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May 28, 2021

VIA EMAIL

Chair John Hidahl
Vice Chair Lori Parlin
Supervisors George Turnboo,
Wendy Thomas, and Sue Novasel
330 Fair Lane, Building A
Placerville, California 95667

Re: Verizon Wireless Appeal, Application CUP20-0006
Telecommunications Facility, Oak Ridge High School, El Dorado Hills
Board of Supervisors Agenda, July 20, 2021

Dear Chair Hidahl, Vice Chair Parlin and Supervisors:

We write on behalf of Verizon Wireless to ask that you grant its appeal of the Planning Commission's denial of a wireless facility on a high school stadium light pole (the "Proposed Facility"). Verizon Wireless worked closely with County staff to ensure that the Proposed Facility satisfies all requirements for approval according to the El Dorado County Ordinance Code (the "Code"). In fact, staff originally recommended approval. While the Planning Commission was supportive of a new wireless facility at the stadium, Commissioners expressed uncertainty regarding noise, lighting and review of alternatives. Verizon Wireless has since commissioned several studies attached to this letter that confirm compliance with County standards, and executed a tolling agreement with the County extending the time period for a decision to July 30, 2021.

Given the additional information confirming compliance, a denial would lack substantial evidence, as required by the federal Telecommunications Act. Further, because the Proposed Facility is the least intrusive means to fill a significant gap in Verizon Wireless service, the Telecommunications Act compels approval. The Proposed Facility will provide new, reliable Verizon Wireless coverage where lacking in southern El Dorado Hills, while posing minimal visual impact at the stadium. We urge you to follow staff's original recommendation of approval, and to grant Verizon Wireless's appeal and approve the Proposed Facility.

I. The Proposed Facility

The Proposed Facility has been thoughtfully designed to minimize any impact on the surrounding area by replacing existing public infrastructure at the high school

stadium. Verizon Wireless proposes to replace the two 48-foot 5-inch light poles on the east side of the stadium that are in front of the bleachers and obstruct views of the field. The new 80-foot light poles will be relocated to each end of the bleachers, elevated an additional five feet on the adjacent slopes. On each new pole, a speaker will be relocated at the same height as presently mounted. At the top of each pole, crossarms will support five lights at 76 feet, and six lights at 80 feet. The replacement poles will be similar in height and spacing to the two light poles on the west side of the field, and will provide consistent, improved lighting for evening events.

On the southeast pole, Verizon Wireless will mount three panel antennas on each of three crossarms, for a total of nine antennas at a centerline of 61 feet (above the speakers and below the lights). Behind the antennas, the crossarms also will support nine radio units and two surge suppressors. This pole with be within a 175-square foot Verizon Wireless lease area.

In a separate 320-square foot lease area located 210 feet south beyond the field, Verizon Wireless will place two network equipment cabinets, along with two battery cabinets and other network gear. This equipment area will be surrounded by a six-foot chain link fence with green slats. Conduit leading from this equipment area to the pole and nearby utility connections will be placed underground.

Photosimulations of the Proposed Facility are attached as Exhibit A. A radio frequency exposure report by Dtech Communications, attached as Exhibit B, confirms that the Proposed Facility will operate well below Federal Communications Commission ("FCC") exposure limits. A noise report by Hammett & Edison, Inc., Consulting Engineers, attached as Exhibit C, confirms that there will be no noise impact to area residences. An outdoor lighting plan prepared by a California-registered engineer at Musco Sports Lighting, attached as Exhibit D, confirms that the relocated stadium lights will comply with the County's outdoor lighting regulations.

II. The Proposed Facility Satisfies All Requirements for Approval.

As confirmed by staff's original recommendation of approval, the Proposed Facility satisfies all findings for a conditional use permit, including compliance with General Plan policies. Code § 130.52.021(C). For example, it is "located and designed in a manner that avoids incompatibility with adjoining land uses." Policy 2.2.5.21. The Proposed Facility simply relocates existing infrastructure at the high school stadium, which is surrounded by three different school properties. The new 80-foot light poles will pose no more impact than the 80-foot poles across the field that both support antennas.

The noise report by Hammett & Edison confirms that relocating the stadium speakers a short distance at the same height will cause no impact on noise levels at the closest residences, which are over 300 feet southeast. The Proposed Facility uses batteries for back-up power, not a generator. As it is unlikely to exceed County noise limits at noise-sensitive areas, the Proposed Facility complies with General Plan Policies

6.5.1.2 and 6.5.1.3. The study by Musco Sports Lighting confirms that the relocated stadium lights will substantially limit glare and "will cause no impact in light pollution to the surrounding community," consistent with Policy 2.8.1.1. Given these compliance factors and its minimal visual impact, the Proposed Facility poses no detriment to public health, safety or welfare. In fact, it will provide an important public benefit through enhanced connectivity for residents, visitors, students and emergency service personnel.

The Proposed Facility also satisfies all Code requirements. The Code provides for a new wireless facility on a replacement light pole with approval of a conditional use permit. Code § 130.40.130(B)(7). The Proposed Facility design mimics the stadium light poles across the field, both of which also support wireless antennas, so therefore it blends with the surrounding area. Code § 130.40.130(D)(1). It also far exceeds the required setback from the property line to the east along Silva Valley Parkway. Code §§ 130.24.030, 130.40.130(D)(2).

Based on these and other factors, the Proposed Facility satisfies all County requirements for approval of a use permit.

III. The Commission's Denial Was Not Based on Substantial Evidence.

Under the federal Telecommunications Act, a local government's denial of a wireless facility application must be based on "substantial evidence." *See* 47 U.S.C. § 332(c)(7)(B)(iii). As interpreted under controlling federal court decisions, this means that denial must be based on requirements set forth in local regulations and supported by evidence in the written record. *See Metro PCS, Inc. v. City and County of San Francisco,* 400 F.3d 715, 725 (9th Cir. 2005) (denial of application must be "authorized by applicable local regulations and supported by a reasonable amount of evidence.") Generalized aesthetic objections do not amount to substantial evidence upon which a local government could deny a wireless facility permit. *See City of Rancho Palos Verdes v. Abrams*, 101 Cal. App. 4th 367, 381 (2002).

In general, the Planning Commission's findings were speculative, alleging that the Proposed Facility "likely" would not meet County standards. With respect to noise and outdoor lighting, Verizon Wireless now has provided the Hammett & Edison and Musco Sports Lighting reports that confirm compliance with County noise and outdoor lighting standards, as discussed above, and there is no evidence to the contrary. The Commission questioned why the pole height extended above the light fixtures, and Verizon Wireless has since reduced the height from 85 to 80 feet so the pole top is flush with the lights.

The Commission found that the Proposed Facility would be inconsistent with General Plan Policy 2.2.5.21, that projects be "located and designed in a manner that avoids incompatibility with adjoining land uses." As noted above, the Proposed Facility pole is surrounded by three school properties: Oak Ridge High School to the north and west, Silva Valley Elementary School due south, and Rolling Hills Middle School east across Silva Valley Parkway. The replacement stadium light poles that match the existing light poles across the field are entirely compatible with these surrounding school

uses. There are no residential parcels directly adjacent to the Proposed Facility. In fact, the closest residences are over 300 feet away to the southeast, across Silva Valley Parkway and south of the middle school property. Their distant views of the replacement light poles at the stadium will be substantially blocked by trees along Silva Valley Parkway and within that residential zone. The photosimulations demonstrate the minimal visual impact of the replacement light poles from nearby vantage points.

The Commission questioned if the Proposed Facility could be collocated on one of the light poles on the west side of the stadium that already supports antennas. As described in the Alternatives Analysis attached as Exhibit E, collocation of nine additional antennas and nine radios on those poles is impractical due to structural requirements, as well as the School District's preference for consistent lighting and equipment separation. A May 26, 2021 letter from El Dorado Union High School District Superintendent Ron Carruth to Supervisor Hidahl, supporting Verizon Wireless's replacement of the eastern stadium light poles, is attached as Exhibit F.

In sum, the Planning Commission's denial violated federal law because it lacked substantial evidence. In contrast, Verizon Wireless has provided ample evidence to support approval of the Proposed Facility. The Board should grant Verizon Wireless's appeal.

IV. The Proposed Facility Is Exempt from the California Environmental Quality Act.

The Commission found that the Proposed Facility requires a negative declaration under the California Environmental Quality Act ("CEQA"). However, staff originally recommended a Class 3 categorical exemption from CEQA. Class 3 consists of "construction and location of limited numbers of new, small facilities or structures; installation of small new equipment and facilities in small structures; and the conversion of existing small structures from one use to another where only minor modifications are made in the exterior of the structure." 14 Cal. Code Regs. § 15303.

The CEQA Guidelines provide examples of the Class 3 exemption, including up to four commercial buildings not exceeding 10,000 square feet in floor area. *Ibid.* The Proposed Facility footprint would total only 495 square feet, much smaller than the Class 3 example projects listed in the CEQA Guidelines.

Moreover, courts have approved the application of the Class 3 exemption to a wide variety of wireless and telecommunications projects. *See Don't Cell Our Parks v. City of San Diego* (2018) 21 Cal.App.5th 338 (faux tree telecommunications pole in public park); *Aptos Residents Ass'n v. County of Santa Cruz* (2018) 20 Cal.App.5th 1039 (10 microcell transmitter units on existing utility poles); *Robinson v. City and County of San Francisco* (2012) 208 Cal.App.4th 950 (40 wireless equipment cabinets on existing utility poles); *San Francisco Beautiful v. City and County of San Francisco* (2014) 226 Cal.App.4th 1012 (726 new utility cabinets on public sidewalks).

The project's architectural plans provide an accurate depiction of the Proposed Facility, summarized in our project description above. The noise and outdoor lighting reports verify that the project, including the relocated speakers and lights, will comply with County standards, and thus confirm that there will be no significant environmental impact from the slight relocation and the increase in height. Because of the Proposed Facility's small footprint and minimal impact, the Board should apply the Class 3 categorical exemption from CEQA.

V. The School District Could Replace the Stadium Light Poles without County Zoning Approval.

While Verizon Wireless must seek a conditional use permit for its wireless facility on a relocated stadium light pole, we note that the El Dorado Union High School District could replace the light poles on its own with no need for a County zoning permit. State law allows a school board to render a local zoning ordinance inapplicable to a proposed use of school property. Government Code § 53094. A state appeals court determined that replacement stadium lights qualify as a use subject to such an exemption because they serve an important educational purpose. *See City of Santa Cruz v. Santa Cruz Schools Board of Education* (1989) 210 Cal.App.3d 1.

If the School District applied this state law to replace the stadium lights, with no wireless facility, then the new lights would not be subject to the County's zoning code, including the outdoor lighting standards. Because Verizon Wireless would place its antennas on one of the replacement light poles, the County is afforded an opportunity to review impacts such as lighting. Verizon Wireless would pay for both replacement light poles, providing a substantial financial benefit to the School District.

VI. Denial Would Constitute an Unlawful Prohibition of Service.

A local government's denial of a wireless facility permit violates the "effective prohibition" clause of the federal Telecommunications Act if the wireless provider can show two things: (1) that it has a "significant gap" in service; and (2) that the proposed facility is the "least intrusive means," in relation to the land use values embodied in local regulations, to address the gap. *See T-Mobile USA, Inc. v. City of Anacortes,* 572 F.3d 987 (9th Cir. 2009).

If a provider proves both elements, the local government *must* approve the facility, even if there is substantial evidence to deny the permit under local land use provisions (which there is not in this case). This is because the provider has met the requirements for federal preemption; i.e., denial of the permit would "have the effect of prohibiting the provision of personal wireless services." 47 U.S.C. § 332(c)(7)(B)(1)(ii); *T-Mobile v. Anacortes,* 572 F.3d at 999. For wireless carriers to establish a prohibition case, federal law does not require that a proposed facility be the "only" alternative, but rather that no feasible alternative is less intrusive. *See Metro PCS, Inc. v. San Francisco,* 400 F.3d at 734-35.

A. Verizon Wireless Has Demonstrated a Significant Gap in Service.

As confirmed in the *Statement of Verizon Wireless RF Engineer Ericson Malana* described above, attached as Exhibit G, Verizon Wireless has identified a significant gap in LTE service coverage in southern El Dorado Hills. In-building service is lacking in residential areas along Silva Valley Parkway south of the high school, and in-vehicle service is lacking along significant stretches of Silva Valley Parkway and Serrano Parkway. Distant Verizon Wireless facilities provide only weak service levels to much of the gap, compromising network accessibility and reliability. The Proposed Facility will provide new, reliable LTE service coverage to these areas.

B. The Proposed Facility is the Least Intrusive Means To Fill the Significant Gap in Service.

To address the significant gap, Verizon Wireless evaluated seven specific alternatives, as described in the comprehensive Alternatives Analysis discussed above, attached as Exhibit E. Verizon Wireless discounted alternatives that cannot serve the significant gap or are infeasible. The Alternatives Analysis confirms that the Proposed Facility is the least intrusive feasible means to provide wireless service to the significant gap.

In sum, Verizon Wireless has identified a significant gap in service, and has shown that the Proposed Facility is the least intrusive means to address it, based on the values expressed in County regulations. Under these circumstances, Verizon Wireless has established that denial of the Proposed Facility would constitute an unlawful prohibition of service.

VII. Denial Would Constitute Unreasonable Discrimination against Verizon Wireless.

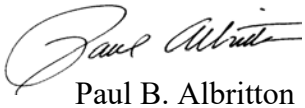
Under the Telecommunications Act, a local government may not unreasonably discriminate among providers of functionally equivalent services. 47 U.S.C. § 332(c)(7)(B)(i)(I). In this case, denial of the Proposed Facility would unlawfully discriminate against Verizon Wireless because the County has approved use permits for both the T-Mobile and Sprint facilities located on light poles at the same stadium. Like the Proposed Facility, the T-Mobile and Sprint antennas are mounted below lights on poles of identical height (80 feet). *See* Special Use Permits S05-0045, S05-0046.

Under these circumstances, where the Proposed Facility is clearly "similarly situated" to the approved T-Mobile and Sprint facilities, denial would mean it was "treated differently," and this would constitute unreasonable discrimination under federal law. *See Metro PCS, Inc. v. San Francisco,* 400 F.3d at 727 ("…[F]ederal courts considering such cases have ruled that providers alleging unreasonable discrimination must show that they have been treated differently from other providers whose facilities are 'similarly situated'.")

Conclusion

Verizon Wireless has worked diligently to identify the ideal location and design for its new wireless facility to serve southern El Dorado Hills. The Proposed Facility will pose minimal visual impact, and it is consistent with all County standards and findings for approval. It also will bring much-needed Verizon Wireless service to the area where it is lacking, benefitting residents, visitors, students and emergency personnel. We strongly encourage you to grant Verizon Wireless's appeal, and to approve the Proposed Facility.

Very truly yours,



Paul B. Albritton

cc: David Livingston, Esq.
Breann Moebius, Esq.
Matthew Aselage

Schedule of Exhibits

Exhibit A: Photosimulations
Exhibit B: Radio Frequency Exposure Compliance Report
Exhibit C: Hammett & Edison Noise Report
Exhibit D: Musco Sports Lighting Report
Exhibit E: Alternatives Analysis
Exhibit F: Letter from El Dorado Union High School District Superintendent Ron Carruth to Supervisor John Hidahl, May 26, 2021
Exhibit G: Statement of Verizon Wireless Radio Frequency Design Engineer Ericson Malana

verizon

239662 Serrano
1120 Harvard Way, El Dorado Hills, CA
Photosims Produced on 8-6-2019

AdvanceSim
Photo Simulation Solutions
Contact (925) 202-8507

Exhibit A

Shot Point Map

Existing

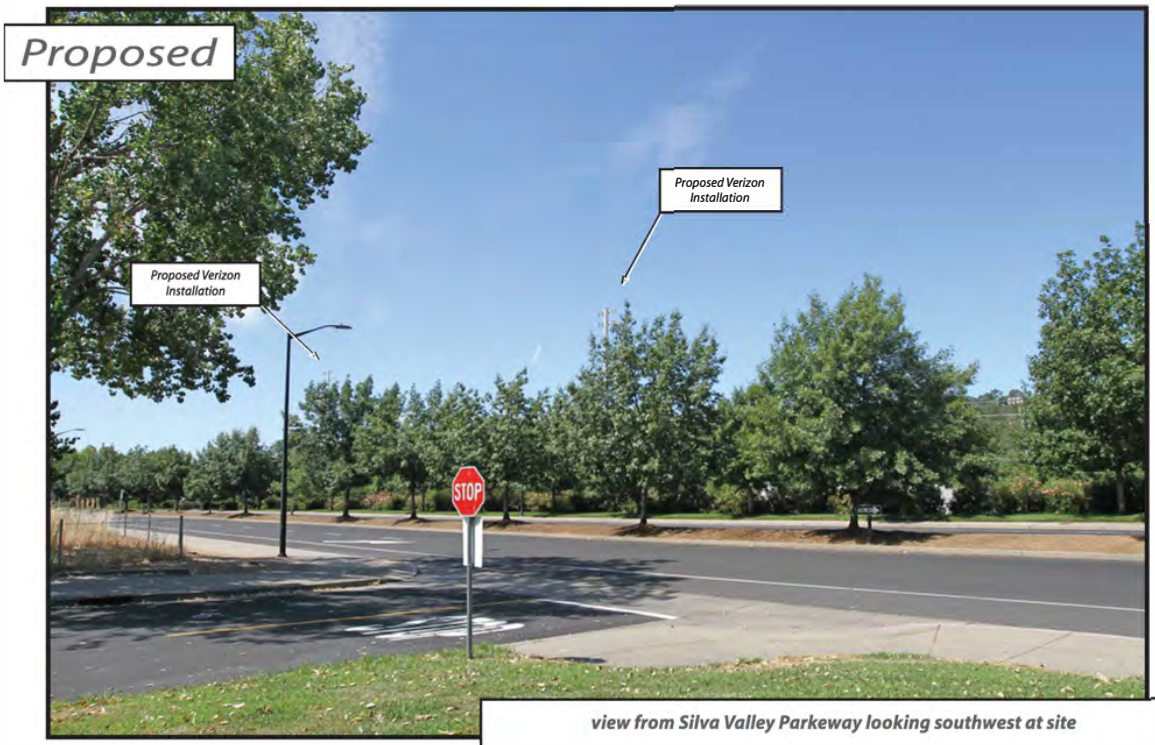
Proposed

view from Silva Valley Parkeway looking northwest at site

verizon

239662 Serrano
1120 Harvard Way, El Dorado Hills, CA
Photosims Produced on 5-24-2021

AdvanceSim
Photo Simulation Solutions
Contact (925) 202-8507



AdvanceSim
Photo Simulation Solutions
Contact (925) 202-8507

view from Silva Valley Parkeway looking southwest at site

verizon

239662 Serrano
1120 Harvard Way, El Dorado Hills, CA
Photosims Produced on 5-24-2021

Existing

Proposed

view from Harvard Way looking south at site

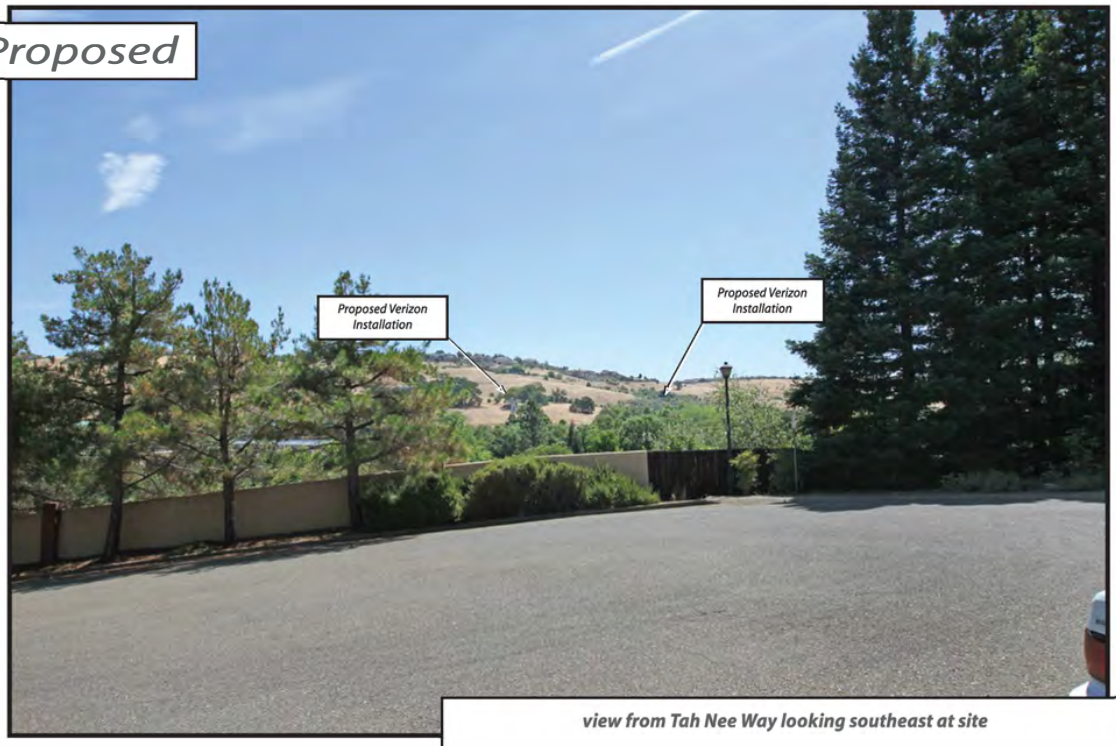
verizon

239662 Serrano
1120 Harvard Way, El Dorado Hills, CA
Photosims Produced on 5-24-2021

AdvanceSim
Photo Simulation Solutions
Contact (925) 202-8507

Existing

Proposed



AdvanceSim
Photo Simulation Solutions
Contact (925) 202-8507

view from Tah Nee Way looking southeast at site

verizon

239662 Serrano
1120 Harvard Way, El Dorado Hills, CA
Photosims Produced on 5-24-2021

Exhibit B

Dtech communications

YOUR RF SAFETY PARTNER

RADIO FREQUENCY ELECTROMAGNETIC FIELDS EXPOSURE REPORT

Prepared for Verizon

c/o Epic Wireless Group LLC

Site Name: Serrano
Site Type: Ball-field Light

Located at:

1120 Harvard Way
El Dorado Hills, CA 95762
Latitude: 38.6790 / Longitude: -121.0686

Report Date: 2/5/2019
Report By: Christopher Stollar, P.E.

Based on FCC Rules and Regulations, Verizon will be compliant provided recommendation(s) are implemented.

TABLE OF CONTENTS

1.0 EXECUTIVE SUMMARY

Dtech Communications, LLC ("Dtech") has been retained by Epic Wireless Group LLC., contractors to Verizon, to determine whether its wireless communications facility complies with the Federal Communications Commission ("FCC") Radio Frequency ("RF") Safety Guidelines. This report contains a computer-simulated with an on-site visit analysis of the Electromagnetic Fields ("EMF") exposure resulting from the facility. The analysis also includes assessment of existing wireless carriers on site, where information is provided. The table below summarizes the results at a glance:

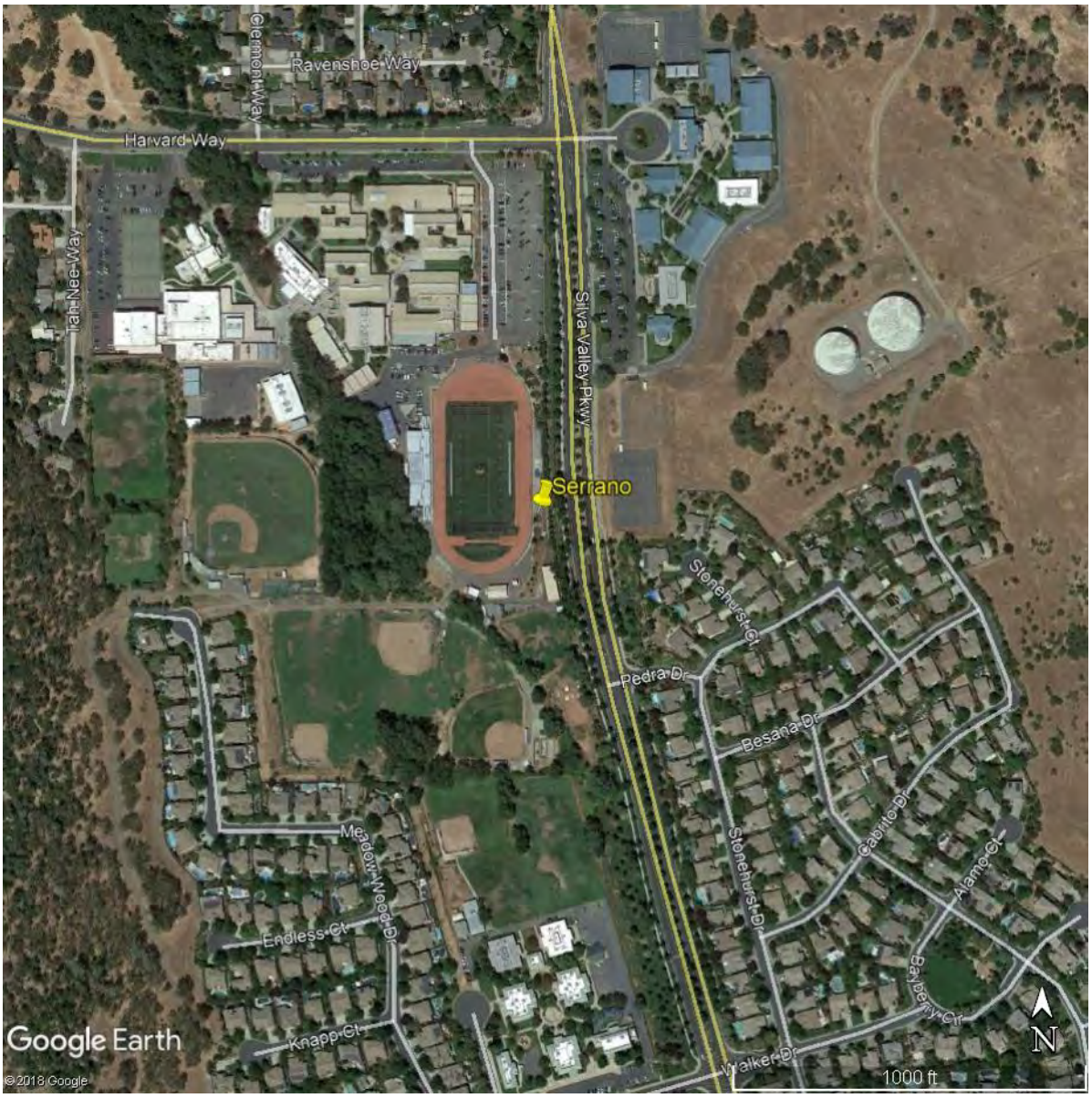
Table 1: EMF Summary

Verizon	Summary
Access Type	Man-Lift/Ladder
Access to antennas locked	NA
RF Sign(s) @ access point(s)	Caution (Recommended)
RF Sign(s) @ antennas	None
Barrier(s) @ sectors	NA
Max EMF level for Verizon on Ground	1.0% General Population
Max cumulative EMF level for facility on Ground	1.0% General Population
Min Clearance Distance from Face of Verizon's Antennas	52 Feet

2.0 SITE DESCRIPTION

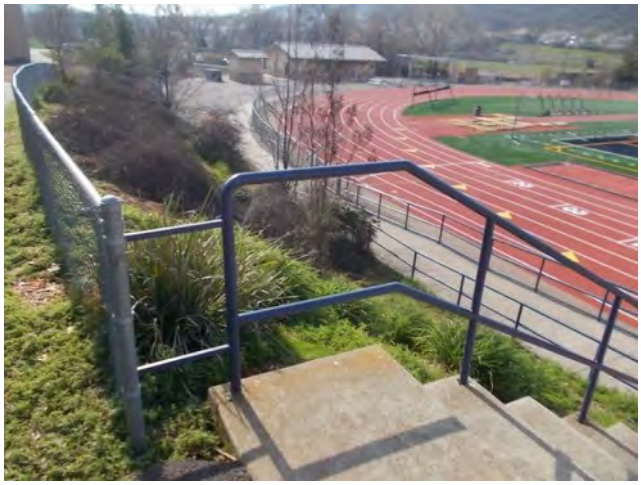
The wireless telecommunication facility is located on the ground. The facility consists of 3 wireless carrier(s) or operator(s): Verizon, T-Mobile and Sprint. The antennas are typically grouped into sectors pointing in different directions to achieve the desired areas of coverage. Verizon's antennas will be mounted on a ball-field light standard and connected to the equipment via coaxial cables.

2.1 Site Map



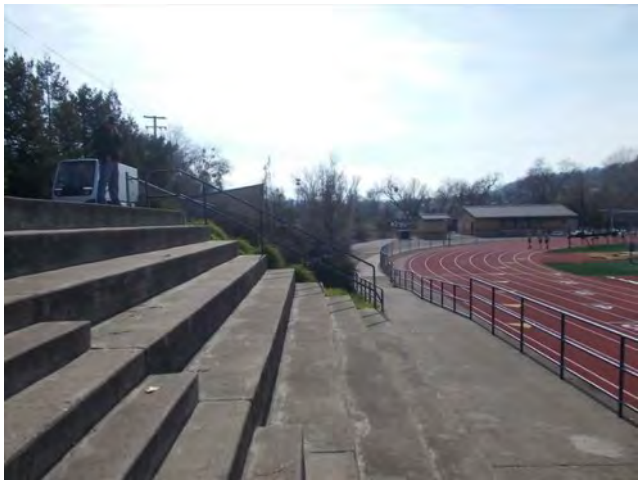
2.2 Site Photographs

Verizon Proposed Location



Verizon Proposed Location

Verizon Proposed Location



Verizon Proposed Location

T-Mobile All Sectors

Sprint All Sectors

2.3 Antenna Inventory

Technical specifications in the table below are provided by our clients and/or gathered from physical field surveys where applicable and/or possible. Conservative estimates are used where information is not provided or available.

Table 2: Site Technical Specifications

Antenna ID	Operator	Antenna Mfg	Antenna Model	Type	Frequency (MHz)	Orientation (°T)	Horizontal BWdth (°)	Antenna Aperture (ft)	Antenna Gain (dBd)	Total Input Power (Watts)	Total ERP (Watts)	Bottom Tip Height Above Ground (Z) (ft)	Bottom Tip Height Ant Level (Z) (ft)
A1	Verizon	Commscope	NHH-45C-R2B	Panel	746	130	48	8.0	15.4	142	4932	57.0	0.0
A1	Verizon	Commscope	NHH-45C-R2B	Panel	880	130	43	8.0	16.2	142	5902	57.0	0.0
A1	Verizon	Commscope	NHH-45C-R2B	Panel	2120	130	42	8.0	17.7	283	16756	57.0	0.0
A2	Verizon	Commscope	NHH-45C-R2B	Panel	746	130	48	8.0	15.4	142	4932	57.0	0.0
A2	Verizon	Commscope	NHH-45C-R2B	Panel	880	130	43	8.0	16.2	142	5902	57.0	0.0
A2	Verizon	Commscope	NHH-45C-R2B	Panel	1965	130	38	8.0	17.4	283	15459	57.0	0.0
A3	Verizon	Commscope	NHH-45C-R2B	Panel	2120	130	42	8.0	17.7	283	16756	57.0	0.0
B1	Verizon	Commscope	NHH-45C-R2B	Panel	746	190	48	8.0	15.4	142	4932	57.0	0.0
B1	Verizon	Commscope	NHH-45C-R2B	Panel	880	190	43	8.0	16.2	142	5902	57.0	0.0
B1	Verizon	Commscope	NHH-45C-R2B	Panel	2120	190	42	8.0	17.7	283	16756	57.0	0.0
B2	Verizon	Commscope	NHH-45C-R2B	Panel	746	190	48	8.0	15.4	142	4932	57.0	0.0
B2	Verizon	Commscope	NHH-45C-R2B	Panel	880	190	43	8.0	16.2	142	5902	57.0	0.0
B2	Verizon	Commscope	NHH-45C-R2B	Panel	1965	190	38	8.0	17.4	283	15459	57.0	0.0
B3	Verizon	Commscope	NHH-45C-R2B	Panel	2120	190	42	8.0	17.7	283	16756	57.0	0.0
C1	Verizon	Commscope	NHH-45C-R2B	Panel	746	350	48	8.0	15.4	142	4932	57.0	0.0
C1	Verizon	Commscope	NHH-45C-R2B	Panel	880	350	43	8.0	16.2	142	5902	57.0	0.0
C1	Verizon	Commscope	NHH-45C-R2B	Panel	2120	350	42	8.0	17.7	283	16756	57.0	0.0
C2	Verizon	Commscope	NHH-45C-R2B	Panel	746	350	48	8.0	15.4	142	4932	57.0	0.0
C2	Verizon	Commscope	NHH-45C-R2B	Panel	880	350	43	8.0	16.2	142	5902	57.0	0.0
C2	Verizon	Commscope	NHH-45C-R2B	Panel	1965	350	38	8.0	17.4	283	15459	57.0	0.0
C3	Verizon	Commscope	NHH-45C-R2B	Panel	2120	350	42	8.0	17.7	283	16756	57.0	0.0
A1	T-Mobile	Ericsson	AIR 21	Panel	1900	90	62	4.5	15.5	-	2083	44.7	NA
A1	T-Mobile	Ericsson	AIR 21	Panel	2100	90	61	4.5	15.7	-	1936	44.7	NA
A2	T-Mobile	Commscope	LNX-6514DS-VTM	Panel	700	90	65	6.1	13.8	-	1702	44.0	NA
B1	T-Mobile	Ericsson	AIR 21	Panel	1900	180	62	4.5	15.5	-	2083	44.7	NA
B1	T-Mobile	Ericsson	AIR 21	Panel	2100	180	61	4.5	15.7	-	1936	44.7	NA
B2	T-Mobile	Commscope	LNX-6514DS-VTM	Panel	700	180	65	6.1	13.8	-	1702	44.0	NA
C1	T-Mobile	Ericsson	AIR 21	Panel	1900	340	62	4.5	15.5	-	2083	44.7	NA
C1	T-Mobile	Ericsson	AIR 21	Panel	2100	340	61	4.5	15.7	-	1936	44.7	NA
C2	T-Mobile	Commscope	LNX-6514DS-VTM	Panel	700	340	65	6.1	13.8	-	1702	44.0	NA
A1	Sprint	Unknown	Unknown	Panel	1900	90	66	6.0	15.8	-	1500	44.0	NA
A2	Sprint	Unknown	Unknown	Panel	2500	90	60	6.0	14.5	-	1500	36.0	NA
B1	Sprint	Unknown	Unknown	Panel	1900	180	66	6.0	15.8	-	1500	44.0	NA
B2	Sprint	Unknown	Unknown	Panel	2500	180	60	6.0	14.5	-	1500	36.0	NA
C1	Sprint	Unknown	Unknown	Panel	1900	340	66	6.0	15.8	-	1500	44.0	NA
C2	Sprint	Unknown	Unknown	Panel	2500	340	60	6.0	14.5	-	1500	36.0	NA

3.0 ANALYSIS

3.1 Site Diagram

Figure 1: Site Diagram - Plan (bird's eye) view

3.2 Emission Predictions

Figure 2: Plan (bird's eye) view map of results compared to FCC's General Population MPE (Maximum Permissible Exposure) Limits. Gray represents areas where exposure levels are calculated to be at or below 5%; Green- between 5% & 100% (below MPE limits); blue, yellow & red – greater than 100% (exceeds MPE limits). Individuals can safely occupy areas in gray and green for indefinite amount of time; whereas areas in blue, yellow & red must be restricted to RF trained personnel who has been made fully aware of potential for exposure, has control and knows how to reduce their exposure with the use of personal protection equipment or has the ability to power down the transmitters.

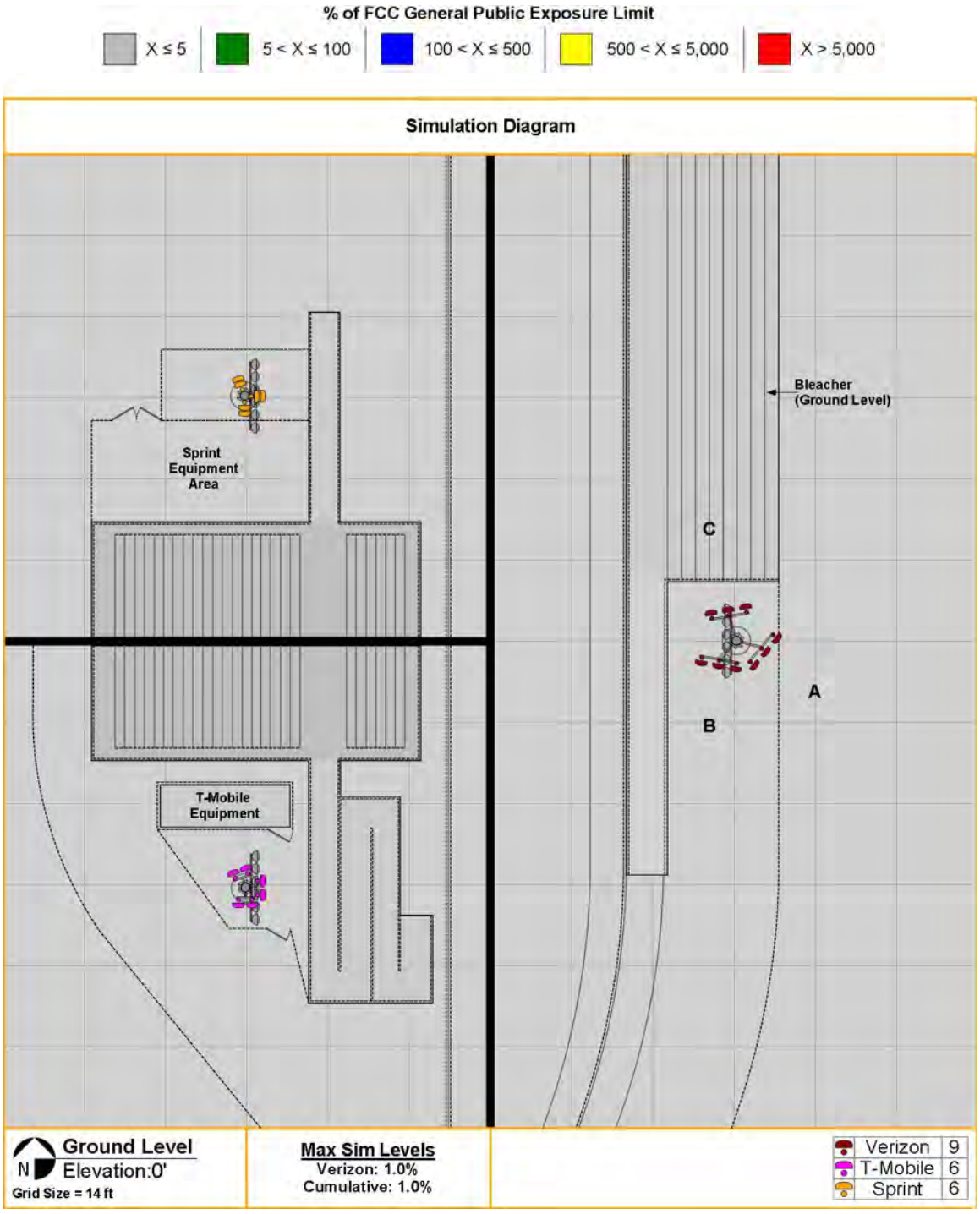
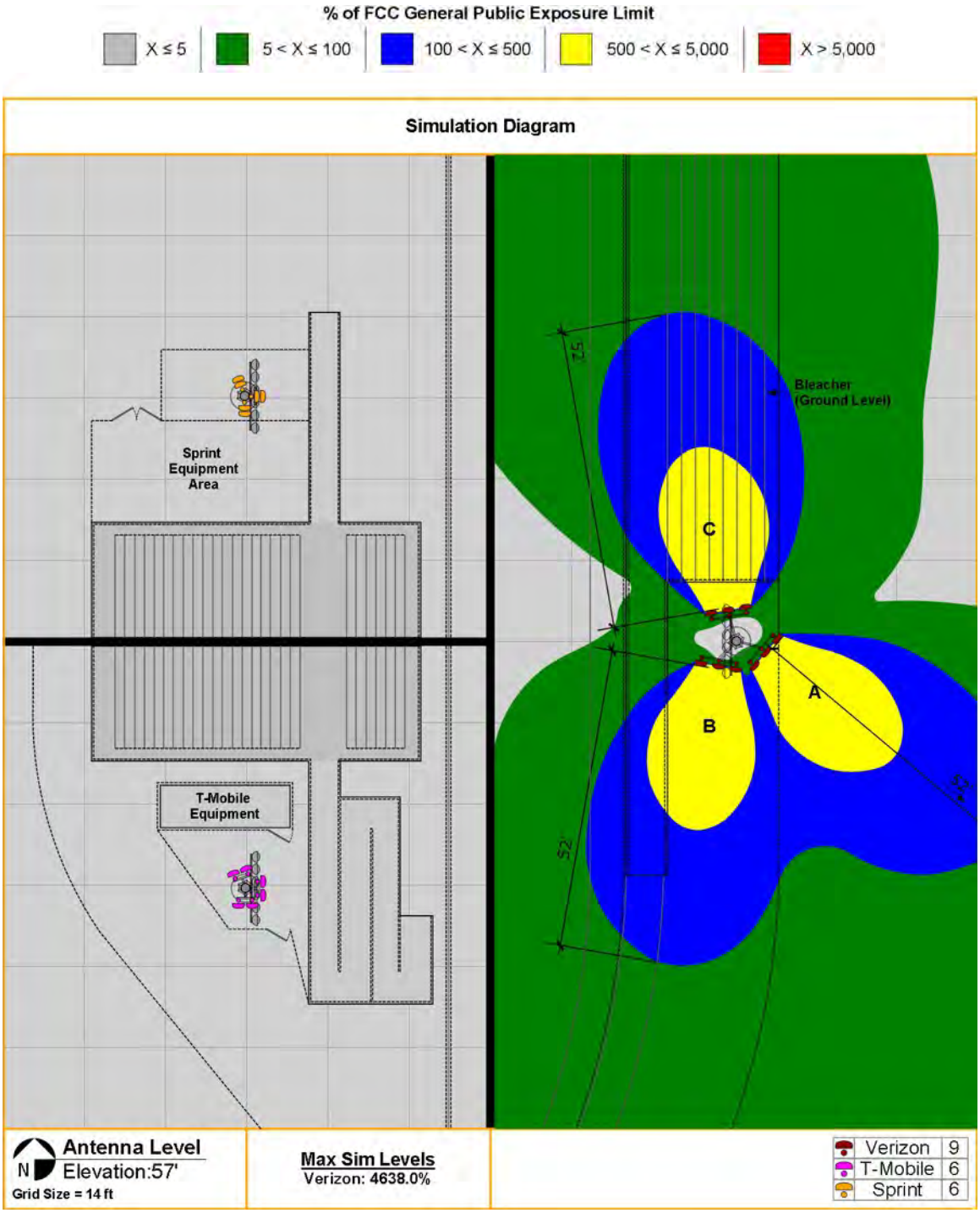


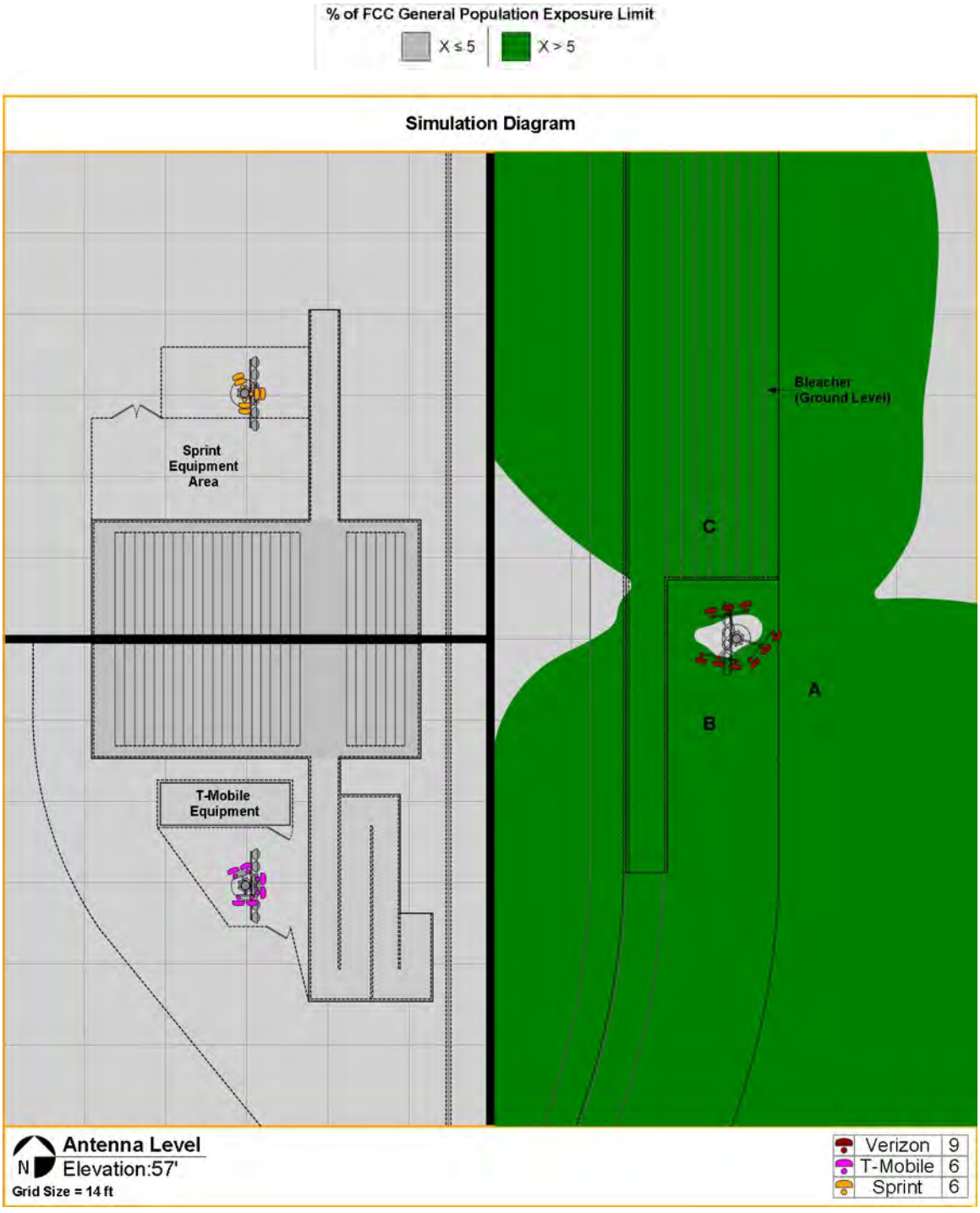
Figure 3: Plan (bird's eye) view map of results compared to FCC's General Population MPE (Maximum Permissible Exposure) Limits. Gray represents areas where exposure levels are calculated to be at or below 5%; Green- between 5% & 100% (below MPE limits); blue, yellow & red – greater than 100% (exceeds MPE limits). Individuals can safely occupy areas in gray and green for indefinite amount of time; whereas areas in blue, yellow & red must be restricted to RF trained personnel who has been made fully aware of potential for exposure, has control and knows how to reduce their exposure with the use of personal protection equipment or has the ability to power down the transmitters.



3.3 Five Percent Contributions

Mitigation measures are a shared responsibility for carriers whose RF emission levels exceed five percent of the FCC's exposure limits in areas of non-compliance.

Figure 4: Plan (bird's eye) view map of results compared to FCC's General Population MPE (Maximum Permissible Exposure) Limits. Gray represents areas where exposure levels are calculated to be at or below 5%; Green – greater than 5%.



4.0 CONCLUSION

4.1 Results

For a person standing on the ground, calculations for Verizon's site including contributions from existing carriers resulted in exposure levels below the FCC's most stringent General Population MPE Limits (see figure 2).

At antenna elevation, the highest calculated exposure level is above the FCC's General Population MPE Limits near the Verizon antennas (see figure 3). The overexposed (yellow and blue) areas extend 52-feet from the front face of the Verizon antennas. From the provided drawings, there are no other buildings or surrounding structures within 52-feet of the Verizon antennas. Beyond 52-feet, exposure levels are predicted to be below the FCC's most stringent General Population MPE Limits.

The antennas are mounted on a tall pole and therefore not accessible by the general public. It is presumed that Verizon employees and contractors are aware of the transmitting antennas and will take appropriate precautions when working near them. However, there may be situations where workers i.e. light standard personnel, etc. may find themselves directly in front of the antennas. Individuals working near/in front of antennas must receive appropriate RF safety training[1] and be made aware of the HotZones (areas where RF exposure may potentially exceed FCC safety limits). In addition, contact information should be made available in the event work is required within the HotZones.

4.2 Recommendation(s)

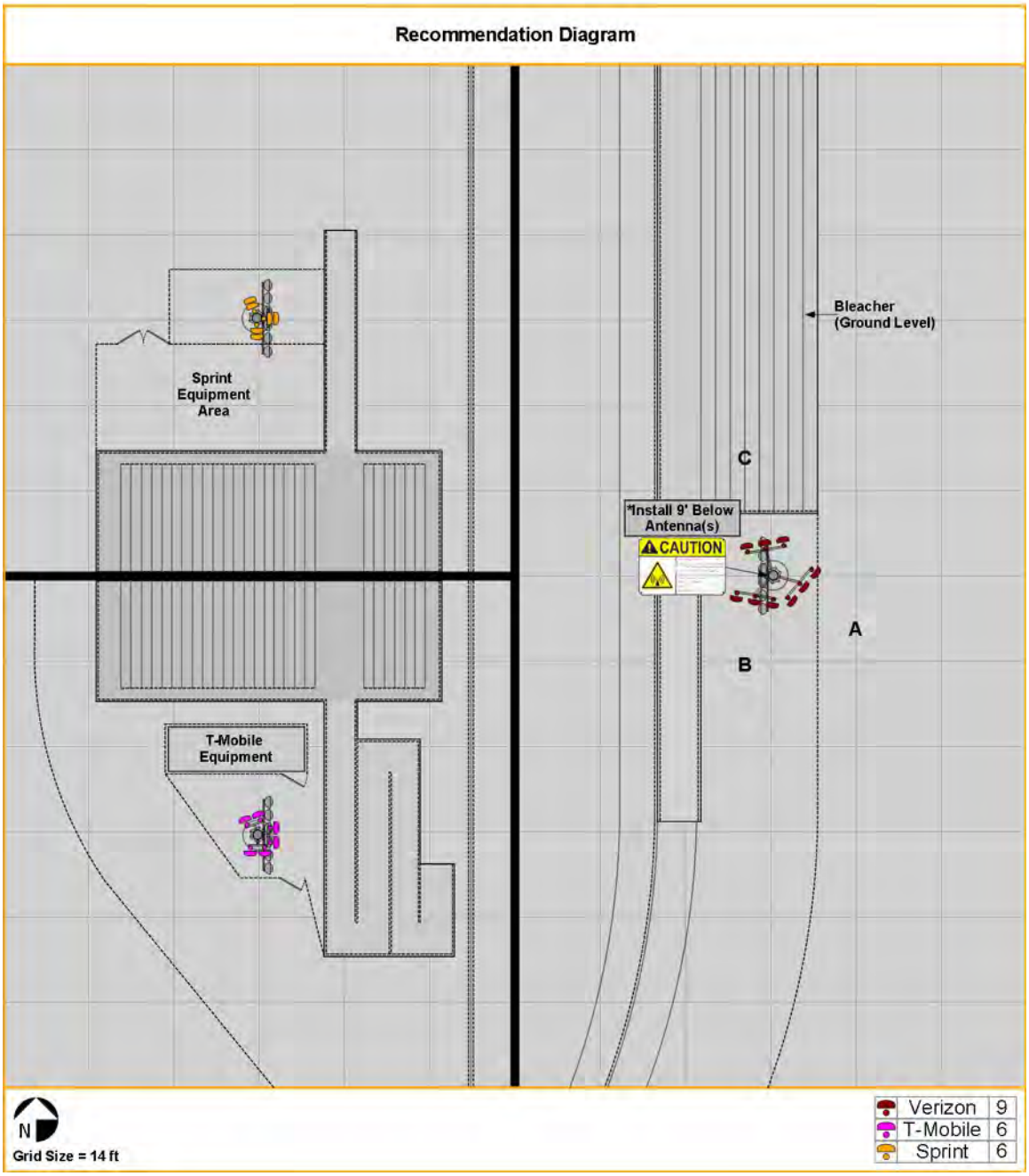
For the facility to be classified as an Occupational/Controlled environment, the following action(s) are recommended in accordance with the FCC's and Verizon's RF Safety Guidelines[2] (see figure 5):

1) Install CAUTION Sign(s) on the pole where they will be clearly visible to workers. Signage should be placed at least 9-feet below the antennas, where RF emissions may start to exceed the General Population Limits.

Compliance actions, if necessary, for the other carrier(s) at this site have not been determined as part of this study since estimates were used for their site specifications.

[1] See Appendix for Dtech's RF Safety training program - AntennaView®
[2] Verizon Radio Frequency Compliance (RFC) Signage & Demarcation Policy – June 2014

Figure 5: Recommendation(s)



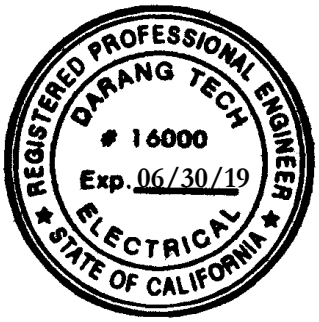
4.3 Statement of Compliance

Based on the above results, analysis and recommendation(s), it is the undersigned's professional opinion that Verizon's site including contributions from existing carriers will be compliant with the FCC's RF Safety Guidelines provided recommendation(s) are implemented.

4.4 Engineer Certification

This report has been prepared by or under the direction of the following Registered Professional Engineer: Darang Tech, holding California registration number 16000. I have reviewed this report and believe it to be both true and accurate to the best of my knowledge.

Darang Tech, P.E.



Appendix A: Background

Dtech uses the FCC's guidelines described in detail in Office of Engineering & Technology, Bulletin No. 65 ("OET-65") "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields". The table below summarizes the current Maximum Permissible Exposure ("MPE") safety limits classified into two groups: General population and Occupational.

Table 3: FCC MPE Limits (from OET-65)

Frequency (Mhz)	General Population/ Uncontrolled MPE (mW/cm^2)	Averaging Time (minutes)	Occupational/ Controlled MPE (mW/cm^2)	Averaging Time (minutes)
30 - 300	0.2	30	1.0	6
300 - 1500	Frequency (Mhz)/1500 (0.2 – 1.0)	30	Frequency (Mhz)/300 (1.0 – 5.0)	6
1500 - 100,000	1.0	30	5.0	6

General population/uncontrolled limits apply in situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment, and may not be fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general public always fall under this category when exposure is not employment-related.

Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment, and those persons have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/controlled limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits, as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

It is important to understand that the FCC guidelines specify *exposure* limits not *emission* limits. For a transmitting facility to be out of compliance with the FCC's RF safety guidelines an area or areas where levels exceed the MPE limits must, first of all, be in some way *accessible* to the public or to workers. When accessibility to an area where excessive levels is appropriately restricted, the facility or operation can certify that it complies with the FCC requirements.

Appendix B: Measurement and/or Computer Simulation Methods

Spatial averaging measurement technique is used. An area between 2 and 6 feet, approximately the size of an average human, is scanned in single passes from top to bottom in multiple planes. When possible, measurements were made at very close proximity to the antennas and inside the main beam where most of the energy is emitted. The spatial averaged values were recorded.

Dtech uses an industry standard power density prediction computer Model[3] to assess the worse-case, cumulative EMF impact of the surrounding areas of the subject site. The Model does not take into account losses due to buildings. Its methodologies are conservative enough to account for typical down-tilts deployed in wireless communications. In addition, the analysis is performed at 100% duty cycle-all transmitters are active at all times and transmitting at maximum power. For purposes of a cumulative study, nearby transmitters are included where possible. The result is a surrounding area map color-coded to percentages of the applicable FCC's MPE Limits. A result higher than 100% exceeds the Limits.

Appendix C: Limitations

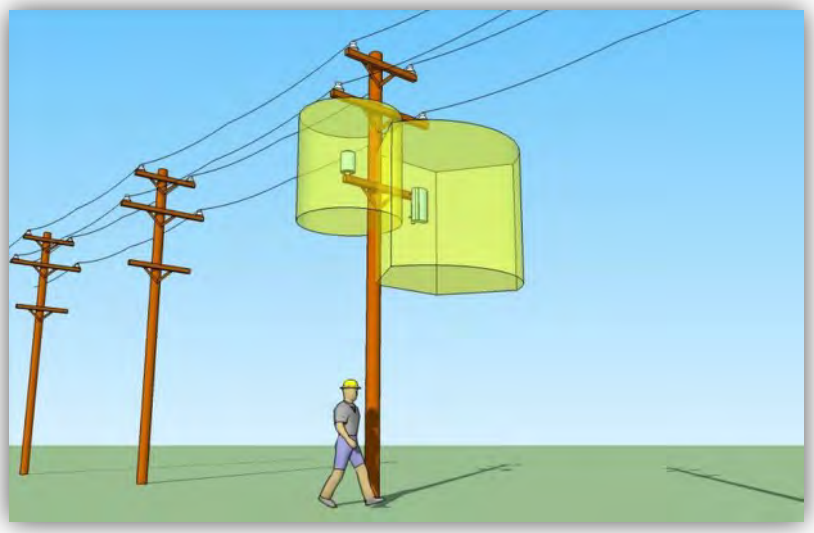
The conclusions in this document rendered by Dtech are based solely upon the information collected during the site survey and/or furnished by our Client which Dtech believes is accurate and correct. Dtech, however, has no responsibility should such Client provided information prove to be inaccurate or incorrect. Third party specification estimates used for cumulative computer simulation purposes, where applicable, are based on common industry practices and our best interpretation of available information. Data, results and conclusions in this document are valid as of its date. However, as mobile technologies continuously change, these data, results and conclusions may also be at variance with such future changes. Dtech has no responsibility to update its survey or report to account for such future technology changes. This document was prepared for the use of our Client only and cannot be utilized by any third party for any purpose without Dtech's written consent. Dtech shall have no liability for any unauthorized use of this document and any such unauthorized user shall defend, indemnify and hold Dtech and its owners, directors, officers and employees harmless from and against any liability, claim, demand, loss or expense (including reasonable attorney's fees) arising from such unauthorized use.

[3] Dtech uses Roofmaster(tm) 2015 Version 15.7.2.18 per Verizon's direction.

Appendix D: AntennaView®

Dtech Communications offers a unique, online tool (AntennaView®) to train, identify and inform individuals of site-specific HotZones – areas that may potentially exceed the FCC's Safety Limits. AntennaView® is an online, interactive training tool that will educate nontechnical people in about ten minutes. It is a site-specific, RF safety training program that requires the end user to sign an online agreement thereby limiting the liability to the landlord and carriers. Some of the advantages include:

- Virtual walk-through in 3-D with corresponding photographs
- Site-specific, interactive, simple to understand
- Delivers pertinent information i.e. HotZones (areas that may potentially exceed FCC safety limits), site owners and contact numbers.
- User online agreement = accountability

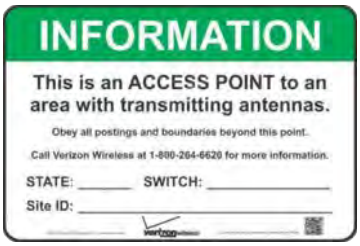


We invite you to take a quick tour at www.AntennaView.com and see how easy to understand and informative AntennaView® is.

Under Article 47 CFR § 1.1307(b), the FCC & OSHA mandates wireless operators/facility owners to have an RF survey completed including a safety plan and training to ensure that their tenants, employees and contractors who work in or around RF sites are aware of the potential risks posed by RF radiation. Most cell sites are located on building rooftops where HVAC contractors, window washers, painters, etc. routinely work and generally do not know what antennas even look like. Dtech Communications can help with ongoing FCC/OSHA compliance and provide practical training that is easy to understand by anyone regardless of their technical background.

Appendix E: Verizon's RF Advisory Signs

GUIDELINES Sign



NOC INFORMATION Sign

NOTICE Sign

CAUTION Sign

WARNING Sign

Exhibit C

HAMMETT & EDISON, INC.
CONSULTING ENGINEERS
BROADCAST & WIRELESS

WILLIAM F. HAMMETT, P.E.
RAJAT MATHUR, P.E.
ROBERT P. SMITH, JR.
ANDREA L. BRIGHT, P.E.
NEIL J. OLIJ, P.E.
BRIAN F. PALMER
M. DANIEL RO
NICHOLAS J. PETERS

ROBERT L. HAMMETT, P.E.
1920-2002
EDWARD EDISON, P.E.
1920-2009

DANE E. ERICKSEN, P.E.
CONSULTANT

BY E-MAIL SARA.KING@EPICWIRELESS.NET

May 21, 2021

Ms. Sara King
Epic Wireless Group LLC
605 Coolidge Drive, Suite 100
Folsom, California 95630

Dear Sara:

As you requested, we have reviewed the Findings for Denial from the Planning Commission action on March 11, 2021, regarding the Verizon Wireless base station installation proposed at Oak Ridge High School in El Dorado Hills, California. In particular, Findings 3.b. and 4.a. reference an increase in height of the existing loudspeakers when they are relocated to the two replacement light poles on the east side of the football field, but Sheet A-5 of the submitted drawings shows that the speakers are to be mounted at the same height as they are today. While the new poles are taller and will be installed slightly uphill from the existing poles, the speakers are to be mounted at the same elevation above the playing field, and there is not any change in the speaker orientation shown in the drawings.

Thus, the height and orientation of the speakers relative to the houses to the southeast and southwest are unchanged. The distances change a little: about 25 feet closer toward the southeast, out of 370 feet, and about 9 feet further away from the southwest, out of 920 feet. For the houses to the southeast, the calculated difference in sound level is just 0.6 dBA, well below the 3 dBA change that is considered "barely perceptible."

Therefore, based on the information and analysis above, it is my professional opinion that there would be no impact from the Verizon Wireless proposal on noise levels at nearby houses from the High School's speaker system at the football field. Please let me know if any further information is required on this matter.

Sincerely yours,

William F. Hammett, P.E.

REGISTERED PROFESSIONAL ENGINEER
WILLIAM F. HAMMETT
E-13026
M-20676
Exp. 6-30-2021
ELECTRICAL
MECHANICAL
STATE OF CALIFORNIA

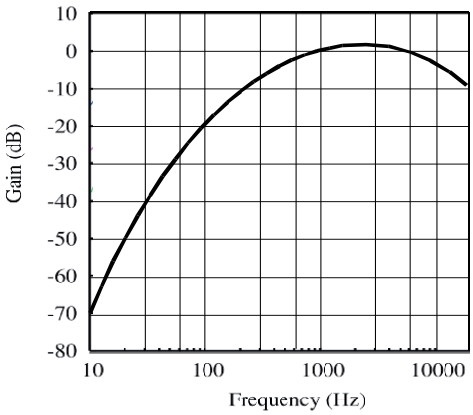
lw

Enclosure

cc: Ms. Lauren Jongsma – BY EMAIL LAUREN.JONGSMA@EPICWIRELESS.NET

Noise Level Calculation Methodology

Most municipalities and other agencies specify noise limits in units of dBA, which is intended to mimic the reduced receptivity of the human ear to Sound Pressure ("L_P") at particularly low or high frequencies. This frequency-sensitive filter shape, shown in the graph to the right as defined in the International Electrotechnical Commission Standard No. 179, the American National Standards Institute Standard No. 5.1, and various other standards, is also incorporated into most calibrated field test equipment for measuring noise levels.



30 dBA	library
40 dBA	rural background
50 dBA	office space
60 dBA	conversation
70 dBA	car radio
80 dBA	traffic corner
90 dBA	lawnmower

The dBA units of measure are referenced to a pressure of 20 µPa (micropascals), which is the threshold of normal hearing. Although noise levels vary greatly by location and noise source, representative levels are shown in the box to the left. In relative loudness, a 3 dBA change is considered "barely perceptible," while a change of 5 dBA is required for the difference to be "readily perceptible."

Manufacturers of many types of equipment, such as air conditioners, generators, and telecommunications devices, often test their products in various configurations to determine the acoustical emissions at certain distances. This data, normally expressed in dBA at a known reference distance, can be used to determine the corresponding sound pressure level at any particular distance, such as at a nearby building or property line. The sound pressure drops as the square of the increase in distance according to the formula:

$$L_P = L_K + 20 \log(D_K/D_P),$$

where L_P is the sound pressure level at distance D_p and L_K is the known sound pressure level at distance D_K.

Individual sound pressure levels at a particular point from several different noise sources cannot be combined directly in units of dBA. Rather, the units need to be converted to scalar sound intensity units in order to be added together, then converted back to decibel units, according to the formula:

where L_T is the total sound pressure level and L_1, L_2, etc are individual sound pressure levels.

$$L_T = 10 \log \left(10^{L_1/10} + 10^{L_2/10} + \ldots\right),$$

Certain equipment installations may include the placement of barriers and/or absorptive materials to reduce transmission of noise beyond the site. Noise Reduction Coefficients ("NRC") are published for many different materials, expressed as unitless power factors, with 0 being perfect reflection and 1 being perfect absorption. Unpainted concrete block, for instance, can have an NRC as high as 0.35. However, a barrier's effectiveness depends on its specific configuration, as well as the materials used and their surface treatment.

Oak Ridge High School Football

El Dorado Hills,CA

Lighting System

Pole / Fixture Summary

Pole ID	Pole Height	Mtg Height	Fixture Qty	Luminaire Type	Avg Load	Max Load	Circuit
F1	80'	80'	13	Green Generation	20.33 kW	22.10 kW	A
F2	80'	80'	14	Green Generation	21.90 kW	23.80 kW	A
F3-F4	80'	80'	10	TLC-LED-1500	14.30 kW	14.30 kW	A
		80'	1	TLC-LED-400	0.40 kW	0.40 kW	B
		16'	2	TLC-BT-575	1.15 kW	1.15 kW	A
4			***53***		***73.93 kW***	***77.60 kW***	

Circuit Summary

Circuit	Description	Avg Load	Max Load	Fixture Qty
A	Football	73.13 kW	76.8 kW	51
B	Egress	0.8 kW	0.8 kW	2

Fixture Type Summary

Type	Source	Wattage	Lumens	L90	L80	L70	Quantity
TLC-LED-1500	LED 5700K - 75 CRI	1430W	160,000	>120,000	>120,000	>120,000	20
TLC-BT-575	LED 5700K - 75 CRI	575W	52,000	>120,000	>120,000	>120,000	4
TLC-LED-400	LED 5700K - 75 CRI	400W	46,500	>120,000	>120,000	>120,000	2

Light Level Summary

Calculation Grid Summary

Grid Name	Calculation Metric	Illumination					Circuits	Fixture Qty
		Ave	Min	Max	Max/Min	Ave/Min		
150' Football Blanket	Horizontal Illuminance	6.40	0	57.7	0.00		A	51
Football	Horizontal Illuminance	27.7	5	59	12.47	5.54	A	51
Track	Horizontal Illuminance	11.4	1	36	31.13	11.40	A	51
Visitor Bleacher	Horizontal	5	2	7	3.16	2.50	B	2

From Hometown to Professional

REGISTERED PROFESSIONAL ENGINEER
JAMES A DOYLE
NO. 19146
EXP. 06/30/22
ELECTRICAL
STATE OF CALIFORNIA

musco Lighting
We Make It Happen.

ENGINEERED DESIGN By: Vashon Alexander · File #196236A-Spill · 31-Mar-21

PROJECT SUMMARY

Exhibit D

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
1	F1	80'	-	80'	LSG 15MZ	13	13	0
1	F2	80'	-	80'	LSG 15MZ	14	14	0
2	F3-F4	80'	5'	85'	TLC-LED-400	1	0	1
				20.5'	TLC-BT-575	2	2	0
				85'	TLC-LED-1500	10	10	0
4	TOTALS					53	51	2

This represents a blanket grid that shows the horizontal footcandle measurements within the field area.

SCALE IN FEET 1 : 60

0' 60' 120'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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Oak Ridge High School Football

El Dorado Hills,CA

GRID SUMMARY

Name:	**Football**
Size:	360' x 160'
Spacing:	30.0' x 30.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**27.7**
Maximum:	59
Minimum:	5
Avg / Min:	5.86
Max / Min:	**12.47**
UG (adjacent pts):	2.03
CU:	0.26
No. of Points:	72

LUMINAIRE INFORMATION

Applied Circuits:	A
No. of Luminaires:	**51**
Avg Load:	73.13 kW
Max Load:	76.8 kW

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

REGISTERED PROFESSIONAL ENGINEER
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ILLUMINATION SUMMARY

EQUIPMENT LIST FOR AREAS SHOWN								
Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	F3-F4	80'	5'	85'	TLC-LED-400	1	1	0
				20.5'	TLC-BT-575	2	0	2
				85'	TLC-LED-1500	10	0	10
2	TOTALS					26	2	24

This represents a blanket grid that shows the horizontal footcandle measurements within the east bleechers area.

SCALE IN FEET 1 : 30

0' 30' 60'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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Oak Ridge High School Football

El Dorado Hills,CA

GRID SUMMARY	
Name:	Visitor Bleacher
Size:	360' x 160'
Spacing:	10.0' x 10.0'

ILLUMINATION SUMMARY	
MAINTAINED HORIZONTAL FOOTCANDLES	
	Entire Grid
Scan Average:	5.0
Maximum:	7
Minimum:	2
Avg / Min:	2.28
Max / Min:	3.16
UG (adjacent pts):	1.76
CU:	0.34
No. of Points:	69
LUMINAIRE INFORMATION	
Applied Circuits:	B
No. of Luminaires:	2
Total Load:	0.8 kW

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

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ILLUMINATION SUMMARY

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
1	F1	80'	-	80'	LSG 15MZ	13	13	0
1	F2	80'	-	80'	LSG 15MZ	14	14	0
2	F3-F4	80'	5'	85'	TLC-LED-400	1	0	1
				20.5'	TLC-BT-575	2	2	0
				85'	TLC-LED-1500	10	10	0
4	TOTALS					53	51	2

This represents a grid that shows the horizontal footcandle measurements within the track area surrounding the field.

SCALE IN FEET 1 : 60

0' 60' 120'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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Oak Ridge High School Football

El Dorado Hills,CA

GRID SUMMARY

Name:	**Track**
Size:	Irregular
Spacing:	30.0' x 30.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**11.4**
Maximum:	36
Minimum:	1
Avg / Min:	9.72
Max / Min:	**31.13**
UG (adjacent pts):	0.00
CU:	0.06
No. of Points:	44

LUMINAIRE INFORMATION

Applied Circuits:	A
No. of Luminaires:	**51**
Avg Load:	73.13 kW
Max Load:	76.8 kW

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

REGISTERED PROFESSIONAL ENGINEER
JAMES A COYLE
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ELECTRICAL
STATE OF CALIFORNIA

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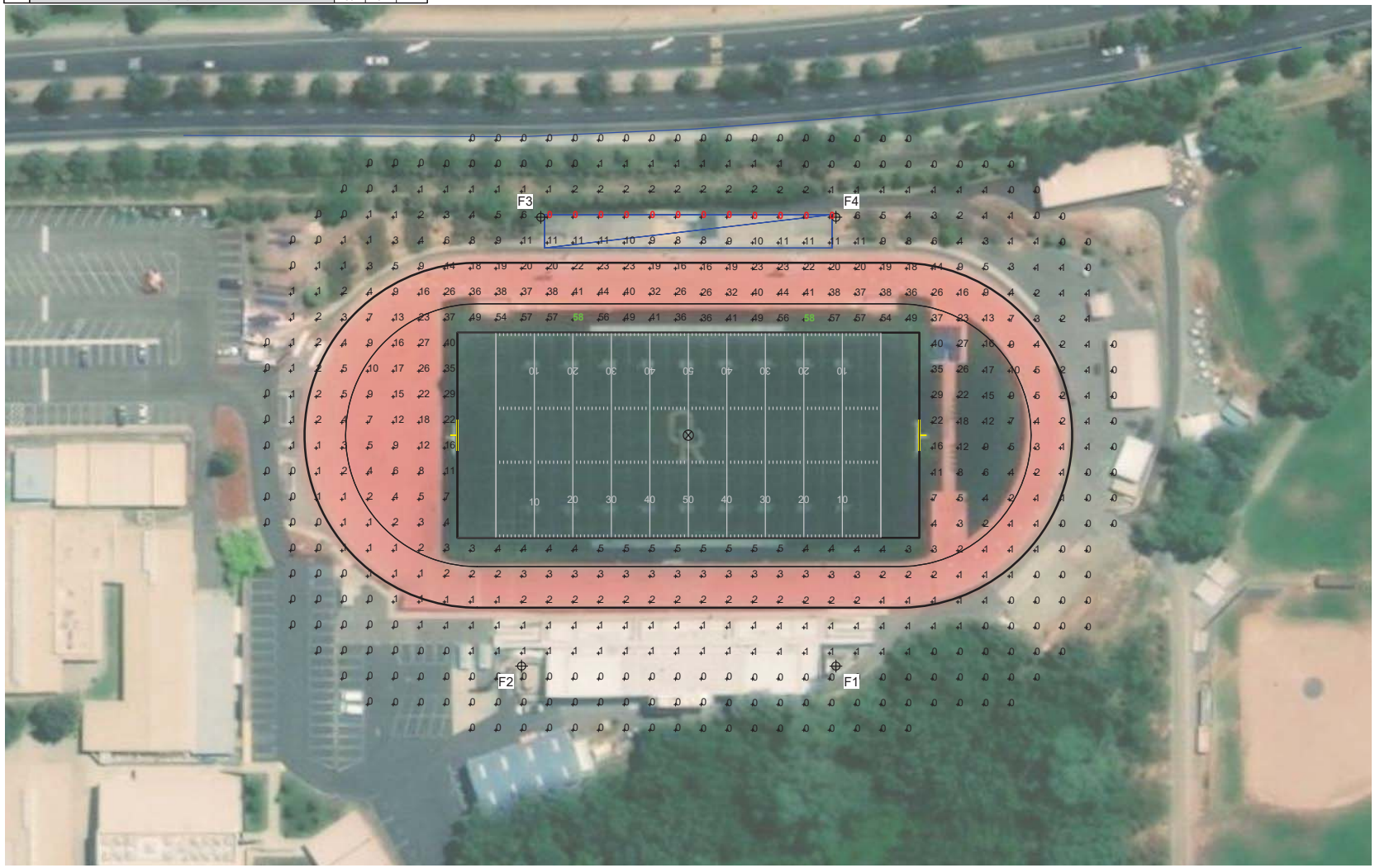
ILLUMINATION SUMMARY

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
1	F1	80'	-	80'	LSG 15MZ	13	13	0
1	F2	80'	-	80'	LSG 15MZ	14	14	0
2	F3-F4	80'	5'	85'	TLC-LED-400	1	0	1
				20.5'	TLC-BT-575	2	2	0
				85'	TLC-LED-1500	10	10	0
4	TOTALS					53	51	2

This represents a blanket grid that shows the horizontal footcandles run out to 150' from the field. At Silva Valley Parkway on the School side of the road the values are zero. A horizontal reading is measuring the light contribution with the meter horizontal at 3 feet above grade.



SCALE IN FEET 1 : 80

0' 80' 160'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

ENGINEERED DESIGN By: Vashon Alexander · File #196236A-Spill · 31-Mar-21

Oak Ridge High School Football

El Dorado Hills,CA

GRID SUMMARY

Name:	**150' Football Blanket**
Size:	360' x 160'
Spacing:	20.0' x 20.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**6.395**
Maximum:	57.73
Minimum:	0.00
CU:	0.22
No. of Points:	588

LUMINAIRE INFORMATION

Applied Circuits:	A
No. of Luminaires:	**51**
Avg Load:	73.13 kW
Max Load:	76.8 kW

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

REGISTERED PROFESSIONAL ENGINEER
JAMES A COYLE
NO. 19146
EXP. 06/30/22
ELECTRICAL
STATE OF CALIFORNIA

musco Lighting
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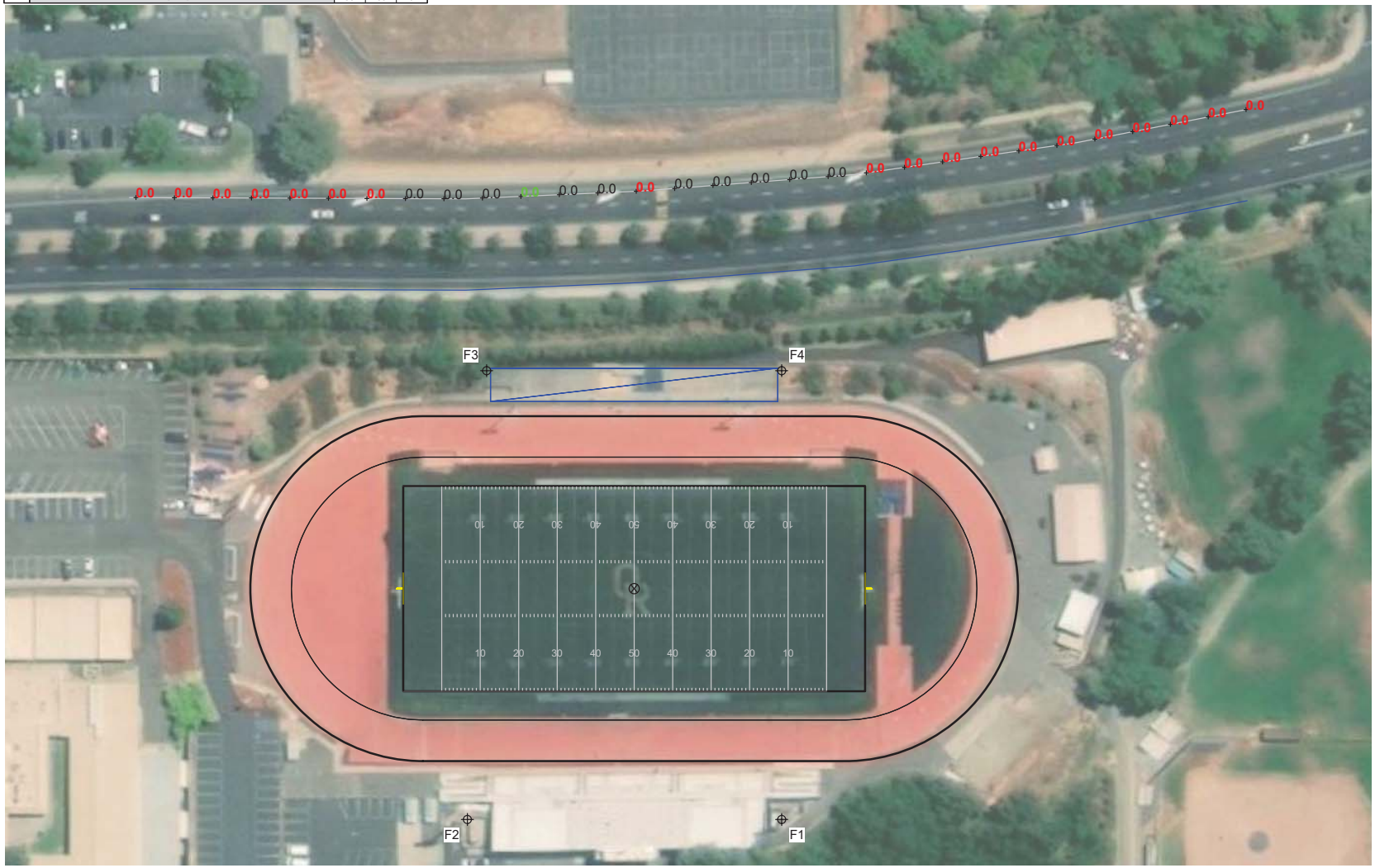
ILLUMINATION SUMMARY

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
1	F1	80'	-	80'	LSG 15MZ	13	13	0
1	F2	80'	-	80'	LSG 15MZ	14	14	0
2	F3-F4	80'	5'	85'	TLC-LED-400	1	1	0
				20.5'	TLC-BT-575	2	2	0
				85'	TLC-LED-1500	10	10	0
4	TOTALS					53	53	0

This represents a horizontal reading on the east side of Silva Valley Parkway, values are zero.



SCALE IN FEET 1 : 80

0' 80' 160'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

ENGINEERED DESIGN By: Vashon Alexander · File #196236A-Spill · 31-Mar-21

Oak Ridge High School Football

El Dorado Hills,CA

GRID SUMMARY

Name:	**Silva Valley Pkwy Northbound**
Spacing:	30.0'
Height:	23.0' above grade

ILLUMINATION SUMMARY

HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	0.000
Maximum:	0.00
Minimum:	0.00
No. of Points:	30

LUMINAIRE INFORMATION

Applied Circuits:	A, B
No. of Luminaires:	**53**
Avg Load:	73.93 kW
Max Load:	77.6 kW

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

REGISTERED PROFESSIONAL ENGINEER
JAMES A COYLE
NO. 19146
EXP. 06/30/22
ELECTRICAL
STATE OF CALIFORNIA

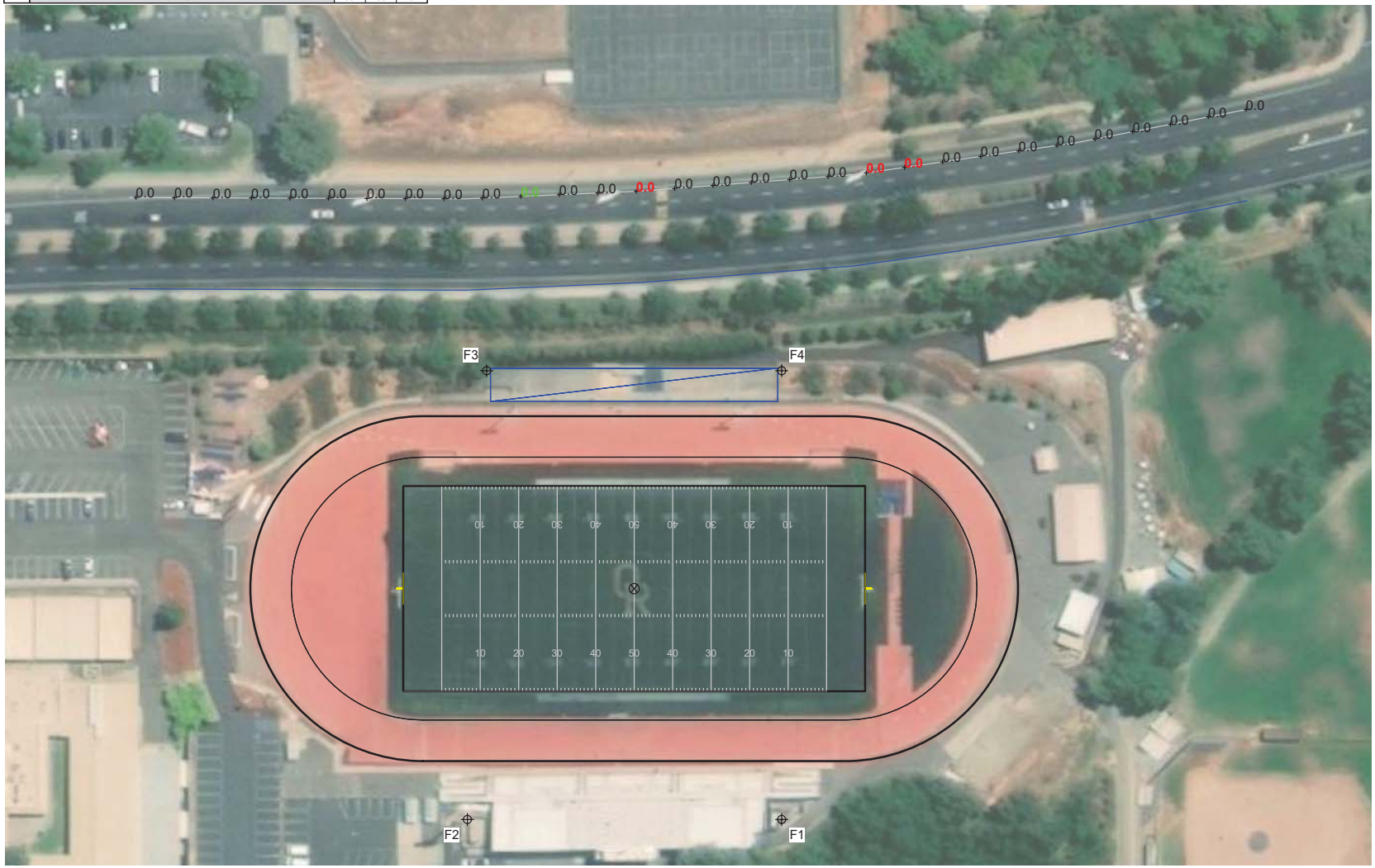
musco Lighting
We Make It Happen.

ILLUMINATION SUMMARY

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
1	F1	80'	-	80'	LSG 15MZ	13	13	0
1	F2	80'	-	80'	LSG 15MZ	14	14	0
2	F3-F4	80'	5'	85'	TLC-LED-400	1	1	0
				20.5'	TLC-BT-575	2	2	0
				85'	TLC-LED-1500	10	10	0
4	TOTALS					53	53	0

This depicts the vertical footcandles on the east side of Silva Valley Parkway. A vertical reading is taken by pointing the meter back at the most offense light source. Values are zero.



SCALE IN FEET 1 : 80

0' 80' 160'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

Oak Ridge High School Football

El Dorado Hills,CA

GRID SUMMARY

Name:	**Silva Valley Pkwy Northbound**
Spacing:	30.0'
Height:	23.0' above grade

ILLUMINATION SUMMARY

MAX VERTICAL FOOTCANDLES

	Entire Grid
Scan Average:	0.000
Maximum:	0.00
Minimum:	0.00
No. of Points:	30

LUMINAIRE INFORMATION

Applied Circuits:	A, B
No. of Luminaires:	**53**
Avg Load:	73.93 kW
Max Load:	77.6 kW

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

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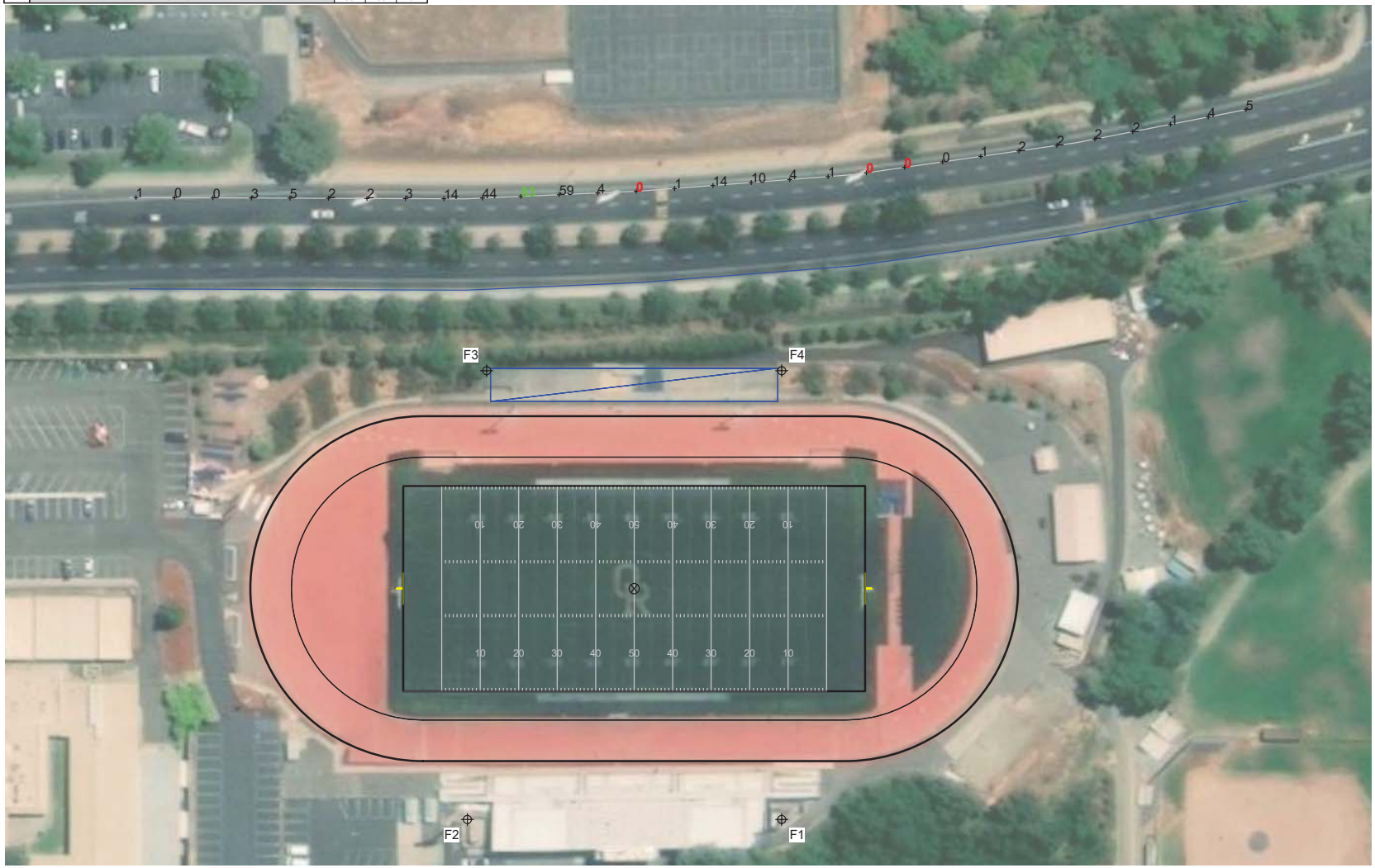
ENGINEERED DESIGN By: Vashon Alexander · File #196236A-Spill · 31-Mar-21

ILLUMINATION SUMMARY

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
1	F1	80'	-	80'	LSG 15MZ	13	13	0
1	F2	80'	-	80'	LSG 15MZ	14	14	0
2	F3-F4	80'	5'	85'	TLC-LED-400	1	1	0
				20.5'	TLC-BT-575	2	2	0
				85'	TLC-LED-1500	10	10	0
4	TOTALS					53	53	0

This is the depicted candela values on the east side of Silva. Candela is the measure of brightness from a light source. A car driving down Silva Parkway with it's low beam headlights on would produce around 15,000 candela on low beam and around 36,000 candela on hi beam. Our Candela Average on the East side of Silva Valley is average is around 9. It is fair to conclude that you would experience no glare from the lights on the East side of the parkway and would most likely not be able to even see any light sources.



SCALE IN FEET 1 : 80

0' 80' 160'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

ENGINEERED DESIGN By: Vashon Alexander · File #196236A-Spill · 31-Mar-21

Oak Ridge High School Football

El Dorado Hills,CA

GRID SUMMARY

Name:	**Silva Valley Pkwy Northbound**
Spacing:	30.0'
Height:	23.0' above grade

ILLUMINATION SUMMARY

CANDELA (PER FIXTURE)

	Entire Grid
Scan Average:	8.999
Maximum:	82.70
Minimum:	0.00
No. of Points:	30

LUMINAIRE INFORMATION

Applied Circuits:	A, B
No. of Luminaires:	**53**
Avg Load:	73.93 kW
Max Load:	77.6 kW

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

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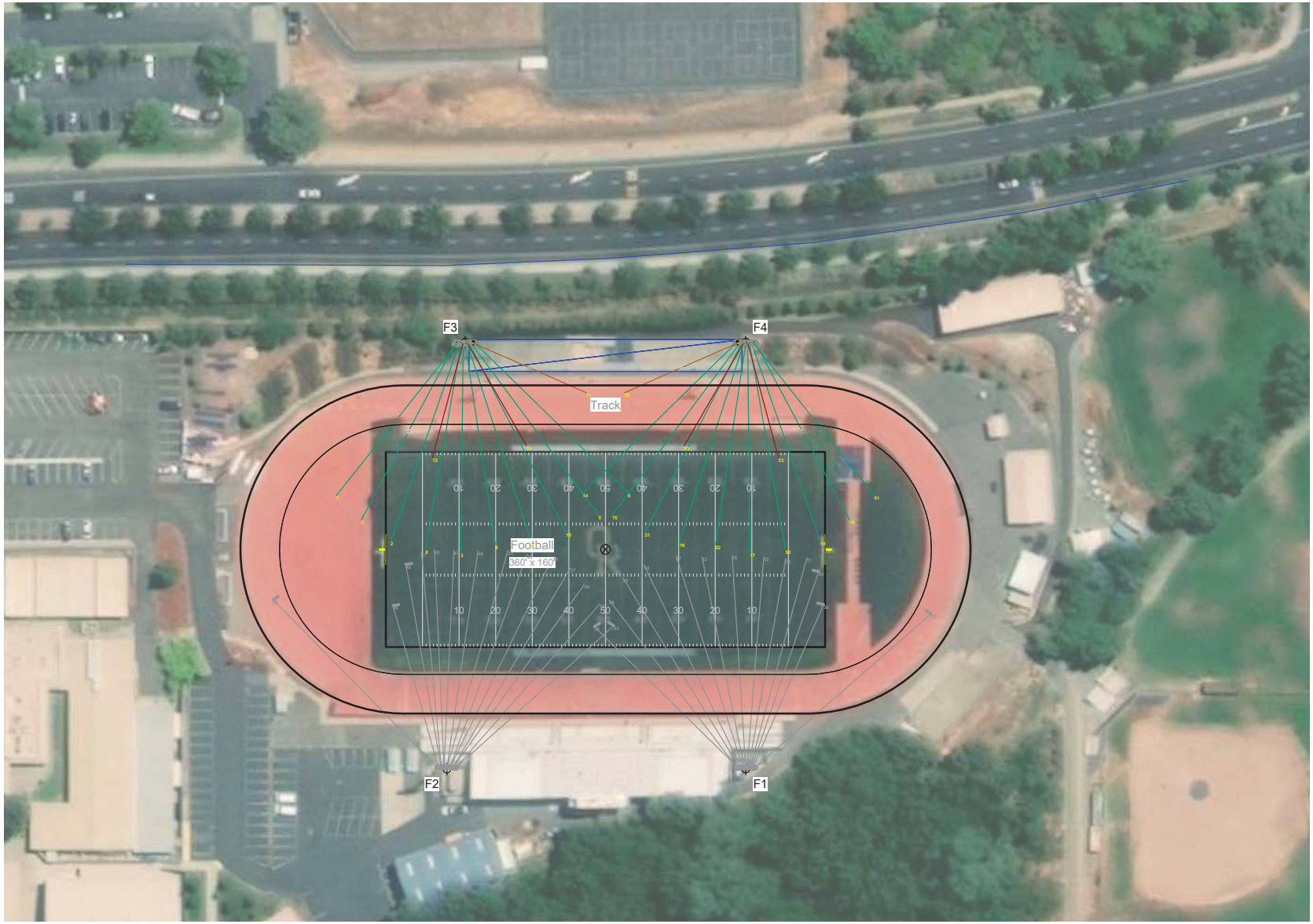
ILLUMINATION SUMMARY



Oak Ridge High School Football

El Dorado Hills,CA

EQUIPMENT LAYOUT

INCLUDES:
· Football
· Track

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

EQUIPMENT LIST FOR AREAS SHOWN

	Pole			Luminaires		
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE
1	F1	80'	-	80'	LSG 15MZ	13
1	F2	80'	-	80'	LSG 15MZ	14
2	F3-F4	80'	5'	85'	TLC-LED-400	1
				20.5'	TLC-BT-575	2
				85'	TLC-LED-1500	10
4	TOTALS					53

SINGLE LUMINAIRE AMPERAGE DRAW CHART

Ballast Specifications (.90 min power factor)	Line Amperage Per Luminaire (max draw)						
Single Phase Voltage	208 (60)	220 (60)	240 (60)	277 (60)	347 (60)	380 (60)	480 (60)
1500 watt MZ	8.6	8.3	7.5	6.5	5.1	4.7	3.7
TLC-LED-1500	8.5	8.1	7.4	6.4	5.1	4.7	3.7
TLC-BT-575	3.4	3.2	2.9	2.5	2.0	1.8	1.5
TLC-LED-400	2.3	2.2	2.0	1.7	1.4	1.3	1.0

This is a depiction of the angles of light projection used for this analysis.

SCALE IN FEET 1 : 80

0' 80' 160'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

REGISTERED PROFESSIONAL ENGINEER
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STATE OF CALIFORNIA

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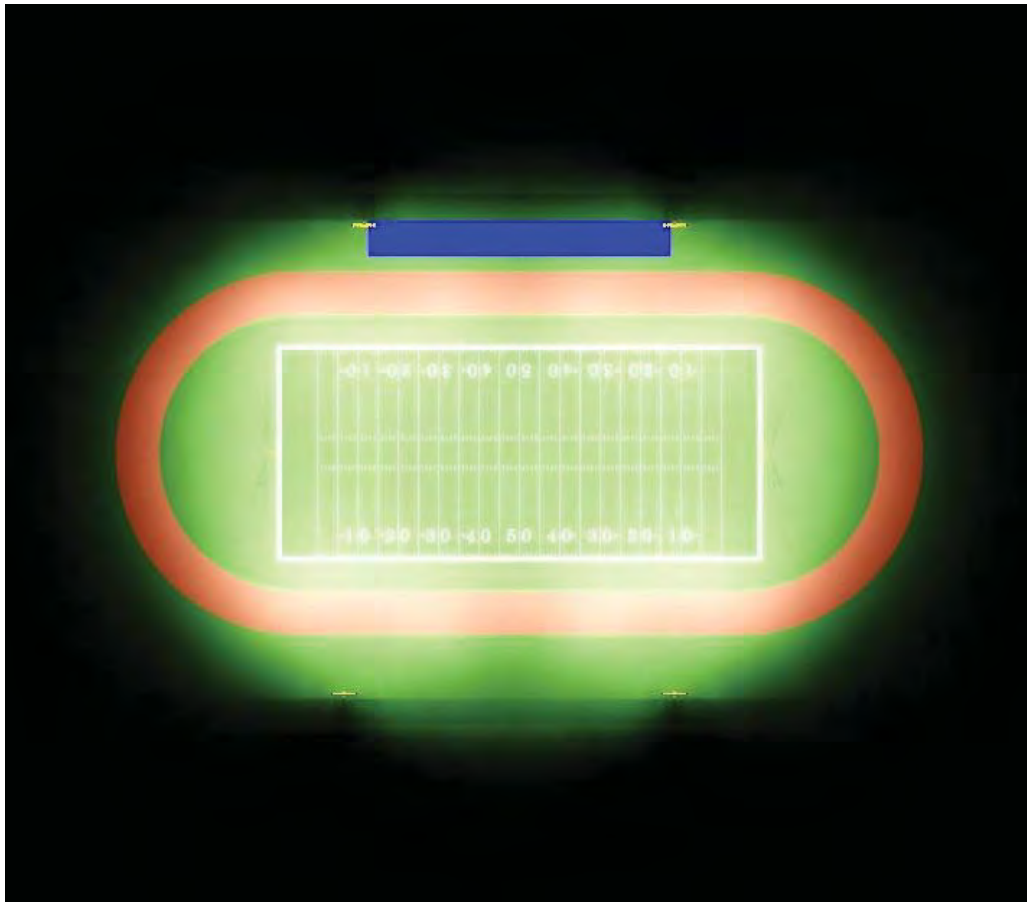
ENGINEERED DESIGN By: Vashon Alexander · File #196236A-Spill · 31-Mar-21

EQUIPMENT LAYOUT

This is a rendering of the anticipated lighting results for this specific field, with these lights, at the specified elevation.

GUARANTEED PERFORMANCE

Design	Oak Ridge High School Football
Location	El Dorado Hills,CA
Date	21-May-2021
Engineer	H.Sabers



CONCLUSION:
The neighborhood to the south of Rollings Hills Middle School would experience no vertical, no horizontal and no measurable candela from the proposed lighting improvements. This project will cause no impact in light pollution to the surrounding community.

Print Date (21/May/2021) & Time (12:10)

Exhibit E

Alternatives Analysis

Serrano Facility

Oak Ridge High School Stadium
1120 Harvard Way, El Dorado Hills

May 28, 2021

Summary of Site Evaluations
Conducted by Verizon Wireless

TABLE OF CONTENTS

I. Executive Summary

Verizon Wireless must fill a significant gap in service in southern El Dorado Hills along Silva Valley Parkway. Based on the review of seven alternative sites set forth in the following analysis, Verizon Wireless believes that placing a new facility on a replacement field light at the Oak Ridge High School stadium (the "Proposed Facility") constitutes the least intrusive feasible alternative to serve the identified gap in network service based on the values expressed in the El Dorado County Ordinance Code (the "Code").

II. Significant Gap

There is a significant gap in Verizon Wireless network service in southern El Dorado Hills. There is a gap in in-building LTE coverage in residential areas along Silva Valley Parkway south of the high school. Reliable in-vehicle coverage is lacking in a larger area, including along significant stretches of Silva Valley Parkway and Serrano Parkway. Distant Verizon Wireless facilities provide only weak service levels to much of the gap, compromising network accessibility and reliability. (Collectively, the "Significant Gap") The Significant Gap is described in detail in the *Statement of Verizon Wireless Radio Frequency Design Engineer Ericson Malana* (the "RF Engineer's Statement"). To remedy the Significant Gap, Verizon Wireless must place a new facility to ensure reliable network service.

III. Methodology

Once a significant gap has been determined, Verizon Wireless seeks to identify a location and design that will provide required network service through the "least intrusive means" based upon the values expressed by local regulations. In addition to seeking the least intrusive alternative, sites proposed by Verizon Wireless must be feasible. In this regard, Verizon Wireless reviews the available height, structural capacity, equipment space, radio frequency propagation, proximity to end users, access, terrain, environmental impacts and other critical factors such as a willing landlord in completing its site analysis.

Code Requirements

The Code encourages co-location on an existing site if feasible, or multi-carrier sites that facilitate future co-location. Code § 130.40.130(A)(1)(b). The County may consider several smaller facilities if less visually obtrusive than a single monopole. Code § 130.40.130(A)(2).

An administrative permit may be approved for the following types of facilities, if they meet certain standards: (Code §§ 130.40.130(B)(2), (3), (5))

- Facade-mounted antennas in all zones
- Roof-mounted antennas in commercial, industrial and research/development zones not adjacent to a state highway or scenic corridor
- Co-located antennas on existing monopoles or towers

A minor use permit may be approved by the Zoning Administrator for the following, if they meet certain standards: (Code §§ 130.40.130(B)(4), (6)(a))

- Co-location on existing structures such as signs, water tanks, utility towers and light standards.
- New towers, or an increase in height of towers, in commercial, industrial and research/development zones not adjacent to a state highway or scenic corridor, or within 500 feet of a residential zone.

A conditional use permit is required for all other facilities, including those that do not meet the standards to qualify for an administrative or minor use permit. Code § 130.40.130(B)(7).

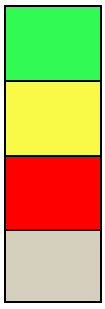
Facilities must be designed to blend with the surrounding area, either painted or constructed with stealth technology to blend with the architecture or natural features of the site. Code § 130.40.130(D)(1).

Coverage Map Explanation

Coverage maps are provided to illustrate why certain alternatives cannot serve the Significant Gap. Coverage maps depict the anticipated level of signal, and therefore the projected LTE coverage provided by a wireless facility at a given location. In the El Dorado Hills area, 61 percent of Verizon Wireless's LTE bandwidth is in the mid-band AWS (2100 MHz) and PCS (1900 MHz) frequencies, with 39 percent in low-band frequencies (700 and 850 MHz). The coverage maps have been prepared using the AWS frequency band. The AWS and PCS bands use similar frequencies and have similar propagation characteristics.

Referenced signal receive power (RSRP) is a measurement of signal level in decibels (dBm), which is a negative number that decreases due to distance and other factors.

The AWS LTE RSRP coverage thresholds are:



In-building >= -75 dBm. Green depicts good coverage that meets or exceeds thresholds for reliable network coverage in homes and vehicles.

In-vehicle >= -85 dBm. Yellow depicts reliable in-vehicle coverage only.

Outdoor >= -95 dBm. Red depicts reliable outdoor service only.

Unreliable >= -105 dBm. Gray depicts unreliable service levels.

IV. Analysis

Verizon Wireless first sought locations where a facility could be permitted with an administrative permit. Buildings in the target area are of insufficient height for façade-mounted antennas to serve the gap. There are no industrial or research/development zones in the gap area, and in the lone commercial zone at Village Green, most buildings are of insufficient height for a rooftop facility to serve the gap, and all have hip roofs that impede construction of a rooftop tower projection required to elevate antennas. Verizon Wireless considered a slightly taller building at Village Green, but this was determined to be infeasible (Alternative 1). The closest existing wireless tower identified already supports Verizon Wireless antennas, which is the Silva Valley Parkway facility 1.7 miles south. Other nearby wireless facilities are mounted on other structures.

Verizon Wireless next sought locations where a facility could be permitted with a minor use permit, first examining collocation on existing stadium lights with antennas at Oak Ridge High School, which is impractical (Alternative 2). Verizon Wireless also considered a water tank property and a PG&E transmission tower which were determined to be infeasible (Alternatives 3 and 4). There is no minor use permit option for a new tower in the gap area, as the Village Creek commercial zone is within 500 feet of residential zones.

Next, Verizon Wireless sought locations where a facility could be allowed with a conditional use permit, readily identifying replacement of a high school stadium field light as the best option, which is supported by the El Dorado Union High School District (Alternative 5). Verizon Wireless also considered new tower facilities at two locations east and west of the Proposed Facility that were determined to be infeasible (Alternatives 6 and 7).

Alternatives Allowed with an Administrative Permit

While buildings in the gap area generally are of insufficient height and elevation for façade- or rooftop-mounted antennas to serve the gap, Verizon Wireless investigated the following option.

1. Parker Development Company
Address: 4525 Serrano Parkway
Elevation: 820 feet
Zoning: CC – Commercial Community

Verizon Wireless investigated this office building in Village Green, 0.5 miles southeast of the Proposed Facility and 15 feet greater in elevation. The tallest portion of the building has a small hip roof that impedes construction of a 15-foot rooftop tower projection that would be required to elevate antennas. Verizon Wireless previously approached the parcel owner, Parker Development Company, regarding development at the Village Green site, but was unable to negotiate a lease. This is not a feasible alternative to the Proposed Facility.

Alternatives Allowed with a Minor Use Permit

The Code allows facilities co-located on existing light standards, water tanks, and utility towers with a minor use permit. Verizon Wireless examined the following three locations.

2. Existing Stadium Lights – Oak Ridge High School Stadium
Address: 1120 Harvard Way
Elevation: 805 feet
Zoning: R1 – Residential

Verizon Wireless considered collocating its antennas on one of the existing field light poles on the west side of the Oak Ridge High School stadium. Both of these light poles already support antennas for T-Mobile and Sprint. Because its customer base is much larger than those carriers, Verizon Wireless would need to place nine panel antennas and nine radio units on one of these poles to serve the Significant Gap, along with two surge suppressors and mounting hardware. Collocation of all this required equipment on these poles is impractical due to structural requirements, as well as the School District's preference for consistent lighting and equipment separation.

Verizon Wireless worked with the School District to design a project that would replace and relocate the eastern stadium lights, which is the Proposed Facility reviewed as Alternative 5.

3. El Dorado Irrigation District Water Tanks

Address: Cabrito Drive
Elevation: 925 feet
Zoning: OS – Open Space

Verizon Wireless considered this 3.2-acre water tank property 0.2 miles east of the Proposed Facility and 120 feet greater in elevation. Antennas mounted to the tanks could be allowed with a minor use permit. A new tower would require a conditional use permit. Verizon Wireless approached the El Dorado Irrigation District regarding placement of a facility on the property, but the District declined due to access issues. Lacking a willing landlord, this is not a feasible alternative to the Proposed Facility.

4. PG&E Tower

Address: Breese Circle
Elevation: 930 feet
Zoning: OS – Open Space

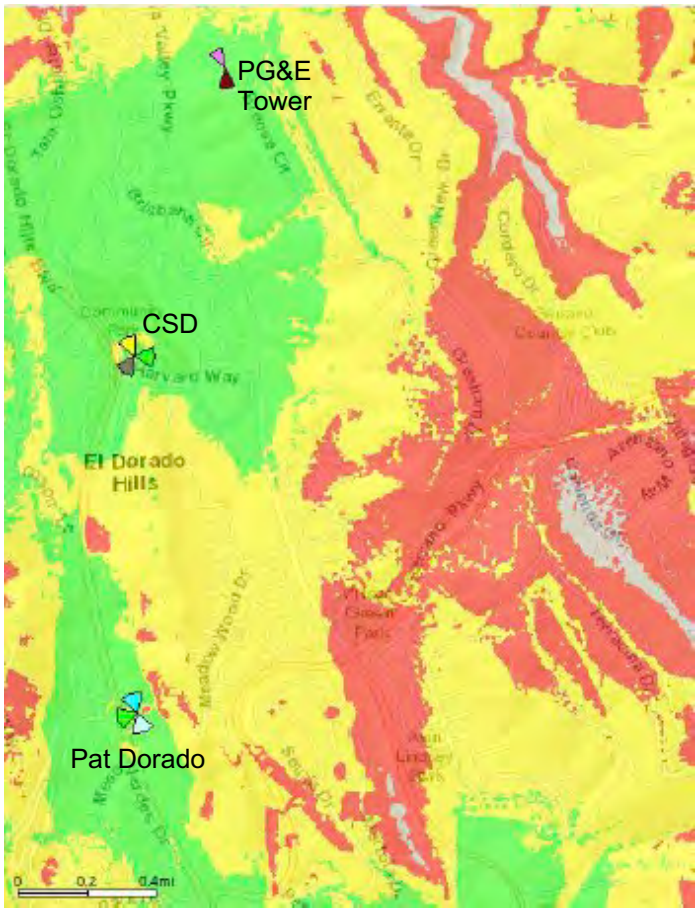
Verizon Wireless considered this PG&E transmission tower between Silva Valley Parkway and Breese Circle, 1.1 miles north of the Proposed Facility and 125 feet greater in elevation. Located along the span of PG&E towers to the north, this is the closest tower with higher elevation. Several of the other PG&E towers northwest near El Dorado Hills Boulevard support wireless facilities, but they are well beyond Verizon Wireless's CSD facility, and lower in elevation than the Proposed Facility.

Verizon Wireless engineers determined that a facility on this PG&E tower cannot serve the Significant Gap due to distance, even with a significant elevation advantage. As shown in the following coverage map, a facility on top of this tower could not provide any new in-building coverage to the gap area to the south of the high school, and it would leave a significant gap in in-vehicle coverage along Silva Valley Parkway and Serrano Parkway. This is not a feasible alternative to the Proposed Facility.

AWS Coverage of Facility
at PG&E Tower
(120-foot Antenna Centerline)

AWS LTE RSRP Coverage

In-building	>= - 75 dBm
In-vehicle	>= -85 dBm
Outdoor	>= -95 dBm
Unreliable	>= -105 dBm



Alternatives Allowed with a Conditional Use Permit

Verizon Wireless considered installations that could be allowed with a conditional use permit, readily identifying the Proposed Facility location at the high school. While a new tower would pose more visual impact than a replacement stadium light, Verizon Wireless also considered two locations for a new tower east and west of the Proposed Facility.

5. Proposed Facility – Oak Ridge High School Stadium
Address: 1120 Harvard Way
Elevation: 805 feet
Zoning: R1 – Residential

Verizon Wireless proposes to replace the two 48-foot 5-inch field light poles on the east side of the high school stadium with 80-foot light poles, relocated to each end of the bleachers, and elevated an additional five feet on the adjacent slopes. On the southeast pole, Verizon Wireless will mount three panel antennas on each of three crossarms, for a total of nine antennas at a centerline of 61 feet. Behind the antennas, the crossarms also will support nine radio units and two surge suppressors. In a separate 320-square foot lease area located south beyond the field, Verizon Wireless will place two network equipment cabinets, along with two battery cabinets and other network gear. This equipment area will be surrounded by a six-foot chain link fence with green slats.

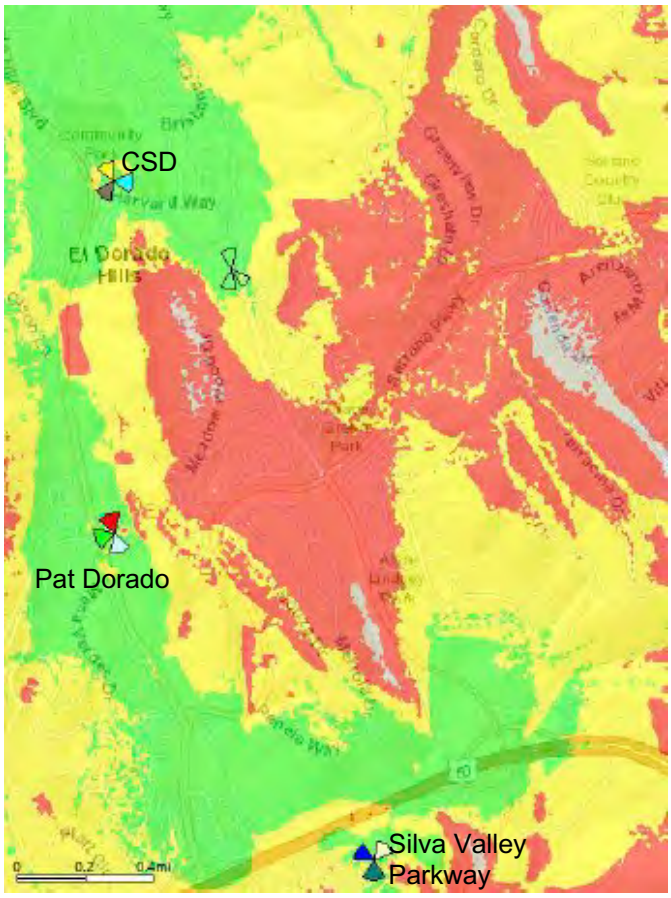
With panel antennas placed at a 61-foot centerline at this optimal location, the Proposed Facility will provide reliable Verizon Wireless LTE service to the Significant Gap. As shown in the following coverage maps, the Proposed Facility will provide new reliable in-building and in-vehicle LTE coverage in areas along Silva Valley Parkway. It also will provide strong new dominant signal to relieve surrounding Verizon Wireless facilities. An analysis comparing existing and proposed service is found in the RF Engineer's Statement. This is Verizon Wireless's preferred location and design for the Proposed Facility.

AWS LTE Coverage Maps

Coverage of Existing Facilities

AWS LTE RSRP Coverage

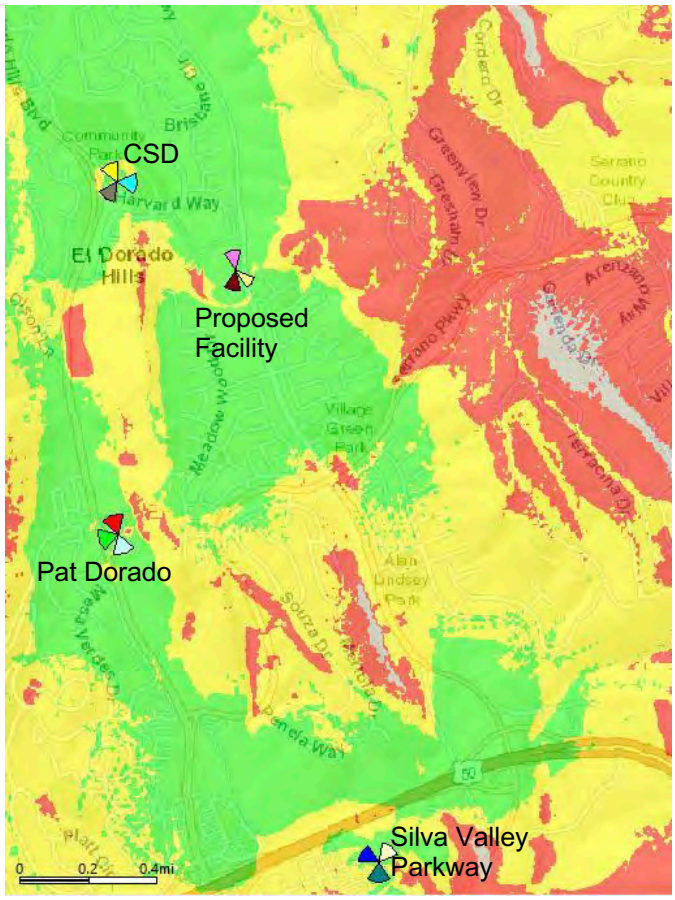
- In-building >= - 75 dBm
- In-vehicle >= -85 dBm
- Outdoor >= -95 dBm
- Unreliable >= -105 dBm



Coverage Including Proposed Facility

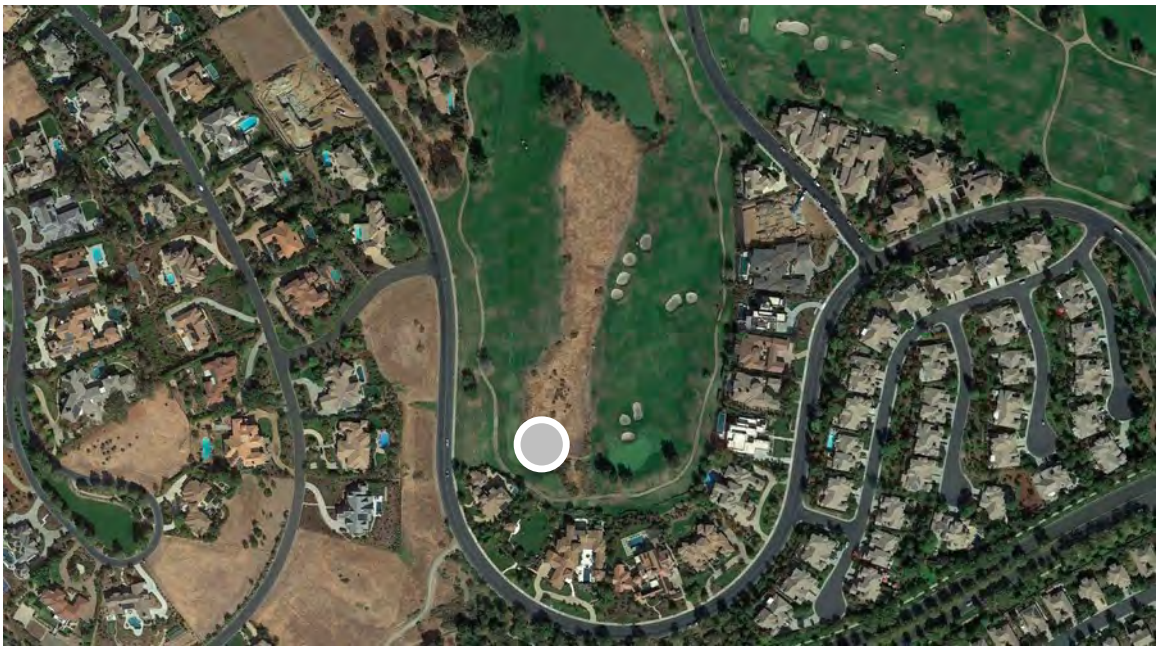
AWS LTE RSRP Coverage

- In-building >= - 75 dBm
- In-vehicle >= -85 dBm
- Outdoor >= -95 dBm
- Unreliable >= -105 dBm



6. Serrano Country Club

Address: 5005 Serrano Parkway
Elevation: 1,115 feet
Zoning: R1 – Residential



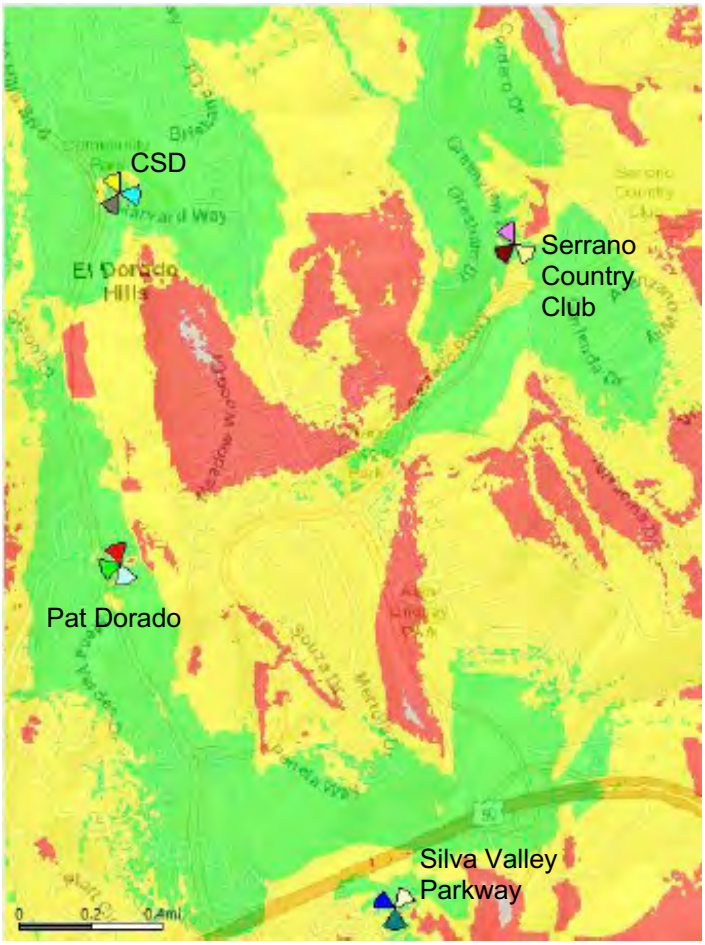
Verizon Wireless considered placement of a new tower near the south end of the third hole at the Country Club golf course, 0.75 miles east of the Proposed Facility and 310 feet greater in elevation. The third hole is the closest to the Proposed Facility and the gap area. Verizon Wireless engineers determined that even with a 100-foot antenna centerline on a very tall tower, a facility at this location cannot serve the Significant Gap due to distance and intervening terrain.

To the west of the golf course, an intervening ridge rising up to 1,225 feet would impede signal from reaching the gap area beyond. As shown in the following coverage map, a tall tower at this location would provide barely any new in-building coverage to the gap area, leaving a significant gap in residential areas along Silva Valley Parkway south of the high school. It also would leave gaps in in-vehicle coverage along Silva Valley Parkway. This is not a feasible alternative to the Proposed Facility.

AWS Coverage of Facility
at Serrano Country Club
(100-foot Antenna Centerline)

AWS LTE RSRP Coverage

In-building	>= - 75 dBm
In-vehicle	>= -85 dBm
Outdoor	>= -95 dBm
Unreliable	>= -105 dBm



7. Sahtout Property

Address: Adam Court (APN 121022012)
Elevation: 850-965 feet
Zoning: R1 – Residential

Verizon Wireless considered placement of a new tower on this 4.4-acre property due west of the high school, cresting 0.3 miles west of the Proposed Facility at an elevation 160 feet greater. Verizon Wireless mailed several letters of interest to the property owner, Mustafa Sahtout, regarding placement of a facility on the property, but never received a reply. Lacking landlord interest, this is not a feasible alternative to the Proposed Facility.

V. Conclusion

Verizon Wireless has reviewed seven specific alternatives to fill the Significant Gap in service in southern El Dorado Hills. Based upon the values expressed in County regulations, the Proposed Facility clearly constitutes the least intrusive feasible location for Verizon Wireless's new facility.


verizon
Serrano Facility
Alternative Site Locations
4. PG&E Tower
Existing CSD Facility
3. Water Tanks
6. Serrano Country Club
2. West Stadium Lights
5. Proposed Facility
7. Sahtout Property
1. Parker Development Company

Exhibit F

EL DORADO UNION HIGH SCHOOL DISTRICT

"Staking a Claim in our Communities' Future"

SUPERINTENDENT
RON CARRUTH, Ed.D.

www.eduhsd.net

May 26, 2021

Supervisor John Hidahl
330 Fair Lane
Placerville, CA 95667

Dear Supervisor Hidahl,

The El Dorado Union High School District was recently informed that our Cell Tower/ Stadium Light Project at Oak Ridge High School was denied by the El Dorado County Planning Commission, and we respectfully request your support in the appeal to this decision.

We understand the Planning Commission has made its decision based on certain factors, but we feel that the benefits to the community and the El Dorado Union High School District may have been overlooked.

Through the years, we have heard multiple comments from Verizon Cell phone customers complaining about the coverage dead zone in the El Dorado Hills area along Silva Velley Parkway. Not only are many customers frustrated, but this dead zone also adversely affects the ORHS Maintenance Department in their daily communication at the site. The Maintenance Department uses Verizon Wireless because it provides the best overall coverage around all of our sites, which span along the Highway 50 corridor from Camino to El Dorado Hills in the terrain known as the "Foothills".

There are many beneficial factors this project would bring to the Oak Ridge High school site as well as the District. The Cell Tower Stadium Lighting Project includes the replacement of two existing, forty-eight foot stadium light poles on the east side of the field with poles that match the height of the cell tower/ stadium lights poles one the west side of the field that were installed over ten years ago. The lights on the west side of the Stadium are mounted at about eighty feet.

The existing forty-eight foot poles on the east side of the field were installed around 1980 between the track and the bleachers, but unfortunately, they obstruct the view of the athletic events from the bleachers. The benefits of the proposed plan included removing the two poles in front of the bleachers and replacing them with one cell tower pole with lights for the stadium and one pole that will hold just stadium lights behind the bleachers, thereby removing the viewing obstruction. This project would also improve the actual lighting on the field itself by raising the height of the lights to match the home side the lights. A final benefit to the school and District community is the continued revenue that would be generated by the lease of this cell tower.

If the El Dorado Union High School District were proposing this project for just the light standards without antennas, the Department of the State Architect of California (DSA) rather than the County would provide our normal oversight for construction projects and inspection services. That said, we understand that in this case

the addition of antennas to one of the poles brings this project into the County's jurisdiction for review. We believe this project complies with both County and DSA standards and requirements and brings significant benefits to the school as well as the surrounding community and we ask for your support in favor of this project's approval.

Sincerely,

Ron Carruth, Ed.D.
Superintendent
El Dorado Union High School District

Exhibit G

295 Parkshore Drive
Folsom, CA 95630

May 27, 2021

To: El Dorado County Board of Supervisors

From: Ericson Malana, Radio Frequency Design Engineer
Verizon Wireless Network Engineering Department

Subject: Statement in Support of Verizon Wireless's Proposed Facility
Oak Ridge High School, El Dorado Hills

Executive Summary

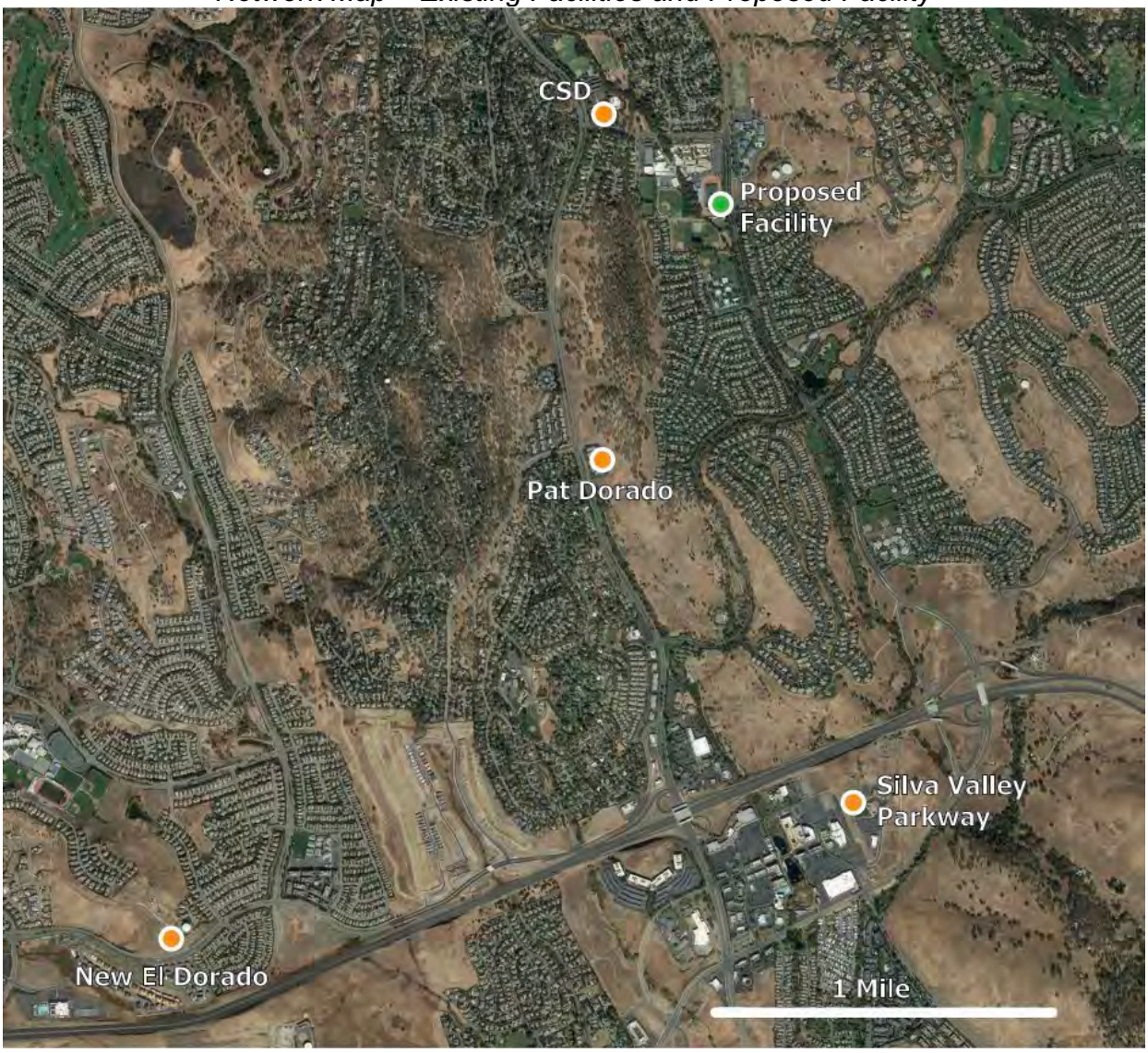
Verizon Wireless has identified a significant gap in its fourth-generation long-term evolution (LTE) service in southern El Dorado Hills along Silva Valley Parkway. This area currently receives inadequate LTE service coverage from the existing Verizon Wireless CSD facility 0.4 miles northwest of the proposed facility and the Silva Valley Parkway facility 1.7 miles south. The Pat Dorado facility 0.8 miles southwest does not serve the gap area because it is much lower in elevation with a ridge in between, and its antenna sectors face away from the gap. The New El Dorado facility on a tall tower 2.7 miles southwest provides limited, weak coverage to the gap area. There are no facilities nearby to the east that provide usable service levels. A network map is shown on the following page.

Due to the distance from existing facilities and a lack of strong dominant signal, there is a gap in reliable LTE in-building and in-vehicle service coverage in southern El Dorado Hills in areas along Silva Valley Parkway.

To meet increased local demand, Verizon Wireless is deploying efficient high-speed fourth-generation LTE technology. In the El Dorado Hills area, 61 percent of Verizon Wireless's LTE bandwidth is in the mid-band AWS (2100 MHz) and PCS (1900 MHz) frequencies, with 39 percent in low-band frequencies (700 and 850 MHz). Higher frequencies mean greater data capacity. However, the mid-band frequencies do not travel as far as low-band frequencies, and require facilities closer together and closer to the end user to provide reliable LTE service. Verizon Wireless designs its networks to ensure that mid-band frequencies can provide adequate capacity as well as coverage.

We describe below the significant gap in coverage that Verizon Wireless seeks to remedy (the "Significant Gap"). To provide reliable LTE coverage and strong dominant signal in southern El Dorado Hills, the Significant Gap must be remedied through construction of a new facility on a stadium light pole at Oak Ridge High School (the "Proposed Facility").

Network Map – Existing Facilities and Proposed Facility



Coverage Gap

Verizon Wireless is experiencing a gap in its LTE service coverage in southern El Dorado Hills, in the valley along Silva Valley Parkway. In-building service is lacking in residential neighborhoods west and east of Silva Valley Parkway, south of Oak Ridge High School and north of Serrano Parkway and Sortwell Court.

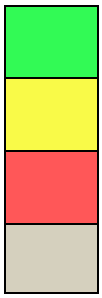
In-vehicle service is lacking in a larger area, including a 0.8-mile stretch of Silva Valley Parkway between Walker Drive and Elk Meadow Elementary with over 17,400 vehicle trips per weekday, and a 0.5-mile stretch of Serrano Parkway between Boundary Oaks Drive and Village Green Drive with over 13,300 vehicle trips per weekday.[1] (Collectively, the "Coverage Gap")

The Proposed Facility will provide new reliable LTE in-building coverage to those residential areas, as well as new reliable in-vehicle service to those stretches of Silva Valley Parkway and Serrano Parkway where lacking. In total, the Proposed Facility will improve coverage to an area of 1.08 square miles, with a population of 2,020.

A graphic description of the LTE coverage gap is shown on the following coverage map, followed by a map showing the improved coverage to be provided by the Proposed Facility. The coverage maps have been prepared using the AWS frequency band. The AWS and PCS bands use similar frequencies and have similar propagation characteristics.

Referenced signal receive power (RSRP) is a measurement of signal level in decibels (dBm), which is a negative number that decreases due to distance and other factors.

The LTE RSRP coverage thresholds are:



In-building >= -75 dBm. Green depicts good coverage that meets or exceeds thresholds for reliable network coverage in homes and vehicles.

In-vehicle >= -85 dBm. Yellow depicts reliable in-vehicle coverage only.

Outdoor >= -95 dBm. Red depicts reliable outdoor service only.

Unreliable >= -105 dBm. Grey depicts unreliable service levels.

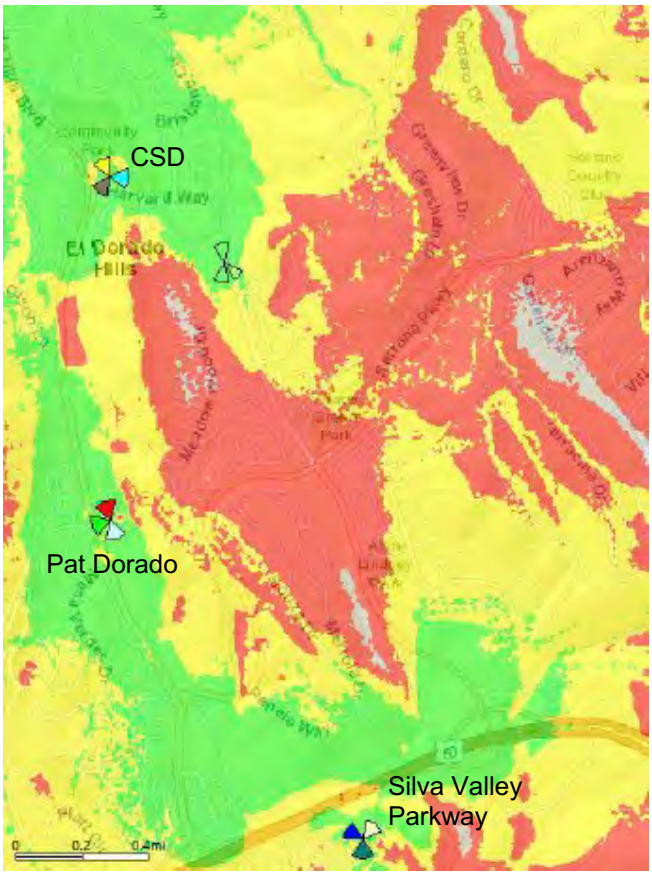
[1] El Dorado County Department of Transportation, 2020 Traffic Counts Annual Summary.

AWS LTE Coverage Maps

Coverage of Existing Facilities

AWS LTE RSRP Coverage

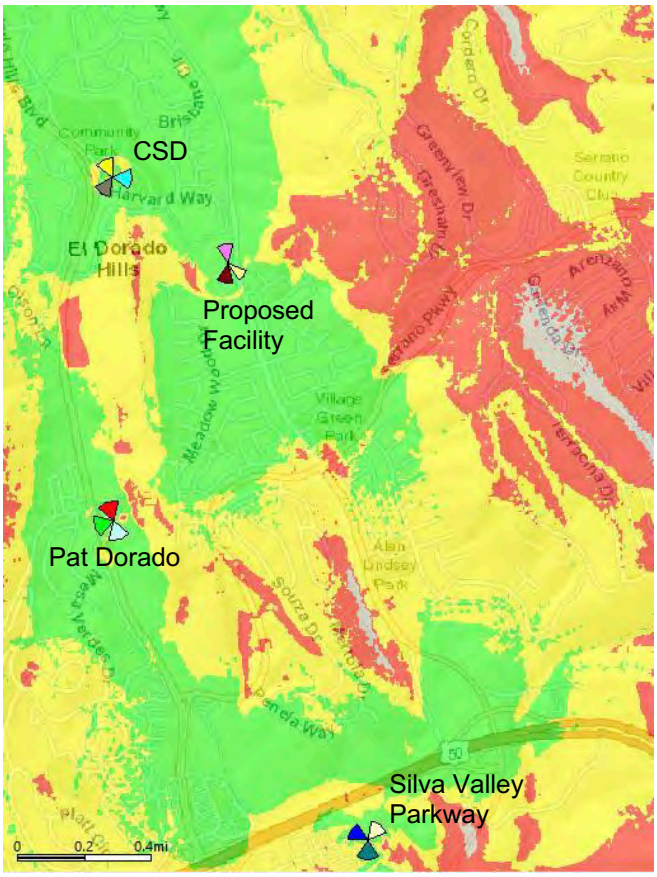
- In-building >= - 75 dBm
- In-vehicle >= -85 dBm
- Outdoor >= -95 dBm
- Unreliable >= -105 dBm



Coverage Including Proposed Facility

AWS LTE RSRP Coverage

- In-building >= - 75 dBm
- In-vehicle >= -85 dBm
- Outdoor >= -95 dBm
- Unreliable >= -105 dBm

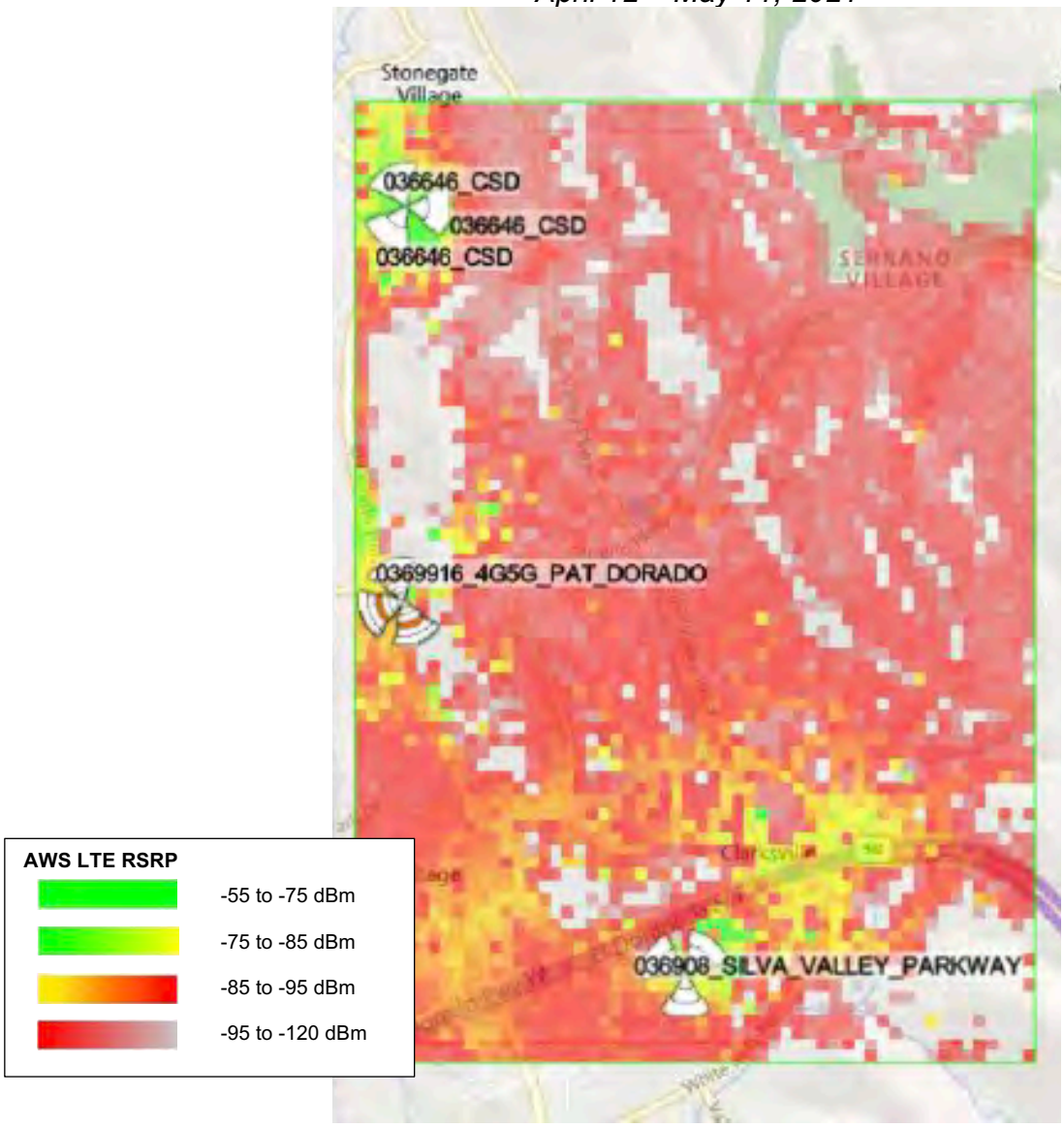


The following map shows the average AWS signal level from existing Verizon Wireless facilities received by customer devices in the gap area over one month, April 12 to May 11, 2021. Customer devices report this data to the network, and Verizon Wireless uses its TrueCall tool to analyze this data and optimize system performance.

Similar to the coverage maps, yellow and red squares show decreasing signal level. Gray squares indicate unreliable service levels. White squares indicate vacant areas (e.g., fields) where no data was reported that day.

The map shows how signal level from the existing Verizon Wireless facilities decreases with distance. The map demonstrates the poor signal levels received in the gap area in the center of the map, with a pronounced lack of in-building and in-vehicle service levels (green and yellow squares). The broad area of red and gray squares indicate only an outdoor level of service or unreliable service levels.

Existing AWS LTE Signal Level Measured by Customer Devices
April 12 – May 11, 2021



Dominant Signal

As described above, the identified gap area receives inadequate service from nearby Verizon Wireless facilities which provide only weak dominant signal to the area. Dominant signal is the strongest signal from a particular Verizon Wireless facility received by a customer's wireless device in area. This is apparent in the following best server maps, which depict the areas of dominant signal from each existing facility. Signal from each antenna sector of these facilities is depicted in a different color.

Although dominant, the signal from existing Verizon Wireless facilities is weak in the gap area. The CSD facility is on a rooftop and only 35 feet in height, limiting its area of dominant signal (shown in light brown and green at the top of the best server maps). The Silva Valley Parkway facility is distant at 1.7 miles, and its northeast-facing antenna sector serves a very large area (shown in light purple), including a portion of the gap. The New El Dorado facility is very distant at 2.7 miles southwest, and its northeast-facing antenna sector likewise serves a very large area (shown in red), with very weak dominant signal to a portion of the gap.

The lack of strong, reliable dominant signal degrades network performance, resulting in unreliable service, particularly during busy hours. This affects the reliability of Verizon Wireless service for residents, workers and visitors as well as for critical communications with emergency service personnel. Nationwide, most 911 calls are placed from mobile phones, and in emergencies, first responder agencies increasingly rely on dependable Verizon Wireless service.

At times of high traffic volume, the coverage area of the surrounding Verizon Wireless facilities shrinks to accommodate an increasing number of mobile devices closer to each facility. As a result, the Coverage Gap area expands and is exacerbated during times of high customer usage. The contraction of coverage during times of high usage has become more relevant as the demand for wireless services has increased rapidly over time.

As shown on the second best server map, the Proposed Facility is strategically located to provide strong, new dominant signal to the gap area. Of note, its southwest- and southeast-facing antenna sectors (shown in dark brown and light yellow) will provide new dominant signal to residential areas currently served by the distant Silva Valley Parkway and New El Dorado facilities. This will relieve the demand on those facilities so they can devote their resources to customers closer to their locations. This will improve overall network performance in the greater vicinity.

See Best Server Maps on Following Page

AWS Best Server Maps

Existing Facilities

CSD Facility
North
East
Southwest

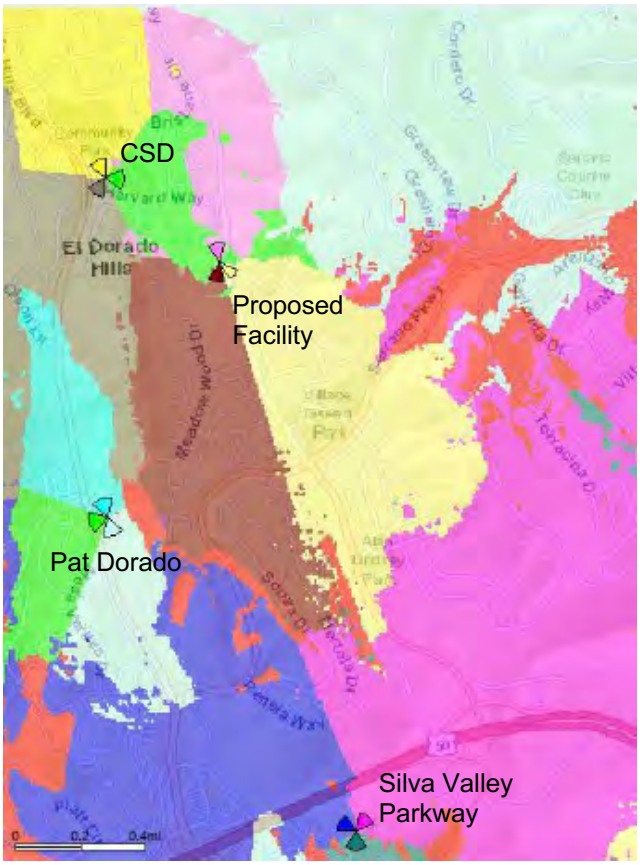
Pat Dorado Facility
North
South
West

Silva Valley Parkway Facility
Northeast
South
Northwest

New El Dorado Facility (2.7 miles southwest)
Northeast

Including Proposed Facility

Serrano (Proposed Facility)
North
Southeast
Southwest

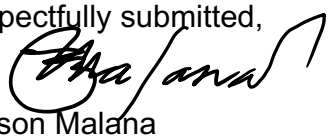


Conclusion

As the Verizon Wireless network matures, the network must be supplemented with more sites closer to customers, in large measure due to the increase in usage of the network. The LTE technology used to provide fourth-generation service requires facilities closer to customers, and this service cannot be provided adequately by the existing facilities serving the gap area. These network challenges have led to the Significant Gap in Verizon Wireless LTE coverage in southern El Dorado Hills. Verizon Wireless must deploy the Proposed Facility to provide reliable LTE service to customers, and to avoid further degradation of its network in the area of the Significant Gap.

Please feel free to contact me with any questions or comments regarding Verizon Wireless's proposed facilities.

Respectfully submitted,



Ericson Malana
RF Design Engineer
Network Engineering Department
Verizon Wireless

My responsibilities include planning, design and implementation of improvements to network infrastructure to provide reliable service. I have been in the wireless telecommunications industry for 27 years. I have eight years of experience in cellular RF network design. I received my Bachelor's degree in Electronics and Communications Engineering at Mapua Institute of Technology in the Philippines.