APPENDIX O

LIGHTING STUDY

THE TERRACES OF LAFAYETTE
NIGHTTIME LIGHTING STUDY
The Planning Center | DC&E
February 3, 2012

The proposed Project would introduce new sources of light and glare in the Project area. The Project's conceptual lighting plan includes streetlights, signage lighting, and decorative lighting on walls and landscape features. All lighting would be installed in conformance with the City's exterior lighting requirements. Lighting would be low level illumination and exterior lighting would be shielded (downward facing) to minimize light spill, glare and reflection and maintain 'dark skies.' Table 1 presents details of the proposed lighting fixtures.

Table 1
Light Fixtures

Light	Manufacturer	Model	Bulb Wattage	Bulb Type
S1	Gardco	Gullwing	65W	LED
S2	Gardco	BRM-827B	35W	High Pressure Sodium
S3	B-K Lighting	El Dorado	(2) 35W	Halogen
S4	Luminaire	VPF-84	28W	LED
S5	B-K Lighting	Precision HP2	35W	Halogen
S6	Wayward	Astrolite	75W	Halogen
S7	B-K Lighting	Stair Light	35W	Halogen
S8	B-K Lighting	El Dorado	35W	Halogen
S9	B-K Lighting	Yosemite	35W	Halogen
S10	B-K Lighting	Nite Star	35W	Halogen
S11	Gardco	DF5	35W	High Pressure Sodium
B1	B-K Lighting	El Dorado	50W	Halogen
B2	Cree	LR6-DR1000	12.5W	LED

Based on the lighting plan and proposed light fixtures, The Planning Center|DC&E plotted light levels across the site and along adjacent areas using Autodesk® 3ds Max® 2010 software. Figure 2, *Projected Light Spillover*, shows the resulting nighttime light levels in foot-candles. This software takes into account the effects of topography and shielding created by the proposed buildings, shields included on the lights, but not shielding related to trees and landscaping. For this reason, the figures are likely to overstate the lighting levels, especially as trees grow taller.

A foot-candle is a measure of illuminance or light intensity. The foot-candle is equal to one lumen per square foot. The table below shows the range of conditions from full daylight at 1,000 fc to full moon at 0.01. While various thresholds of significance have been used for spillover lighting impacts, this study uses the conservative figure of 0.5 fc.

Condition	Foot-candles
Full Daylight	1,000
Overcast Day	100
Twilight	1.0
Significance Threshold	0.5
Full Moon	0.01

The light levels shown on Figure 1 demonstrate that light from this project drops to insignificant levels within a short distance of the property line. Within the width of Pleasant Hill Road and Deer Hill Road, the light levels from the project are negligible. The residential area located east of Pleasant Hill Road is further protected from intrusive lights by the existing mature trees along their western edge of this neighborhood. Based on a significance threshold of 0.5 fc, the spillover light levels at the adjacent residential areas do not represent a significant impact. Figure 2, *Nighttime Light Simulation – Plan View*, provides a simulated aerial view the projected lighting level.

Visual Simulations

The proposed project also has the potential to create nighttime glare as people within the surrounding area and along adjacent roadways look directly at the site. To assess this visual impact, nighttime visual simulations have been created from two vantage points. Autodesk® 3ds Max® 2010 was used to create these visual simulations.

View 1 provides the view due west from a location on Pleasant Hill Road just south of the high school. Figure 3, *Nighttime View Simulation – View 1*, shows the daytime view from this vantage point combined with the view at dusk.

View 2 provides the view toward the northwest from Pleasant Hill Road just south of the freeway. Figure 4, *Nighttime View Simulation – View 2*, shows the daytime view from this point combined with the view at dusk.

The lights within the project site will be visible from the surrounding areas at certain locations, although such vantage points are limited due to the topography and trees. While the spillover lighting impact was determined to be less than significant based on a quantified significance threshold, the determination of visual impact is much more subjective. The project site currently contains no light sources and after the project is complete, the site will be visible at night. The lighting levels are modest and in keeping with nearby developed areas. There are no high intensity lights proposed. However, because the project would add lights to a location that currently is currently dark, this impact is considered significant.

Figure 1, Projected Light Spillover in Foot-candles

Figure 2, Nighttime Light Simulation – Plan View

Figure 3, Nighttime View Simulation

View at Day

View at Dusk

Figure 4, Nighttime View Simulation

View at Day

View at Dusk