Cap:	0.22	0.06	0.22	0.21	0.21	0.35	0.35	0.35	0.35	0.35	0.35	0.35
Delay/Veh:	38.3	36.9	38.2	38.1	38.1	39.3	45.4	5.9	5.9	51.7	7.7	7.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	38.3	36.9	38.2	38.1	38.1	39.3	45.4	5.9	5.9	51.7	7.7	7.7
LOS by Move:	D	D	D	D	D	D	D	A	A	D	A	A
HCM2kAvgQ:	1	0	2	1	1	3	2	2	2	1	3	3

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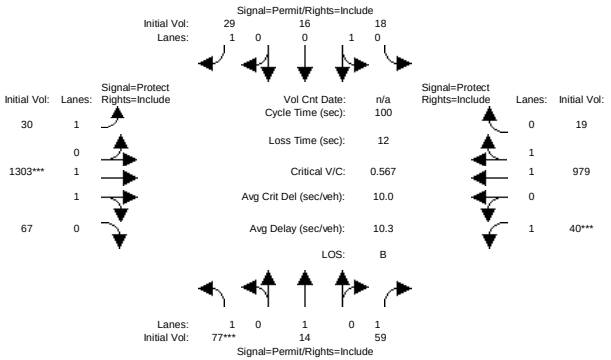
Moonridge Animal Park
W/O 11-3004
Existing + Ambient + Project

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
EAP-Weekend

Intersection #3: Summit Boulevard (NS) at Big Bear Boulevard (SR-18) (EW)



Street Name:	Summit Boulevard (NS)						Big Bear Boulevard (SR-18) (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module:												
Base Vol:	73	13	56	17	15	27	28	1221	63	37	901	18
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	77	14	59	18	16	29	30	1294	67	39	955	19
Added Vol:	0	0	0	0	0	0	0	9	0	1	24	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	77	14	59	18	16	29	30	1303	67	40	979	19
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
PHF Volume:	82	15	63	19	17	30	32	1386	71	43	1042	20
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	82	15	63	19	17	30	32	1386	71	43	1042	20
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	82	15	63	19	17	30	32	1386	71	43	1042	20
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.72	0.98	0.83	0.83	0.83	0.83	0.93	0.92	0.92	0.93	0.93	0.93
Lanes:	1.00	1.00	1.00	0.53	0.47	1.00	1.00	1.90	0.10	1.00	1.96	0.04
Final Sat.:	1376	1862	1583	843	744	1583	1769	3342	171	1769	3460	67
Capacity Analysis Module:												
Vol/Sat:	0.06	0.01	0.04	0.02	0.02	0.02	0.02	0.41	0.41	0.02	0.30	0.30
Crit Moves:	****							****		****		
Green/Cycle:	0.11	0.11	0.11	0.11	0.11	0.11	0.04	0.73	0.73	0.04	0.73	0.73
Volume/Cap:	0.57	0.07	0.38	0.22	0.22	0.18	0.41	0.57	0.57	0.57	0.41	0.41
Delay/Veh:	47.7	40.5	43.1	41.6	41.6	41.3	50.2	6.4	6.4	56.7	5.3	5.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	47.7	40.5	43.1	41.6	41.6	41.3	50.2	6.4	6.4	56.7	5.3	5.3
LOS by Move:	D	D	D	D	D	D	D	A	A	E	A	A
HCM2kAvgQ:	3	0	2	1	1	1	1	2	2	2	1	1

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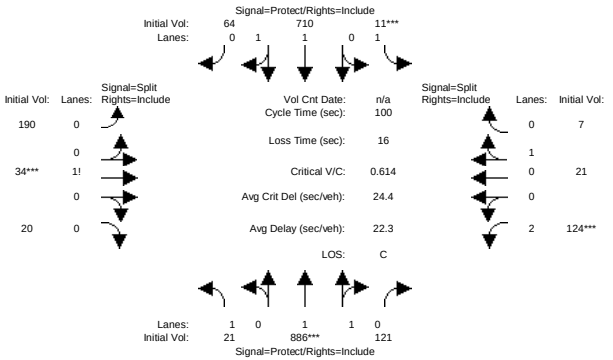
Moonridge Animal Park
W/O 11-3004
Existing + Ambient + Project

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
EAP-Weekday

Intersection #4: Big Bear Boulevard (SR-18) (NS) at Moonridge Road (EW)



Street Name:	Big Bear Boulevard (SR-18) (NS)						Moonridge Road (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module:												
Base Vol:	20	836	106	10	670	60	179	32	19	94	20	7
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	21	886	112	11	710	64	190	34	20	100	21	7
Added Vol:	0	0	9	0	0	0	0	0	0	24	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	21	886	121	11	710	64	190	34	20	124	21	7
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
PHF Volume:	23	974	133	12	780	70	209	37	22	136	23	8
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	23	974	133	12	780	70	209	37	22	136	23	8
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	23	974	133	12	780	70	209	37	22	136	23	8
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.93	0.91	0.91	0.93	0.92	0.92	0.93	0.93	0.93	0.90	0.94	0.94
Lanes:	1.00	1.76	0.24	1.00	1.84	0.16	0.78	0.14	0.08	2.00	0.74	0.26
Final Sat.:	1769	3056	418	1769	3208	287	1380	247	146	3432	1325	464
Capacity Analysis Module:												
Vol/Sat:	0.01	0.32	0.32	0.01	0.24	0.24	0.15	0.15	0.15	0.04	0.02	0.02
Crit Moves:		****		****				****		****		
Green/Cycle:	0.03	0.52	0.52	0.01	0.50	0.50	0.25	0.25	0.25	0.06	0.06	0.06
Volume/Cap:	0.48	0.61	0.61	0.61	0.48	0.48	0.61	0.61	0.61	0.61	0.27	0.27
Delay/Veh:	55.4	17.6	17.6	97.0	16.6	16.6	36.1	36.1	36.1	50.6	45.8	45.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	55.4	17.6	17.6	97.0	16.6	16.6	36.1	36.1	36.1	50.6	45.8	45.8
LOS by Move:	E	B	B	F	B	B	D	D	D	D	D	D
HCM2kAvgQ:	1	10	10	1	7	7	8	8	8	3	1	1

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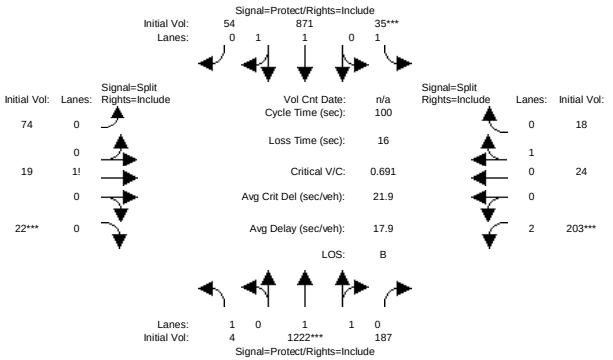
Moonridge Animal Park
W/O 11-3004
Existing + Ambient + Project

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
EAP-Weekend

Intersection #4: Big Bear Boulevard (SR-18) (NS) at Moonridge Road (EW)



Street Name:	Big Bear Boulevard (SR-18) (NS)						Moonridge Road (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module:												
Base Vol:	4	1153	168	33	822	51	70	18	21	168	23	17
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	4	1222	178	35	871	54	74	19	22	178	24	18
Added Vol:	0	0	9	0	0	0	0	0	0	25	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	4	1222	187	35	871	54	74	19	22	203	24	18
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	4	1287	197	37	917	57	78	20	23	214	26	19
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	4	1287	197	37	917	57	78	20	23	214	26	19
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	4	1287	197	37	917	57	78	20	23	214	26	19
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.93	0.91	0.91	0.93	0.92	0.92	0.92	0.92	0.92	0.90	0.92	0.92
Lanes:	1.00	1.73	0.27	1.00	1.88	0.12	0.64	0.17	0.19	2.00	0.58	0.42
Final Sat.:	1769	3007	460	1769	3301	205	1129	290	339	3432	1002	741
Capacity Analysis Module:												
Vol/Sat:	0.00	0.43	0.43	0.02	0.28	0.28	0.07	0.07	0.07	0.06	0.03	0.03
Crit Moves:		****		****						****	****	
Green/Cycle:	0.01	0.62	0.62	0.03	0.64	0.64	0.10	0.10	0.10	0.09	0.09	0.09
Volume/Cap:	0.43	0.69	0.69	0.69	0.43	0.43	0.69	0.69	0.69	0.69	0.28	0.28
Delay/Veh:	75.9	13.6	13.6	80.2	8.9	8.9	54.6	54.6	54.6	50.7	43.5	43.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	75.9	13.6	13.6	80.2	8.9	8.9	54.6	54.6	54.6	50.7	43.5	43.5
LOS by Move:	E	B	B	F	A	A	D	D	D	D	D	D
HCM2kAvgQ:	1	11	11	2	4	4	5	5	5	5	2	2

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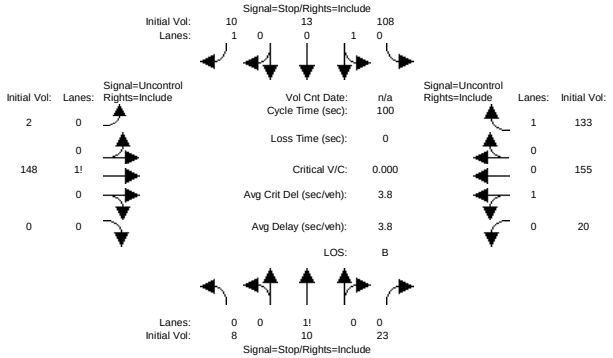
Moonridge Animal Park
W/O 11-3004
Existing + Ambient + Project

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
EAP-Weekday

Intersection #5: Moonridge Way - Brownie Lane (NS) at Moonridge Road (EW)



Street Name:	Moonridge Way - Brownie Lane (NS)						Moonridge Road (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Volume Module:												
Base Vol:	8	9	22	94	12	9	2	131	0	19	124	106
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	8	10	23	100	13	10	2	139	0	20	131	112
Added Vol:	0	0	0	8	0	0	0	9	0	0	24	21
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	8	10	23	108	13	10	2	148	0	20	155	133
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
PHF Volume:	9	10	25	115	14	10	2	157	0	21	165	142
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	9	10	25	115	14	10	2	157	0	21	165	142
Critical Gap Module:												
Critical Gp:	7.1	6.5	6.2	7.1	6.5	6.2	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	3.5	4.0	3.3	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	453	512	157	388	370	165	307	xxxx	xxxxx	157	xxxx	xxxxx
Potent Cap.:	517	465	888	571	560	879	1253	xxxx	xxxxx	1422	xxxx	xxxxx
Move Cap.:	495	457	888	539	550	879	1253	xxxx	xxxxx	1422	xxxx	xxxxx
Volume/Cap:	0.02	0.02	0.03	0.21	0.02	0.01	0.00	xxxx	xxxx	0.02	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	0.0	0.0	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	9.1	7.9	xxxx	xxxxx	7.6	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	A	A	*	*	A	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	644	xxxxx	540	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	0.2	xxxxx	0.9	xxxx	xxxxx	0.0	xxxx	xxxxx	0.0	xxxx	xxxxx
Shrd ConDel:	xxxxx	11.0	xxxxx	13.7	xxxx	xxxxx	7.9	xxxx	xxxxx	7.6	xxxx	xxxxx
Shared LOS:	*	B	*	B	*	*	A	*	*	A	*	*
ApproachDel:	11.0			13.4			xxxxxx			xxxxxx		
ApproachLOS:	B			B			*			*		

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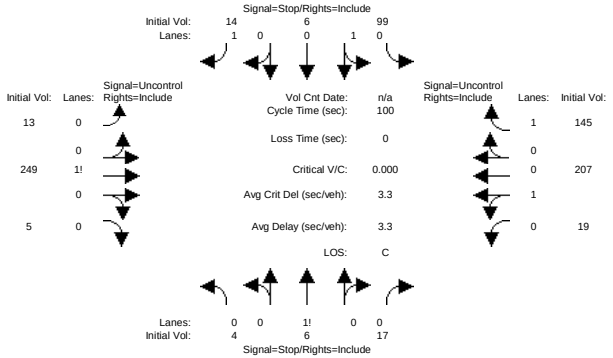
Moonridge Animal Park
W/O 11-3004
Existing + Ambient + Project

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
EAP-Weekend

Intersection #5: Moonridge Way - Brownie Lane (NS) at Moonridge Road (EW)



Street Name:	Moonridge Way - Brownie Lane (NS)						Moonridge Road (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Volume Module:												
Base Vol:	4	6	16	86	6	13	12	226	5	18	172	116
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	4	6	17	91	6	14	13	240	5	19	182	123
Added Vol:	0	0	0	8	0	0	0	9	0	0	25	22
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	4	6	17	99	6	14	13	249	5	19	207	145
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
PHF Volume:	5	7	19	109	7	15	14	273	6	21	228	159
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	5	7	19	109	7	15	14	273	6	21	228	159
Critical Gap Module:												
Critical Gp:	7.1	6.5	6.2	7.1	6.5	6.2	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	3.5	4.0	3.3	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	664	733	276	587	577	228	387	xxxx	xxxxx	279	xxxx	xxxxx
Potent Cap.:	374	348	763	421	428	811	1171	xxxx	xxxxx	1284	xxxx	xxxxx
Move Cap.:	354	338	763	396	415	811	1171	xxxx	xxxxx	1284	xxxx	xxxxx
Volume/Cap:	0.01	0.02	0.02	0.28	0.02	0.02	0.01	xxxx	xxxx	0.02	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	0.1	0.0	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	9.5	8.1	xxxx	xxxxx	7.9	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	A	A	*	*	A	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	520	xxxxx	397	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	0.2	xxxxx	1.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Shrd ConDel:	xxxxx	12.4	xxxxx	17.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.9	xxxx	xxxxx
Shared LOS:	*	B	*	C	*	*	*	*	*	A	*	*
ApproachDel:	12.4			16.8			xxxxxx			xxxxxx		
ApproachLOS:	B			C			*			*		

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HCM Unsignalized Intersection Capacity Analysis
6: Moonridge Way & Big Bear Boulevard (SR-18) 9/26/2012

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	169	1078	13	116	778
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	186	1185	14	127	855
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1874	599			1199	
vC1, stage 1 conf vol	1192					
vC2, stage 2 conf vol	682					
vCu, unblocked vol	1874	599			1199	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	58			78	
cM capacity (veh/h)	205	444			578	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	93	93	790	409	127	427	427
Volume Left	0	0	0	0	127	0	0
Volume Right	93	93	0	14	0	0	0
cSH	444	444	1700	1700	578	1700	1700
Volume to Capacity	0.21	0.21	0.46	0.24	0.22	0.25	0.25
Queue Length 95th (ft)	19	19	0	0	21	0	0
Control Delay (s)	15.2	15.2	0.0	0.0	13.0	0.0	0.0
Lane LOS	C	C			B		
Approach Delay (s)	15.2		0.0		1.7		
Approach LOS	C						

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	45.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
6: Moonridge Way & Big Bear Boulevard (SR-18) 9/26/2012

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	202	1310	5	155	973
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	213	1379	5	163	1024
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2220	692			1384	
vC1, stage 1 conf vol	1382					
vC2, stage 2 conf vol	838					
vCu, unblocked vol	2220	692			1384	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	45			67	
cM capacity (veh/h)	152	386			491	

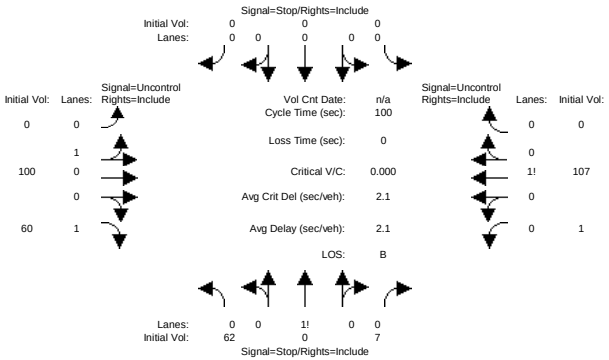
Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	106	106	919	465	163	512	512
Volume Left	0	0	0	0	163	0	0
Volume Right	106	106	0	5	0	0	0
cSH	386	386	1700	1700	491	1700	1700
Volume to Capacity	0.28	0.28	0.54	0.27	0.33	0.30	0.30
Queue Length 95th (ft)	28	28	0	0	36	0	0
Control Delay (s)	17.8	17.8	0.0	0.0	15.9	0.0	0.0
Lane LOS	C	C			C		
Approach Delay (s)	17.8		0.0		2.2		
Approach LOS	C						

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	54.1%	ICU Level of Service	A
Analysis Period (min)	15		

Moonridge Animal Park
W/O 11-3004
Existing + Ambient + Project

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
EAP-Weekday

Intersection #7: Club View Drive (NS) at Moonridge Road (EW)



Street Name:	Club View Drive (NS)						Moonridge Road (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Volume Module:												
Base Vol:	49	0	7	0	0	0	0	94	51	1	101	0
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	52	0	7	0	0	0	0	100	54	1	107	0
Added Vol:	10	0	0	0	0	0	0	0	6	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	62	0	7	0	0	0	0	100	60	1	107	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
PHF Volume:	71	0	9	0	0	0	0	115	69	1	123	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	71	0	9	0	0	0	0	115	69	1	123	0
Critical Gap Module:												
Critical Gp:	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	240	240	115	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	184	xxxx	xxxxx
Potent Cap.:	748	661	938	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1391	xxxx	xxxxx
Move Cap.:	748	661	938	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1391	xxxx	xxxxx
Volume/Cap:	0.10	0.00	0.01	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.00	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.6	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	A	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	764	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	0.3	xxxxx	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	0.0	xxxx	xxxxx
Shrd ConDel:	xxxxx	10.3	xxxxx	xxxxx	xxxx	xxxxx	9.0	xxxx	xxxxx	7.6	xxxx	xxxxx
Shared LOS:	*	B	*	*	*	*	A	*	*	A	*	*
ApproachDel:	10.3			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	B			*			*			*		

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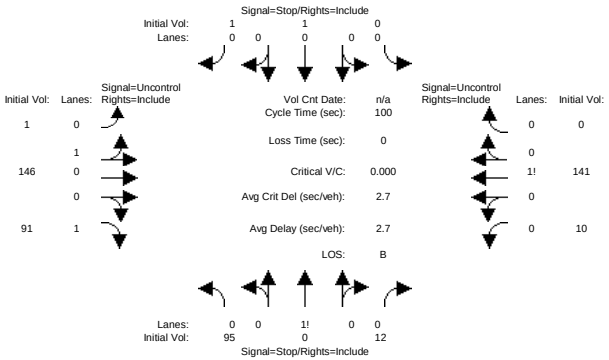
Moonridge Animal Park
W/O 11-3004
Existing + Ambient + Project

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
EAP-Weekend

Intersection #7: Club View Drive (NS) at Moonridge Road (EW)



Street Name:	Club View Drive (NS)						Moonridge Road (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Volume Module:												
Base Vol:	79	0	11	0	1	1	1	138	80	9	133	0
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	84	0	12	0	1	1	1	146	85	10	141	0
Added Vol:	11	0	0	0	0	0	0	0	6	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	95	0	12	0	1	1	1	146	91	10	141	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
PHF Volume:	101	0	12	0	1	1	1	156	97	10	150	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	101	0	12	0	1	1	1	156	97	10	150	0
Critical Gap Module:												
Critical Gp:	7.1	6.5	6.2	xxxxx	6.5	6.2	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	xxxxx	4.0	3.3	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	329	328	156	xxxx	425	150	150	xxxx	xxxxx	252	xxxx	xxxxx
Potent Cap.:	624	591	890	xxxx	521	897	1431	xxxx	xxxxx	1313	xxxx	xxxxx
Move Cap.:	618	586	890	xxxx	517	897	1431	xxxx	xxxxx	1313	xxxx	xxxxx
Volume/Cap:	0.16	0.00	0.01	xxxx	0.00	0.00	0.00	xxxx	xxxx	0.01	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.5	xxxx	xxxxx	7.8	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	A	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	640	xxxxx	xxxx	xxxx	656	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	0.6	xxxxx	xxxxx	xxxx	0.0	0.6	xxxx	xxxxx	0.0	xxxx	xxxxx
Shrd ConDel:	xxxxx	11.8	xxxxx	xxxxx	xxxx	10.5	7.5	xxxx	xxxxx	7.8	xxxx	xxxxx
Shared LOS:	*	B	*	*	*	B	A	*	*	A	*	*
ApproachDel:	11.8			10.5			xxxxxx			xxxxxx		
ApproachLOS:	B			B			*			*		

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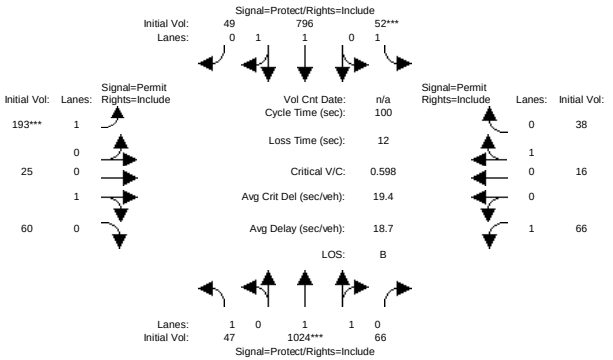
Moonridge Animal Park
W/O 11-3004
Existing + Ambient + Project

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
EAP-Weekday

Intersection #8: Big Bear Boulevard (SR-18) (NS) at Fox Farm Road (EW)



Street Name:	Big Bear Boulevard (SR-18) (NS)						Fox Farm Road (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module:												
Base Vol:	44	948	59	49	744	46	182	24	57	61	15	36
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	47	1005	63	52	789	49	193	25	60	65	16	38
Added Vol:	0	19	3	0	7	0	0	0	0	1	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	47	1024	66	52	796	49	193	25	60	66	16	38
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
PHF Volume:	51	1113	71	56	865	53	210	28	66	71	17	41
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	51	1113	71	56	865	53	210	28	66	71	17	41
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	51	1113	71	56	865	53	210	28	66	71	17	41
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.93	0.92	0.92	0.93	0.92	0.92	0.71	0.88	0.88	0.68	0.88	0.88
Lanes:	1.00	1.88	0.12	1.00	1.88	0.12	1.00	0.30	0.70	1.00	0.29	0.71
Final Sat.:	1769	3295	211	1769	3304	202	1341	493	1171	1292	490	1175
Capacity Analysis Module:												
Vol/Sat:	0.03	0.34	0.34	0.03	0.26	0.26	0.16	0.06	0.06	0.06	0.04	0.04
Crit Moves:		****		****			****					
Green/Cycle:	0.06	0.56	0.56	0.05	0.56	0.56	0.26	0.26	0.26	0.26	0.26	0.26
Volume/Cap:	0.47	0.60	0.60	0.60	0.47	0.47	0.60	0.21	0.21	0.21	0.13	0.13
Delay/Veh:	48.6	14.8	14.8	56.4	13.5	13.5	35.1	29.1	29.1	29.2	28.4	28.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	48.6	14.8	14.8	56.4	13.5	13.5	35.1	29.1	29.1	29.2	28.4	28.4
LOS by Move:	D	B	B	E	B	B	D	C	C	C	C	C
HCM2kAvgQ:	2	9	9	3	6	6	6	2	2	2	1	1

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Moonridge Animal Park
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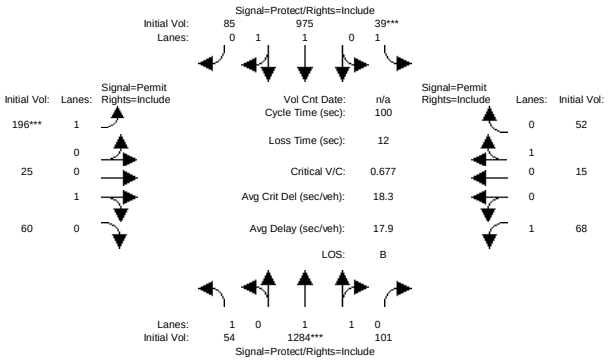
Existing + Ambient + Project

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
EAP-Weekend

Intersection #8: Big Bear Boulevard (SR-18) (NS) at Fox Farm Road (EW)



Street Name:	Big Bear Boulevard (SR-18) (NS)						Fox Farm Road (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module:												
Base Vol:	51	1192	92	37	913	80	185	24	57	63	14	49
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	54	1264	98	39	968	85	196	25	60	67	15	52
Added Vol:	0	20	3	0	7	0	0	0	0	1	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	54	1284	101	39	975	85	196	25	60	68	15	52
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	57	1351	106	41	1026	89	206	27	64	71	16	55
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	57	1351	106	41	1026	89	206	27	64	71	16	55
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	57	1351	106	41	1026	89	206	27	64	71	16	55
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.93	0.92	0.92	0.93	0.92	0.92	0.70	0.88	0.88	0.68	0.87	0.87
Lanes:	1.00	1.85	0.15	1.00	1.84	0.16	1.00	0.30	0.70	1.00	0.22	0.78
Final Sat.:	1769	3245	254	1769	3216	280	1326	493	1171	1294	365	1279
Capacity Analysis Module:												
Vol/Sat:	0.03	0.42	0.42	0.02	0.32	0.32	0.16	0.05	0.05	0.06	0.04	0.04
Crit Moves:		****		****			****					
Green/Cycle:	0.06	0.62	0.62	0.03	0.59	0.59	0.23	0.23	0.23	0.23	0.23	0.23
Volume/Cap:	0.54	0.68	0.68	0.68	0.54	0.54	0.68	0.24	0.24	0.24	0.19	0.19
Delay/Veh:	51.3	13.5	13.5	74.0	12.6	12.6	41.1	31.7	31.7	31.8	31.2	31.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	51.3	13.5	13.5	74.0	12.6	12.6	41.1	31.7	31.7	31.8	31.2	31.2
LOS by Move:	D	B	B	E	B	B	D	C	C	C	C	C
HCM2kAvgQ:	3	11	11	2	7	7	7	2	2	2	2	2

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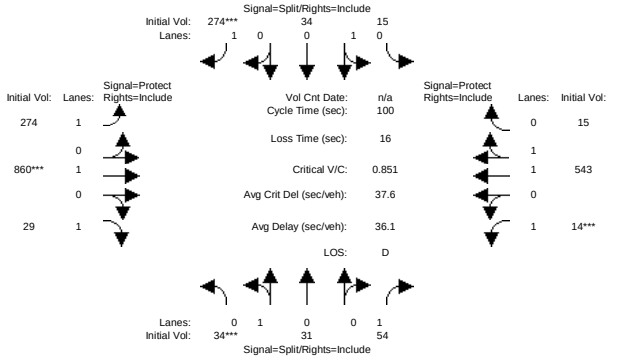
Moonridge Animal Park
W/O 11-3004
Existing + Ambient + Project

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
EAP-Weekday

Intersection #9: Stanield Cutoff (NS) at Big Bear Boulevard (SR-18) (EW)



Street Name:	Stanield Cutoff (NS)						Big Bear Boulevard (SR-18) (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module:												
Base Vol:	32	29	51	14	32	254	246	807	27	13	510	14
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	34	31	54	15	34	269	261	855	29	14	541	15
Added Vol:	0	0	0	0	0	5	13	5	0	0	2	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	34	31	54	15	34	274	274	860	29	14	543	15
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	36	32	57	16	36	289	288	906	30	15	571	16
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	36	32	57	16	36	289	288	906	30	15	571	16
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	36	32	57	16	36	289	288	906	30	15	571	16
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.95	0.83	0.97	0.97	0.83	0.93	0.98	0.83	0.93	0.93	0.93
Lanes:	0.52	0.48	1.00	0.30	0.70	1.00	1.00	1.00	1.00	1.00	1.95	0.05
Final Sat.:	951	862	1583	558	1276	1583	1769	1862	1583	1769	3430	94
Capacity Analysis Module:												
Vol/Sat:	0.04	0.04	0.04	0.03	0.03	0.18	0.16	0.49	0.02	0.01	0.17	0.17
Crit Moves:	****					****		****		****		
Green/Cycle:	0.04	0.04	0.04	0.21	0.21	0.21	0.29	0.57	0.57	0.01	0.29	0.29
Volume/Cap:	0.85	0.85	0.81	0.13	0.13	0.85	0.57	0.85	0.03	0.85	0.57	0.57
Delay/Veh:	101.5	102	97.3	31.9	31.9	55.9	31.8	24.5	9.4	194.4	30.6	30.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	101.5	102	97.3	31.9	31.9	55.9	31.8	24.5	9.4	194.4	30.6	30.6
LOS by Move:	F	F	F	C	C	E	C	C	A	F	C	C
HCM2kAvgQ:	4	4	4	1	1	11	8	26	0	2	9	9

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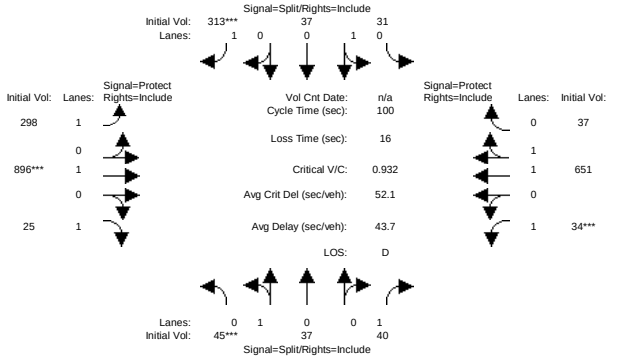
Moonridge Animal Park
W/O 11-3004
Existing + Ambient + Project

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
EAP-Weekend

Intersection #9: Stanield Cutoff (NS) at Big Bear Boulevard (SR-18) (EW)



Street Name:	Stanield Cutoff (NS)						Big Bear Boulevard (SR-18) (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module:												
Base Vol:	42	35	38	29	35	291	268	840	24	32	612	35
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	45	37	40	31	37	308	284	890	25	34	649	37
Added Vol:	0	0	0	0	0	5	14	6	0	0	2	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	45	37	40	31	37	313	298	896	25	34	651	37
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	47	39	42	32	39	330	314	944	27	36	685	39
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	47	39	42	32	39	330	314	944	27	36	685	39
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	47	39	42	32	39	330	314	944	27	36	685	39
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.95	0.83	0.96	0.96	0.83	0.93	0.98	0.83	0.93	0.92	0.92
Lanes:	0.55	0.45	1.00	0.45	0.55	1.00	1.00	1.00	1.00	1.00	1.89	0.11
Final Sat.:	988	824	1583	825	996	1583	1769	1862	1583	1769	3320	189
Capacity Analysis Module:												
Vol/Sat:	0.05	0.05	0.03	0.04	0.04	0.21	0.18	0.51	0.02	0.02	0.21	0.21
Crit Moves:	****					****		****		****		
Green/Cycle:	0.05	0.05	0.05	0.22	0.22	0.22	0.26	0.54	0.54	0.02	0.30	0.30
Volume/Cap:	0.93	0.93	0.53	0.18	0.18	0.93	0.68	0.93	0.03	0.93	0.68	0.68
Delay/Veh:	118.8	119	52.6	31.6	31.6	69.0	37.2	35.8	10.6	166.9	32.3	32.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	118.8	119	52.6	31.6	31.6	69.0	37.2	35.8	10.6	166.9	32.3	32.3
LOS by Move:	F	F	D	C	C	E	D	D	B	F	C	C
HCM2kAvgQ:	5	5	2	2	2	14	10	32	0	3	11	11

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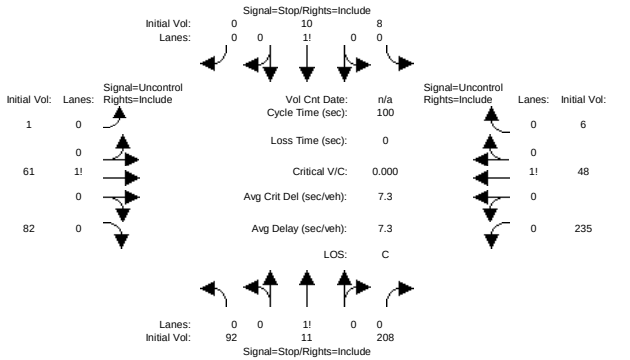
Moonridge Animal Park
W/O 11-3004
Existing + Ambient + Project

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
EAP-Weekday

Intersection #10: Stanfield Cutoff (NS) at North Shore Drive (SR-38)(EW)



Street Name:	Stanfield Cutoff (NS)						North Shore Drive (SR-38) (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Volume Module:												
Base Vol:	82	189	10	8	9	0	1	58	75	219	45	6
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	87	200	11	8	10	0	1	61	80	232	48	6
Added Vol:	5	8	0	0	0	0	0	0	2	3	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	92	208	11	8	10	0	1	61	82	235	48	6
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	97	219	11	9	10	0	1	65	86	248	50	7
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	97	219	11	9	10	0	1	65	86	248	50	7
Critical Gap Module:												
Critical Gp:	7.1	6.2	6.5	7.1	6.5	xxxxx	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	3.3	4.0	3.5	4.0	xxxxx	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	663	108	662	774	701	xxxxx	57	xxxx	xxxxx	151	xxxx	xxxxx
Potent Cap.:	374	946	382	316	363	xxxxx	1548	xxxx	xxxxx	1431	xxxx	xxxxx
Move Cap.:	308	946	305	200	290	xxxxx	1548	xxxx	xxxxx	1431	xxxx	xxxxx
Volume/Cap:	0.31	0.23	0.04	0.04	0.03	xxxx	0.00	xxxx	xxxx	0.17	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	0.6	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.3	xxxx	xxxxx	8.0	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	A	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	987	xxxxx	239	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	1.5	xxxxx	0.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	10.4	xxxxx	21.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	B	*	C	*	*	*	*	*	*	*	*
ApproachDel:	10.4			21.4			xxxxxx			xxxxxx		
ApproachLOS:	B			C			*			*		

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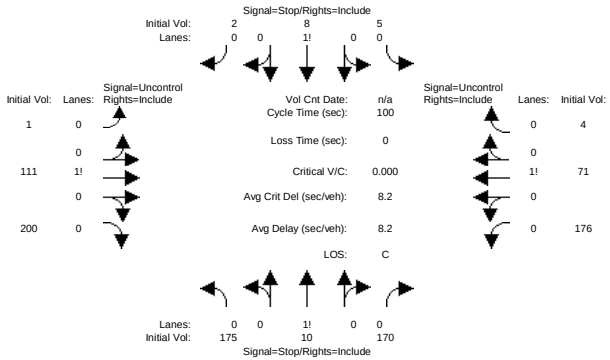
Moonridge Animal Park
W/O 11-3004
Existing + Ambient + Project

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
EAP-Weekend

Intersection #10: Stanfield Cutoff (NS) at North Shore Drive (SR-38)(EW)



Street Name:	Stanfield Cutoff (NS)						North Shore Drive (SR-38) (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Volume Module:												
Base Vol:	159	153	9	5	8	2	1	105	187	163	67	4
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	169	162	10	5	8	2	1	111	198	173	71	4
Added Vol:	6	8	0	0	0	0	0	0	2	3	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	175	170	10	5	8	2	1	111	200	176	71	4
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
PHF Volume:	186	181	10	6	9	2	1	118	213	187	76	5
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	186	181	10	6	9	2	1	118	213	187	76	5
Critical Gap Module:												
Critical Gp:	7.1	6.2	6.5	7.1	6.5	6.2	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	3.3	4.0	3.5	4.0	3.3	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	685	225	681	775	785	78	80	xxxx	xxxxx	331	xxxx	xxxxx
Potent Cap.:	362	815	373	315	324	983	1518	xxxx	xxxxx	1228	xxxx	xxxxx
Move Cap.:	306	815	309	208	269	983	1518	xxxx	xxxxx	1228	xxxx	xxxxx
Volume/Cap:	0.61	0.03	0.22	0.03	0.03	0.00	0.00	xxxx	xxxx	0.15	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	0.5	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.4	xxxx	xxxxx	8.5	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	A	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	687	xxxxx	xxxx	269	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	3.4	xxxxx	xxxxx	0.2	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	16.4	xxxxx	xxxxx	19.3	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	C	*	*	C	*	*	*	*	*	*	*
ApproachDel:	16.4			19.3			xxxxxx			xxxxxx		
ApproachLOS:	C			C			*			*		

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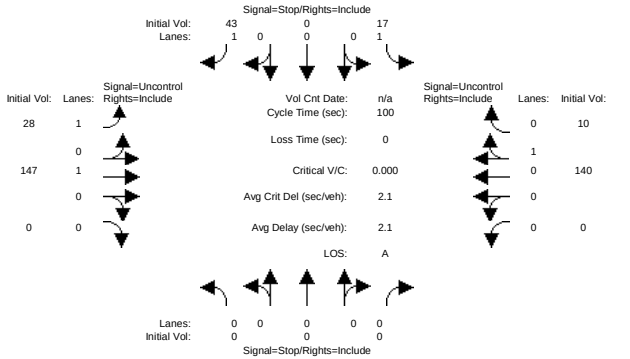
Existing plus Ambient Growth plus Cumulative Projects Level of Service Calculations

Moonridge Animal Park
W/O 11-3004
Existing + Ambient + Cumulative

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
EAC-Weekday

Intersection #1: North Shore Drive (NS) at Big Bear Boulevard (SR-18) (EW)



Street Name:	North Shore Drive (SR-38) (NS)						Big Bear Boulevard (SR-18) (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Volume Module:												
Base Vol:	0	0	0	12	0	41	26	135	0	0	130	7
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	0	0	0	13	0	43	28	143	0	0	138	7
Added Vol:	0	0	0	4	0	0	0	4	0	0	2	3
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	17	0	43	28	147	0	0	140	10
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
PHF Volume:	0	0	0	19	0	49	31	165	0	0	157	12
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	19	0	49	31	165	0	0	157	12
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	xxxx	6.2	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	xxxx	3.3	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	390	xxxx	163	169	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	614	xxxx	882	1409	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	603	xxxx	882	1409	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.03	xxxx	0.06	0.02	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.1	xxxx	0.2	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	11.2	xxxx	9.3	7.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	B	*	A	A	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			9.8			xxxxxx			xxxxxx		
ApproachLOS:	*			A			*			*		

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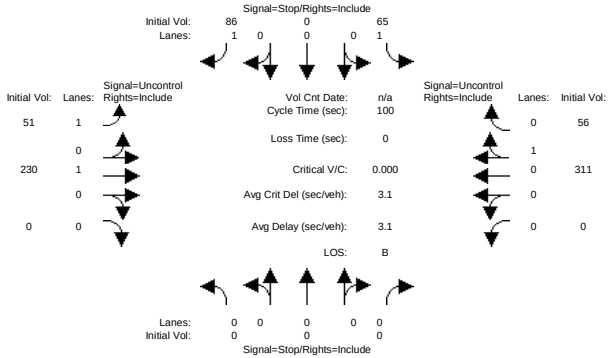
Moonridge Animal Park
W/O 11-3004
Existing + Ambient + Cumulative

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
EAC-Weekend

Intersection #1: North Shore Drive (NS) at Big Bear Boulevard (SR-18) (EW)



Street Name:	North Shore Drive (SR-38) (NS)						Big Bear Boulevard (SR-18) (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Volume Module:												
Base Vol:	0	0	0	57	0	81	48	214	0	0	291	49
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	0	0	0	60	0	86	51	227	0	0	308	52
Added Vol:	0	0	0	5	0	0	0	3	0	0	3	4
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	65	0	86	51	230	0	0	311	56
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
PHF Volume:	0	0	0	72	0	94	56	253	0	0	342	61
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	72	0	94	56	253	0	0	342	61
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	xxxx	6.2	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	xxxx	3.3	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	737	xxxx	373	404	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	385	xxxx	673	1155	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	371	xxxx	673	1155	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.19	xxxx	0.14	0.05	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.7	xxxx	0.5	0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	17.0	xxxx	11.2	8.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	C	*	B	A	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			13.7			xxxxxx			xxxxxx		
ApproachLOS:	*			B			*			*		

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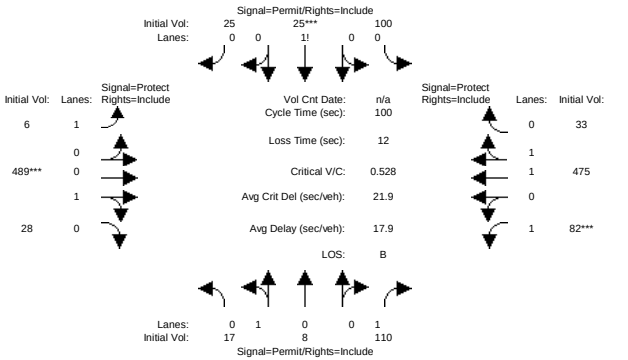
Moonridge Animal Park
W/O 11-3004
Existing + Ambient + Cumulative

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
EAC-Weekday

Intersection #2: Pine Knot Boulevard (NS) at Big Bear Boulevard (SR-18) (EW)



Street Name:	Pine Knot Boulevard (NS)						Big Bear Boulevard (SR-18) (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module:												
Base Vol:	16	8	104	94	24	24	6	445	26	77	426	31
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	17	8	110	100	25	25	6	472	28	82	452	33
Added Vol:	0	0	0	0	0	0	0	17	0	0	23	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	17	8	110	100	25	25	6	489	28	82	475	33
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
PHF Volume:	18	9	119	107	27	27	7	525	30	88	510	35
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	18	9	119	107	27	27	7	525	30	88	510	35
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	18	9	119	107	27	27	7	525	30	88	510	35
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.80	0.80	0.83	0.74	0.74	0.74	0.93	0.97	0.97	0.93	0.92	0.92
Lanes:	0.67	0.33	1.00	0.66	0.17	0.17	1.00	0.95	0.05	1.00	1.87	0.13
Final Sat.:	1017	508	1583	933	238	238	1769	1748	99	1769	3276	227
Capacity Analysis Module:												
Vol/Sat:	0.02	0.02	0.07	0.11	0.11	0.11	0.00	0.30	0.30	0.05	0.16	0.16
Crit Moves:					****			****		****		
Green/Cycle:	0.22	0.22	0.22	0.22	0.22	0.22	0.02	0.57	0.57	0.09	0.65	0.65
Volume/Cap:	0.08	0.08	0.34	0.53	0.53	0.53	0.24	0.53	0.53	0.53	0.24	0.24
Delay/Veh:	31.3	31.3	33.7	36.3	36.3	36.3	53.0	13.8	13.8	46.4	7.4	7.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	31.3	31.3	33.7	36.3	36.3	36.3	53.0	13.8	13.8	46.4	7.4	7.4
LOS by Move:	C	C	C	D	D	D	D	B	B	D	A	A
HCM2kAvgQ:	1	1	3	5	5	5	0	7	7	3	2	2

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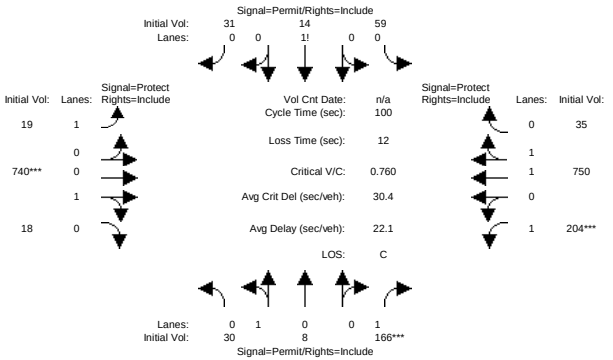
Moonridge Animal Park
W/O 11-3004
Existing + Ambient + Cumulative

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
EAC-Weekend

Intersection #2: Pine Knot Boulevard (NS) at Big Bear Boulevard (SR-18) (EW)



Street Name:	Pine Knot Boulevard (NS)						Big Bear Boulevard (SR-18) (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module:												
Base Vol:	28	8	157	56	13	29	18	677	17	192	688	33
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	30	8	166	59	14	31	19	718	18	204	729	35
Added Vol:	0	0	0	0	0	0	0	22	0	0	21	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	30	8	166	59	14	31	19	740	18	204	750	35
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
PHF Volume:	32	9	177	63	15	33	20	787	19	217	798	37
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	32	9	177	63	15	33	20	787	19	217	798	37
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	32	9	177	63	15	33	20	787	19	217	798	37
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.76	0.76	0.83	0.75	0.75	0.75	0.93	0.98	0.98	0.93	0.92	0.92
Lanes:	0.78	0.22	1.00	0.57	0.13	0.30	1.00	0.98	0.02	1.00	1.91	0.09
Final Sat.:	1118	319	1583	813	189	421	1769	1810	44	1769	3357	156
Capacity Analysis Module:												
Vol/Sat:	0.03	0.03	0.11	0.08	0.08	0.08	0.01	0.43	0.43	0.12	0.24	0.24
Crit Moves:			****					****		****		
Green/Cycle:	0.15	0.15	0.15	0.15	0.15	0.15	0.03	0.57	0.57	0.16	0.70	0.70
Volume/Cap:	0.19	0.19	0.76	0.53	0.53	0.53	0.34	0.76	0.76	0.76	0.34	0.34
Delay/Veh:	37.9	37.9	54.5	41.9	41.9	41.9	50.6	19.5	19.5	51.4	6.0	6.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	37.9	37.9	54.5	41.9	41.9	41.9	50.6	19.5	19.5	51.4	6.0	6.0
LOS by Move:	D	D	D	D	D	D	D	B	B	D	A	A
HCM2kAvgQ:	1	1	7	4	4	4	1	16	16	8	2	2

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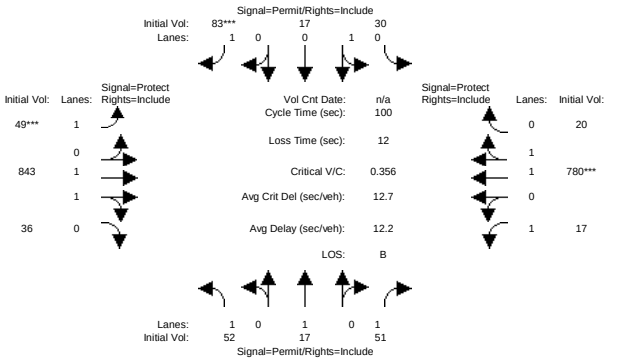
Moonridge Animal Park
W/O 11-3004
Existing + Ambient + Cumulative

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
EAC-Weekday

Intersection #3: Summit Boulevard (NS) at Big Bear Boulevard (SR-18) (EW)



Street Name:	Summit Boulevard (NS)						Big Bear Boulevard (SR-18) (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module:												
Base Vol:	41	15	48	28	15	75	44	775	28	16	710	19
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	43	16	51	30	16	80	47	822	30	17	753	20
Added Vol:	9	1	0	0	1	3	2	21	6	0	27	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	52	17	51	30	17	83	49	843	36	17	780	20
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
PHF Volume:	54	17	52	30	17	84	50	860	36	17	796	21
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	54	17	52	30	17	84	50	860	36	17	796	21
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	54	17	52	30	17	84	50	860	36	17	796	21
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.71	0.98	0.83	0.81	0.81	0.83	0.93	0.93	0.93	0.93	0.93	0.93
Lanes:	1.00	1.00	1.00	0.64	0.36	1.00	1.00	1.92	0.08	1.00	1.95	0.05
Final Sat.:	1357	1862	1583	981	559	1583	1769	3374	143	1769	3435	89
Capacity Analysis Module:												
Vol/Sat:	0.04	0.01	0.03	0.03	0.03	0.05	0.03	0.25	0.25	0.01	0.23	0.23
Crit Moves:						****	****				****	
Green/Cycle:	0.15	0.15	0.15	0.15	0.15	0.15	0.08	0.70	0.70	0.03	0.65	0.65
Volume/Cap:	0.26	0.06	0.22	0.21	0.21	0.36	0.36	0.36	0.36	0.36	0.36	0.36
Delay/Veh:	38.3	36.6	37.9	37.8	37.8	39.1	45.2	6.0	6.0	52.4	8.0	8.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	38.3	36.6	37.9	37.8	37.8	39.1	45.2	6.0	6.0	52.4	8.0	8.0
LOS by Move:	D	D	D	D	D	D	D	A	A	D	A	A
HCM2kAvgQ:	2	0	2	1	1	3	2	2	2	1	3	3

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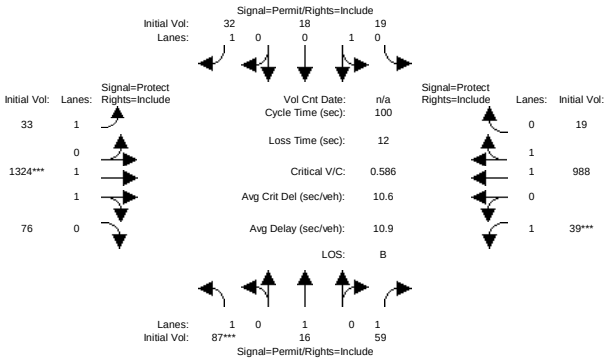
Moonridge Animal Park
W/O 11-3004
Existing + Ambient + Cumulative

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
EAC-Weekend

Intersection #3: Summit Boulevard (NS) at Big Bear Boulevard (SR-18) (EW)



Street Name:	Summit Boulevard (NS)						Big Bear Boulevard (SR-18) (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module:												
Base Vol:	73	13	56	17	15	27	28	1221	63	37	901	18
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	77	14	59	18	16	29	30	1294	67	39	955	19
Added Vol:	10	2	0	1	2	3	3	30	9	0	33	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	87	16	59	19	18	32	33	1324	76	39	988	19
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
PHF Volume:	93	17	63	20	19	34	35	1409	81	42	1051	20
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	93	17	63	20	19	34	35	1409	81	42	1051	20
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	93	17	63	20	19	34	35	1409	81	42	1051	20
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.72	0.98	0.83	0.84	0.84	0.83	0.93	0.92	0.92	0.93	0.93	0.93
Lanes:	1.00	1.00	1.00	0.52	0.48	1.00	1.00	1.89	0.11	1.00	1.96	0.04
Final Sat.:	1370	1862	1583	822	774	1583	1769	3320	190	1769	3460	67
Capacity Analysis Module:												
Vol/Sat:	0.07	0.01	0.04	0.02	0.02	0.02	0.02	0.42	0.42	0.02	0.30	0.30
Crit Moves:	****							****		****		
Green/Cycle:	0.12	0.12	0.12	0.12	0.12	0.12	0.05	0.72	0.72	0.04	0.72	0.72
Volume/Cap:	0.59	0.08	0.34	0.21	0.21	0.18	0.42	0.59	0.59	0.59	0.42	0.42
Delay/Veh:	47.5	39.6	41.9	40.7	40.7	40.4	49.9	7.0	7.0	59.2	5.8	5.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	47.5	39.6	41.9	40.7	40.7	40.4	49.9	7.0	7.0	59.2	5.8	5.8
LOS by Move:	D	D	D	D	D	D	D	A	A	E	A	A
HCM2kAvgQ:	4	1	2	1	1	1	2	3	3	2	2	2

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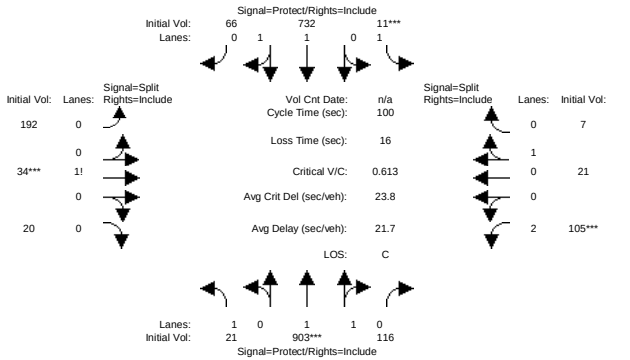
Moonridge Animal Park
W/O 11-3004
Existing + Ambient + Cumulative

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
EAC-Weekday

Intersection #4: Big Bear Boulevard (SR-18) (NS) at Moonridge Road (EW)



Street Name:	Big Bear Boulevard (SR-18) (NS)						Moonridge Road (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module:												
Base Vol:	20	836	106	10	670	60	179	32	19	94	20	7
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	21	886	112	11	710	64	190	34	20	100	21	7
Added Vol:	0	17	4	0	22	2	2	0	0	5	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	21	903	116	11	732	66	192	34	20	105	21	7
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
PHF Volume:	23	992	128	12	805	72	211	37	22	115	23	8
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	23	992	128	12	805	72	211	37	22	115	23	8
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	23	992	128	12	805	72	211	37	22	115	23	8
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.93	0.92	0.92	0.93	0.92	0.92	0.93	0.93	0.93	0.90	0.94	0.94
Lanes:	1.00	1.77	0.23	1.00	1.84	0.16	0.78	0.14	0.08	2.00	0.74	0.26
Final Sat.:	1769	3081	397	1769	3208	287	1382	244	145	3432	1325	464
Capacity Analysis Module:												
Vol/Sat:	0.01	0.32	0.32	0.01	0.25	0.25	0.15	0.15	0.15	0.03	0.02	0.02
Crit Moves:		****		****				****		****		
Green/Cycle:	0.03	0.53	0.53	0.01	0.51	0.51	0.25	0.25	0.25	0.05	0.05	0.05
Volume/Cap:	0.49	0.61	0.61	0.61	0.49	0.49	0.61	0.61	0.61	0.61	0.32	0.32
Delay/Veh:	55.8	17.2	17.2	96.5	16.3	16.3	35.8	35.8	35.8	52.1	47.4	47.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	55.8	17.2	17.2	96.5	16.3	16.3	35.8	35.8	35.8	52.1	47.4	47.4
LOS by Move:	E	B	B	F	B	B	D	D	D	D	D	D
HCM2kAvgQ:	1	10	10	1	7	7	8	8	8	3	1	1

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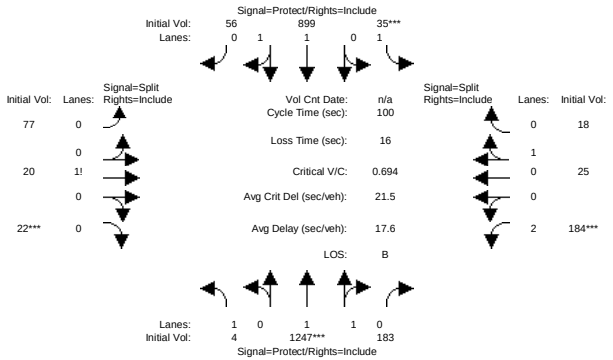
Moonridge Animal Park
W/O 11-3004
Existing + Ambient + Cumulative

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
EAC-Weekend

Intersection #4: Big Bear Boulevard (SR-18) (NS) at Moonridge Road (EW)



Street Name:	Big Bear Boulevard (SR-18) (NS)						Moonridge Road (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module:												
Base Vol:	4	1153	168	33	822	51	70	18	21	168	23	17
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	4	1222	178	35	871	54	74	19	22	178	24	18
Added Vol:	0	25	5	0	28	2	3	1	0	6	1	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	4	1247	183	35	899	56	77	20	22	184	25	18
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	4	1313	193	37	947	59	81	21	23	194	27	19
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	4	1313	193	37	947	59	81	21	23	194	27	19
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	4	1313	193	37	947	59	81	21	23	194	27	19
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.93	0.91	0.91	0.93	0.92	0.92	0.93	0.93	0.93	0.90	0.92	0.92
Lanes:	1.00	1.74	0.26	1.00	1.88	0.12	0.64	0.17	0.19	2.00	0.58	0.42
Final Sat.:	1769	3026	444	1769	3300	206	1136	296	328	3432	1021	725
Capacity Analysis Module:												
Vol/Sat:	0.00	0.43	0.43	0.02	0.29	0.29	0.07	0.07	0.07	0.06	0.03	0.03
Crit Moves:		****		****					****	****		
Green/Cycle:	0.01	0.63	0.63	0.03	0.65	0.65	0.10	0.10	0.10	0.08	0.08	0.08
Volume/Cap:	0.44	0.69	0.69	0.69	0.44	0.44	0.69	0.69	0.69	0.69	0.32	0.32
Delay/Veh:	77.4	13.4	13.4	80.9	8.7	8.7	54.3	54.3	54.3	52.1	44.6	44.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	77.4	13.4	13.4	80.9	8.7	8.7	54.3	54.3	54.3	52.1	44.6	44.6
LOS by Move:	E	B	B	F	A	A	D	D	D	D	D	D
HCM2kAvgQ:	1	11	11	2	4	4	5	5	5	4	2	2

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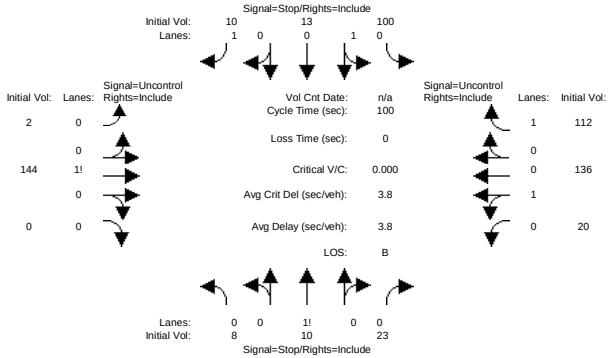
Moonridge Animal Park
W/O 11-3004
Existing + Ambient + Cumulative

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
EAC-Weekday

Intersection #5: Moonridge Way - Brownie Lane (NS) at Moonridge Road (EW)




```
Street Name:Moonridge Way - Brownie Lane (NS)        Moonridge Road (EW)
Approach:      North Bound      South Bound      East Bound      West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       8    9    22    94   12    9     2  131     0    19  124   106
Growth Adj:  1.06 1.06  1.06  1.06 1.06 1.06  1.06 1.06  1.06  1.06 1.06  1.06
Initial Bse:    8   10    23   100   13   10     2  139     0    20  131   112
Added Vol:      0    0     0     0    0    0     0    5     0     0    5     0
PasserByVol:    0    0     0     0    0    0     0    0     0     0    0     0
Initial Fut:    8   10    23   100   13   10     2  144     0    20  136   112
User Adj:    1.00 1.00  1.00  1.00 1.00 1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.94 0.94  0.94  0.94 0.94 0.94  0.94 0.94  0.94  0.94 0.94  0.94
PHF Volume:     9   10    25   106   14   10     2  153     0    21  145   120
Reduct Vol:     0    0     0     0    0    0     0    0     0     0    0     0
FinalVolume:    9   10    25   106   14   10     2  153     0    21  145   120
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.1  6.5   6.2   7.1  6.5   6.2   4.1 xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3   3.5  4.0   3.3   2.2 xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  417  465   153   363  346   145   265 xxxx xxxxx   153 xxxx xxxxx
Potent Cap.:  546  495   893   593  578   902  1299 xxxx xxxxx  1428 xxxx xxxxx
Move Cap.:    523  486   893   560  568   902  1299 xxxx xxxxx  1428 xxxx xxxxx
Volume/Cap:  0.02 0.02  0.03  0.19 0.02  0.01  0.00 xxxx  xxxx  0.02 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx   0.0   0.0 xxxx xxxxx   0.0 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx   9.0   7.8 xxxx xxxxx   7.6 xxxx xxxxx
LOS by Move:   *    *     *     *    *     A     A    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx  667 xxxxx   561 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.2 xxxxx   0.8 xxxx xxxxx   0.0 xxxx xxxxx   0.0 xxxx xxxxx
Shrd ConDel:xxxxx 10.8 xxxxx  13.2 xxxx xxxxx   7.8 xxxx xxxxx   7.6 xxxx xxxxx
Shared LOS:    *    B     *     B    *     *     A    *     *     A    *     *
ApproachDel:       10.8             12.8           xxxxxx           xxxxxx
ApproachLOS:         B                B              *                *
```

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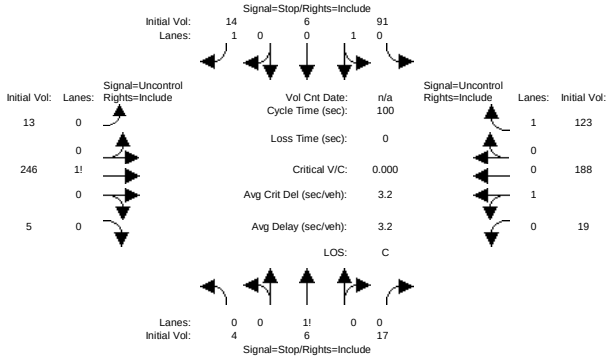
Moonridge Animal Park
W/O 11-3004
Existing + Ambient + Cumulative

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
EAC-Weekend

Intersection #5: Moonridge Way - Brownie Lane (NS) at Moonridge Road (EW)




```
Street Name:Moonridge Way - Brownie Lane (NS)        Moonridge Road (EW)
Approach:      North Bound      South Bound      East Bound      West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       4    6    16    86    6    13    12  226     5    18  172   116
Growth Adj:  1.06 1.06  1.06  1.06 1.06 1.06  1.06 1.06  1.06  1.06 1.06  1.06
Initial Bse:    4    6    17    91    6    14    13  240     5    19  182   123
Added Vol:      0    0     0     0    0     0     0    6     0     0    6     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    4    6    17    91    6    14    13  246     5    19  188   123
User Adj:    1.00 1.00  1.00  1.00 1.00 1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.91 0.91  0.91  0.91 0.91 0.91  0.91 0.91  0.91  0.91 0.91  0.91
PHF Volume:     5    7    19   100    7    15    14  270     6    21  207   135
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    5    7    19   100    7    15    14  270     6    21  207   135
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.1  6.5   6.2   7.1  6.5   6.2   4.1 xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3   3.5  4.0   3.3   2.2 xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  628  685   273   562  553   207   342 xxxx xxxxx   276 xxxx xxxxx
Potent Cap.:  395  371   766   437  441   833  1217 xxxx xxxxx  1287 xxxx xxxxx
Move Cap.:    375  360   766   411  429   833  1217 xxxx xxxxx  1287 xxxx xxxxx
Volume/Cap:  0.01 0.02  0.02  0.24 0.02  0.02  0.01 xxxx  xxxx  0.02 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx   0.1   0.0 xxxx xxxxx   0.0 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx   9.4   8.0 xxxx xxxxx   7.8 xxxx xxxxx
LOS by Move:   *    *     *     *    *     A     A    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx  539 xxxxx   413 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.2 xxxxx   1.0 xxxx xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx
Shrd ConDel:xxxxx 12.1 xxxxx  16.8 xxxx xxxxx xxxxx xxxx xxxxx   7.8 xxxx xxxxx
Shared LOS:    *    B     *     C    *     *     *    *     *     A    *     *
ApproachDel:       12.1             15.8           xxxxxx           xxxxxx
ApproachLOS:         B                C              *                *
```

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HCM Unsignalized Intersection Capacity Analysis
6: Moonridge Way & Big Bear Boulevard (SR-18) 9/26/2012

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	148	1097	13	108	801
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	163	1205	14	119	880
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1890	610			1220	
vC1, stage 1 conf vol	1213					
vC2, stage 2 conf vol	677					
vCu, unblocked vol	1890	610			1220	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	63			79	
cM capacity (veh/h)	203	437			567	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	81	81	804	416	119	440	440
Volume Left	0	0	0	0	119	0	0
Volume Right	81	81	0	14	0	0	0
cSH	437	437	1700	1700	567	1700	1700
Volume to Capacity	0.19	0.19	0.47	0.24	0.21	0.26	0.26
Queue Length 95th (ft)	17	17	0	0	20	0	0
Control Delay (s)	15.1	15.1	0.0	0.0	13.0	0.0	0.0
Lane LOS	C	C			B		
Approach Delay (s)	15.1		0.0		1.5		
Approach LOS	C						

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	45.4%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
6: Moonridge Way & Big Bear Boulevard (SR-18) 9/26/2012

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	180	1338	5	147	1003
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	189	1408	5	155	1056
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2248	707			1414	
vC1, stage 1 conf vol	1411					
vC2, stage 2 conf vol	837					
vCu, unblocked vol	2248	707			1414	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	50			68	
cM capacity (veh/h)	150	378			478	

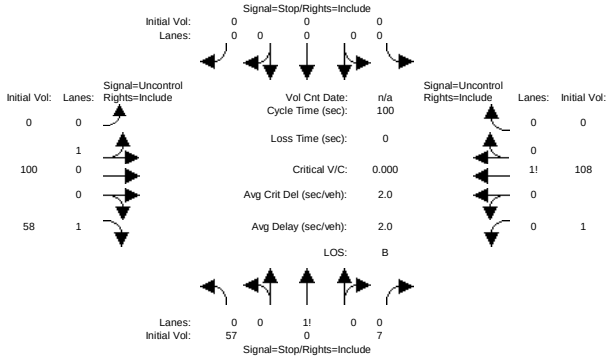
Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	95	95	939	475	155	528	528
Volume Left	0	0	0	0	155	0	0
Volume Right	95	95	0	5	0	0	0
cSH	378	378	1700	1700	478	1700	1700
Volume to Capacity	0.25	0.25	0.55	0.28	0.32	0.31	0.31
Queue Length 95th (ft)	24	24	0	0	35	0	0
Control Delay (s)	17.7	17.7	0.0	0.0	16.1	0.0	0.0
Lane LOS	C	C			C		
Approach Delay (s)	17.7		0.0		2.1		
Approach LOS	C						

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	54.5%	ICU Level of Service	A
Analysis Period (min)	15		

Moonridge Animal Park
W/O 11-3004
Existing + Ambient + Cumulative

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
EAC-Weekday

Intersection #7: Club View Drive (NS) at Moonridge Road (EW)



Street Name:	Club View Drive (NS)						Moonridge Road (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Volume Module:												
Base Vol:	49	0	7	0	0	0	0	94	51	1	101	0
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	52	0	7	0	0	0	0	100	54	1	107	0
Added Vol:	5	0	0	0	0	0	0	0	4	0	1	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	57	0	7	0	0	0	0	100	58	1	108	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
PHF Volume:	65	0	9	0	0	0	0	115	67	1	124	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	65	0	9	0	0	0	0	115	67	1	124	0
Critical Gap Module:												
Critical Gp:	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	241	241	115	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	181	xxxx	xxxxx
Potent Cap.:	747	660	938	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1394	xxxx	xxxxx
Move Cap.:	747	660	938	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1394	xxxx	xxxxx
Volume/Cap:	0.09	0.00	0.01	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.00	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.6	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	A	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	765	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	0.3	xxxxx	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	0.0	xxxx	xxxxx
Shrd ConDel:	xxxxx	10.2	xxxxx	xxxxx	xxxx	xxxxx	9.0	xxxx	xxxxx	7.6	xxxx	xxxxx
Shared LOS:	*	B	*	*	*	*	A	*	*	A	*	*
ApproachDel:	10.2			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	B			*			*			*		

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Moonridge Animal Park
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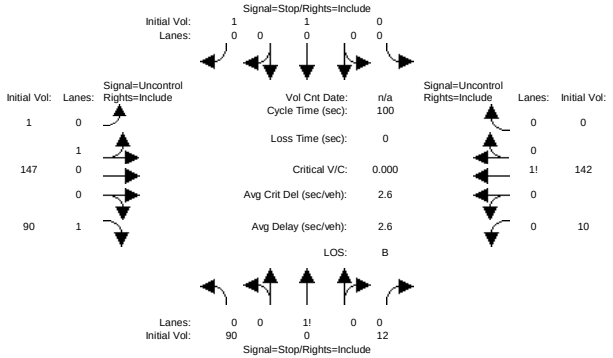
Existing + Ambient + Cumulative

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
EAC-Weekend

Intersection #7: Club View Drive (NS) at Moonridge Road (EW)



Street Name:	Club View Drive (NS)						Moonridge Road (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Volume Module:												
Base Vol:	79	0	11	0	1	1	1	138	80	9	133	0
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	84	0	12	0	1	1	1	146	85	10	141	0
Added Vol:	6	0	0	0	0	0	0	1	5	0	1	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	90	0	12	0	1	1	1	147	90	10	142	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
PHF Volume:	95	0	12	0	1	1	1	157	96	10	151	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	95	0	12	0	1	1	1	157	96	10	151	0
Critical Gap Module:												
Critical Gp:	7.1	6.5	6.2	xxxxx	6.5	6.2	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	xxxxx	4.0	3.3	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	331	330	157	xxxx	426	151	151	xxxx	xxxxx	252	xxxx	xxxxx
Potent Cap.:	622	589	889	xxxx	521	895	1430	xxxx	xxxxx	1313	xxxx	xxxxx
Move Cap.:	616	584	889	xxxx	516	895	1430	xxxx	xxxxx	1313	xxxx	xxxxx
Volume/Cap:	0.15	0.00	0.01	xxxx	0.00	0.00	0.00	xxxx	xxxx	0.01	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.5	xxxx	xxxxx	7.8	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	A	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	639	xxxxx	xxxx	xxxx	655	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	0.6	xxxxx	xxxxx	xxxx	0.0	0.6	xxxx	xxxxx	0.0	xxxx	xxxxx
Shrd ConDel:	xxxxx	11.8	xxxxx	xxxxx	xxxx	10.5	7.5	xxxx	xxxxx	7.8	xxxx	xxxxx
Shared LOS:	*	B	*	*	*	B	A	*	*	A	*	*
ApproachDel:	11.8			10.5			xxxxxx			xxxxxx		
ApproachLOS:	B			B			*			*		

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Moonridge Animal Park
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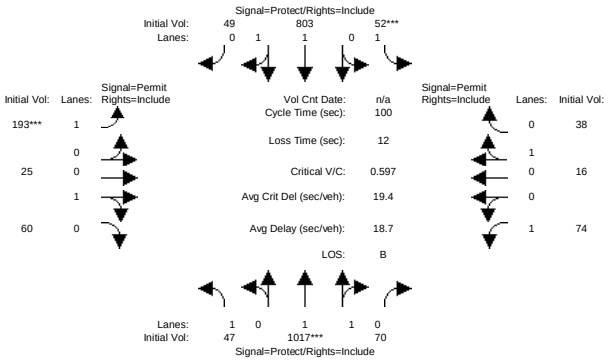
Existing + Ambient + Cumulative

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
EAC-Weekday

Intersection #8: Big Bear Boulevard (SR-18) (NS) at Fox Farm Road (EW)



Street Name:	Big Bear Boulevard (SR-18) (NS)						Fox Farm Road (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module:												
Base Vol:	44	948	59	49	744	46	182	24	57	61	15	36
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	47	1005	63	52	789	49	193	25	60	65	16	38
Added Vol:	0	12	7	0	14	0	0	0	0	9	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	47	1017	70	52	803	49	193	25	60	74	16	38
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
PHF Volume:	51	1105	76	56	872	53	210	28	66	80	17	41
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	51	1105	76	56	872	53	210	28	66	80	17	41
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	51	1105	76	56	872	53	210	28	66	80	17	41
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.93	0.92	0.92	0.93	0.92	0.92	0.71	0.88	0.88	0.68	0.88	0.88
Lanes:	1.00	1.87	0.13	1.00	1.89	0.11	1.00	0.30	0.70	1.00	0.29	0.71
Final Sat.:	1769	3278	224	1769	3305	201	1341	493	1171	1292	490	1175
Capacity Analysis Module:												
Vol/Sat:	0.03	0.34	0.34	0.03	0.26	0.26	0.16	0.06	0.06	0.06	0.04	0.04
Crit Moves:		****		****			****					
Green/Cycle:	0.06	0.56	0.56	0.05	0.56	0.56	0.26	0.26	0.26	0.26	0.26	0.26
Volume/Cap:	0.47	0.60	0.60	0.60	0.47	0.47	0.60	0.21	0.21	0.24	0.13	0.13
Delay/Veh:	48.7	14.8	14.8	56.3	13.5	13.5	35.1	29.1	29.1	29.4	28.4	28.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	48.7	14.8	14.8	56.3	13.5	13.5	35.1	29.1	29.1	29.4	28.4	28.4
LOS by Move:	D	B	B	E	B	B	D	C	C	C	C	C
HCM2kAvgQ:	2	9	9	3	6	6	6	2	2	2	1	1

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Moonridge Animal Park
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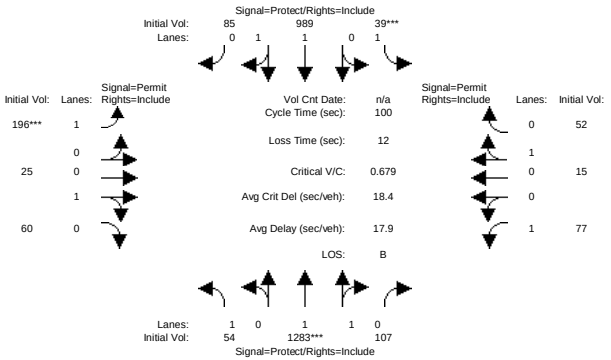
Existing + Ambient + Cumulative

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
EAC-Weekend

Intersection #8: Big Bear Boulevard (SR-18) (NS) at Fox Farm Road (EW)



Street Name:	Big Bear Boulevard (SR-18) (NS)						Fox Farm Road (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module:												
Base Vol:	51	1192	92	37	913	80	185	24	57	63	14	49
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	54	1264	98	39	968	85	196	25	60	67	15	52
Added Vol:	0	19	9	0	21	0	0	0	0	10	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	54	1283	107	39	989	85	196	25	60	77	15	52
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	57	1350	112	41	1041	89	206	27	64	81	16	55
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	57	1350	112	41	1041	89	206	27	64	81	16	55
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	57	1350	112	41	1041	89	206	27	64	81	16	55
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.93	0.92	0.92	0.93	0.92	0.92	0.70	0.88	0.88	0.68	0.87	0.87
Lanes:	1.00	1.85	0.15	1.00	1.84	0.16	1.00	0.30	0.70	1.00	0.22	0.78
Final Sat.:	1769	3227	268	1769	3219	276	1326	493	1171	1294	365	1279
Capacity Analysis Module:												
Vol/Sat:	0.03	0.42	0.42	0.02	0.32	0.32	0.16	0.05	0.05	0.06	0.04	0.04
Crit Moves:		****		****			****					
Green/Cycle:	0.06	0.62	0.62	0.03	0.59	0.59	0.23	0.23	0.23	0.23	0.23	0.23
Volume/Cap:	0.55	0.68	0.68	0.68	0.55	0.55	0.68	0.24	0.24	0.27	0.19	0.19
Delay/Veh:	51.7	13.5	13.5	74.5	12.6	12.6	41.2	31.7	31.7	32.2	31.3	31.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	51.7	13.5	13.5	74.5	12.6	12.6	41.2	31.7	31.7	32.2	31.3	31.3
LOS by Move:	D	B	B	E	B	B	D	C	C	C	C	C
HCM2kAvgQ:	3	11	11	2	7	7	7	2	2	2	2	2

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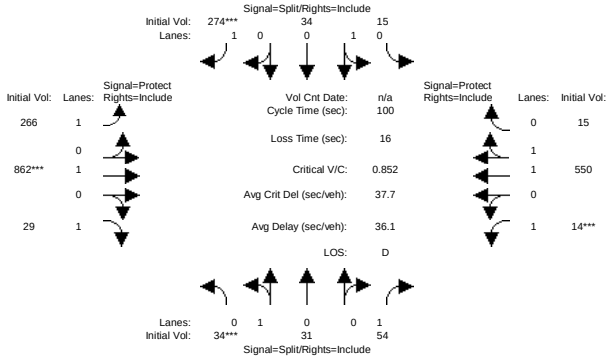
Moonridge Animal Park
W/O 11-3004
Existing + Ambient + Cumulative

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
EAC-Weekday

Intersection #9: Stanield Cutoff (NS) at Big Bear Boulevard (SR-18) (EW)



Street Name:	Stanield Cutoff (NS)						Big Bear Boulevard (SR-18) (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module:												
Base Vol:	32	29	51	14	32	254	246	807	27	13	510	14
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	34	31	54	15	34	269	261	855	29	14	541	15
Added Vol:	0	0	0	0	0	5	5	7	0	0	9	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	34	31	54	15	34	274	266	862	29	14	550	15
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	36	32	57	16	36	289	280	908	30	15	579	16
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	36	32	57	16	36	289	280	908	30	15	579	16
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	36	32	57	16	36	289	280	908	30	15	579	16
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.95	0.83	0.97	0.97	0.83	0.93	0.98	0.83	0.93	0.93	0.93
Lanes:	0.52	0.48	1.00	0.30	0.70	1.00	1.00	1.00	1.00	1.00	1.95	0.05
Final Sat.:	951	862	1583	558	1276	1583	1769	1862	1583	1769	3431	93
Capacity Analysis Module:												
Vol/Sat:	0.04	0.04	0.04	0.03	0.03	0.18	0.16	0.49	0.02	0.01	0.17	0.17
Crit Moves:	****					****		****		****		
Green/Cycle:	0.04	0.04	0.04	0.21	0.21	0.21	0.28	0.57	0.57	0.01	0.30	0.30
Volume/Cap:	0.85	0.85	0.82	0.13	0.13	0.85	0.56	0.85	0.03	0.85	0.56	0.56
Delay/Veh:	101.9	102	97.7	31.9	31.9	56.1	32.1	24.6	9.3	195.2	30.1	30.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	101.9	102	97.7	31.9	31.9	56.1	32.1	24.6	9.3	195.2	30.1	30.1
LOS by Move:	F	F	F	C	C	E	C	C	A	F	C	C
HCM2kAvgQ:	4	4	4	1	1	11	8	26	0	2	9	9

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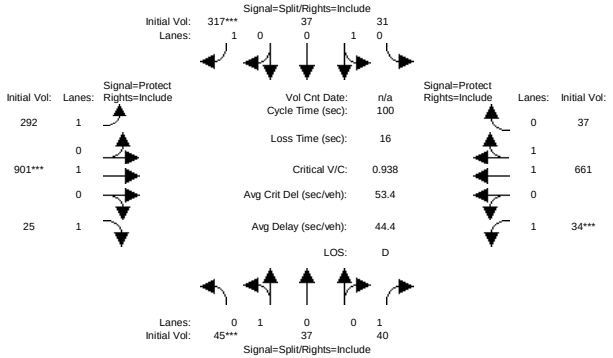
Moonridge Animal Park
W/O 11-3004
Existing + Ambient + Cumulative

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
EAC-Weekend

Intersection #9: Stanield Cutoff (NS) at Big Bear Boulevard (SR-18) (EW)



Street Name:	Stanield Cutoff (NS)						Big Bear Boulevard (SR-18) (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module:												
Base Vol:	42	35	38	29	35	291	268	840	24	32	612	35
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	45	37	40	31	37	308	284	890	25	34	649	37
Added Vol:	0	0	0	0	0	9	8	11	0	0	12	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	45	37	40	31	37	317	292	901	25	34	661	37
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	47	39	42	32	39	334	307	949	27	36	695	39
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	47	39	42	32	39	334	307	949	27	36	695	39
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	47	39	42	32	39	334	307	949	27	36	695	39
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.95	0.83	0.96	0.96	0.83	0.93	0.98	0.83	0.93	0.92	0.92
Lanes:	0.55	0.45	1.00	0.45	0.55	1.00	1.00	1.00	1.00	1.00	1.89	0.11
Final Sat.:	988	824	1583	825	996	1583	1769	1862	1583	1769	3323	187
Capacity Analysis Module:												
Vol/Sat:	0.05	0.05	0.03	0.04	0.04	0.21	0.17	0.51	0.02	0.02	0.21	0.21
Crit Moves:	****					****		****		****		
Green/Cycle:	0.05	0.05	0.05	0.22	0.22	0.22	0.26	0.54	0.54	0.02	0.31	0.31
Volume/Cap:	0.94	0.94	0.53	0.17	0.17	0.94	0.68	0.94	0.03	0.94	0.68	0.68
Delay/Veh:	121.1	121	52.9	31.5	31.5	70.2	37.6	36.9	10.6	169.9	32.0	32.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	121.1	121	52.9	31.5	31.5	70.2	37.6	36.9	10.6	169.9	32.0	32.0
LOS by Move:	F	F	D	C	C	E	D	D	B	F	C	C
HCM2kAvgQ:	5	5	2	2	2	14	10	32	0	3	11	11

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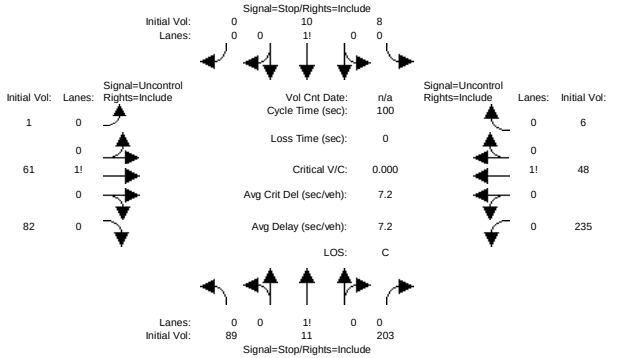
Moonridge Animal Park
W/O 11-3004
Existing + Ambient + Cumulative

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
EAC-Weekday

Intersection #10: Stanfield Cutoff (NS) at North Shore Drive (SR-38)(EW)



Street Name:	Stanfield Cutoff (NS)						North Shore Drive (SR-38) (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Volume Module:												
Base Vol:	82	10	189	8	9	0	1	58	75	219	45	6
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	87	11	200	8	10	0	1	61	80	232	48	6
Added Vol:	2	0	3	0	0	0	0	0	2	3	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	89	11	203	8	10	0	1	61	82	235	48	6
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	94	11	214	9	10	0	1	65	86	248	50	7
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	94	11	214	9	10	0	1	65	86	248	50	7
Critical Gap Module:												
Critical Gp:	7.1	6.5	6.2	7.1	6.5	xxxxx	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	3.5	4.0	xxxxx	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	663	662	108	771	701	xxxxx	57	xxxx	xxxxx	151	xxxx	xxxxx
Potent Cap.:	374	382	946	317	363	xxxxx	1548	xxxx	xxxxx	1431	xxxx	xxxxx
Move Cap.:	308	305	946	202	290	xxxxx	1548	xxxx	xxxxx	1431	xxxx	xxxxx
Volume/Cap:	0.30	0.04	0.23	0.04	0.03	xxxx	0.00	xxxx	xxxx	0.17	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	0.6	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.3	xxxx	xxxxx	8.0	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	A	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	986	xxxxx	240	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	1.4	xxxxx	0.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	10.4	xxxxx	21.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	B	*	C	*	*	*	*	*	*	*	*
ApproachDel:	10.4			21.3			xxxxxx			xxxxxx		
ApproachLOS:	B			C			*			*		

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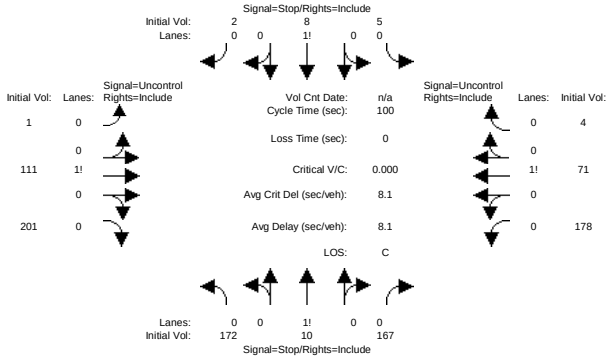
Moonridge Animal Park
W/O 11-3004
Existing + Ambient + Cumulative

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
EAC-Weekend

Intersection #10: Stanfield Cutoff (NS) at North Shore Drive (SR-38)(EW)



Street Name:	Stanfield Cutoff (NS)						North Shore Drive (SR-38) (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Volume Module:												
Base Vol:	159	9	153	5	8	2	1	105	187	163	67	4
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	169	10	162	5	8	2	1	111	198	173	71	4
Added Vol:	3	0	5	0	0	0	0	0	3	5	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	172	10	167	5	8	2	1	111	201	178	71	4
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
PHF Volume:	182	10	178	6	9	2	1	118	214	189	76	5
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	182	10	178	6	9	2	1	118	214	189	76	5
Critical Gap Module:												
Critical Gp:	7.1	6.5	6.2	7.1	6.5	6.2	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	3.5	4.0	3.3	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	689	686	225	778	791	78	80	xxxx	xxxxx	332	xxxx	xxxxx
Potent Cap.:	360	370	814	314	322	983	1518	xxxx	xxxxx	1227	xxxx	xxxxx
Move Cap.:	303	306	814	207	266	983	1518	xxxx	xxxxx	1227	xxxx	xxxxx
Volume/Cap:	0.60	0.03	0.22	0.03	0.03	0.00	0.00	xxxx	xxxx	0.15	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	0.5	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.4	xxxx	xxxxx	8.5	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	A	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	680	xxxxx	xxxx	267	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	3.3	xxxxx	xxxxx	0.2	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	16.4	xxxxx	xxxxx	19.4	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	C	*	*	C	*	*	*	*	*	*	*
ApproachDel:	16.4			19.4			xxxxxx			xxxxxx		
ApproachLOS:	C			C			*			*		

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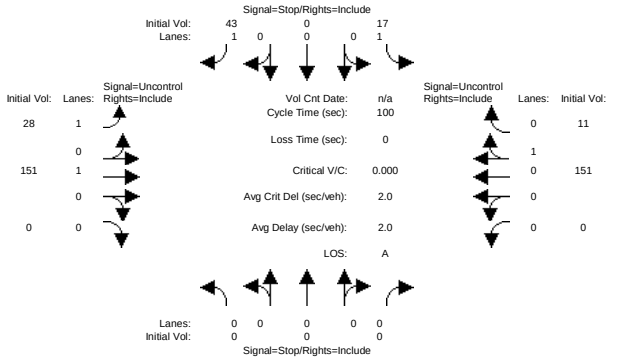
Existing plus Ambient Growth plus Cumulative Projects plus Project Level of Service Calculations

Moonridge Animal Park
W/O 11-3004
Existing + Ambient + Cumulative + Project

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
EACP-Weekday

Intersection #1: North Shore Drive (NS) at Big Bear Boulevard (SR-18) (EW)



Street Name:	North Shore Drive (SR-38) (NS)						Big Bear Boulevard (SR-18) (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Volume Module:												
Base Vol:	0	0	0	12	0	41	26	135	0	0	130	7
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	0	0	0	13	0	43	28	143	0	0	138	7
Added Vol:	0	0	0	4	0	0	0	8	0	0	13	4
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	17	0	43	28	151	0	0	151	11
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
PHF Volume:	0	0	0	19	0	49	31	170	0	0	169	13
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	19	0	49	31	170	0	0	169	13
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	xxxx	6.2	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	xxxx	3.3	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	408	xxxx	176	182	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	600	xxxx	867	1393	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	590	xxxx	867	1393	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.03	xxxx	0.06	0.02	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.1	xxxx	0.2	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	11.3	xxxx	9.4	7.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	B	*	A	A	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			9.9			xxxxxx			xxxxxx		
ApproachLOS:	*			A			*			*		

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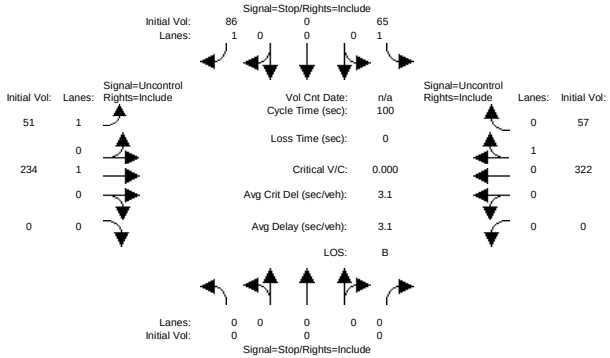
Moonridge Animal Park
W/O 11-3004
Existing + Ambient + Cumulative + Project

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
EACP- Weekend

Intersection #1: North Shore Drive (NS) at Big Bear Boulevard (SR-18) (EW)



Street Name:	North Shore Drive (SR-38) (NS)						Big Bear Boulevard (SR-18) (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Volume Module:												
Base Vol:	0	0	0	57	0	81	48	214	0	0	291	49
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	0	0	0	60	0	86	51	227	0	0	308	52
Added Vol:	0	0	0	5	0	0	0	7	0	0	14	5
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	65	0	86	51	234	0	0	322	57
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
PHF Volume:	0	0	0	72	0	94	56	257	0	0	354	63
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	72	0	94	56	257	0	0	354	63
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	xxxx	6.2	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	xxxx	3.3	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	754	xxxx	386	417	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	377	xxxx	662	1142	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	363	xxxx	662	1142	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.20	xxxx	0.14	0.05	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.7	xxxx	0.5	0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	17.4	xxxx	11.3	8.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	C	*	B	A	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			13.9			xxxxxx			xxxxxx		
ApproachLOS:	*			B			*			*		

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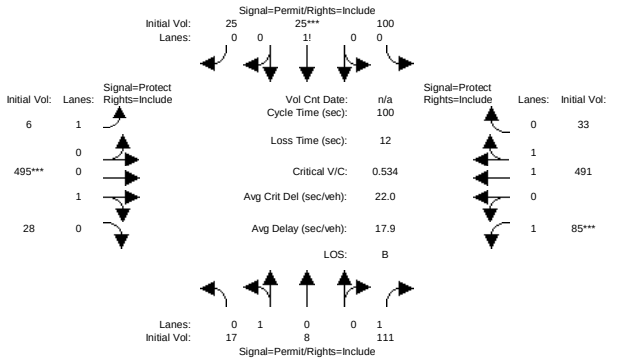
Moonridge Animal Park
W/O 11-3004
Existing + Ambient + Cumulative + Project

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
EACP-Weekday

Intersection #2: Pine Knot Boulevard (NS) at Big Bear Boulevard (SR-18) (EW)



Street Name:	Pine Knot Boulevard (NS)						Big Bear Boulevard (SR-18) (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module:												
Base Vol:	16	8	104	94	24	24	6	445	26	77	426	31
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	17	8	110	100	25	25	6	472	28	82	452	33
Added Vol:	0	0	1	0	0	0	0	23	0	3	39	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	17	8	111	100	25	25	6	495	28	85	491	33
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
PHF Volume:	18	9	120	107	27	27	7	532	30	91	527	35
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	18	9	120	107	27	27	7	532	30	91	527	35
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	18	9	120	107	27	27	7	532	30	91	527	35
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.80	0.80	0.83	0.74	0.74	0.74	0.93	0.97	0.97	0.93	0.92	0.92
Lanes:	0.67	0.33	1.00	0.66	0.17	0.17	1.00	0.95	0.05	1.00	1.87	0.13
Final Sat.:	1015	508	1583	933	238	238	1769	1750	97	1769	3286	220
Capacity Analysis Module:												
Vol/Sat:	0.02	0.02	0.08	0.11	0.11	0.11	0.00	0.30	0.30	0.05	0.16	0.16
Crit Moves:					****			****		****		
Green/Cycle:	0.21	0.21	0.21	0.21	0.21	0.21	0.02	0.57	0.57	0.10	0.65	0.65
Volume/Cap:	0.08	0.08	0.35	0.53	0.53	0.53	0.25	0.53	0.53	0.53	0.25	0.25
Delay/Veh:	31.5	31.5	34.0	36.7	36.7	36.7	53.3	13.9	13.9	46.3	7.4	7.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	31.5	31.5	34.0	36.7	36.7	36.7	53.3	13.9	13.9	46.3	7.4	7.4
LOS by Move:	C	C	C	D	D	D	D	B	B	D	A	A
HCM2kAvgQ:	1	1	3	5	5	5	0	7	7	3	2	2

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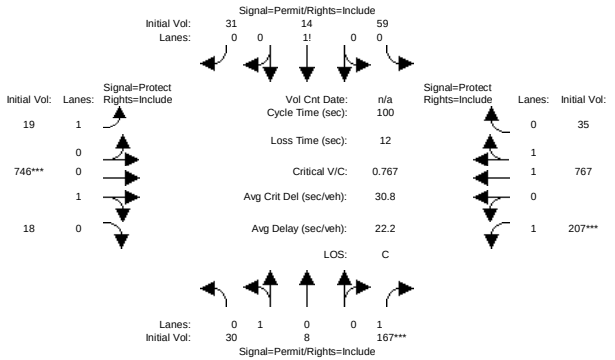
Moonridge Animal Park
W/O 11-3004
Existing + Ambient + Cumulative + Project

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
EACP- Weekend

Intersection #2: Pine Knot Boulevard (NS) at Big Bear Boulevard (SR-18) (EW)



Street Name:	Pine Knot Boulevard (NS)						Big Bear Boulevard (SR-18) (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module:												
Base Vol:	28	8	157	56	13	29	18	677	17	192	688	33
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	30	8	166	59	14	31	19	718	18	204	729	35
Added Vol:	0	0	1	0	0	0	0	28	0	3	38	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	30	8	167	59	14	31	19	746	18	207	767	35
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
PHF Volume:	32	9	178	63	15	33	20	793	19	220	816	37
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	32	9	178	63	15	33	20	793	19	220	816	37
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	32	9	178	63	15	33	20	793	19	220	816	37
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.76	0.76	0.83	0.75	0.75	0.75	0.93	0.98	0.98	0.93	0.92	0.92
Lanes:	0.78	0.22	1.00	0.57	0.13	0.30	1.00	0.98	0.02	1.00	1.91	0.09
Final Sat.:	1118	319	1583	813	189	421	1769	1811	44	1769	3360	153
Capacity Analysis Module:												
Vol/Sat:	0.03	0.03	0.11	0.08	0.08	0.08	0.01	0.44	0.44	0.12	0.24	0.24
Crit Moves:			****					****		****		
Green/Cycle:	0.15	0.15	0.15	0.15	0.15	0.15	0.03	0.57	0.57	0.16	0.70	0.70
Volume/Cap:	0.19	0.19	0.77	0.53	0.53	0.53	0.35	0.77	0.77	0.77	0.35	0.35
Delay/Veh:	37.9	37.9	55.2	42.0	42.0	42.0	50.8	19.8	19.8	51.9	6.0	6.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	37.9	37.9	55.2	42.0	42.0	42.0	50.8	19.8	19.8	51.9	6.0	6.0
LOS by Move:	D	D	E	D	D	D	D	B	B	D	A	A
HCM2kAvgQ:	1	1	7	4	4	4	1	16	16	8	2	2

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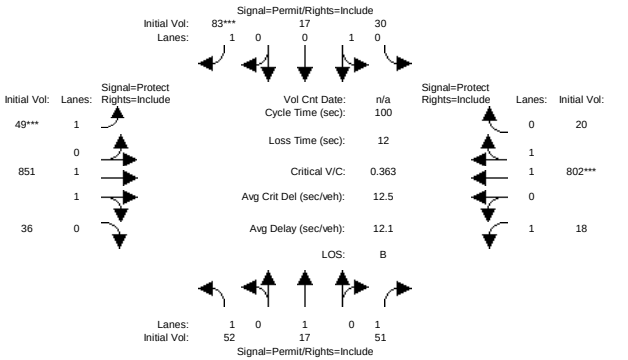
Moonridge Animal Park
W/O 11-3004
Existing + Ambient + Cumulative + Project

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
EACP-Weekday

Intersection #3: Summit Boulevard (NS) at Big Bear Boulevard (SR-18) (EW)



Street Name:	Summit Boulevard (NS)						Big Bear Boulevard (SR-18) (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module:												
Base Vol:	41	15	48	28	15	75	44	775	28	16	710	19
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	43	16	51	30	16	80	47	822	30	17	753	20
Added Vol:	9	1	0	0	1	3	2	29	6	1	49	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	52	17	51	30	17	83	49	851	36	18	802	20
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
PHF Volume:	54	17	52	30	17	84	50	868	36	18	818	21
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	54	17	52	30	17	84	50	868	36	18	818	21
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	54	17	52	30	17	84	50	868	36	18	818	21
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.71	0.98	0.83	0.81	0.81	0.83	0.93	0.93	0.93	0.93	0.93	0.93
Lanes:	1.00	1.00	1.00	0.64	0.36	1.00	1.00	1.92	0.08	1.00	1.95	0.05
Final Sat.:	1357	1862	1583	980	558	1583	1769	3375	142	1769	3437	86
Capacity Analysis Module:												
Vol/Sat:	0.04	0.01	0.03	0.03	0.03	0.05	0.03	0.26	0.26	0.01	0.24	0.24
Crit Moves:						****	****				****	
Green/Cycle:	0.15	0.15	0.15	0.15	0.15	0.15	0.08	0.70	0.70	0.03	0.66	0.66
Volume/Cap:	0.27	0.06	0.22	0.21	0.21	0.36	0.36	0.36	0.36	0.36	0.36	0.36
Delay/Veh:	38.6	36.8	38.1	38.0	38.0	39.4	45.4	6.0	6.0	52.2	7.9	7.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	38.6	36.8	38.1	38.0	38.0	39.4	45.4	6.0	6.0	52.2	7.9	7.9
LOS by Move:	D	D	D	D	D	D	D	A	A	D	A	A
HCM2kAvgQ:	2	0	2	1	1	3	2	2	2	1	3	3

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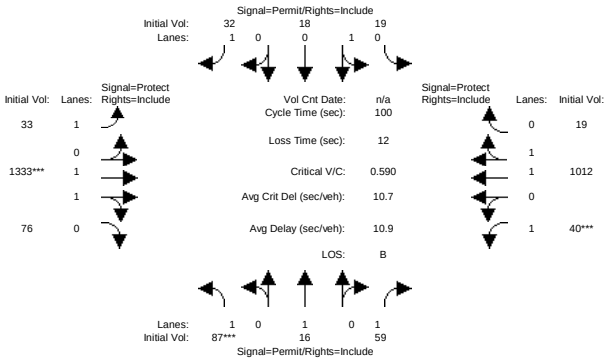
Moonridge Animal Park
W/O 11-3004
Existing + Ambient + Cumulative + Project

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
EACP- Weekend

Intersection #3: Summit Boulevard (NS) at Big Bear Boulevard (SR-18) (EW)



Street Name:	Summit Boulevard (NS)						Big Bear Boulevard (SR-18) (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module:												
Base Vol:	73	13	56	17	15	27	28	1221	63	37	901	18
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	77	14	59	18	16	29	30	1294	67	39	955	19
Added Vol:	10	2	0	1	2	3	3	39	9	1	57	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	87	16	59	19	18	32	33	1333	76	40	1012	19
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
PHF Volume:	93	17	63	20	19	34	35	1418	81	43	1077	20
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	93	17	63	20	19	34	35	1418	81	43	1077	20
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	93	17	63	20	19	34	35	1418	81	43	1077	20
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.72	0.98	0.83	0.84	0.84	0.83	0.93	0.92	0.92	0.93	0.93	0.93
Lanes:	1.00	1.00	1.00	0.52	0.48	1.00	1.00	1.89	0.11	1.00	1.96	0.04
Final Sat.:	1370	1862	1583	822	774	1583	1769	3321	189	1769	3462	65
Capacity Analysis Module:												
Vol/Sat:	0.07	0.01	0.04	0.02	0.02	0.02	0.02	0.43	0.43	0.02	0.31	0.31
Crit Moves:	****							****		****		
Green/Cycle:	0.11	0.11	0.11	0.11	0.11	0.11	0.05	0.72	0.72	0.04	0.72	0.72
Volume/Cap:	0.59	0.08	0.35	0.21	0.21	0.18	0.43	0.59	0.59	0.59	0.43	0.43
Delay/Veh:	47.8	39.7	41.9	40.7	40.7	40.5	50.2	7.0	7.0	59.3	5.8	5.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	47.8	39.7	41.9	40.7	40.7	40.5	50.2	7.0	7.0	59.3	5.8	5.8
LOS by Move:	D	D	D	D	D	D	D	A	A	E	A	A
HCM2kAvgQ:	4	1	2	1	1	1	2	3	3	2	2	2

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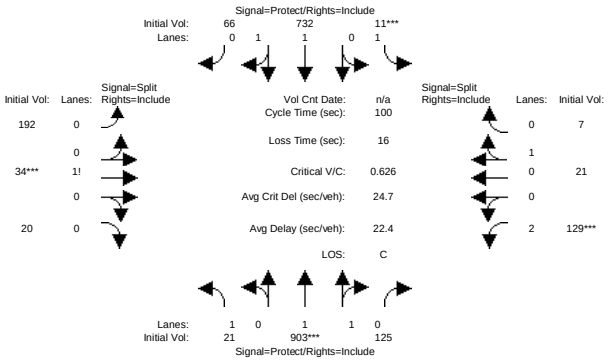
Moonridge Animal Park
W/O 11-3004
Existing + Ambient + Cumulative + Project

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
EACP-Weekday

Intersection #4: Big Bear Boulevard (SR-18) (NS) at Moonridge Road (EW)



Street Name:	Big Bear Boulevard (SR-18) (NS)						Moonridge Road (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module:												
Base Vol:	20	836	106	10	670	60	179	32	19	94	20	7
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	21	886	112	11	710	64	190	34	20	100	21	7
Added Vol:	0	17	13	0	22	2	2	0	0	29	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	21	903	125	11	732	66	192	34	20	129	21	7
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
PHF Volume:	23	992	138	12	805	72	211	37	22	141	23	8
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	23	992	138	12	805	72	211	37	22	141	23	8
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	23	992	138	12	805	72	211	37	22	141	23	8
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.93	0.91	0.91	0.93	0.92	0.92	0.93	0.93	0.93	0.90	0.94	0.94
Lanes:	1.00	1.76	0.24	1.00	1.84	0.16	0.78	0.14	0.08	2.00	0.74	0.26
Final Sat.:	1769	3051	423	1769	3208	287	1382	244	145	3432	1325	464
Capacity Analysis Module:												
Vol/Sat:	0.01	0.33	0.33	0.01	0.25	0.25	0.15	0.15	0.15	0.04	0.02	0.02
Crit Moves:		****		****				****		****		
Green/Cycle:	0.03	0.52	0.52	0.01	0.50	0.50	0.24	0.24	0.24	0.07	0.07	0.07
Volume/Cap:	0.50	0.63	0.63	0.63	0.50	0.50	0.63	0.63	0.63	0.63	0.27	0.27
Delay/Veh:	56.1	17.8	17.8	101.3	16.6	16.6	36.6	36.6	36.6	50.9	45.6	45.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	56.1	17.8	17.8	101.3	16.6	16.6	36.6	36.6	36.6	50.9	45.6	45.6
LOS by Move:	E	B	B	F	B	B	D	D	D	D	D	D
HCM2kAvgQ:	1	11	11	1	7	7	8	8	8	3	1	1

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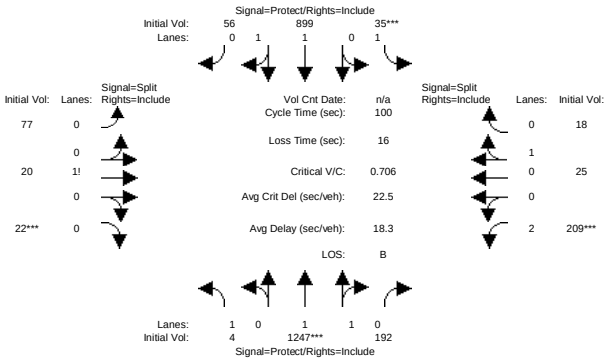
Moonridge Animal Park
W/O 11-3004
Existing + Ambient + Cumulative + Project

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
EACP- Weekend

Intersection #4: Big Bear Boulevard (SR-18) (NS) at Moonridge Road (EW)



Street Name:	Big Bear Boulevard (SR-18) (NS)						Moonridge Road (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module:												
Base Vol:	4	1153	168	33	822	51	70	18	21	168	23	17
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	4	1222	178	35	871	54	74	19	22	178	24	18
Added Vol:	0	25	14	0	28	2	3	1	0	31	1	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	4	1247	192	35	899	56	77	20	22	209	25	18
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	4	1313	202	37	947	59	81	21	23	220	27	19
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	4	1313	202	37	947	59	81	21	23	220	27	19
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	4	1313	202	37	947	59	81	21	23	220	27	19
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.93	0.91	0.91	0.93	0.92	0.92	0.93	0.93	0.93	0.90	0.92	0.92
Lanes:	1.00	1.73	0.27	1.00	1.88	0.12	0.64	0.17	0.19	2.00	0.58	0.42
Final Sat.:	1769	3004	463	1769	3300	206	1136	296	328	3432	1021	725
Capacity Analysis Module:												
Vol/Sat:	0.00	0.44	0.44	0.02	0.29	0.29	0.07	0.07	0.07	0.06	0.03	0.03
Crit Moves:		****		****						****	****	
Green/Cycle:	0.01	0.62	0.62	0.03	0.64	0.64	0.10	0.10	0.10	0.09	0.09	0.09
Volume/Cap:	0.45	0.71	0.71	0.71	0.45	0.45	0.71	0.71	0.71	0.71	0.29	0.29
Delay/Veh:	78.2	14.0	14.0	84.0	9.1	9.1	55.7	55.7	55.7	51.4	43.5	43.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	78.2	14.0	14.0	84.0	9.1	9.1	55.7	55.7	55.7	51.4	43.5	43.5
LOS by Move:	E	B	B	F	A	A	E	E	E	D	D	D
HCM2kAvgQ:	1	12	12	2	4	4	5	5	5	5	2	2

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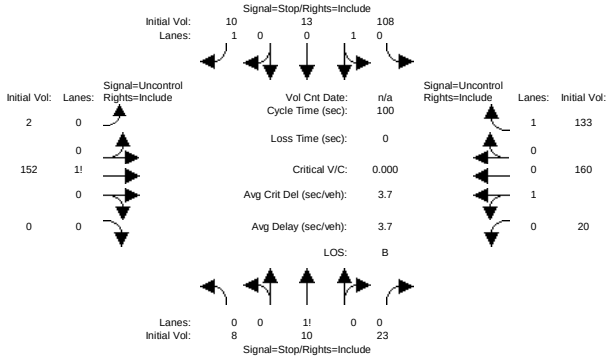
Moonridge Animal Park
W/O 11-3004
Existing + Ambient + Cumulative + Project

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
EACP-Weekday

Intersection #5: Moonridge Way - Brownie Lane (NS) at Moonridge Road (EW)



Street Name:	Moonridge Way - Brownie Lane (NS)						Moonridge Road (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Volume Module:												
Base Vol:	8	9	22	94	12	9	2	131	0	19	124	106
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	8	10	23	100	13	10	2	139	0	20	131	112
Added Vol:	0	0	0	8	0	0	0	13	0	0	29	21
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	8	10	23	108	13	10	2	152	0	20	160	133
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
PHF Volume:	9	10	25	115	14	10	2	162	0	21	171	142
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	9	10	25	115	14	10	2	162	0	21	171	142
Critical Gap Module:												
Critical Gp:	7.1	6.5	6.2	7.1	6.5	6.2	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	3.5	4.0	3.3	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	462	521	162	397	380	171	313	xxxx	xxxxx	162	xxxx	xxxxx
Potent Cap.:	510	460	883	563	553	873	1248	xxxx	xxxxx	1417	xxxx	xxxxx
Move Cap.:	488	452	883	531	543	873	1248	xxxx	xxxxx	1417	xxxx	xxxxx
Volume/Cap:	0.02	0.02	0.03	0.22	0.02	0.01	0.00	xxxx	xxxx	0.02	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	0.0	0.0	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	9.2	7.9	xxxx	xxxxx	7.6	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	A	A	*	*	A	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	637	xxxxx	532	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	0.2	xxxxx	0.9	xxxx	xxxxx	0.0	xxxx	xxxxx	0.0	xxxx	xxxxx
Shrd ConDel:	xxxxx	11.1	xxxxx	13.9	xxxx	xxxxx	7.9	xxxx	xxxxx	7.6	xxxx	xxxxx
Shared LOS:	*	B	*	B	*	*	A	*	*	A	*	*
ApproachDel:	11.1			13.5			xxxxxx			xxxxxx		
ApproachLOS												

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Moonridge Animal Park
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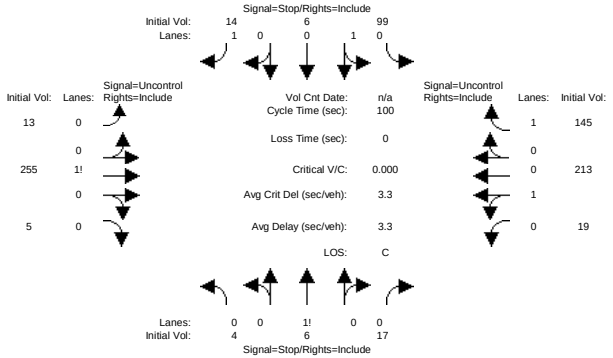
Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
EACP- Weekend

Intersection #5: Moonridge Way - Brownie Lane (NS) at Moonridge Road (EW)



Street Name:	Moonridge Way - Brownie Lane (NS)						Moonridge Road (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Volume Module:												
Base Vol:	4	6	16	86	6	13	12	226	5	18	172	116
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	4	6	17	91	6	14	13	240	5	19	182	123
Added Vol:	0	0	0	8	0	0	0	15	0	0	31	22
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	4	6	17	99	6	14	13	255	5	19	213	145
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
PHF Volume:	5	7	19	109	7	15	14	280	6	21	234	159
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	5	7	19	109	7	15	14	280	6	21	234	159
Critical Gap Module:												
Critical Gp:	7.1	6.5	6.2	7.1	6.5	6.2	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	3.5	4.0	3.3	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	678	746	283	600	590	234	394	xxxx	xxxxx	286	xxxx	xxxxx
Potent Cap.:	366	342	756	413	420	805	1165	xxxx	xxxxx	1277	xxxx	xxxxx
Move Cap.:	347	332	756	388	408	805	1165	xxxx	xxxxx	1277	xxxx	xxxxx
Volume/Cap:	0.01	0.02	0.02	0.28	0.02	0.02	0.01	xxxx	xxxx	0.02	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	0.1	0.0	xxxx	xxxxx	0.1	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	9.6	8.1	xxxx	xxxxx	7.9	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	A	A	*	*	A	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	512	xxxxx	389	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	0.2	xxxxx	1.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.1	xxxx	xxxxx
Shrd ConDel:	xxxxx	12.5	xxxxx	18.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.9	xxxx	xxxxx
Shared LOS:	*	B	*	C	*	*	*	*	*	A	*	*
ApproachDel:	12.5			17.2			xxxxxx			xxxxxx		
ApproachLOS:	B			C			*			*		

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HCM Unsignalized Intersection Capacity Analysis
6: Moonridge Way & Big Bear Boulevard (SR-18) 9/26/2012

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	169	1097	13	116	801
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	186	1205	14	127	880
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1908	610			1220	
vC1, stage 1 conf vol	1213					
vC2, stage 2 conf vol	695					
vCu, unblocked vol	1908	610			1220	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	58			78	
cM capacity (veh/h)	200	437			567	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	93	93	804	416	127	440	440
Volume Left	0	0	0	0	127	0	0
Volume Right	93	93	0	14	0	0	0
cSH	437	437	1700	1700	567	1700	1700
Volume to Capacity	0.21	0.21	0.47	0.24	0.22	0.26	0.26
Queue Length 95th (ft)	20	20	0	0	21	0	0
Control Delay (s)	15.4	15.4	0.0	0.0	13.2	0.0	0.0
Lane LOS	C	C			B		
Approach Delay (s)	15.4		0.0		1.7		
Approach LOS	C						

Intersection Summary				
Average Delay	1.9			
Intersection Capacity Utilization	45.9%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
6: Moonridge Way & Big Bear Boulevard (SR-18) 9/26/2012

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	202	1338	5	155	1003
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	213	1408	5	163	1056
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2265	707			1414	
vC1, stage 1 conf vol	1411					
vC2, stage 2 conf vol	854					
vCu, unblocked vol	2265	707			1414	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	44			66	
cM capacity (veh/h)	147	378			478	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	106	106	939	475	163	528	528
Volume Left	0	0	0	0	163	0	0
Volume Right	106	106	0	5	0	0	0
cSH	378	378	1700	1700	478	1700	1700
Volume to Capacity	0.28	0.28	0.55	0.28	0.34	0.31	0.31
Queue Length 95th (ft)	28	28	0	0	37	0	0
Control Delay (s)	18.2	18.2	0.0	0.0	16.4	0.0	0.0
Lane LOS	C	C			C		
Approach Delay (s)	18.2		0.0		2.2		
Approach LOS	C						

Intersection Summary				
Average Delay	2.3			
Intersection Capacity Utilization	54.9%	ICU Level of Service		A
Analysis Period (min)	15			

Moonridge Animal Park
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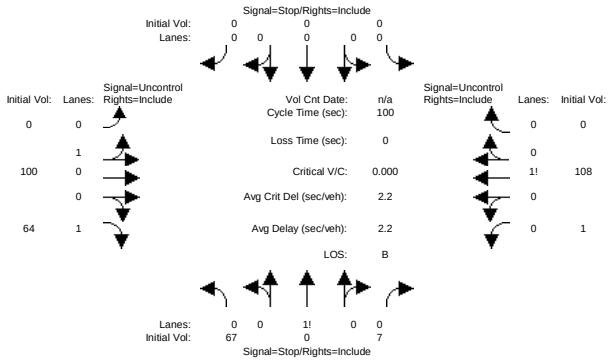
Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
EACP-Weekday

Intersection #7: Club View Drive (NS) at Moonridge Road (EW)



Street Name:	Club View Drive (NS)						Moonridge Road (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Volume Module:												
Base Vol:	49	0	7	0	0	0	0	94	51	1	101	0
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	52	0	7	0	0	0	0	100	54	1	107	0
Added Vol:	15	0	0	0	0	0	0	0	10	0	1	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	67	0	7	0	0	0	0	100	64	1	108	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
PHF Volume:	77	0	9	0	0	0	0	115	74	1	124	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	77	0	9	0	0	0	0	115	74	1	124	0
Critical Gap Module:												
Critical Gp:	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	241	241	115	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	188	xxxx	xxxxx
Potent Cap.:	747	660	938	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1386	xxxx	xxxxx
Move Cap.:	747	660	938	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1386	xxxx	xxxxx
Volume/Cap:	0.10	0.00	0.01	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.00	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.6	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	A	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	762	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	0.4	xxxxx	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	0.0	xxxx	xxxxx
Shrd ConDel:	xxxxx	10.3	xxxxx	xxxxx	xxxx	xxxxx	9.0	xxxx	xxxxx	7.6	xxxx	xxxxx
Shared LOS:	*	B	*	*	*	*	A	*	*	A	*	*
ApproachDel:	10.3			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	B			*			*			*		

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Moonridge Animal Park
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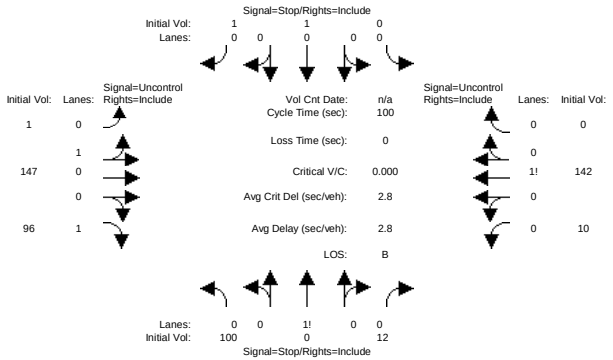
Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
EACP- Weekend

Intersection #7: Club View Drive (NS) at Moonridge Road (EW)



Street Name:	Club View Drive (NS)						Moonridge Road (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Volume Module:												
Base Vol:	79	0	11	0	1	1	1	138	80	9	133	0
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	84	0	12	0	1	1	1	146	85	10	141	0
Added Vol:	16	0	0	0	0	0	0	1	11	0	1	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	100	0	12	0	1	1	1	147	96	10	142	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
PHF Volume:	106	0	12	0	1	1	1	157	102	10	151	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	106	0	12	0	1	1	1	157	102	10	151	0
Critical Gap Module:												
Critical Gp:	7.1	6.5	6.2	xxxxx	6.5	6.2	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	xxxxx	4.0	3.3	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	331	330	157	xxxx	432	151	151	xxxx	xxxxx	259	xxxx	xxxxx
Potent Cap.:	622	589	889	xxxx	516	895	1430	xxxx	xxxxx	1306	xxxx	xxxxx
Move Cap.:	616	584	889	xxxx	512	895	1430	xxxx	xxxxx	1306	xxxx	xxxxx
Volume/Cap:	0.17	0.00	0.01	xxxx	0.00	0.00	0.00	xxxx	xxxx	0.01	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.5	xxxx	xxxxx	7.8	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	A	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	637	xxxxx	xxxx	xxxx	651	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	0.7	xxxxx	xxxxx	xxxx	0.0	0.0	xxxx	xxxxx	0.0	xxxx	xxxxx
Shrd ConDel:	xxxxx	11.9	xxxxx	xxxxx	xxxx	10.5	7.5	xxxx	xxxxx	7.8	xxxx	xxxxx
Shared LOS:	*	B	*	*	*	B	A	*	*	A	*	*
ApproachDel:	11.9			10.5			xxxxxx			xxxxxx		
ApproachLOS:	B			B			*			*		

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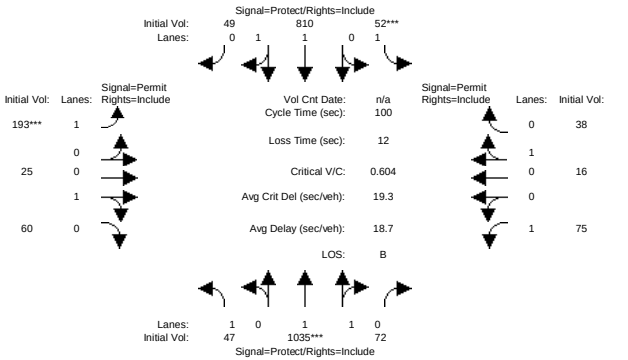
Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
EACP-Weekday

Intersection #8: Big Bear Boulevard (SR-18) (NS) at Fox Farm Road (EW)



Street Name:	Big Bear Boulevard (SR-18) (NS)						Fox Farm Road (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module:												
Base Vol:	44	948	59	49	744	46	182	24	57	61	15	36
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	47	1005	63	52	789	49	193	25	60	65	16	38
Added Vol:	0	30	9	0	21	0	0	0	0	10	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	47	1035	72	52	810	49	193	25	60	75	16	38
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
PHF Volume:	51	1125	78	56	880	53	210	28	66	81	17	41
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	51	1125	78	56	880	53	210	28	66	81	17	41
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	51	1125	78	56	880	53	210	28	66	81	17	41
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.93	0.92	0.92	0.93	0.92	0.92	0.71	0.88	0.88	0.68	0.88	0.88
Lanes:	1.00	1.87	0.13	1.00	1.89	0.11	1.00	0.30	0.70	1.00	0.29	0.71
Final Sat.:	1769	3276	226	1769	3307	199	1341	493	1171	1292	490	1175
Capacity Analysis Module:												
Vol/Sat:	0.03	0.34	0.34	0.03	0.27	0.27	0.16	0.06	0.06	0.06	0.04	0.04
Crit Moves:		****		****			****					
Green/Cycle:	0.06	0.57	0.57	0.05	0.56	0.56	0.26	0.26	0.26	0.26	0.26	0.26
Volume/Cap:	0.47	0.60	0.60	0.60	0.47	0.47	0.60	0.22	0.22	0.24	0.14	0.14
Delay/Veh:	48.7	14.7	14.7	57.1	13.3	13.3	35.6	29.3	29.3	29.7	28.6	28.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	48.7	14.7	14.7	57.1	13.3	13.3	35.6	29.3	29.3	29.7	28.6	28.6
LOS by Move:	D	B	B	E	B	B	D	C	C	C	C	C
HCM2kAvgQ:	2	9	9	3	6	6	7	2	2	2	1	1

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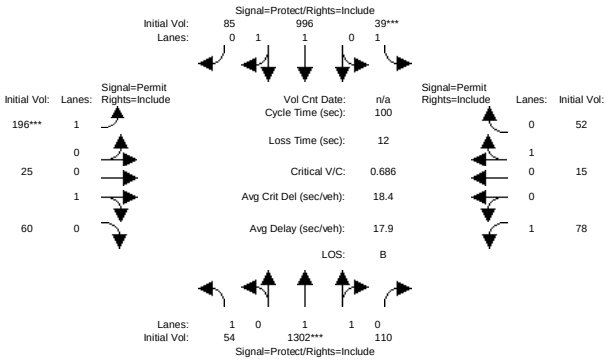
Existing + Ambient + Cumulative + Project

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
EACP- Weekend

Intersection #8: Big Bear Boulevard (SR-18) (NS) at Fox Farm Road (EW)



Street Name:	Big Bear Boulevard (SR-18) (NS)						Fox Farm Road (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module:												
Base Vol:	51	1192	92	37	913	80	185	24	57	63	14	49
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	54	1264	98	39	968	85	196	25	60	67	15	52
Added Vol:	0	38	12	0	28	0	0	0	0	11	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	54	1302	110	39	996	85	196	25	60	78	15	52
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	57	1370	115	41	1048	89	206	27	64	82	16	55
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	57	1370	115	41	1048	89	206	27	64	82	16	55
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	57	1370	115	41	1048	89	206	27	64	82	16	55
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.93	0.92	0.92	0.93	0.92	0.92	0.70	0.88	0.88	0.68	0.87	0.87
Lanes:	1.00	1.84	0.16	1.00	1.84	0.16	1.00	0.30	0.70	1.00	0.22	0.78
Final Sat.:	1769	3224	271	1769	3221	274	1326	493	1171	1294	365	1279
Capacity Analysis Module:												
Vol/Sat:	0.03	0.42	0.42	0.02	0.33	0.33	0.16	0.05	0.05	0.06	0.04	0.04
Crit Moves:		****		****			****					
Green/Cycle:	0.06	0.62	0.62	0.03	0.59	0.59	0.23	0.23	0.23	0.23	0.23	0.23
Volume/Cap:	0.55	0.69	0.69	0.69	0.55	0.55	0.69	0.24	0.24	0.28	0.19	0.19
Delay/Veh:	51.8	13.5	13.5	76.0	12.5	12.5	41.9	31.9	31.9	32.4	31.5	31.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	51.8	13.5	13.5	76.0	12.5	12.5	41.9	31.9	31.9	32.4	31.5	31.5
LOS by Move:	D	B	B	E	B	B	D	C	C	C	C	C
HCM2kAvgQ:	3	11	11	3	7	7	7	2	2	2	2	2

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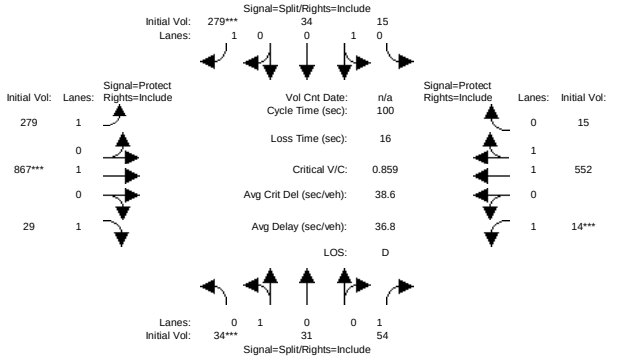
Moonridge Animal Park
W/O 11-3004
Existing + Ambient + Cumulative + Project

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
EACP-Weekday

Intersection #9: Stanield Cutoff (NS) at Big Bear Boulevard (SR-18) (EW)



Street Name:	Stanield Cutoff (NS)						Big Bear Boulevard (SR-18) (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module:												
Base Vol:	32	29	51	14	32	254	246	807	27	13	510	14
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	34	31	54	15	34	269	261	855	29	14	541	15
Added Vol:	0	0	0	0	0	10	18	12	0	0	11	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	34	31	54	15	34	279	279	867	29	14	552	15
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	36	32	57	16	36	294	293	913	30	15	581	16
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	36	32	57	16	36	294	293	913	30	15	581	16
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	36	32	57	16	36	294	293	913	30	15	581	16
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.95	0.83	0.97	0.97	0.83	0.93	0.98	0.83	0.93	0.93	0.93
Lanes:	0.52	0.48	1.00	0.30	0.70	1.00	1.00	1.00	1.00	1.00	1.95	0.05
Final Sat.:	951	862	1583	558	1276	1583	1769	1862	1583	1769	3431	92
Capacity Analysis Module:												
Vol/Sat:	0.04	0.04	0.04	0.03	0.03	0.19	0.17	0.49	0.02	0.01	0.17	0.17
Crit Moves:	****					****		****		****		
Green/Cycle:	0.04	0.04	0.04	0.22	0.22	0.22	0.29	0.57	0.57	0.01	0.29	0.29
Volume/Cap:	0.86	0.86	0.82	0.13	0.13	0.86	0.58	0.86	0.03	0.86	0.58	0.58
Delay/Veh:	104.2	104	99.9	31.8	31.8	56.9	32.1	25.3	9.4	199.3	30.9	30.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	104.2	104	99.9	31.8	31.8	56.9	32.1	25.3	9.4	199.3	30.9	30.9
LOS by Move:	F	F	F	C	C	E	C	C	A	F	C	C
HCM2kAvgQ:	4	4	4	1	1	12	8	26	0	2	9	9

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Moonridge Animal Park
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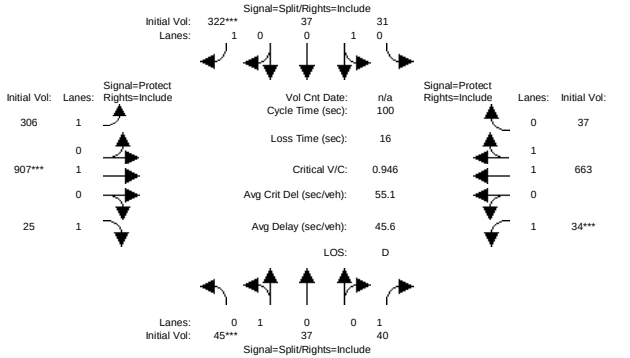
Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
EACP- Weekend

Intersection #9: Stanield Cutoff (NS) at Big Bear Boulevard (SR-18) (EW)



Street Name:	Stanield Cutoff (NS)						Big Bear Boulevard (SR-18) (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module:												
Base Vol:	42	35	38	29	35	291	268	840	24	32	612	35
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	45	37	40	31	37	308	284	890	25	34	649	37
Added Vol:	0	0	0	0	0	14	22	17	0	0	14	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	45	37	40	31	37	322	306	907	25	34	663	37
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	47	39	42	32	39	339	322	955	27	36	698	39
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	47	39	42	32	39	339	322	955	27	36	698	39
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	47	39	42	32	39	339	322	955	27	36	698	39
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.95	0.83	0.96	0.96	0.83	0.93	0.98	0.83	0.93	0.92	0.92
Lanes:	0.55	0.45	1.00	0.45	0.55	1.00	1.00	1.00	1.00	1.00	1.89	0.11
Final Sat.:	988	824	1583	825	996	1583	1769	1862	1583	1769	3323	186
Capacity Analysis Module:												
Vol/Sat:	0.05	0.05	0.03	0.04	0.04	0.21	0.18	0.51	0.02	0.02	0.21	0.21
Crit Moves:	****					****		****		****		
Green/Cycle:	0.05	0.05	0.05	0.23	0.23	0.23	0.26	0.54	0.54	0.02	0.30	0.30
Volume/Cap:	0.95	0.95	0.53	0.17	0.17	0.95	0.70	0.95	0.03	0.95	0.70	0.70
Delay/Veh:	124.0	124	53.3	31.3	31.3	71.9	37.9	38.5	10.7	173.7	32.9	32.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	124.0	124	53.3	31.3	31.3	71.9	37.9	38.5	10.7	173.7	32.9	32.9
LOS by Move:	F	F	D	C	C	E	D	D	B	F	C	C
HCM2kAvgQ:	5	5	2	2	2	15	10	33	0	3	12	12

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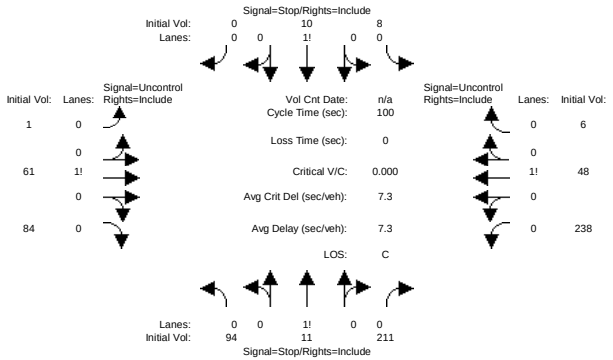
Moonridge Animal Park
W/O 11-3004
Existing + Ambient + Cumulative + Project

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
EACP-Weekday

Intersection #10: Stanfield Cutoff (NS) at North Shore Drive (SR-38)(EW)



Street Name:	Stanfield Cutoff (NS)						North Shore Drive (SR-38) (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Volume Module:												
Base Vol:	82	10	189	8	9	0	1	58	75	219	45	6
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	87	11	200	8	10	0	1	61	80	232	48	6
Added Vol:	7	0	11	0	0	0	0	0	4	6	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	94	11	211	8	10	0	1	61	84	238	48	6
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	99	11	222	9	10	0	1	65	88	251	50	7
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	99	11	222	9	10	0	1	65	88	251	50	7
Critical Gap Module:												
Critical Gp:	7.1	6.5	6.2	7.1	6.5	xxxxx	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	3.5	4.0	xxxxx	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	671	669	109	783	710	xxxxx	57	xxxx	xxxxx	153	xxxx	xxxxx
Potent Cap.:	370	379	945	311	359	xxxxx	1548	xxxx	xxxxx	1428	xxxx	xxxxx
Move Cap.:	304	301	945	195	285	xxxxx	1548	xxxx	xxxxx	1428	xxxx	xxxxx
Volume/Cap:	0.33	0.04	0.24	0.05	0.04	xxxx	0.00	xxxx	xxxx	0.18	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	0.6	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.3	xxxx	xxxxx	8.1	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	A	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	984	xxxxx	234	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	1.5	xxxxx	0.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	10.5	xxxxx	21.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	B	*	C	*	*	*	*	*	*	*	*
ApproachDel:	10.5			21.7			xxxxxx			xxxxxx		
ApproachLOS:	B			C			*			*		

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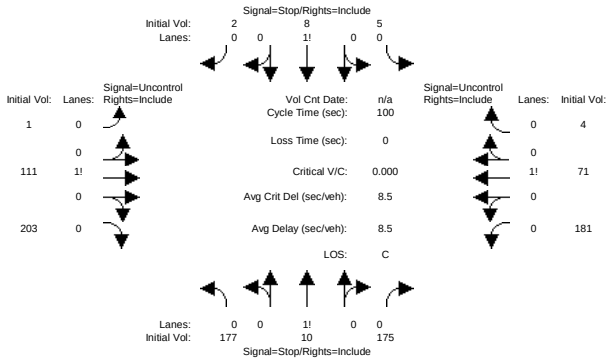

Street Name:	Stanfield Cutoff (NS)						North Shore Drive (SR-38) (EW)					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Volume Module:												
Base Vol:	159	9	153	5	8	2	1	105	187	163	67	4
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	169	10	162	5	8	2	1	111	198	173	71	4
Added Vol:	8	0	13	0	0	0	0	0	5	8	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	177	10	175	5	8	2	1	111	203	181	71	4
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
PHF Volume:	188	10	186	6	9	2	1	118	216	192	76	5
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	188	10	186	6	9	2	1	118	216	192	76	5
Critical Gap Module:												
Critical Gp:	7.1	6.5	6.2	7.1	6.5	6.2	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	3.5	4.0	3.3	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	697	693	227	789	799	78	80	xxxx	xxxxx	335	xxxx	xxxxx
Potent Cap.:	356	367	813	308	318	983	1518	xxxx	xxxxx	1225	xxxx	xxxxx
Move Cap.:	299	302	813	200	262	983	1518	xxxx	xxxxx	1225	xxxx	xxxxx
Volume/Cap:	0.63	0.03	0.23	0.03	0.03	0.00	0.00	xxxx	xxxx	0.16	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	0.6	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.4	xxxx	xxxxx	8.5	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	A	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	676	xxxxx	xxxx	261	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	3.6	xxxxx	xxxxx	0.2	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	17.1	xxxxx	xxxxx	19.8	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	C	*	*	C	*	*	*	*	*	*	*
ApproachDel:	17.1			19.8			xxxxxx			xxxxxx		
ApproachLOS:	C			C			*			*		

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APPENDIX J.2
Traffic Impact Analysis Appendices

APPENDIX K.1
Water Feasibility Study

Department of Water

May 15, 2012

Mr. James A. Oravets
County of San Bernardino, Special Districts Department
157 West Fifth Street, Second Floor
San Bernardino, Ca. 92415-0450

Subject: Water Service Feasibility Study
Moonridge Animal Park Relocation Project

Dear Jim,

The City of Big Bear Lake Department of Water & Power (DWP) has completed the Water Feasibility Study for the proposed Moonridge Animal Park Relocation Project (attached). The study has concluded that DWP has adequate water supply to serve the proposed project. With the addition of three hydrants on the existing Moonridge Road pipeline, offsite hydrant spacing will meet current Fire Department requirements. The Fire Department may require the County to furnish and maintain onsite hydrants. If this is the case, then a fire service from DWP will also be required.

The County can use this Feasibility Study as a "Will Serve Letter" for this project. The conclusions of this report are valid for a twelve month period. If the County requires a longer time period, DWP will review the water system conditions in May of 2013 and grant an extension, if no significant changes to the water system have occurred. DWP will compute connection fees for the proposed project, once final construction drawings are received.

Sincerely,

Reginald A. Lamson, PE LS
General Manager, DWP

Department of Water and Power, City of Big Bear Lake
41972 Garstin Drive, P.O. Box 1929, Big Bear Lake CA 92315 • 909/866-5050 • Fax 909/866-3184
www.bbldwp.com

ALDA Inc.
5928 Vineyard Avenue
Alta Loma, CA 91701
Tel: (909) 587-9916
Fax: (909) 498-0423

May 15, 2012

Steve Wilson, Water Superintendent
City of Big Bear Lake
Department of Water & Power
41972 Garstin Drive
Big Bear Lake, CA 92315

Subject: **Big Bear Zoo Feasibility Study Final Report**

Dear Mr. Wilson:

Pursuant to your request, ALDA Inc. (ALDA) has conducted a feasibility study to determine the necessary system facilities to serve the above referenced development. This report summarizes the results of our investigation and recommendations. This final report presents the project background, an assessment of demand and supply issues, the results of the system analysis, and the recommended improvements.

Project Background

The Big Bear Valley Recreation and Park District (District) would like to relocate the current zoo from its existing location to a 10.4 acre property located at the intersection of Moonridge Road and Club View Drive in the Lower Moonridge portion of the Big Bear Lake Department of Water and Power (BBLDWP) service area.

The project was initially proposed to be built in two phases with build out estimated at 2021. However, due to funding constrains additional phases may be required. As part of the proposed development, the Big Bear Zoo will have a number of large buildings including a gift shop, administration and restaurant building, an animal hospital, a maintenance building, an educational center, a conference center, and several other minor buildings. The total area for all structures is estimated at 24,174 square feet with the proposed hospital being the largest building at 7,629 square feet.

Pressure Zone Service Area

The proposed development is geographically located within the Lower Moonridge pressure zone. The service area in this zone generally ranges in elevation from 6,850 ft. to 7,020 ft. and has a governing hydraulic grade of approximately 7,150 ft. which is set by a combination of pressure reducing valves (PRVs) from higher zones in the upper portions of the Moonridge area.

Lower Moonridge Hydraulic Operations and System Facilities

The Lower Moonridge pressure zone is a one-directional transition zone between the upper portions of the Moonridge area and the Town pressure zone that serves the lower areas of the City of Big Bear Lake around the southern lake shore. The Lower Moonridge pressure zone is fed through PRVs from the Minton, Butte, and Lassen pressures zones, as illustrated in Figure 1. Water from the Upper Moonridge area is conveyed to the Town pressure zone through PRVs. The hydraulic settings of the PRVs from the upper pressure zones are presented in Table 1 below.

Table 1
Pressure Reducing Valves into the Lower Moonridge Pressure Zone

PRV Location	Elevation (ft)	Setting (psi)	Hydraulic Grade (ft)
Butte	7,045	45	7,149
Villagrove/Jasper	7,028	55	7,155
Sunset / Monterrey	7,029	60	7,168
Silvertip/Plymouth	7,026	70	7,188
Moonridge/Silvertip	7,033	52	7,153
Club View	7,016	70	7,178

Operating pressures range from 45 psi at the higher elevations to over 120 psi near the intersection of Elm Street and Moonridge Road. Currently, there are no reservoirs or pump stations in this pressure zone. Pipelines range in size from 4 to 12-inches in diameter.

Water Demand

Projected water demand at buildout conditions was estimated by the County of San Bernardino Special District Department and reviewed by ALDA. The county based its estimate on the actual water demand at the zoo's present location. Currently, the zoo is using an estimated 4.21 ac-ft of water per year with a maximum day demand estimated at 12.51 gpm. This results in a maximum day to average day demand ratio of 4.79.

Projected water demand for the proposed facilities was estimated for each of the various buildings being considered and the corresponding number of equivalent dwelling units. Annual water demand is estimated at 6.50 ac-ft/yr for indoor use and 4.93 ac-ft/yr for

outdoor use. It should be noted that only a portion of the outdoor demand will be used from DWP supplies as irrigation demand will be supplemented using storm water stored in detention basins on-site. Total annual water consumption from DWP is estimated for this project at 7.95 ac-ft/yr.

Average daily demand is estimated at 7,097 gallons per day or 4.93 gpm. Maximum day demand was estimated using the 4.79 maximum day to average day demand ratio developed by the county. Using this factor the maximum day demand is estimated at 23.6 gpm.

Water Supply

DWP has adequate existing water supply sources for the proposed project.

Fire Flow Requirements

The fire flow requirements for the proposed Big Bear Zoo are based on the size of the largest building for commercial development. Information obtained from the City of Big Bear Lake Fire Department indicates a minimum fire flow requirement of 2,500 gpm for the proposed animal hospital based on the estimated size of the building of 7,629 square feet. Considering that the proposed buildings will be equipped with automatic fire sprinklers systems, the fire flow requirement can be reduced to the 1,500 gpm minimum fire flow.

Fire Hydrant Spacing

Section C105.1 of the Fire Code recommends a minimum spacing between fire hydrants of 300 ft in industrial, commercial, and multifamily developments. This minimum requirement is applicable to the proposed Big Bear Zoo.

Storage Requirements

Storage for the proposed development will be provided by the Lassen Reservoirs 1 and 2 (0.80 MG), the Shuff Reservoir (1.00 MG), and the Yosemite Reservoir (1.10 MG).

Storage capacity was sized to meet the operational, emergency and fire flow storage requirements. Operational storage is used to meet the hourly fluctuations in demand during maximum day conditions and it is equal to 30 percent of maximum day. Emergency storage is used to meet demands during a power outage or other emergency situation when supply sources and boosting pumps may not be available; DWP requirements for emergency storage are equal to one day of maximum day demand. Fire flow storage is equal to the fire flow capacity (1,500 gpm) times its duration (two-hours). Storage requirements for the proposed development are as follows:

- Operational Storage = 30% of MDD (23.6 gpm): 10,195 gals

▪ Emergency Storage =	100% of MDD (23.6 gpm):	33,984 gals
▪ Fire Flow Storage =	1,500 gpm x 120 minutes:	180,000 gals
Total Storage Required:		224,179 gals

Water System Evaluation

The existing water system facilities were evaluated using an EPANET hydraulic model. The model is capable of evaluating various water supply and demand scenarios. The following scenarios were evaluated to determine the adequacy of existing system facilities to provide the required fire flow at the proposed development under various hydraulic conditions; the scenarios evaluated are as follows:

- Scenario No. 1 - Maximum day demand (MDD).
- Scenario No. 2 – Scenario No. 1 plus a fire flow of 1,500 gpm near the intersection of Moonridge Road and Sunset Drive.
- Scenario No. 3 – Scenario No. 1 plus a fire flow of 1,500 gpm near the intersection of Peregrine Avenue and Club View Drive.

The maximum day demand for current and ultimate demands in the Lower Moonridge pressure zone were based on the 2006 Water Master Plan. It should be noted that the demands estimated in the 2006 study are higher than what is now projected to be ultimate demands. While the estimate of demands is somewhat conservative, the fire flow requirement is the governing criteria for sizing of facilities.

To assist in the evaluation of the existing distribution facilities, static pressures were taken at Fire Hydrant No. 390, located near the intersection of Moonridge Road and Sunset Drive and at Fire Hydrant No. 189, located near the intersection of Club View Drive and Peregrine Avenue. Static pressures recorded at these hydrants were 100 psi and 96 psi respectively. The location of these hydrants is depicted in Figure 2.

The results of the hydraulic modeling for Scenario No. 1 indicate a static pressure during maximum day demand of 105 psi at Fire Hydrant No. 390, which is 5 psi higher than recorded in the field, and 115 psi at Fire Hydrant No. 189, which is 19 psi higher. The difference between the recorded and modeled pressure at the former hydrant is within the acceptable margin of error of 10 psi; however, the difference at the later hydrant exceeds this threshold. This difference in pressure would be considered in the analysis of the distribution facilities under fire flow conditions as described below. Adjustments to the model are currently being conducted as part of a separate study

Evaluation of the system under Scenario No. 2 indicates a residual pressure of 78 psi for a fire flow of 1,500 gpm near the intersection of Moonridge Road and Sunset Drive.

Similarly, under Scenario No. 3, a residual pressure of 67 psi is predicted by the model near the intersection of Club View Drive and Peregrine Avenue. This residual pressure was reduced by 19 psi to 48 psi to accommodate the difference between recorded and modeled pressures. Further, pressures at all other locations within the service are of the Lower Moonridge pressure zone were all above 20 psi during both fire flow conditions.

Based on this analysis, the existing distribution facilities are adequate to meet the required fire flow of 1,500 gpm for the proposed Big Bear Zoo. However, the existing fire hydrants along Moonridge Road do not meet the maximum separation criterion of 300 feet. To meet this criterion, the installation of three fire hydrants along Moonridge Road is recommended, as illustrated in Figure 2.

On-site Improvements

A detail of the proposed on-site facilities was not provided by the county at this time; however, it should meet DWP's standards where applicable. Further, on-site location of fire hydrants should be coordinated with the Fire Department.

Estimated Cost of Improvements

The installation cost of the three recommended hydrants is estimated at $8,000.00 each for a total cost of $24,000.00.

Disclaimer

This feasibility study is based on current system conditions and it is valid for a period of 12 months from the date of this letter. The feasibility of developing this project may need to be revised and/or reassessed if the project is delayed. Revisions may result from changes in future water demands, system conditions, and construction cost of recommended facilities.

Closing

Should you have any questions, please contact us at 909-587-9916 during normal business hours.

Very truly yours

ALDA Engineering Inc.

F. Anibal Blandon, P.E.
Principal

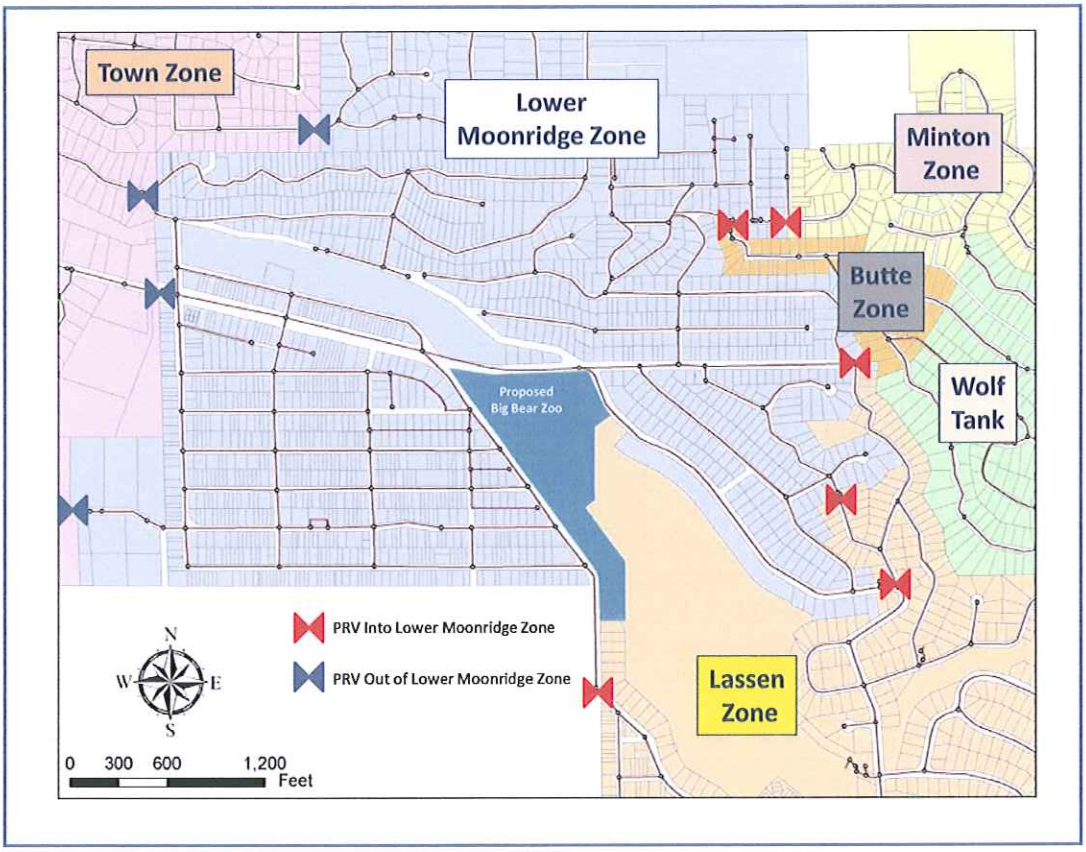


Figure 1
Lower Moonridge Pressure Zone and Project Location

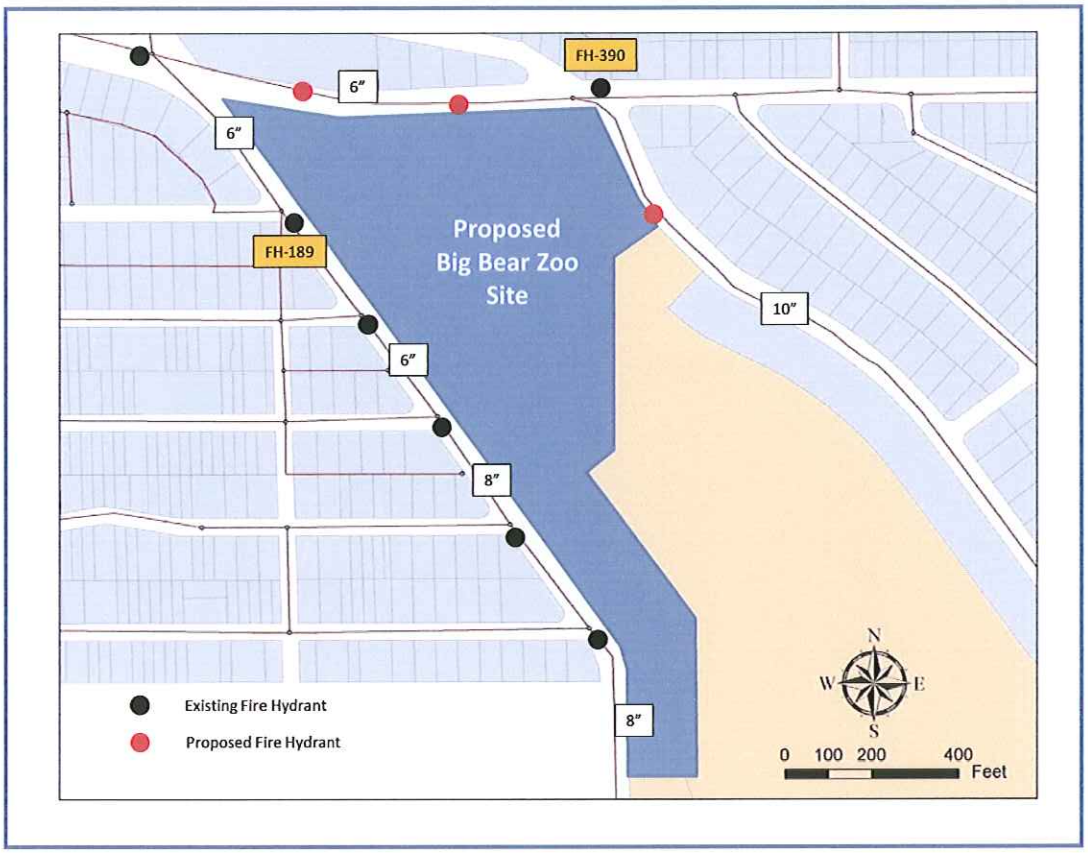


Figure 2
Recommended Improvements to Serve the Proposed Big Bear Zoo

APPENDIX K.2
Sewer Will Serve Letter

City of Big Bear Lake

PUBLIC WORKS/ENGINEERING

August 13, 2012

Carrie Hyke, AICP
District Planner
County of San Bernardino
Special Districts Department

Re: Big Bear Alpine Zoo at Moonridge

Dear Ms. Hyke:

Per your request in your letter dated June 15th, 2012, this letter serves as the City's willingness to service for sewer. Based on your estimates the new facility will generate 10 equivalent dwelling units (EDUs) from domestic use. This letter does not; however, cover any request to use our sewer system for storm water runoff transport.

Sincerely,

David Lawrence, P.E.
Director of Public Works/City Engineer

City of Big Bear Lake Civic Center and Performing Arts Center
39707 Big Bear Boulevard, P.O. Box 10000, Big Bear Lake CA 92315-8900
•Phone 909/866-5831 •Fax 909/866-7511

SPECIAL DISTRICTS DEPARTMENT

COUNTY OF SAN BERNARDINO

157 West Fifth Street, Second Floor • San Bernardino, CA 92415-0450 • (909) 387-5940
Fax (909) 387-5968

JEFFREY O. RIGNEY
Director

June 15, 2012

Mr. David Lawrence, City Engineer
City of Big Bear Lake
39707 Big Bear Blvd
P.O. Box 10000
Big Bear, CA 92315

SUBJECT: Sewer Service / Will Serve
Moonridge Animal Park Relocation Project
Big Bear Valley Recreation and Park (District)

Dear Mr. Lawrence,

The Special Districts Department, on behalf of the Big Bear Valley Recreation and Park District (District), would like to request a "Will Serve" letter from the City of Big Bear Lake (City) to provide sewer service to the soon to be relocated Moonridge Animal Park. The current zoo, located on a 2.5-acre leased parcel, will relocate to a 10.4-acre property owned by the District and located at the southeast corner of the intersection of Moonridge Road and Club View Drive (refer to the attached location map).

The project was originally proposed to be built in two phases with build out estimated for 2021. Attached are the two proposed phasing diagrams (Phases I and build out) as outlined by the Districts planning consultant. However, it should be noted that due to funding constraints additional intermediate phases will be incorporated into the project.

The final attachment to this letter is the Districts "Preliminary Estimate of Sewer Generation." This attachment provides a summary of the calculated sewer flows generated by each structure and a breakdown of fixture units per structure. The District has calculated the sanitary sewer flows at build out to be approximately 3,250-gallons per average day which equates to annual generation of 1,186,250-gallons. Peak hourly flows might reach as high as 13,000-gallons during a peak day peak hour event. It should be noted that only sanitary sewage will be directed to your system.

The District is looking forward to working with the City on this portion of the project. Should you have any questions or comments please contact me at the office.

Sincerely,

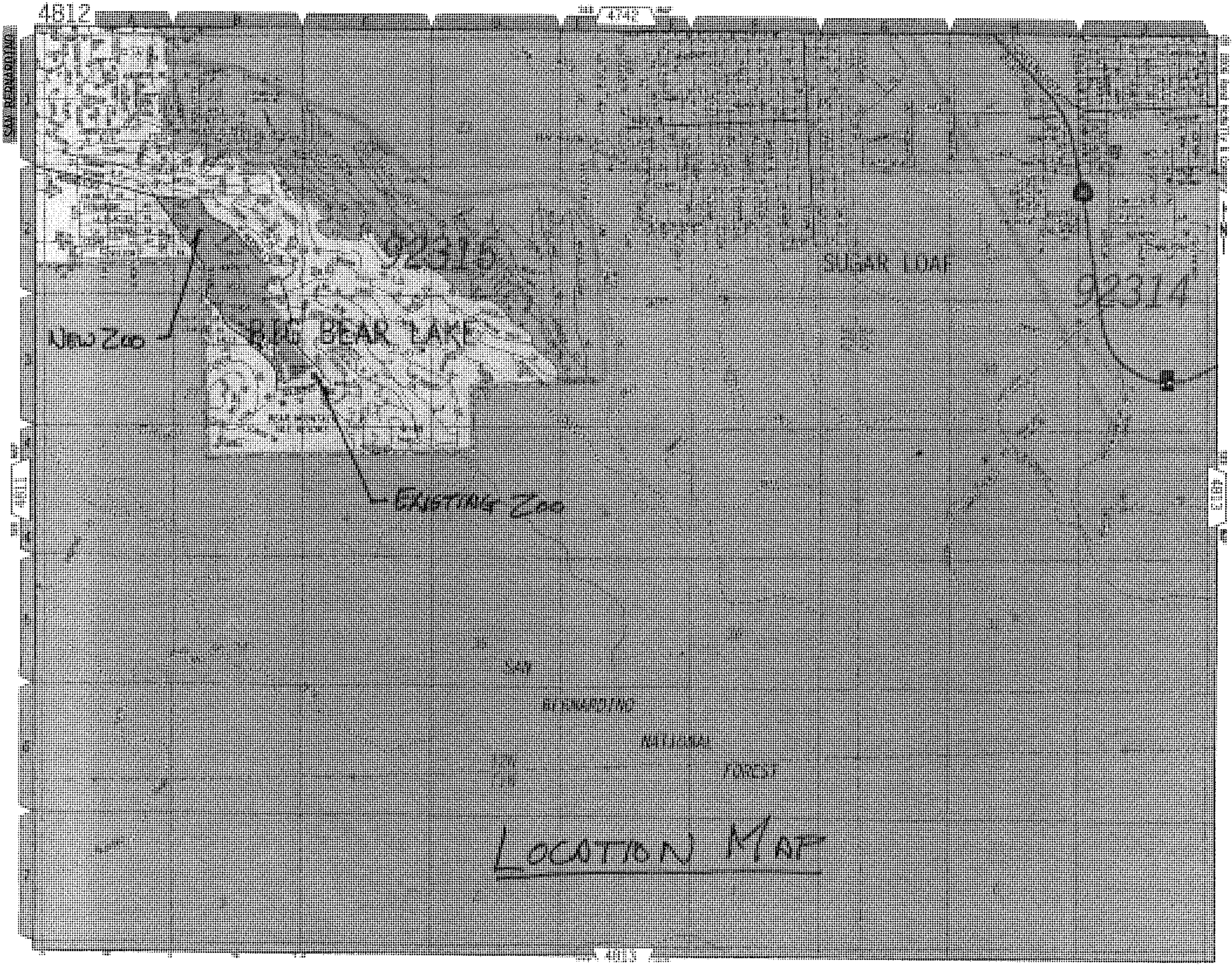
James A. Oravets
Division Manager

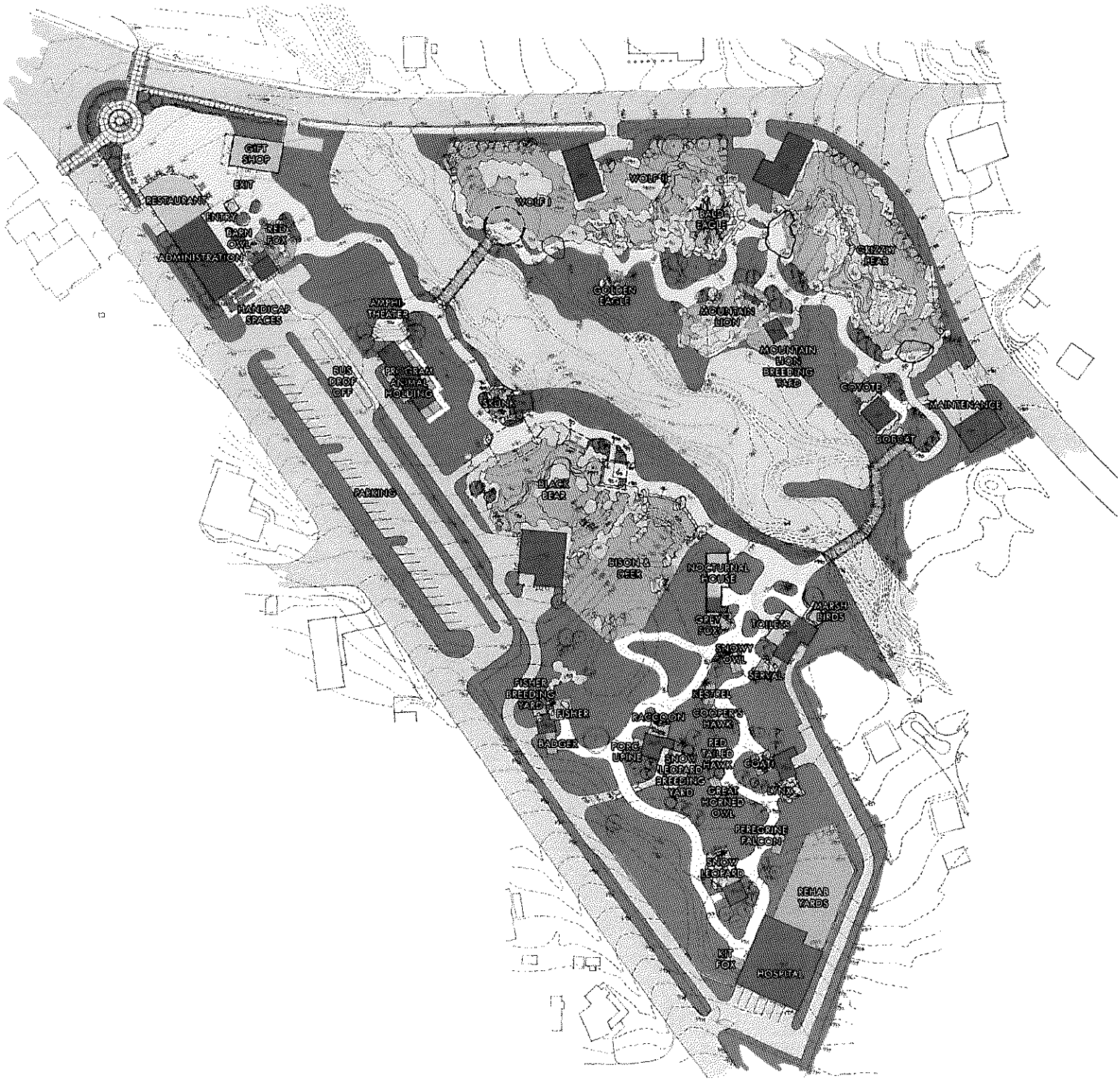
enclosures

cc: Jeffrey O. Rigney, Director
Reese Troublefield, General Manager

GREGORY C. DEVEREAUX
Chief Executive Officer

Board of Supervisors
BRAD MITZELFELT ..... First District
JANICE RUTHERFORD ..... Second District
JOSIE GONZALES ..... Fifth District
NEIL DERRY ..... Third District
GARY C. OVITT ..... Fourth District


4812
SAN BERNARDINO
92315
BIG BEAR LAKE
New Zoo
Existing Zoo
SUGAR LOAF
92314
SAN
BERNARDINO
NATIONAL
FOREST
LOCATION MAP



PGAV DESTINATIONS

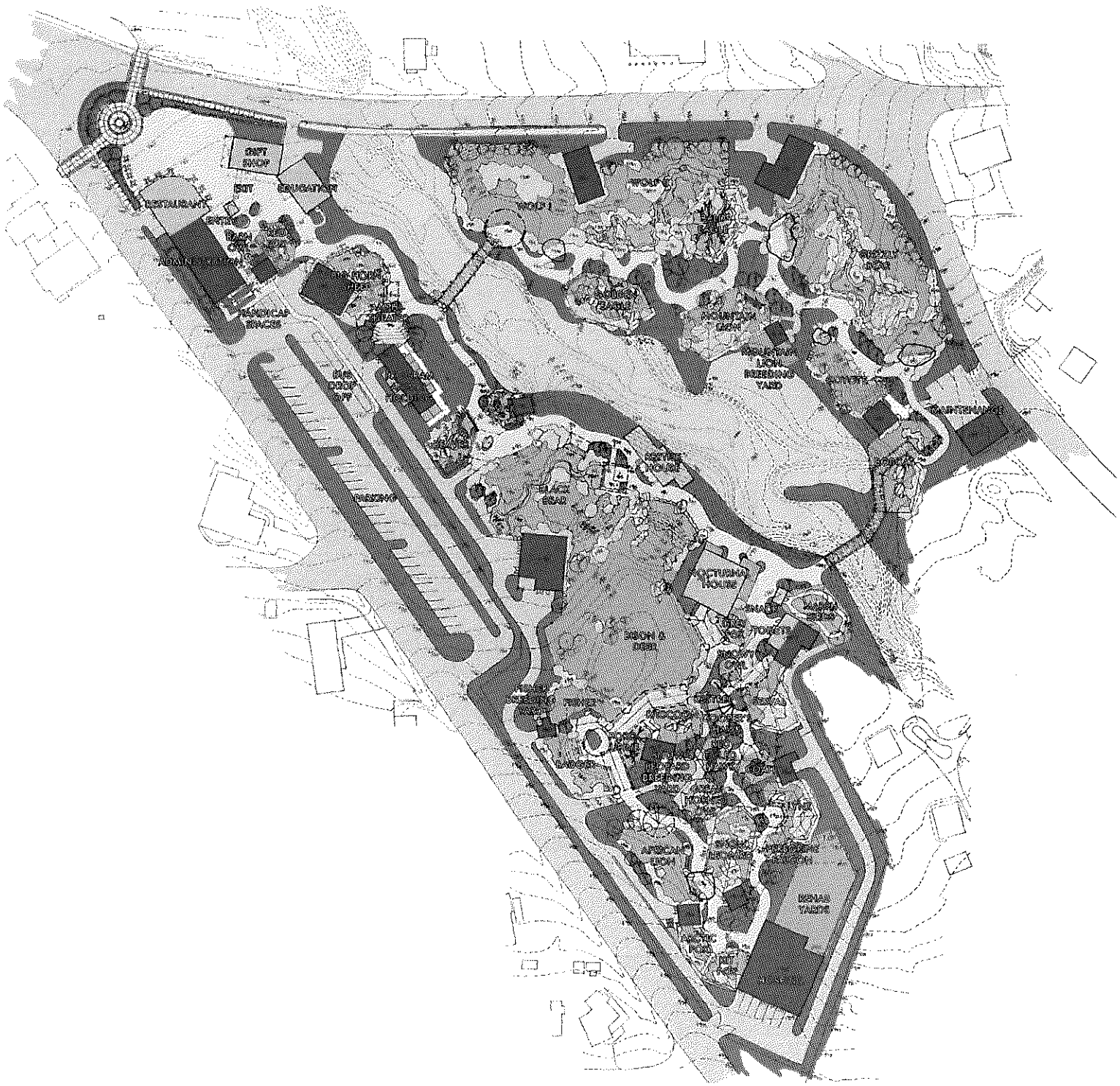
1/32" = 1'-0"

MASTER PLAN

MOONRIDGE ANIMAL PARK RELOCATION

SITE PLAN -- PHASE 1

03 MARCH, 2011



PGAV DESTINATIONS

1/32" = 1'-0"

OVERALL SITE PLAN

MOONRIDGE ANIMAL PARK RELOCATION

PHASE II

03 MARCH, 2011

BIG BEAR RECREATION PARK DISTRICT
MOONRIDGE ZOO RELOCATION
Preliminary Estimate of Sewer Generation
June 12, 2012

Assumptions/Terminology:

The below calculations/Estimates are provided based on Build Out
One equivilant dwelling unit is equal to 20 plumbing fixture units
Average Daily Demand (ADD) assumes that the daily sewage generation occurs over 10-hours
Peak Hourly sewage generation assumes 4 * ADD
Generation Rate is 100 Gal per Capita per day / 3.25 Capita per EDU
New Zoo will incorporate a total of 25,554 sf of usable structures

Projected Structure Sewer Generation:

Stucture Description	Bldg Size SF	Calc'd EDUs	Avg. Day gal/day	Peak Hour gal/day	Annual Gal
Toilets/Tickets	3,000	4	1,300.00	5,200	474,500
Gift Shop (1)	1,492	0	0.00	0	0
Child Zoo/Barn (1)	1,985	0	0.00	0	0
Restaurant	2,954	2	650.00	2,600	237,250
Hospital	7,629	1	325.00	1,300	118,625
Maint. Bldg.	4,244	1	325.00	1,300	118,625
Ed. Center	1,800	1	325.00	1,300	118,625
Conf. Ctr.	2,450	1	325.00	1,300	118,625
Totals	25,554	10	3,250.00	13,000	1,186,250

(1) No plumbing fixtures in structure

Total Annual Sewer Generation for Build out of the Zoo = 1,186,250 Gallons/yr
Total Daily Sewer Generation for Build out of the Zoo = 3,250.00 Gallons/day

Big Bear Valley Recreation and Park District
Moonridge Zoo Relocation

Preliminary Fixture Unit Summary
June 2012

Assumptions

Plumbing Fixture Units are based on the 2007 California Plumbing Code
One equivilant dwelling unit is equal to 20 total PFUs

Fixture Description	Quantity of Fixtures	Unit PFU	Total PFU	EDU's
Bathroom No. 1				
Water Closet	5	6	30	1.5
Urinals	2	2	4	0.2
Floor Drains	1	2	2	0.1
Lavatories	3	1	3	0.15
Subtotal BR No. 1	11	11	39	1.95
Use 2 Equivilant Dwelling Units for Bathroom No. 1				
Bathroom No. 2				
Water Closet	4	6	24	1.2
Urinals	0	2	0	0
Floor Drains	1	2	2	0.1
Lavatories	4	1	4	0.2
Subtotal BR No. 2	9	11	30	1.5
Use 2 Equivilant Dwelling Units for Bathroom No. 2				
Restaurant				
Kitchen Sinks	3	3	9	0.45
Mop Sinks	1	3	3	0.15
Floor Drains	3	3	9	0.45
Dish Washer	1	4	4	0.2
Drinking Fountain	1	0	0	0
Subtotal Restaurant	9	13	25	1.25
Use 2 Equivilant Dwelling Units for the Restaurant				
Animal Hospital				
Lavatories	4	1	4	0.2
Water Closets	1	6	6	0.3
Shower Heads	1	2	2	0.1
Mop Sinks	2	3	6	0.3
Subtotal Hospital	8	12	18	0.9
Use 1 Equivilant Dwelling Unit for the Animal Hospital				
Maintenance Bldg				
Lavatories	1	1	1	0.05
Water Closets	1	6	6	0.3
Shower Heads	1	2	2	0.1
Mop Sinks	2	3	6	0.3
Subtotal Maint. Bldg	5	12	15	0.75
Use 1 Equivilant Dwelling Unit for the Maintenance Bldg				

Big Bear Valley Recreation and Park District
Moonridge Zoo Relocation
Preliminary Fixture Unit Summary
June 2012

Fixture Description	Quantity of Fixtures	Unit PFU	Total PFU	EDU's
Education Center				
Water Closet	1	6	6	0.3
Urinals	1	2	2	0.1
Floor Drains	1	2	2	0.1
Lavatories	1	1	1	0.05
Subtotal Ed Center	4	11	11	0.55
Use 1 Equivilant Dwelling Unit for the Education Center				
Conference Center				
Water Closet	1	6	6	0.3
Urinals	1	2	2	0.1
Floor Drains	1	2	2	0.1
Lavatories	1	1	1	0.05
Subtotal conf. Center	4	11	11	0.55
Use 1 Equivilant Dwelling Unit for the Conference Center				
Tickets/Gift Shop	No plumbing units in these structures			
Total Project EDUs @ Build Out	**=**	**10**		

APPENDIX K.3
Solid Waste Facility Report

Jurisdiction Disposal By Facility

With Reported Alternative Daily Cover (ADC) and Alternative Intermediate Cover (AIC)

Disposal during 2011 for Big Bear Lake

Destination Facility	SWISNo	Qtr	Instate Ton	Transform Ton	Export Ton	Total ADC	Total AIC
Azusa Land Reclamation Co. Landfill	19-AA-0013		12				
Barstow Sanitary Landfill	36-AA-0046		11,308			34	
Colton Sanitary Landfill	36-AA-0051						
Landers Sanitary Landfill	36-AA-0057		68				
Mid-Valley Sanitary Landfill	36-AA-0055		34			15	
Puente Hills Landfill	19-AA-0053		12				
San Timoteo Sanitary Landfill	36-AA-0087		524				
Simi Valley Landfill & Recycling Center	56-AA-0007		18				
Victorville Sanitary Landfill	36-AA-0045		855			23	
Yearly Totals:			12,829.79			71.39	

Notes:
1. Disposal tonnage is subject to change due to revisions. Report is based upon information provided by County disposal reports.
2. AIC information was not collected prior to 2006.