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RESPONSE TO CEC STAFF DATA REQUEST SET 1

San Jose Data Center 04 (22-SPPE-02)

SUBMITTED TO: CALIFORNIA ENERGY COMMISSION

SUBMITTED BY: **Microsoft**

March 2023

DAYZEN LLC

INTRODUCTION

Attached are Microsoft's responses to California Energy Commission (CEC) Staff Data Request Set No. 1 (1-60) for the SJ04 Data Center Application for Small Power Plant Exemption (SPPE) (22-SPPE-02). Staff issued Data Request Set No. 1 on January 20, 2023.

The Data Responses are grouped by individual discipline or topic area. Within each discipline area, the responses are presented in the same order as Staff presented them and are keyed to the Data Request numbers (1-60)[1]. Additional tables, figures, or documents submitted in response to a data request (e.g., supporting data, stand-alone documents such as plans, folding graphics, etc.) are found in Attachments at the end of the document and labeled with the Data Request Number for ease of reference.

For context, the text of the Background and Data Request precede each Data Response.

GENERAL OBJECTIONS

Microsoft objects to all data requests that require analysis beyond which is necessary to comply with the California Environmental Quality Act (CEQA) or which require Microsoft to provide data that is in the control of third parties and not reasonably available to Microsoft. Notwithstanding this objection, Microsoft has worked diligently to provide these responses swiftly to allow the CEC Staff to prepare the Draft Environmental Impact Report (DEIR).

[1] There was a problem with the numbering of the docketed data request whereby the sequence was repeated and resulting in duplicate numbers. The sequencing was corrected in these responses in order to avoid confusion.

AIR QUALITY

BACKGROUND: AIR DISTRICT REVIEW

The proposed San Jose 04 Data Center (SJDC 04 or project) will include backup generators that would require a permit from the Bay Area Air Quality Management District (BAAQMD). For purposes of consistency, staff needs copies of all correspondence between the applicant and the BAAQMD promptly to stay up to date on any issues that arise before the completion of the initial study.

DATA REQUESTS

1. Please provide copies of all substantive correspondence between the applicant and the BAAQMD regarding the project, including application and e-mails, within one week of submittal or receipt. This request is in effect until staff publishes the initial study.

RESPONSE TO DATA REQUEST 1

All substantive correspondence between Microsoft and the BAAQMD regarding the project, including the application and related e-mails, will be supplied within one week of submittal or receipt.

2. Please identify the current schedule for the BAAQMD permit application submittal. If the application was already filed, please provide a copy of the application. If this application is filed during the CEC proceeding for the project, please submit a copy of that application to the CEC docket within five days of submitting it to the BAAQMD.

RESPONSE TO DATA REQUEST 2

The Authority to Construct application has not yet been filed with the BAAQMD and will most likely not be filed until after the CEC makes a decision on the SPPE.

BACKGROUND: COOLING TOWERS

The Small Power Plant Exemption (SPPE) application includes emissions estimates for cooling towers, or wet-surface cooling, in the form of particulate matter (SPPE Application App A, Part II, Appendix AQ-1, Tables AQ1-3 through AQ1-5, starting on page 44 of 189). The project description for the project describes an "indirect cooling system" and indicates that each data center building would use the "indirect cooling system" for cooling needs (Section 4.3.2.3 of the SPPE application, page 85). Staff would like a better understanding of the "indirect cooling system".

DATA REQUESTS

3. Please clarify if the indirect cooling system as described in the project description is also referred to as the cooling towers as quantified in Appendix AQ-1 of App A, Part II. If so, please detail whether the indirect cooling system will be closed-loop or open-loop and exposed to the environment.

RESPONSE TO DATA REQUEST 3

The project is not using traditional cooling towers. The indirect cooling system includes fluid coolers which are similar but not identical to traditional cooling towers. Unlike a cooling tower the fluid coolers are a closed system. The water recirculating between the indoor cooling equipment and the fluid coolers located on the roof is within the closed system. However, the fluid coolers do include a water spray to cool the exterior of the heat rejection coils. The water spray takes place on the outside of the roof mounted fluid cooler. Blowdown will be collected in the fluid cooler and periodically discharged to the sanitary sewer system. This system was selected to provide a reduction in electricity consumption over air cooled chillers.

For purposes of emission estimates and Air Quality analysis, we included conservative assumptions that the fluid coolers would operate like a cooling tower.

4. If the system is described as an open system, please perform a visible plume analysis.

RESPONSE TO DATA REQUEST 4

It is possible the system results in a visible plume. Microsoft is working with the supplier/manufacturer of the fluid cooler equipment to obtain the necessary design and operating criteria to support a either determination that no visible plume will occur or to conduct a visible plume analysis. This data response will be supplemented once the design and operation criteria are received.

BACKGROUND: AMMONIA EMISSIONS

With the use of selective catalytic reduction (SCR) to control oxides of nitrogen (NOx) emissions from the proposed engines, unreacted ammonia would also be emitted. Staff needs the ammonia emissions estimate to complete the analysis.

DATA REQUEST

5. Please provide engine ammonia emission rates and total emissions due to the use of SCR.

RESPONSE TO DATA REQUEST SET 5

See the table below.

Estimated Ammonia Emissions from Engine SCR Systems based on 10 ppm slip

Engine ID	ACFM	Stack, F°	% H2O	DSCFM	NH3 ppm @ 15% O2
C175-16	25320	890.4	7	9652	8
C-27	6011.7	952.5	7	2187	8
Engine ID	**NH3, lbs/hr**	**Hrs/Yr**	**NH3, lbs/yr per Engine**	**NH3, TPY per Engine**	**NH3, TPY all Engines**
C175-16	0.204	50	10.2	0.0051	0.1632
C-27	0.046	50	2.3	0.00115	0.0046
				Total NH3 Emissions from All Engines, TPY	**0.168**

Notes:
NH3 ppm value from ecoCube Brochure for both engines (SPPE AQ Appendix)
32 – C175-16 engines – 3.1 MW
4 – C27 engines – 0.8 MW

BACKGROUND: SCREENING FOR LOW-LOAD CONDITIONS

The air quality impact analysis (SPPE application, p. 91) indicates that testing of the engines can occur over a range of load conditions. However, the analysis says that "an air quality screening analysis was not performed," but then goes on to say "…the worst- case stack condition and the worst-case engine location could be determined from the screening analysis" (SPPE application, p. 91). The analysis also says "the screening results are presented in Appendix AQ-3". However, staff was not able to find the screening results.

The applicant assumed that the 100 percent load case would produce the maximum ground-based concentrations (SPPE application, p. 91). However, staff has reviewed projects with worst-case impacts modeled under lower load cases. In calculating the NOx emissions for the 100 percent load case, the applicant assumed a warm-up period of 0.25 hour (15 minutes) for the SCR to become effective. For lower load cases (e.g., 100, 75, 50, 25, and 10 percent load), it may take more time for the SCR to warm up. Staff needs to confirm whether the NOx emissions during lower load cases would be lower than those estimated for the 100

percent load case. If a Tier 4 emission factor is assumed for part of the hour for these load cases, the applicant needs to provide documents/certificates from the SCR vendor to verify the warm-up period of the SCR to reach Tier 4 emission rates for these load cases.

In addition, lower exhaust temperatures and slower exhaust velocities at lower loads could result in higher ground-level concentrations, even if the mass emissions would be lower. Without modeling, staff would not be able to confirm whether the ground-level impacts for the lower load cases would be lower than those for the 100 percent load case.

DATA REQUESTS

6. Please provide NOx emission calculations for the representative range of engine load points (e.g., 100, 75, 50, 25, and 10 percent load) for the CAT C175 and CAT C27 engines. If a Tier 4 emission rate is assumed for part of the hour for these load cases, please provide documents/certificates from the vendor to verify the warm-up period of the SCR to reach Tier 4 emission rates for these load cases.

RESPONSE TO DATA REQUEST 6

The NO_x emissions for the requested range of engine load points will be submitted electronically to the CEC.

With regards to warmup time, the application included control system information in Appendix AQ-2. Caterpillar has provided documentation that provides the SCR heat times for the load points of 10, 25, 50, 75 and 100 percent. All SCR warmup times are less than 15 minutes with the exception of the 10 percent load case, which has a warmup time of 21 minutes. As noted below, the worst-case screening modeling demonstrates that the 100 percent load case is always worst case with regards to both emissions and modeled impacts. The assumed 15-minute SCR warmup used in the modeling is much more conservative that the 7-minute warmup time provided by Caterpillar.

7. Please provide a screening review of short-term (1-hour) ambient air quality impacts during testing for a representative range of engine load points (e.g., 100, 75, 50, 25 and 10 percent load) to confirm that full-load testing would produce the highest ground level concentrations.

RESPONSE TO DATA REQUEST 7

As noted in the Modeling Overview, Model Selection and Modeling Inputs sections of the SPPE application, changes to plume rise for sources undergoing downwash plays an insignificant role for sources that have limited flow characteristics, such as internal combustion equipment (diesel engines). For the 1-hour NO2 emissions, Caterpillar provided the uncontrolled emission factors for loads of 100, 75, 50, 25 and 10 percent

which also included the stack parameters of flow rate and exit temperature. Since the focus of data request 7 had to do with the SCR and NO_x, a screening level analysis of the impacts of the different load cases on the modeled results was assessed for the California 1-hour NO_2 standard. The NO_x emissions were left at the uncontrolled levels (no control was assumed for the SCR for this screening analysis). The screening analysis used both ARM2 and the ozone limiting method (OLM). Background NO_2 concentrations were not included in the modeling input files. The results of the modeling are consistent with past modeling analyses of reciprocating engines under a variety of load conditions in that the maximum modeled impacts, regardless of the use of additional Tier 4 controls, always occur during the 100% load case. Typically, sources with stack heights that are adjacent to structures where significant downwash is occurring, plume rise does not play a significant role in determining the final modeled concentrations. The modeling input/output files and the Caterpillar uncontrolled emission factors will be made available to the CEC electronically.

BACKGROUND: SMALLER ENGINES

The SPPE application (p. v and p. 12) indicates that there would be 32 3-megawatt (MW) generators, two 500 kilowatt (kW) administrative generators, and two 800 kW water storage tank yard generators. However, one 500 kW generator may need to increase to 800 kW later as part of the final design and two 800 kW generators may be reduced to 500 kW. To account for this change, the SPPE application (p. 13 and p. 81) states that the air quality impacts analysis conservatively used 800 kW for all four smaller generators.

The diesel engines proposed for the 800 kW generators are rated at 1,214 brake horsepower (bhp), therefore, are required to comply with Tier 4 final emission standards per BAAQMD December 2020 Best Available Control Technology (BACT) policy memo: BACT Determination for Diesel Back-Up Engines Greater than or equal to 1,000 Brake Horsepower. However, if the 800 kW generators are reduced to 500 kW, the associated engines would not be required to comply with Tier 4 final emission standards since they would be rated below 1,000 bhp. Emissions and impacts of the smaller engines may be higher than those analyzed in the application. Staff needs to make sure that if there are engine changes, the emissions and impacts of the engines would be analyzed properly.

DATA REQUESTS

8. Please notify the California Energy Commission if there are engine changes in the project design.

RESPONSE TO DATA REQUEST 8

At the time of the air quality modeling effort the project was considering either the 500 kW or the 800 kW generator for administrative building and the water storage tank yard. Now the project will only use the 800 kW generators at both locations. Since the modeling assumed 800 kW at both locations, the air quality modeling analysis is accurate and need not be modified.

9. Please provide an updated air quality impacts analysis, including public health, if there are engine changes in the project design.

RESPONSE TO DATA REQUEST 9

See Response to Data Request 8.

BACKGROUND: MODELED EMISSION RATES INCONSISTENCIES

Staff noticed some inconsistencies between emission rates used in the applicant's modeling files and those calculated based on emission rates shown in the application (as shown in the following table). Staff needs to understand the inconsistencies and make sure the project impacts are analyzed correctly.

Source and Modeling File	Modeled Emission Rate (g/s)	Calculated Emission Rate (g/s)
CONST001 through CONST103 in 'Microsoft-Construction-24-HR-PM10.INP' and 'Microsoft-Construction-Annual-PM10...INP' for construction	6.4131E-06	7.3676E-06 = 7.95E-3 tons/year × 2000 lbs/ton ÷ (264 days/year) ÷ (10 hours/day) ÷ 103 sources × 453.6 grams/lbs ÷ (3600 sec/hour)
CONST001 through CONST103 in 'Microsoft-Construction-24-HR-PM25.INP' and 'Microsoft-Construction-Annual-PM25.INP' for construction	6.2648E-06	7.1359E-06 = 7.70E-3 tons/year × 2000 lbs/ton ÷ (264 days/year) ÷ (10 hours/day) ÷ 103 sources × 453.6 grams/lbs ÷ (3600 sec/hour)
CT01 through CT64 in 'Microsoft-24-HR-PM10.INP' and 'Microsoft-24-HR-PM25.INP' for operation CT01 through CT32 in 'Microsoft-Construction2-24HR-PM10.INP' and 'Microsoft-Construction2-24HR-PM25.INP' for overlap period	2.2211E-03	1.11E-03 = 0.0088 lbs/hour × 453.6 grams/lbs ÷ (3600 sec/hour)
CT01 through CT64 in 'Microsoft-ANNUAL-PM10…INP' and 'Microsoft-ANNUAL-PM25.INP' for operation CT01 through CT32 in 'Microsoft-Construction2-Annual-PM10…INP' and 'Microsoft-Construction2-Annual-PM25.INP' for overlap period	1.6807E-03	8.40E-04 = 0.00667 lbs/hour × 453.6 grams/lbs ÷ (3600 sec/hour)
PAREA1 in 'Microsoft-Construction2-24HR-PM10.INP' and 'Microsoft-Construction2-Annual-PM10…INP' for overlap period	0.011607 = 8.3565E-07 g/s/m^2 × 13889.9 m^2	0.01449 = 0.1518 tons/year × 2000 lbs/ton ÷ (264 days/year) ÷ (10 hours/day) × 453.6 grams/lbs ÷ (3600 sec/hour)
PAREA1 in 'Microsoft-Construction2-24HR-PM25.INP' and 'Microsoft-Construction2-Annual-PM25.INP' for overlap period	0.003102 = 2.2335E-07 g/s/m^2 × 13889.9 m^2	0.006596 = 0.0691 tons/year × 2000 lbs/ton ÷ (264 days/year) ÷ (10 hours/day) × 453.6 grams/lbs ÷ (3600 sec/hour)

DATA REQUESTS

10. Please explain the inconsistencies between the modeled emission rates and the calculated emission rates shown above.

RESPONSE TO DATA REQUEST 10

The responses are in the same order as the table provided in the data request.

- For sources CONST001 through 103 for both the 24-hour and annual PM10 inputs, the maximum year of emissions was used (2024) which is the total of both exhaust and fugitive PM10 at 0.2783 tons per year. The exhaust emissions used for CONST001 through 103 for the 2024 year was 6.92E-03 tpy, which when modified to reflect 2,640 hours per year and 103 sources produces an emission rate of 6.4131E-06 g/s per source. The CEC provided emission rate is for the 2025 construction year which has lower total PM10 emissions of 0.2749 tpy versus the modeled 0.2783 tpy. As the objective is to model the maximum year, the maximum totals of both fugitive and exhaust emissions for the year 2024 were used.
- For sources CONST001 through 103 for both the 24-hour and annual PM2.5 inputs, the 2024 maximum year of emissions was used, which is the maximum year total of both exhaust and fugitive PM2.5 at 0.1036 tons per year. As noted above, the CEC provided emission rate is based on the year 2025 which has a lower total annual emission rate of 0.0806 tpy than the 0.1036 tpy emission rate that were used.
- For CT01 through CT64 and for CT01 through CT32 (overlap) for the 24-hour PM10 and PM2.5 emissions rates, the incorrect modeling file(s) were initially provided. Table 4.3-16 has been revised to reflect the modeling data. The modeling files will be submitted .
- For CT01 through CT64 and for CT01 through CT32 (overlap) for the annual PM10 and PM2.5 emissions rates, the incorrect modeling file(s) were initially provided. The modeling files will be submitted electronically.
- PAREA1 in the 24-hour and annual PM10 overlap emissions for the area source used 0.1216 tpy (2027 time period from CalEEMod) for the fugitive dust emissions as this was the year the maximum exhaust emissions of 4.28E-03 tpy occurred (from CalEEMod). Since the overlap impacts were looking at both the testing of the emergency generators at SJC04 as well as the construction of the data center SJC06, it was determined that the health risk impacts of diesel particulate matter (DPM) would be the most important consideration for the overlap analysis as the modeled criteria pollutant impacts for PM10 construction and operation were small. The maximum emissions year of 2026 was also modeled and the results are presented in Table 2 for PM10 and PM2.5. Note that there is a slight decrease in

the modeled impacts due to a small decrease in the construction exhaust emissions for the year 2026.

- As above for PM10, PAREA1 in the 24-hour and annual PM2.5 overlap emissions for the area source used 0.1216 tpy (2027 time period from CalEEMod) for the fugitive dust emissions as this was the year the maximum PM 2.5 exhaust emissions of 4.19E-03 tpy occurred (from CalEEMod). Since the overlap impacts were looking at both the testing of the emergency generators at SJC04 as well as the construction of the data center SJC06, it was determined that the health risk impacts of DPM (based on worst case year for exhaust PM10 emissions which is the surrogate for PM10) would be the most important consideration for the overlap analysis as the modeled criteria pollutant impacts for PM2.5construction and operation were small. The maximum emissions year of 2026 was also modeled and the results are presented in Table 4.3-27. Note that there is a slight decrease in the modeled impacts due to a small decrease in the construction exhaust emissions for the year 2026.

Table 4.3-16: Modeled Operational Concentrations and Ambient Air Quality Standards (Revised for PM10 and PM2.5)

Pollutant	Averaging Period	Maximum Concentration (µg/m^3)	Background (µg/m^3)	Total (µg/m^3)	Ambient Air Quality Standards (µg/m^3)	
					CAAQS	NAAQS
24-Hour Maxima shown for one engine operating up to 10 hours/day (7AM-5PM)						
PM10	24-hour maximum (CAAQS)	1.62	134	135.6	50	-
	24-hour 6th highest over 5 years (NAAQS)	1.35	74.8	76.2	-	150
	Annual maximum (CAAQS)	0.39	24.8	25.2	20	-
PM2.5	3-year average of 24-hour yearly 98th %	1.12	33.3	34.4	-	35
	Annual maximum (CAAQS)	0.39	11.5	11.9	12	-
	3-year average of annual concentrations (NAAQS)	0.37	9.8	10.2	-	12.0

Table 4.3-27: Modeled Overlap (Construction + Operation) Concentrations and Ambient Air Quality Standards (Revised for PM10 and PM2.5)

PM10	24-hour maximum (CAAQS)	2.59	134	136.6	50	-
	Annual maximum (CAAQS)	0.56	24.8	25.4	20	-
PM2.5	3-year average of 24-hour yearly 98th %	1.22	33.3	34.5	-	35
	3-year average of annual concentrations (NAAQS)	0.39	9.8	10.2	-	12.0

11. Please revise the air quality impacts modeling files (and health risk assessment files if applicable) to properly consider the correct emission rates.

RESPONSE TO DATA REQUEST 11

No revisions, other than those noted in Response to Data Request 10, are necessary. The use of the model year 2026 for the exhaust emissions of DPM from construction equipment would result in a decrease of the HRA impacts as the emissions of DPM (exhaust PM10 from CalEEMod) are less than the modeled year 2027 as presented in the application.

BACKGROUND: REFRIGERANT USE IN AIR-CONDITIONING UNITS

The application (TN 245946) states that the project will use air-conditioning (AC) units connected to the facility cooling water loop to provide cooling to the data center. The application also states that R-410A will be the refrigerant used in these AC units.

On September 30, 2022, the Governor approved Senate Bill (SB) 1206[2], which would prohibit a person from offering for sale or distribution, or otherwise entering into commerce in the state, bulk hydrofluorocarbons (HFCs) or bulk blends containing HFCs that exceed a specified global warming potential limit beginning January 1, 2025, and lower global warming potential limits beginning January 1, 2030, and January 1, 2033. However, the bill does not restrict the authority of the California Air Resources Board (CARB) to establish regulations lowering the maximum allowable global warming potential limit below the limits established by the bill.

Given the restrictions established by the bill and the potential for more stringent limits to be imposed by CARB in the future, staff needs to know how the proposed refrigerant for the AC units, R-410A would be initially charged, and handled during maintenance and repair, and replenished after the sale and distribution prohibition timelines established in SB 1206.

DATA REQUESTS

12. Please explain how the proposed refrigerant for the air-conditioning units, R-410A, would be initially charged, handled during maintenance and repair, and replenished after the sale and distribution prohibition timelines established in SB 1206.

[2] https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202120220SB1206

RESPONSE TO DATA REQUEST 12

Packaged DX HVAC equipment is planned to utilize R-410A refrigerant which will be pre-charged by the manufacturer. Refrigerant R-410A has a rated GWP value of 2088, and as such it meets the current requirements of SB1206 until 1-1-2030 when the GWP requirement will be lowered from 2200 to 1500. Maintenance of these systems will utilize reclaimed R-410A beginning in 2030 or sooner if required by law. More favorable refrigerant alternatives will be considered for use in 2030 if made more widely available by equipment vendors in the future as a response to current and future legislation.

BACKGROUND: SULFUR HEXAFLUORIDE EMISSIONS

The project would include electrical equipment such as circuit breakers and transformers. The California Air Resources Board (CARB) adopted Amendments to the Regulation for Reducing Sulfur Hexafluoride Emissions from Gas-Insulated Switchgear on December 30, 2021, which became effective on January 1, 2022. Based on the amended regulation (Cal. Code Regs., tit. 17, § 95352), starting on the applicable phase-out dates, no person may acquire sulfur hexafluoride (SF6) gas-insulated equipment (GIE) for use in California unless one of the following provisions apply:

a. ***An SF6 phase-out exemption was approved by the Executive Officer, or SF6 GIE was acquired in response to a failure, pursuant to section 95357.***
b. ***The SF6 GIE device was present in California and reported to CARB pursuant to section 95355(a) for a data year prior to the applicable phase-out date listed in Table 1 or Table 2.***
c. ***The SF6 GIE device was purchased by the GIE owner prior to the applicable phase- out date listed in Table 1 or Table 2 for the relevant GIE characteristics and enters California no later than 24 months after the purchase date.***
d. ***The SF6 GIE manufacturer replaces a defective SF6 GIE device under the terms of the manufacturer's warranty.***

Staff needs to confirm whether SF6 would be used in the circuit breakers and transformers of the project. Staff needs to confirm which of the four provisions the applicant would rely upon to comply with the current SF6 phase-out regulation (Cal. Code Regs., tit. 17, § 95352) and the applicable phase-out date based on the proposed GIE characteristics. If SF6 would not be used, staff needs information on the non-SF6 alternative to be used in the circuit breakers and transformers. Staff

needs an estimate of the leakage of SF6 or non-SF6 alternative from the electrical equipment to include in the Greenhouse Gas analysis.

DATA REQUESTS

13. Please confirm whether SF6 would be used as the electrical insulator for any electrical equipment for the project.

RESPONSE TO DATA REQUEST 13

SF6 will be used as the electrical insulator for the 115kV above ground circuit breakers, 38kV class aboveground switchgear and the 115kV to 34.5kV substation transformers.

14. Please provide the voltage and short-circuit current rating of the circuit breakers and transformers and determine the applicable SF6 phase-out date.

RESPONSE TO DATA REQUEST 14

The project plans to purchase 115kV class above ground switch gear with a short-circuit current rating less than 63 kA. The phase-out date for the purchase of SF6 gas in this equipment is January 01, 2025.

The project plans to purchase 38kV class aboveground switchgear with a 25 kA short-circuit current rating. The phase-out date for the purchase of SF6 gas in this equipment is January 01, 2028.

The project plans to purchase 115kV to 34.5kV substation transformers with a base rating of 57 kVA and a short-circuit current rating of less than 63 kA. The phase-out date for the purchase of SF6 gas in this equipment is January 01, 2025.

15. Please confirm which of the four provisions the applicant would rely upon to comply with the current SF6 phase-out regulation (Cal. Code Regs., tit. 17, § 95352).

RESPONSE TO DATA REQUEST 15

The project plans to purchase the gas insulated equipment (GIE) by the phase-out date and will be delivered to the project site within 24 months thereby complying with the requirements of Section 95352.a.3.

16. If the applicant is going to use option c) of the provisions shown above, please confirm whether the proposed circuit breakers and transformers would be purchased before the applicable SF6 phase-out date and enter California no later than 24 months after the purchase date, therefore, the project would be able to use SF6 in the circuit breakers and transformers.

RESPONSE TO DATA REQUEST 16

The project plans to purchase the gas insulated equipment (GIE) by the phase-out date and will be delivered to the project site within 24 months as required by 95352.a.3 and therefore qualifies for an exemption.

17. If SF6 would not be used, please provide information on the non-SF6 alternative to be used in the circuit breakers and transformers.

RESPONSE TO DATA REQUEST 17

Please see Response to Data Request 16.

18. Please provide an estimate of the quantity used and the amount of annual SF6/non- SF6 alternative leakage.

RESPONSE TO DATA REQUEST 18

Microsoft is in active conversations with single vendors for each piece of electrical equipment. Based on these vendors we anticipate the following SF6 gas volumes for our aboveground SF6 gas insulated equipment (GIE).

115kV SF6 GIE circuit breakers: 58 lbs x 2 units = 116 lbs

38kV Class SF6 GIE switchgear: 50 lbs x 2 units = 100 lbs

Total SF6 in the circuit breakers and switchgear is 216 lbs. A leak rate of 0.5% wt. per year was assumed, which results in SF6 emissions of 1.08 lbs/yr.

BACKGROUND: CALEEMOD INDOOR AND OUTDOOR OPERATIONAL WATER CONSUMPTION

Operational water usage for the project would be divided into outdoor and indoor purposes, where outdoor water use would be limited to landscaping, and indoor water use would result primarily from water supplied to operate the building cooling system and for use by on-site employees.

CalEEMod quantifies the indirect greenhouse gas emissions associated with this water usage by calculating the energy used to supply, distribute, treat the water and any resulting wastewater, and then determining the greenhouse gas emissions resulting from that energy use and any additional emissions resulting from wastewater treatment.

In the explanatory comments for the SJDC 04 data center building CalEEMod Water and Wastewater module (TN 245949, Table AQ4-3), annual operational water usage is stated to be 250.21 million gallons for indoor purposes and 1.79 million gallons for outdoor purposes. The explanatory comments for the water usage module of the other data center building (TN 245949, Table AQ4-4), SJC06, state that the operational water usage for SJC06 would be identical to that of SJC04.

Additionally, Appendix J of the application (TN 245972, Water Supply Assessment), similarly states that 221.5 million gallons of water would be used for indoor purposes every year (the combination of employee usage of potable water and cooling system recycled water needs; not adjusted for leakage) and 3.3 million gallons for outdoor usage (used for landscaping; not adjusted for leakage).

However, the actual operational water usage values used in CalEEMod are significantly less than what is stated in the explanatory comments and Appendix J. Total annual indoor water usage is shown to be 1.62 million gallons and annual outdoor water usage as 0.02 million gallons, the combination of what was inputted for each building.

DATA REQUESTS

19. Please explain the discrepancy between the annual water usage inputted into CalEEMod for each data center building (SJC04 and SJC06) and the annual water usage described in the CalEEMod explanatory comments and Appendix J.

RESPONSE TO DATA REQUEST 19

Note the following:

a. The water use value of 224.8 million gallons per year by the proposed facility was not available at the time of the CalEEMod analysis for the project. This value is presently the assumed correct value. This value can be apportioned at a 50% ratio for each of the proposed data center buildings resulting in a total water use (indoor plus outdoor uses) of 112.4 million gallons per year per data center.

b. The CalEEMod analysis performed by the Applicant's consultant assumed that each phase of the project, i.e., SJC04 and SJC06 would each use approximately 250.21 million gallons for indoor use (cooling and employee uses) and 1.793 million gallons for outdoor uses, for a total of 252.0 million gallons per year per data center.

c. Based on a. and b. above it can be clearly seen that the original analysis was based on water use values that represent a gross over-prediction of water use (approximately 2.24 times the actual engineering estimates).

d. The CalEEMod analysis is therefore significantly conservative with respect to emissions calculated for water use during operations, and as such since the

calculated emissions from water use are “0”, there is no need to rerun CalEEMod at this time.

e. The original over-prediction of water use also impacts the emissions calculations for the cooling systems. As such, revised cooling tower emissions estimates (criteria and toxics) are enclosed based upon the revised water use values. Since the cooling tower emissions are now based on the revised use rate there is no need for Appendix A Table AQ1-4, therefore it should be omitted and replaced with the revised Table AQ1-3, included in Attachment AQ DR-19.

f. Additionally, staff states above that the water inputs to CalEEMod are incorrect. The CalEEMod inputs were reviewed and found to be correct based on the input units for water use, i.e., gallons/yr/1000 sq.ft of floor space. Each DC building was evaluated at ~308,000 sq.ft.

20. Please confirm what the annual operational outdoor and indoor water usage will be for each data center building (SJC04 and SJC06), including predicted leakage.

RESPONSE TO DATA REQUEST 20

See Response to Data Request 19. The original value represents a significant over prediction of water use, which more than compensates for any “leakage” (at a leak rate of 5.7 percent for the 2000 San Jose Urban Water Management Plan), when compared to the revised water use values.

BACKGROUND: HEALTH RISK ASSESSMENT (HRA)

According to the application (TN#245946), the stationary sources during operation would not only include the project 36 standby diesel generators (page 91), but also the fuel storage, indirect cooling systems (page 85), and miscellaneous sources such as worker travel, deliveries, energy, and fuel use for facility electrical, heating and cooling needs, periodic use of architectural coatings, landscaping, etc. The fuel storage would emit VOC, the indirect cooling systems could emit PM10/2.5, and the miscellaneous sources would emit TAC (page 86). Also, in Table AQ1-5 in Appendix A (TN#245949), the applicant provided the calculation of hazardous and toxic pollutant emissions from cooling towers.

Moreover, on page 273 of the application (TN#245949), it is written that “these potential public health risks were evaluated quantitatively based on the most sensitive population, which includes the EJ population, by conducting a health risk assessment. The results were presented by the level of risk. The potential construction and operation risks are associated with exposure to diesel particulate matter (DPM), total organic gases (TOG) in diesel exhaust, and evaporative and

exhaust TOGs from gasoline vehicles. The toxic air contaminants (TACs) from TOG include 1,3-Butadiene, Acetaldehyde, Benzene, Ethylbenzene, Formaldehyde, n-Hexane, Methanol, Methyl Ethyl Ketone, Naphthalene, Propylene, Styrene, Toluene, and Xylene.”’

However, when checking the HRA modeling files, it looks like only DPM from the thirty-six standby diesel generators was included in the applicant’s HRA. Staff needs to verify if all these TACs emissions were included in the HRA.

DATA REQUESTS

21. Other than DPM emitted from the 36 standby diesel generators, did the HRA include the following:

    a. TACs from other sources such as fuel storage, indirect cooling systems, cooling towers, and miscellaneous sources.

    b. Total organic gases (TOG) in diesel exhaust, and evaporative and exhaust TOGs from gasoline vehicles, including 1,3-Butadiene, Acetaldehyde, Benzene, Ethylbenzene, Formaldehyde, n-Hexane, Methanol, Methyl Ethyl Ketone, Naphthalene, Propylene, Styrene, Toluene, and Xylene.

RESPONSE TO DATA REQUEST 21

a. TACs from fuel storage emissions were not included as the level of emissions were highly insignificant. See the emissions calculations for the large and small diesel storage tanks contained in Attachment AQ DR-21. The emissions noted from the diesel fuel storage tanks are well below the HRA acute and chronic mass emissions triggers in BAAQMD Regulation 2 Rule 5.

   TACs from the indirect cooling systems (water cycle portion), based upon the water analysis data supplied by South Bay Water Reclamation were provided in the AQ Appendix Table AQ1-5. This table presents data on non-TACs as well. The seven substances evaluated as TACs were arsenic, cadmium, total chromium, copper, lead, mercury, and nickel. The emissions of these substance for all systems combined ranged from 3.32E-8 to 1.07E-4 lbs/year, and as such they were considered to be insignificant (per the acute and chronic mass emissions trigger limits in BAAQMD Regulation 2 Rule 5), and not included in the HRA analysis.

b. The current surrogate for diesel exhaust (as evaluated by CARB and EPA) is DPM). The DPM established risk value as presented in the HARP model incorporates risk values from a whole host of VOC toxics as noted in Data Request 21 b. Inclusion of diesel exhaust species as noted in Data Request 21 b. would result in an over prediction of risk. As such, the noted exhaust VOC toxics were not included in the HRA analysis.

We are not aware of any data center HRA that has incorporated offsite TAC emissions from gasoline vehicles. Emissions from gasoline vehicles would be derived primarily from employee vehicles used for work related commuting trips. These emissions would occur offsite and are not included in the HRA analysis.

22. If yes, please provide the detailed HRA modeling files for staff to verify the HRA.

RESPONSE TO DATA REQUEST 22

Please see Response to Data Request 21.

23. If not, please justify why these TACs were not included in the HRA.

RESPONSE TO DATA REQUEST 23

Please see Response to Data Request 21.

BACKGROUND: HEALTH RISK ASSESSMENT (HRA) MODELING FILES

The Applicant conducted HRA for construction, operation, and construction and operation overlay. The applicant also provided HRA output electronically. However, staff needs some clarifications and may need more modeling files.

DATA REQUESTS

24. The HARP modeling files are within 3 folders: ICE HRA Files, MDC Const, and MS Overlap. Please explain which folder represents what. Is ICE HRA Files for operation?

RESPONSE TO DATA REQUEST 24

Note the following:

- ICE HRA files pertain to the operational HRA results for the total facility.
- MDC Const files pertain to the construction HRA results.
- MS Overlap files pertain to the overlap analysis on SJC04 operations with SJC06 construction.

25. Please provide the HARP modeling files in a standard form, so it is easier for staff to locate the files and verify the analysis.

    a. Place the files into the folders such as data, glc, hra, plt, and sa.

    b. Please also provide the input ADM file.

RESPONSE TO DATA REQUEST 25

The HARP files were provided in standard form as generated by HARP and using Winzip to combine the files into one file (with the applicable HARP generated subdirectories). The .adm files are in each of the three Winzip files for construction, operations and overlap.

BIOLOGICAL RESOURCES

BACKGROUND: Protected Trees and Linear Features

Offsite linear features are shown in Figure 3.3-10 of the SPPE application (application) (TN 245946), and Exhibit A (TN 245947) depicts the area surveyed for trees protected under the local ordinance. It is not clear if the offsite linears were surveyed for trees.

DATA REQUEST

26. Please describe if offsite linears were surveyed for trees, and either:

    a. provide results, or

    b. describe why this was considered unnecessary.

RESPONSE TO DATA REQUEST 26

The offsite linears shown in Figure 3.3-10 of the SPPE Application depict the route of an underground recycled water line extension. All work related to the underground recycled water line extension would occur within existing roadways in the public right-of-way. No trees would be removed or impacted by this work. Therefore, a survey for trees within the alignment of the offsite linears was determined to be unnecessary.

As described in the SPPE Application, three street trees will be removed to allow for site access along Orchard Parkway. As part of the right-of-way improvements along Orchard Parkway, the City may require the remaining ten street trees to be removed and replaced in new tree wells installed in the proposed sidewalk, for a potential total removal of thirteen street trees. These trees were included within the tree surveys completed for the project (see Appendix C). Nesting birds may be present in these trees. Potential impacts to nesting birds from construction of offsite infrastructure improvements would be avoided through implementation of PDFs BIO-1.1 and BIO-1.2.

BACKGROUND: Burrowing Owl

Page 123 of the application states that "The project will result in the permanent loss of 18.6 acres of unoccupied but ostensibly suitable nesting, roosting, and foraging habitat for burrowing owls on the Project Site". Staff understands onsite suitable habitat to consist of annual grasslands, which are described elsewhere (page 111 of the application) as being 20.9 acres.

DATA REQUEST

27. Please review reported acres of impacted burrowing owl habitat (annual grassland) and rectify numbers; explain any initial discrepancies. Update mitigation measure (PDF BIO 5.1) as necessary.

RESPONSE TO DATA REQUEST 27

The site contains 20.9 acres of grassland, 18.6 acres of which would be permanently impacted while the other 2.3 acres would remain. As stated under footnote one on page 48 of Appendix B to the SPPE Application, "18.6 acres is the acreage of permanent impacts within California annual grassland habitat on the project site. The project's permanent area is shown on Figure 7, and the extent of California annual grassland habitat on the site is shown on Figure 3." A southwest sliver of grassland habitat mapped in Figure 3 of Appendix B will not be permanently impacted, as shown in Figure 7 of Appendix B.

BACKGROUND: Southwestern Pond Turtle

In California, the CDFW ranks and categorizes "southwestern" pond turtle as "western pond turtle" at the full species level (CDFW 2022; page 107-108). "Southwestern" is the nomenclature that applicant used, and is not uncommon, staff will use "southwestern" here. The southwestern pond turtle is a state Species of Special Concern, and a USFWS Sensitive species. Page 126 of the application states that southwestern pond turtle may be impacted by the project during upland (annual grasslands onsite) dispersal and nesting. Further, the application states that conditions 3 and 11 of the Santa Clara Valley Habitat Plan (SCVHP) would avoid and mitigate any impacts to this species.

Condition 3 of the SCVHP regulates peak discharge and pollutant runoff (in this project- specific case, to the Guadalupe River) during all project phases. Condition 11 requires a 100-foot setback from the river; however, this species may disperse upland and further than 100 feet from Guadalupe River (and therefore into the proposed project site).

Therefore, staff considers this insufficient protection to avoid impacts to the species.

Further, the US Geological Service (USGS) has published a visual survey protocol (2006a) as well as a trapping protocol (2006b) for this species; therefore, protocols for this species exist (albeit the range covered is south of the project), and relevant portions of the protocol could have been adapted and used for this project.

DATA REQUESTS

28. Describe and explain how conditions 3 and 11 of the SCVHP would fully avoid impacts to southwestern pond turtle (western pond turtle) dispersing or nesting in the project site's annual grassland habitat.

RESPONSE TO DATA REQUEST 28

The southwestern pond turtle is a covered species under the SCVHP. As described in Section 6.3.6 of the Biological Resources Report (Appendix B to the SPPE Application): "The VHP does not provide species-level avoidance and minimization measures for the southwestern pond turtle. Nevertheless, the project would adhere to the general conditions of the VHP described in Section 6.1 above, which will help to reduce proposed project impacts on the southwestern pond turtle and its habitats. Applicable VHP Conditions that will minimize potential project impacts on the western pond turtle are Conditions 3 and 11. Because the project will comply with all relevant VHP conditions, impacts on the southwestern pond turtle will be less than significant under CEQA. This finding (less than significant) is consistent with the EIR prepared for the VHP." Compliance with the SCVHP, therefore, adequately mitigates impacts to the southwestern pond turtle under CEQA.

29. Describe any further avoidance protocols known to the applicant.

RESPONSE TO DATA REQUEST 29

Although not required under CEQA due to the project's compliance with the SCVHP, a typical measure to avoid impacts on southwestern pond turtles for projects not covered under a Habitat Plan is provided below:

> Pre-Activity Survey. A qualified biologist will examine the impact area for pond turtles no more than 48 hours prior to the start of ground disturbing activities. If a western pond turtle is observed during proposed ground disturbing activities, all ground disturbing activities in the vicinity of the pond turtle will cease until such time that either (1) the pond turtle leaves the area or (2) the qualified biologist can capture and relocate the animal to suitable habitat away from ground disturbing activity.

As described above, there would be no nexus under CEQA to require these surveys as mitigation because the impacts would be mitigated through compliance with the SCVHP, as intended when the SCVHP was adopted. However, Microsoft agrees to include the above measure as Project Design Feature **PDF BIO-5.2**

30. Describe why protocol surveys for this species were not followed or implemented, at least partially. Include agency coordination contact information and logs, if available.

RESPONSE TO DATA REQUEST 30

Protocol-level surveys for southwestern pond turtles are not needed to support CEQA review of the project. As described previously, the southwestern pond turtle is a covered species under the SCVHP, and the project will comply with applicable SCVHP conditions to ensure that impacts on this species are less than significant under CEQA. No species-specific surveys or avoidance measures are required by the SCVHP.

BACKGROUND: Point Source Nitrogen Deposition and Indirect Impacts

Impacts of excessive nitrogen deposition to plant communities include direct toxicity and changes in species composition among native species such as enhancement of non- native invasive species. The increased dominance and growth of invasive annual grasses is especially prevalent in low-bio-mass vegetation communities that are naturally nitrogen limited such as serpentine habitats. Although the application site is highly developed and does not contain sensitive habitat, there is serpentine habitat and Northern Coastal Salt Marsh within 6 miles of the project site. Although air emissions including nitrogen oxides (NOx) were discussed in the application, this was relative only to vehicle trips (TN 245946); no model or data to determine the total nitrogen deposition rate as well as the extent of the plume from the testing and maintenance of the proposed project's backup generators was provided. Nitrogen deposition resulting from NOx and ammonia emissions during the testing and maintenance of the backup generators of the proposed project may have potentially significant impacts on sensitive habitats (including critical habitat) and species nearby if the nitrogen deposition plume covers these areas.

While the proposed project is a "covered project" under the Santa Clara Valley Habitat Plan (SCVHP), the fees imposed for mitigation of nitrogen deposition are related to mobile emission sources only. Although mitigation for nitrogen deposition from stationary sources under the SCVHP is not required or covered, there still may be an impact to sensitive habit that needs to be mitigated to less than significant. CEQA criteria a, b, and c are pertinent to this impact. Therefore, a separate evaluation of nitrogen deposition must be made for the backup generators, which contribute as a point source for NOx and ammonia emissions and hence nitrogen deposition.

DATA REQUESTS

Within a 6-mile radius of the project site:

31. Please use AERMOD or an equivalent model to provide an analysis of impacts due to total annual nitrogen deposition (from NOx and ammonia) from the testing and maintenance of the backup generators. The analysis should specify the amount of total annual nitrogen deposition in kilograms of nitrogen per hectare per year (kg N/ha/yr) at sensitive habitat such as serpentine formations and Northern Coastal Salt Marsh. Please provide complete citations for references used in determining this number.

RESPONSE TO DATA REQUEST 31

A nitrogen deposition analysis is being performed and will be submitted under separate cover and will include the information requested in Data Requests 31 through 33.

32. Please provide an isopleths graphic over topographical maps of the direct total annual nitrogen deposition rates caused by the backup generators. This will be a graphical depiction of the project's nitrogen deposition contribution. Label the location of the proposed project and sensitive habitat such as serpentine, Northern coastal salt marsh, etc., and ensure that modeled nitrogen deposition rates in each sensitive habitat are clearly marked.

RESPONSE TO DATA REQUEST 32

Please See Response to Data Request 31.

33. Please also provide files corroborating nitrogen emissions calculation, model inputs and outputs (with plot files) for staff to review.

RESPONSE TO DATA REQUEST 33

Please See Response to Data Request 31.

GEOLOGY AND SOILS

BACKGROUND: Grading Plans

The application and Geotechnical Engineering Report prepared by Terracon do not appear to agree as to the grading plan for the site. The project description of the Geotechnical Engineering Report states:

"We understand the site will be elevated up 10 feet to raise the proposed improvements above the design flood risk elevation. We anticipate site grading may consist of fills up to 10 feet and cuts will be made along the northwestern portion of the site to depths up of about 15 feet below current grade. We do not anticipate any cut or fill slopes at the site."

The Geotechnical Engineering Report also notes the site is relatively flat and that the property varies in elevation from about 26.5 feet to 48.3 feet above Mean Sea Level (MSL) due to the presence of a mound near the northwest edge of the property.

However, the application, subsection 3.4.1, Site Grading, Excavation, and Construction Phasing, states:

"For purposes of this analysis, it is assumed that up to 90,000 cubic yards of soil and undocumented fill will be removed from the Project Site. Grading of the Project Site is not expected to require the import of fill material."

The application and Geotechnical Engineering Report do not appear to agree as to the grading plan for the site. Staff needs a clear understanding of the source of the material to be used to raise site grades up to 10 feet and where the 90,000 cubic yards of soil and undocumented fill is to be removed from.

DATA REQUESTS

34. What is the source of the fill material to be used to raise site grades up to 10 feet?

RESPONSE TO DATA REQUEST 34

The site earthwork is estimated to consist of ±97,000 cubic yards of cut and ±7,000 cubic yards of fill, equating to a net export of ±90,000 cubic yards. In the small areas of the site where fill is required, the native soil will be used wherever possible. If non-expansive fill is required in certain areas such as under the buildings, that fill will be brought from off site.

The proposed source of any imported fill is currently unknown but is anticipated to be sourced from other local project sites or quarries. All imported fill would meet the requirements for structural engineered fill as recommended in the Geotechnical Report, contained in Appendix of the SPPE Application. These requirements generally call for well graded granular sand and gravel soil types.

35. Please clarify if the source of the 90,000 cubic yards of soil and undocumented fill to be removed is the mound near the northwest edge of the property.

RESPONSE TO DATA REQUEST 35

It is our expectation that the approximately 34,000 cubic yards in the location of the 'mound' will be part of the 90,000 cubic yards that will be exported from the site. Excavation under the footprint of the two proposed buildings and excavation along the east side of the site to comply with the North San Jose Floodplain Management Policy will make up a large portion of the remainder of the total 90,000 cubic yards of exported earth.

36. What is the original source of the mound near the northwest edge of the property?

RESPONSE TO DATA REQUEST 36

The source of the "mound" area fill is unknown, but we believe that the likely source of the mound is excess material from the grading of the LBA owned property located to the north of the Project Site. Based on a review of aerial photographs, we believe that the LBA owned site was originally developed in the late 1970s.

37. If the mound is the source of the fill, has the mound been analyzed as an acceptable fill material from both a geotechnical and an environmental perspective?

RESPONSE TO DATA REQUEST 37

Excavated material from across the site may be used as fill provided it is cleared of vegetation, debris and other deleterious material and meets the criteria for engineered fill specified in the Geotechnical Report, contained in Appendix D to the SPPE Application. A Phase II ESA was completed for the site (refer to Appendix G of the SPPE Application). The Phase II ESA included soil samples throughout the site, including in the area of the mound. The Phase II determined that, although elevated levels of arsenic were detected in soils on the site, the levels of arsenic are within background levels in the region and do not present a hazard to future commercial/industrial uses on the site, nor do they present a hazard to construction workers assuming implementation of proper health and safety protocols, as would be required by the proposed Health and Safety Plan included in PDF HAZ-1.1 of the SPPE Application. As a result, soils on the site, including those in the mound, would be acceptable fill material from an environmental perspective. However, due to the moderately to highly plastic and expansive nature of the surficial clay soils, the upper 18 inches of fill below the building and equipment floor slabs is required to be granular structural engineered fill, and/or lime-treated subgrade soils.

BACKGROUND: Maximum Depth of Proposed Piles

In the Geotechnical Engineering Report, the project description states:

> ***"If Ground Improvement will not be performed, the proposed improvements should be supported by Deep Foundations to protect the improvements against the estimated total and differential settlements due to structural loads and Liquefaction. The Deep Foundations may consist of auger cast piles (ACP) or driven piles and should extend through the potentially liquefiable sand layers and derive their support from the subgrade soils below a depth of 60 feet…the ACPs or driven piles should extend through soils susceptible to liquefaction to a minimum depth of 70 feet below existing site grade into underlying firm soil."***

The application indicates in Section 3.4.1, Site Grading, Excavation, and Construction Phasing that the buildings would use a deep foundation system with piles. The piles are anticipated to extend 80 feet below the existing grade surface. Staff needs a clear understanding of the maximum depth of the proposed piles, if this option is selected during the final design, to complete their analysis.

DATA REQUEST

38. Please clarify the proposed depths of the ACPs or driven piles if the deep foundation option is selected.

RESPONSE TO DATA REQUEST 38

The current deep foundation system design is Drilled Displacement Piles, 18-inch diameter, with a minimum Pile Tip Elevation = -50 feet (approximately 80 feet below the existing ground surface), as recommended in the Preliminary Drilled Displacement Pile Foundation Recommendations Memorandum, dated 04/22/2022, contained in Attachment GEO DR-38. Final structural foundation system design is in progress.

BACKGROUND

In the application, Section 4.7.1.2, Paleontological Resources, the applicant referenced the City of San José 2040 General Plan EIR (San Jose 2011) and noted:

> ***"Paleontological resources are the fossilized remains of organisms from prehistoric environments found in geologic strata. Most of the City of San José is situated on alluvial fan deposits of Holocene age that have a low potential to contain significant nonrenewable paleontological resources; however, older Pleistocene sediments***

present at or near the ground surface at some locations have high potential to contain these resources. These older sediments, often found at depths of greater than 10 feet below the ground surface, have yielded the fossil remains of plants and extinct terrestrial Pleistocene vertebrates. Based on Figure 3.11-1 of the 2040 General Plan EIR, Palaeontologic Sensitivity of City of San José Geologic Units (San Jose 2011), the Project Site (as well as the Off- Site Infrastructure Areas) are located in an area of high paleontological sensitivity at depth."

In addition to the information provided, the potential for paleontological resources to occur in the project area should also be evaluated using the federal Potential Fossil Yield Classification (PFYC) system developed by the Bureau of Land Management (BLM 2016). Because of its demonstrated usefulness as a resource management tool, the PFYC has been utilized for many years for projects across the country, regardless of land ownership. It is a predictive resource management tool that classifies geologic units based on their likelihood to contain paleontological resources on a scale of 1 (very low potential) to 5 (very high potential) or Unknown. This system is intended to aid in predicting, assessing, and mitigating impacts to paleontological resources.

DATA REQUEST

39. Provide the PFYC ranking for the site.

RESPONSE TO DATA REQUEST 39

The Bureau of Land Management (BLM) currently does not have PFYC mapping data available for the state of California. As stated on their website, "Data for the following states have been posted: Alaska, Colorado, Montana, Nevada, North Dakota, Oregon, South Dakota, Utah, and Wyoming. Arizona, Idaho, New Mexico, Oklahoma, and southern California will be added soon." (Source: U.S. Department of the Interior Bureau of Land Management. PFYC: A Rapid Assessment Tool for Paleontology. July 8, 2021. https://www.blm.gov/blog/2021-07-08/pfyc-rapid-assessment-tool-paleontology)

HYDROLOGY AND WATER QUALITY

BACKGROUND: Section Reference

In the application, subsection 4.10.2.1 Project Impacts, within the second paragraph, within the parenthesizes of the second sentence, the Section number reference is replaced by the following error message: Error! Reference source not found.

DATA REQUEST

40. Please provide the referenced Section number as referenced in Section 4.10.2.1 of the application.

RESPONSE TO DATA REQUEST 40

The Section number is 4.7.2.1.

LAND USE

BACKGROUND: Building Heights

Building heights are discussed under subsection 3.3.4.1 of the application, "Building Heights and Setbacks," where it states the following:

> ***The data center buildings will be approximately 101 feet at the roof's high point with parapet walls extending to a height of approximately 136 feet above the Level 1 slab height at the high point. The parapet/screen walls will extend to a height of approximately 40 feet above the roof level to conceal the rooftop mechanical and electrical equipment and provide sound attenuation.***

Based on this paragraph, the height to the top of the screen wall would be 141 feet rather than 136 feet.

Figures 3.3-7 and 3.3-8 show building elevations, which are labeled 96 feet 8 inches for the "roof low point," 108 feet 6 inches for "dunnage," and 135 feet 6 inches for the "screen." (Staff assumes that dunnage refers to a rooftop platform for mechanical equipment.) Based on the height measurements in the application, the dunnage would add roughly from 7 to 11 feet to the roof height, depending on whether it is added to the "roof low point" or "high point" height.

Figure 3.3-7 shows a plain grid pattern for part of the data center structures rather than finalized drawings showing building elements and characteristics.

Figure 3.3-8 shows a longitudinal elevation with an additional marker at 100 feet 5 inches but with no identifying label.

DATA REQUEST

41. Staff requests clarifications of building elements and structure heights and improved elevation drawings, including:

    a. meanings of the roof low point and high point heights,

    b. roof height elevations,

    c. dunnage platform height and description,

    d. parapet wall height and description,

    e. screen wall height and description,

    f. data center height to the top of the screen (text states 136 feet and building elevations state 135 feet 6 inches),

g. description of the building element that is at a height of 100 feet 5 inches, and

h. elevation drawings to replace Figure 3.3-7 that more clearly depict the building elements and structure heights.

RESPONSE TO DATA REQUEST 41

a. The "Roof High Point" (also known as the "Ridge") and "Roof Low Point" represent the slope required for proper water runoff from the roof. Currently this is a 3/8" = 1'-0" slope, where the water starts at the Roof High Point (100'-5") and drains to the Roof Low Point (96'-8").

b. See Response to Data Request 41.a.

c. Dunnage Platform Height 108'-6"; the dunnage platform is a flat grated metal assembly.

d. The parapet wall is approximately 38'-10" tall or 135'-6" above the Level 1 slab. The parapet is an extension of the building façade's stucco panels with structural steel supports. The parapet screens the roof top mechanical equipment that is mounted on the dunnage platform.

e. The screen wall around the substation is 25'-0" tall; the screen wall is opaque. The current screen wall is a preliminary design of CMU, structural steel and metal panels.

f. Data center is 135'-6" to the top of the parapet.

g. Roof High Point 100'-5"

h. Figure 3.3-7 has been revised as requested and a new Figure 3.3-7A has been included to depict the building elements show the exterior material palettes in more detail. Both Figures are included in Attachment LU DR-41.

BACKGROUND: Site Elevation

The Phase I Environmental Site Assessment for the proposed project (TN #245978) states that the property lies at approximately 20 feet AMSL and that the topography of the property area is relatively flat with one small hill on the northern section. It states that the surface elevation of the property varies from approximately 20 to 37 feet.

Figure 3.3-13 of the application, "Grading and Drainage Plan," shows a finished floor elevation of 33.0 feet for data center SJC06 and 32.0 feet for data center SJDC 04.

Staff's analysis of consistency of the proposed project with the Comprehensive Land Use Plan for the San José International Airport requires data on structure heights in feet AMSL. Information in the proposed project application states maximum building heights from a base elevation of zero inches, as shown in the building elevations and described in the text (Chapter 3, subsection 3.3.4.1 Building Heights and Setbacks; Figures 3.3-7 and 3.3-8; and Section 4.9 Hazards and Hazardous Materials). These measurements do not account for site elevation, which is needed to determine structure heights in feet AMSL.

DATA REQUEST

42. Please provide the site elevations for the two data center buildings in feet AMSL. Please clarify the difference between site elevation and finished floor elevation.

RESPONSE TO DATA REQUEST 42

The finished floor elevation is the elevation of the ground floor of the building above mean sea level (AMSL). The Level 1 slab for the SJC04 building will be 32'-0" AMSL. The Level 1 slab for the SJC06 will be 33'-0" AMSL.

The site elevator around the SJC04 and SCJ06 buildings after mass grading has been completed will be near the fished floor elevation but will vary slightly around the perimeter of the building ranging around 1' higher to 2' lower than the building floor slab elevation.

BACKGROUND: Special Use Permit

The proposed project site is in the CIC Combined Industrial/Commercial zoning district. The city of San José requires a Special Use Permit for a data center.

DATA REQUEST

43. Please provide information on when the applicant plans to apply to the City for a Special Use Permit. If the applicant has submitted an application, please provide information on its status.

RESPONSE TO DATA REQUEST 43

A Special Use Permit (SUP) (SP22-029) is currently on file with City of San Jose. A copy of which is included as Attachment LU DR-43. The City has informed Microsoft that the SUP must be converted to a Conditional Use Permit (CUP) due to the inclusion of an electrical substation as part of the project. The conversion to the CUP application will be handled administratively by the City. Microsoft has received City Departmental/Agency comments/requests for project revisions and potential conditions of approval. The Microsoft design team is currently responding to these comments and preparing plan revisions.

BACKGROUND: Lot Line Adjustment

The application states under subsection 3.3.1, Site Description, that a portion of the Pacific Gas and Electric Company (PG&E) switching station would be located on Assessor Parcel Number 101-02-019, which would be incorporated into the proposed project through a lot line adjustment.

DATA REQUEST

44. Please provide a figure showing the project site plan with the proposed property lot line adjustment.

RESPONSE TO DATA REQUEST 44

Civil Site Plan 005-C (Attachment LU DR-43) shows the existing and future property after the lot line adjustment has been approved by the San Jose Planning Department. A Lot Line Adjustment application has been submitted to the San Jose Planning Department under application number AT22-025.

POPULATION AND HOUSING

BACKGROUND: Project Construction and Operation Workforce

Staff needs to know about the assumptions used for the construction and operations workforce for the project. No assumptions were discussed in the application.

DATA REQUESTS

45. What is the estimated number of operation workers for the project?

RESPONSE TO DATA REQUEST 45

The anticipated weekday, daytime headcount in each of the two buildings is anticipated to be thirty-five staff. The weekday, evening headcount in each of the two buildings is anticipated to be up to 29 staff.

46. From where are the project construction and operation workforce estimate to be derived, locally within the Greater Bay Area or non-locally (beyond a two-hour commute of the project site)?

RESPONSE TO DATA REQUEST 46

All Operations workforce will be local. For Construction workforce contracted under the General Contractor, they will be local; however, Owner Furnished Contractor Installed (OFCI) vendors may have some equipment support staff that will be non-local.

47. What portion of the construction and operation workforce does the applicant anticipate would be local and what portion would be non-local?

RESPONSE TO DATA REQUEST 47

We anticipate that the non-local construction workforce (primarily equipment support staff) represents less than 5 percent of the total labor hours during the construction of the project.

PROJECT DESCRIPTION

BACKGROUND: Transmission Interconnection

The application Section 3 indicated that the project includes an on-site new substation and a switching station, with two electrical supply lines that would connect to the PG&E Trimble and Newark substations. Also, power outage data was provided for the past 10 years for Trimble Substation and past 6 years for Newark-Lawrence Substation. Staff requires a complete description of the project interconnection to the PG&E system to understand the potential operation of the backup generators.

DATA REQUESTS

48. Please provide complete one-line diagrams for the new project substation. Show all equipment ratings including bay arrangement of the breakers, disconnect switches, buses, redundant transformers or equipment, etc. that would be required for interconnection of the project.

RESPONSE TO DATA REQUEST 48

The 115 kV switching station will be designed and constructed by PG&E. The 115 kV to 34.5 kV substation will be designed and constructed by Microsoft. PG&E has not started their design at this time; a conceptual layout of the site has been coordinated with PG&E and is included in Attachment PD DR-48.

49. Please provide a detailed description and one-line diagrams of the new PG&E switching station with the interconnection of the project substation. Please label the name of the lines and provide the line voltages.

RESPONSE TO DATA REQUEST 49

PG&E will connect the new 115 kV switching station into an existing 12.5-mile route between the Newark and Trimble Substations. PG&E has provided a concept one-line diagram showing the existing and the new configuration which is included as Attachment PD DR-49.

50. Will the new on-site switching station require California Public Utility Commission discretionary action?

RESPONSE TO DATA REQUEST 50

The California Public Utilities Commission (CPUC) will require PG&E to obtain a Notice To Construct (NOC) pursuant to General Order 131d. The CEC should ensure that the

EIR includes the CPUC as a responsible agency in its descriptions of agencies that may utilize the EIR for subsequent permit actions.

After the filing of the SPPE Application, Microsoft learned that in order to support the total electricity demands of the SJ04 and SJ06 data centers, PG&E will need to upgrade the conductors between the Newark and the Trimble Substation. The PG&E reconductoring project is in the concept design stage. PG&E will increase the size of the 115kV conductors along an approximate 12.5-mile-long path between the Newark and the Trimble Substation using existing support poles along an existing transmission right-of-way. The CEC should include this feature as part of this project for CEQA purposes. To support inclusion of the transmission reconductoring, Microsoft has authorized environmental survey work to determine the existing setting and to support further environmental analysis. Specifically, the environmental survey work will focus around each of the high-voltage support structures, which will be reused and where the potential for ground disturbance is most likely to occur. The ground disturbance associated with the reconductoring activity will most likely be near the existing support structures and staging of cranes and materials around each of the support structures. When the environmental analysis is complete, Microsoft will provide a revised project description and updates to the affected environmental chapters of the SPPE Application as applicable. See Attachment PD DR-50 for a map of the reconductoring path.

51. Please provide the pole configurations which would be used to support the overhead transmission lines from the new switching station to the new project substation. Show proposed pole structure configurations and measurements.

RESPONSE TO DATA REQUEST 51

The 115 kV transmission line will be intercepted along the south edge of the Microsoft property and will be routed along new poles to the new switching station for one of the connections to the switching station. The 115 kV line will be intercepted along the east edge of the Microsoft property and will be routed either overhead on new poles or underground to the new switching station for the second connection to the switching station. The 115kV link between the point of connection on the south and east edge of the site will be removed.

One new pole is anticipated at each point of interconnect to the site to facilitate the 90 degree turn into the Microsoft site. Additional poles are anticipated on the Microsoft site between the existing 115 kV right of way and the new switching station.

The distance between the point of connection to the south and the new switching station is approximately 1,025 feet. The distance between the point of connection to the east and the new switching station is approximately 425 feet. See Attachment PD DR-51 for the PG&E concept plan. PG&E has not yet designed the pole sizes, location or quantities.

52. Please provide a detailed description and drawing of the proposed 115 kilovolt (kV) transmission line route and length. Show the interconnection points between the new PG&E switching station and project substation, and possible pole locations. Please provide a legend and label the drawing to show the proposed line route and pole locations.

RESPONSE TO DATA REQUEST 52

Please see Response to Data Request 51.

53. Please note if any of the past outages for the two substations are due to Public Safety Power Shutoff (PSPS) events.

RESPONSE TO DATA REQUEST 53

According to PG&E none of the past outages over the last 10 years for Trimble Substation and past 6 years for Newark-Lawrence Substation were due to Public Safety Power Shutdown (PSPS) events.

54. Have there been changes to the PG&E system, since PSPS events began, that would affect the likelihood that future PSPS events would result in the operation of emergency generators at the proposed project?

RESPONSE TO DATA REQUEST 54

According to PG&E, past PSPS events have de-energized power in less populated areas. Our project site in located toward the urban center of the San Jose area. Based on the PSPS events over the last few years, and input from PG&E, there have been no changes to the PG&E system that would affect the likelihood that future PSPS events would result in operation of the Project's emergency generators.

TRAFFIC AND TRANSPORTATION

BACKGROUND: Construction Activities and Worker Vehicle Trips

The San Jose Transportation Handbook, Section 4.19 Construction, states "To the extent possible the operational analysis should include information about the project construction such as duration, hours of operations, any required grading, potential haul routes, traffic control plans, closure or relocation of bus stops, street closures and construction entrances."

Staff reviewed the SPPE Application and the Draft VMT Analysis in Appendix I and could not locate a table or discussion of construction worker vehicle trips required for the construction of the project. A short discussion of construction activities is included in the Draft VMT Analysis however there are not enough details to describe construction activities. For example, Section 3.4 Construction and Operation states "construction worker parking and staging areas will be off-site at an existing commercial property parking lot located at 2825 Lafayette Street, approximately 1.9 miles from the site. Bus transportation between the project and the off-site parking will be provided by the project owner." There's not an associated map to show where the parking and staging areas are located at 2825 Lafayette Street, nor are there identified bus routes. To adequately answer CEQA Transportation question b, the applicant must provide more details related to the construction of the project.

DATA REQUESTS

55. Please provide a table labeled "Construction Trip Generation" that includes offsite construction worker trips that would be routed to the 2825 Lafayette Street parking and staging area. The trip generation table should include information on trip type (delivery/haul trucks, maximum and average amount of construction workers, and total construction traffic) and AM and PM peak hour trips.

RESPONSE TO DATA REQUEST 55

Construction Trip Generation Parking Lot: 2825 Lafayette St, Santa Clara, CA 95050		
	Parking Lot - Trip Generation Rate	Trip Type (Busing Personnel)
Max. Amount of Construction Workers	75 per bus	Bus transfer to site
Average amount of Construction Workers	50 per bus	Bus transfer to site
AM Peak Hour Trips	8 Round Trips/ Mon. - Sat.	Bus transfer to site
PM Peak Hour Trips	8 Round Trips / Mon. -Sat	Bus transfer to site

Construction Trip Generation Storage/Staging Area Address: Peninsula Crane & Rigging 656 Wool Creek Dr, San Jose, CA 95112		
	Storage/ Staging Trip Generation Rate (round trips/day)	AM / Peak Hour Trips
Delivery	1-10 Deliveries/day one way	N/A - As needed basis
Haul to Site	1-10 round trips material pick up / day	AM Peak - 1-6 Material Pick ups PM Peak - 1-4 Material Pick ups

56. Please include anticipated schedules for the construction worker shuttle buses.

RESPONSE TO DATA REQUEST 56

Description	**Time Frame**	**Trip Generation Rate (round trips/day)**	**Number of Active Buses**
Construction Personnel Start of Workday	6am - 8am	8 Round Trips	4
Storage / Delivery for staging items	As needed basis	1-10 per day	N/A
Construction Personnel End of Workday	2:15pm - 4:30	8 Round Trips	4

57. Please provide a map of the construction worker parking and laydown areas. Include the route(s) to be used to get to and from the project site.

RESPONSE TO DATA REQUEST 57

Please see Attachment TRANS DR-57.

58. Approximately how long would construction take to complete the new 1.5-mile recycled water connection?

RESPONSE TO DATA REQUEST 58

Based on current conceptual plans construction of the recycled water pipeline will take approximately 288 working days to complete.

59. Approximately how long would construction take to complete pedestrian improvements along Component Way? Would improvements take place during project construction?

RESPONSE TO DATA REQUEST 59

The pedestrian improvements along Component Way will likely take thirty working days to complete. This work is part of Phase I construction of the Project.

BACKGROUND: Federal Aviation Administration

The San Jose International Airport is located approximately 1,100-feet southwest of the project site. Title 14, Part 77.9 of the Code of Federal Regulations requires Federal Aviation Administration (FAA) notification for construction or alterations within 20,000 feet of an airport with a runway more than 3,200 feet in length if the height of the construction or alteration exceeds a slope of 100 to 1 extending outward and upward from the nearest point of the nearest runway of the airport (CFR 2020). The threshold for the FAA notification 100 to 1 surface exceedance height is approximately 10 feet at the project site. If a project's height, including any temporary equipment (such as cranes used during construction) or any ancillary structures (such as transmission poles), exceeds the 100 to 1 surface, the project applicant must submit a copy of FAA Form 7460-1, Notice of Proposed Construction or Alteration, to the FAA.

DATA REQUESTS

60. Please prepare and submit Form 7460-1, Notice of proposed Construction or Alteration, to the FAA for the project's proposed buildings, transmission poles and temporary construction equipment such as cranes. Submit the FAA's determinations to the project docket log once they are received.

RESPONSE TO DATA REQUEST 60

Five FAA 7460-1 Obstruction Evaluation applications have been submitted to the FAA for this project. Microsoft's applications are still under review; no final determination has been made at this time.

ATTACHMENT AQ DR-19

Air Quality Revised Table AQ1-3

Table AQ1-3 Cooling Towers-Wet Surface Condensers PM10/PM2.5 Based on Makeup Water TDS and Cycles of Concentration

Scenario or Project ID:	Microsoft DC Water Demand SJC04 and SJC06				
Indirect Cooling Systems	Reclaimed Water		**Tower Physical Data (optional)**		
# of Identical Towers:	64		# of Fans:	256	2 per cell
# of Cells in each Tower:	2			Individual Fan Data	
Operational Schedule: Hrs/day	24		Fan ACFM:		
Days/Year	365		Fan Diam (ft):		0 m
Hrs/Year	8760		Exit Vel (ft/sec)		0.000 m/s
Total tower circulation rate, gpm:	421.0		Length (ft)		0.00 m
Flow of cooling water (lbs/hr)	210516.8		Width (ft)		0.00 m
TDS in Makeup Water: (mg/l or ppmw)	513.0		Deck Ht (ft)		0.00 m
Cycles of Concentration:	4.0		Fan Ht (ft)		0.00 m
Avg TDS of circ water (mg/l or ppmw)	2052.0	annual avg value			
Flow of dissolved solids (lbs/hr)	431.98				
Fraction of flow producing drift*	1.00	1= worst case			
Control efficiency of drift eliminators, %	0.0005	0.000005			
Calculated drift rate (lbs water/hr)		1.05	25.3	Calc lbs/day	

	Per Tower	**Per Cell**	**All Towers**
PM10 emissions (lbs/hr)	**0.002**	**0.001**	**0.138**
PM10 emissions (lbs/day)	**0.052**	**0.026**	**3.318**
PM10 emissions (tpy)	**0.009**	**0.005**	**0.605**
PM2.5 fraction of PM10	1.00	1= worst case	
PM2.5 emissions (lbs/hr)	**0.002**	**0.001**	**0.138**
PM2.5 emissions (lbs/day)	**0.052**	**0.026**	**3.318**
PM2.5 emissions (tpy)	**0.009**	**0.005**	**0.605**

Notes:
Based on Method AP 42, Section 13.4, Jan 1995
*Technical Report EPA-600-7-79-251a, Page 63
Effects of Pathogenic and Toxic Materials Transported Via Cooling Device Drift - Volume 1.
Total maximum facility water demand is estimated to be 221.5 million gallons per year for cooling.
CYCLES OF CONCENTRATION-in laymans terms, the TDS in the blowdown or circulating water divided by the TDS in the incoming makeup water yields the cycles of concentration.

ATTACHMENT AQ DR-21

Revised Emission Calculations for Large and Small Diesel Fuel Tanks

Table AQ1-6 Fixed Roof Tank Emissions Estimates

Ref: AP-42, Section 7.1, 11/2006

indicates input

Standing Storage Losses			***Comments***	**Note**
Type of organic liquid:	#2 ULS Diesel			
Vapor molecular weight:	Mw	130	AP-42	
Vapor density, lbs/ft3:	Vd	0.00015243		
Liquid density, lbs/gal	Dl	7.05	AP-42	
TVP, psia @ 60F	Vp	0.0065	AP-42 (consistent with Ta below)	
~ Tank diameter, ft.	D	12		
~ Tank height or length, ft.	H	60		
~ Tank capacity, gals	Tc	50000		
Avg vapor space height, ft.	Hv	4	annual avg value based on use versus tank refills	
Vapor space volume, ft3	Vv	452.39		
~Total tank volume, ft3	Tv	6684	Based on actual tank dimensions	
Avg Annual Temp, F	Ta	56.6	API Bulletin 2517, for SFO Airport	
Avg diurnal temp change, F	Tc	13.1	Avg max minus avg min.	
Paint factor	Pf	0.05	AP-42, Table 7.1-6, solar absorbance value	1
Product factor	Pd	1	Crude = 0.75, all others = 1	
Turnover factor	Kn	1	If turnover <36/year, the factor = 1. If >36 then calculate Kn. Per AP-42.	
Annual throughput, gals/yr	At	43000		
Vapor space expansion factor	Ke	0.04	AP-42, default value	
Vapor saturation factor	Ks	0.9986		
# of similar tanks		8	4 tanks per data cneter bldg	2
Standing Loss	**Ls**	**1.01**	**lbs/yr (breathing and standing losses)**	

Working Losses			
Vapor molecular weight:	Mw	130	
Vapor pressure, psia @ 70F	Vp	0.0065	
Throughput, bbl/yr	Q	1023.8	
Turnover factor	Kn	1	
Working loss product factor	Kp	1	
Working Loss	**Lw**	**0.87**	**lbs/yr (tank filling and withdrawal losses)**
	Ls+Lw	**1.87**	
Engineering Uncertainty Factor		1.2	
Uncontrolled Total Tank Losses		**2.24**	**lbs/yr each tank**
		17.96	**lbs/yr all tanks**
Control System ?	No	0	control fraction
System type, etc.	NA, no controls are required on #2 fuel oil storage tanks or delivery systems		3
Controlled Total Tank Losses		**2.24**	**lbs/yr each tank**
		17.96	**lbs/yr all tanks**
		0.009	**TPY all tanks**

Note 1 - paint factor reduced due to tanks being inside the bldg on the ground floor not subject to ambient sunlight exposure.

Note 2 - for conservativeness, thruput increase 43000 gal/yr/tank

Note 3 - these tanks are not exempt form BAAQMD permits per Reg 2 Rule 1, section 123.

Table AQ1-7 Fixed Roof Tank Emissions Estimates

Ref: AP-42, Section 7.1, 11/2006

indicates input

Standing Storage Losses			***Comments***	**Note**
Type of organic liquid:	#2 ULS Diesel			
Vapor molecular weight:	Mw	130	AP-42	
Vapor density, lbs/ft3:	Vd	0.00015243		
Liquid density, lbs/gal	Dl	7.05	AP-42	
TVP, psia @ 60F	Vp	0.0065	AP-42 (consistent with Ta below)	
~ Tank diameter, ft.	D	8.25	equivalent dimemnsion for 4000 gals	
~ Tank height or length, ft.	H	10	equivalent dimemnsion for 4000 gals	
~ Tank capacity, gals	Tc	4000		
Avg vapor space height, ft.	Hv	2	annual avg value based on use versus tank refills	
Vapor space volume, ft3	Vv	106.91		
Total tank volume, ft3	Tv	535	Based on actual tank dimensions	
Avg Annual Temp, F	Ta	56.6	API Bulletin 2517, for SFO Airport	
Avg diurnal temp change, F	Tc	13.1	Avg max minus avg min.	
Paint factor	Pf	0.17	AP-42, Table 7.1-6, solar absorbance value	1
Product factor	Pd	1	Crude = 0.75, all others = 1	
Turnover factor	Kn	1	If turnover <36/year, the factor = 1. If >36 then calculate Kn. Per AP-42.	
Annual throughput, gals/yr	At	3000		
Vapor space expansion factor	Ke	0.04	AP-42, default value	
Vapor saturation factor	Ks	0.9993		
# of similar tanks		4	equals 1 equivalent tank per engine	2
Standing Loss	**Ls**	**0.24**	**lbs/yr (breathing and standing losses)**	
Working Losses				
Vapor molecular weight:	Mw	130		
Vapor pressure, psia @ 70F	Vp	0.0065		
Throughput, bbl/yr	Q	71.4		
Turnover factor	Kn	1		
Working loss product factor	Kp	1		
Working Loss	**Lw**	**0.06**	**lbs/yr (tank filling and withdrawal losses)**	
	Ls+Lw	**0.30**		
Engineering Uncertainty Factor		1.2		
Uncontrolled Total Tank Losses		**0.36**	**lbs/yr each tank**	
		1.43	**lbs/yr all tanks**	
Control System ?	No	0	control fraction	
System type, etc.	NA, no controls are required on #2 fuel oil storage tanks or delivery systems			3
Controlled Total Tank Losses		**0.36**	**lbs/yr each tank**	
		1.43	**lbs/yr all tanks**	
		0.001	**TPY all tanks**	

Note 1 - paint factor for new tanks, painted white, etc.

Note 2 - for conservativeness, annual thruput increased from 2825 to 3000 gal/yr

Note 3 - these tanks are exempt form BAAQMD permits per Reg 2 Rule 1, section 123.

ATTACHMENT GEO DR-38

Preliminary Drilled Displacement Pile Foundation Recommendations Memorandum, dated 04/22/2022, prepared by Terracon

Memorandum

TO: Travis Test – Thornton Tomasetti
Kerem Gulec – Thornton Tomasetti

FROM: Robert Fosse
Noah Smith

CC: Chad Mendell, ESD

DATE: April 22, 2022

RE: Preliminary Drilled Displacement Pile Foundation Recommendations
Microsoft SJC04 Data Center
Santa Clara County, California
Terracon Project No. ND215040

This technical memorandum provides preliminary geotechnical recommendations for drilled displacement pile foundation system design, and is intended for further internal discussions with the project design team during master planning and preliminary structural design. These recommendations are based on recent modifications to the project, consultation meetings with the structural and civil consultants, and are supplemental to our December 16, 2020 geotechnical report for the project.

Drilled Displacement Pile Design Parameters

Based on the current stage of design development and consultation with the design team, the proposed structure is recommended to be founded on augered cast-in-place or drilled displacement piles. This pile type is generally cost-effective, practical to install, appropriate for the site conditions, and has been used successfully to achieve relatively high axial compression capacities on similar projects. These types of foundation systems are typically developed through a design-build foundation sub-contractor

For conceptual and preliminary design, preliminary recommendations for the design of deep foundation system alternatives are provided herein. The design pile capacities and lengths should be determined by the Foundation Subcontractor and Geotechnical and Structural Engineers. We recommend that the deep foundation system be designed to develop axial compression pile capacities through a combination of skin friction and end bearing in the underlying dense sand and stiff clay layers below liquefiable sandy soil layers. Pile uplift capacity will be derived from skin friction only. We anticipate pile depths on the order of 75 to 80 feet below the existing ground surface will be required to achieve sufficient embedment into the dense sand and stiff lay below loose to medium dense sand layers susceptible to liquefaction, encountered at Elevations ranging from about +13 to +5 feet.

The range of pile tip elevations and driving resistances should be determined during the construction indicator pile program. Actual tip elevations and pile lengths will vary depending on the available ultimate geotechnical capacity and the consistency of the dense sand and stiff clay bearing layers.

Two design alternatives are currently being evaluated by the project design team, both with finish floor levels at Elevation = 33 feet. Alternative 1 is a conventional fixed base design, with a building rough pad grade at Elevation +32 feet, and the bottom of the pilecaps (assumed top of pile) at Elevation +28 feet Alternative 2 includes a base isolation pit with an excavated level of about Elevation +27 feet, and the bottoms of the pilecaps (assumed top of pile) at Elevation +23 feet. Both of the alternatives will have a structural floor slab at the alternative elevations. Preliminary Design Parameters for a drilled displacement pile (DDP) foundation system are presented below.

Based on our review of the results of the 2020 subsurface investigation program, and more recent site investigation data, we recommend a design groundwater level of Elevation +24 feet be considered for final design. It is also our understanding that a 100-year flood level of Elevation +32 feet is also being considered for final design.

Preliminary Axial Design	
Description	**Recommendations**
Pile Type	Drilled Displacement Pile
Pile Dimension	18-inch diameter
Minimum Pile Embedment for Axial Design	Minimum Pile Tip Elevation -50.0 feet (Approximately 80 feet below the existing ground surface)
Ultimate Axial Compression Capacity	500 kips
Ultimate Axial Uplift Capacity	300 kips
Total Estimated Settlement	Less than ½ inch (to be confirmed based on actual structural loading conditions)
Minimum center to center spacing to develop full skin friction	3 times the diameter of the DDP
Groups of 3 or more piles spaced closer than 3 pile diameters	Should be evaluated on a case by case basis by Terracon. Alternative installation sequences may be needed to allow for a minimum of 48 hours concrete curing time, before installation of adjacent shafts.

1. Preliminary design capacity is dependent upon the method of installation, and quality control parameters, and should be evaluated further during final design.
2. Allowable capacities may be evaluated with a Factor of Safety of 2.0 (ASD).
3. Piles should extend at least 50 to 60 feet into the bearing stratum below the bottom of the potentially liquefiable sandy soil layer.
4. Our current scope of work included extending test borings and CPTs to maximum depths ranging from about 50 to 100 feet bgs. We have assumed similar soils extend below the maximum explored depths. Deeper borings/CPTs shall be utilized for confirmation if needed.
5. Preliminary axial capacity design recommendations are applicable to either Alternative 1 or Alternative 2 pilecap elevations.

Negative skin friction, or drag loads, as a result consolidation settlement of moderately compressible clay soil layers due to proposed site grading fills should also be considered in the design of the deep foundation system. This settlement will result in additional loading on the pile foundations which should be considered, in addition to the long-term pile loads, for evaluating the structural capacity of the pile foundations. Liquefaction-induced settlements of up to ½ to 2 inches may also occur following a large seismic event.

Terracon should be contacted to provide estimates of drag loads, when structural design information and pile foundation system type and geometry is developed during final design. The project Structural Engineer should confirm combined drag and design loads do not exceed the structural capacity of the pile.

Drilled Displacement Pile Lateral Loading

The lateral resistance of a foundation pile is a function of the surrounding soil strength and stiffness, size and stiffness of the pile, pile top connection, and induced moments and forces at the top of the pile. Resistance to lateral loads on piles will be provided by passive soil pressure against the pile and by the bending strength of the pile itself.

Lateral load analyses for single piles with a nominal axial compression load of 200 kips are presented in the attached figures. The lateral response is presented for both Alternative 1 and Alternative 2 pilecap elevations.

The attached figures present estimated lateral displacements of pile heads for maximum lateral loads ranging from about 30 to 60 kips, and pile head deflections ranging from ¼ to 1 inch. Induced bending moments and shear forces along the pile length are shown for each lateral load case. Conditions have been analyzed for the top of the pile restrained (fixed head). The calculated lateral displacements, moments, and shears include no safety factors. Our analyses assume that the top of the pile is approximately 4 feet below either the rough pad grade or excavated base isolation pit level.

For preliminary evaluation of pile cap lateral resistance, a pile group reduction factor of 0.8 should be used for groups of two to five piles. A pile group reduction factor of 0.7 should be used for groups of greater than 5 piles. If required, more detailed pile group lateral capacity analyses can be performed when the foundation system geometry is more clearly defined. Lateral loads corresponding to the deflection of a single pile should be multiplied by the recommended group reduction factor to determine total pile group loads corresponding to a given deflection. However, the moment profile for a single pile with no load reduction should be used to check the design of individual piles in a group.

Construction and Indicator and Pile Load Testing Program

Prior to construction, the design team and deep foundation sub-contractor should perform an indicator and pile load testing program for the deep foundation system selected. The indicator pile program should be designed to further define estimates of pile capacity, required embedment below potentially liquefiable sandy soil layers, and the range of pile tip elevations required across the building footprints. The indicator pile program should also evaluate the constructability of the selected deep foundation system and pile type(s) and provide guidelines for installation of the production piles.

Details for the indicator and pile load testing program should be developed when the deep foundation system geometry and structural loading conditions are more clearly defined. The pile foundation sub-contractor shall be required to provide a submittal detailing all pile design parameters, shop drawings, and details for the indicator pile installation and testing programs. The pile foundation subcontractor should consider the potential for variation in subsurface conditions across the site, and the constructability of the pile foundation type to determine the appropriate number of indicator piles required. Indicator piles may be installed at building column and production pile locations and should be installed using the same equipment and methods that will be used for the production piles. Sacrificial indicator piles can also be considered, but should be located a minimum of 8 feet from production pile locations. We recommend that at a minimum, the indicator pile program consist of about 2 percent of the total number of production piles, with a minimum of 10 indicator piles, per structure.

Depending on the foundation system selected during final design, the indicator piles could be tested with high-strain dynamic testing methods using a drop hammer/weight and dynamic measurements in general conformance with ASTM D4945-08: High-Strain Dynamic Testing of Deep Foundations. The indicator piles should be instrumented with strain and acceleration transducers using a Pile Driving Analyzer (PDA). The ultimate capacity of each indicator pile should be evaluated in the field using the Case Method, and additional calculations using the Case Pile Wave Analysis Program (CAPWAP), which further estimates the soil resistance and capacity distribution.

Static load testing should also be considered in conjunction with the indicator pile dynamic testing program. We recommend that a minimum of one axial compression and one tension (uplift) load test be performed on select indicator piles, to correlate with the dynamic test results. Based on the type of deep foundation system selected, additional static load testing may be required. Static load testing should be performed in general conformance with ASTM Standard D1143 and D3689 for compression and tension, respectively.

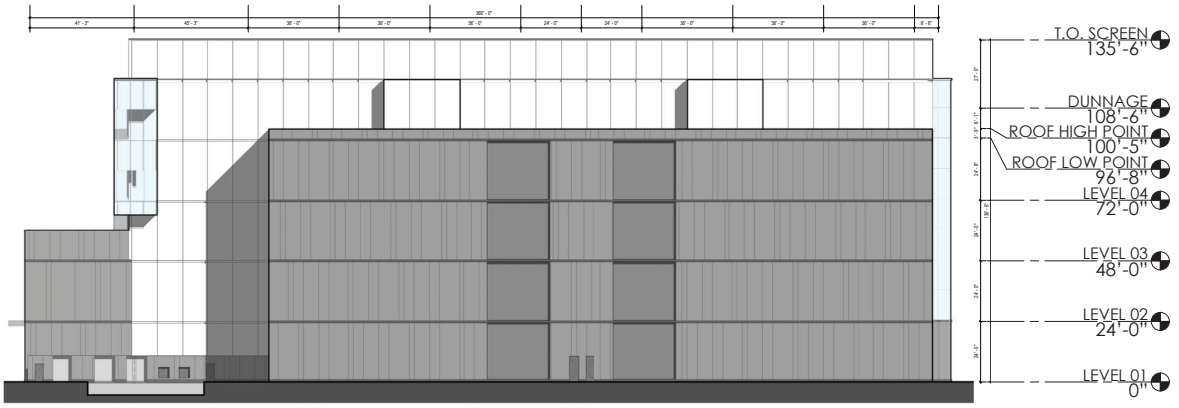
Continuing consultation with the design team will evaluate alternatives and modifications to these preliminary geotechnical recommendations during final design.

ATTACHMENT LU DR-41

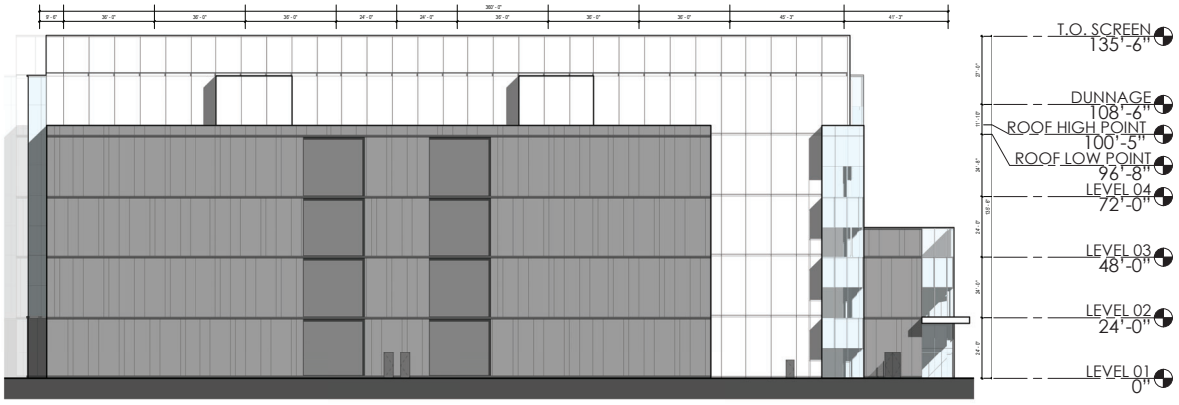
Revised Elevation Figure 3.3-7

and

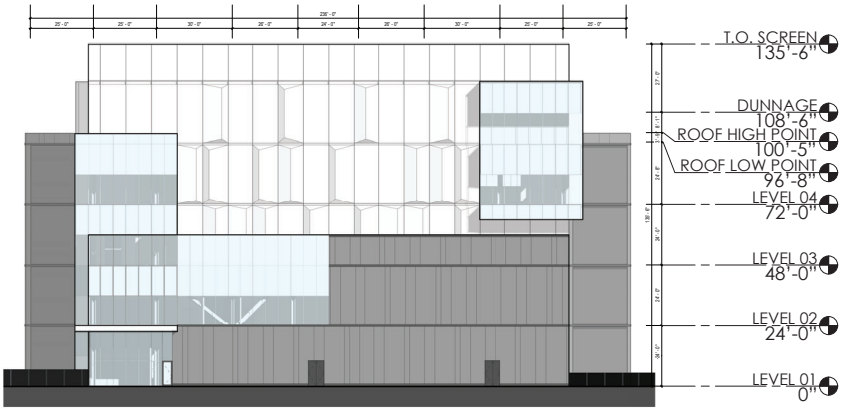
New Exterior Materials Palette Figure 3.3-7A



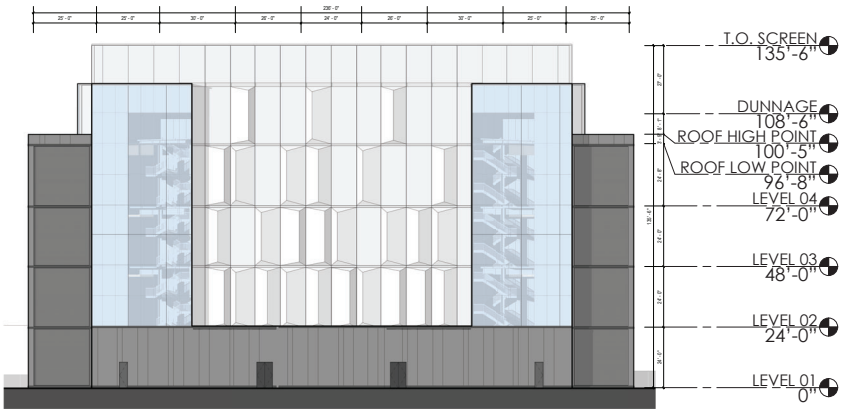
NORTH ELEVATION



SOUTH ELEVATION



EAST ELEVATION



WEST ELEVATION

BUILDING ELEVATIONS | FIGURE 3.3-7

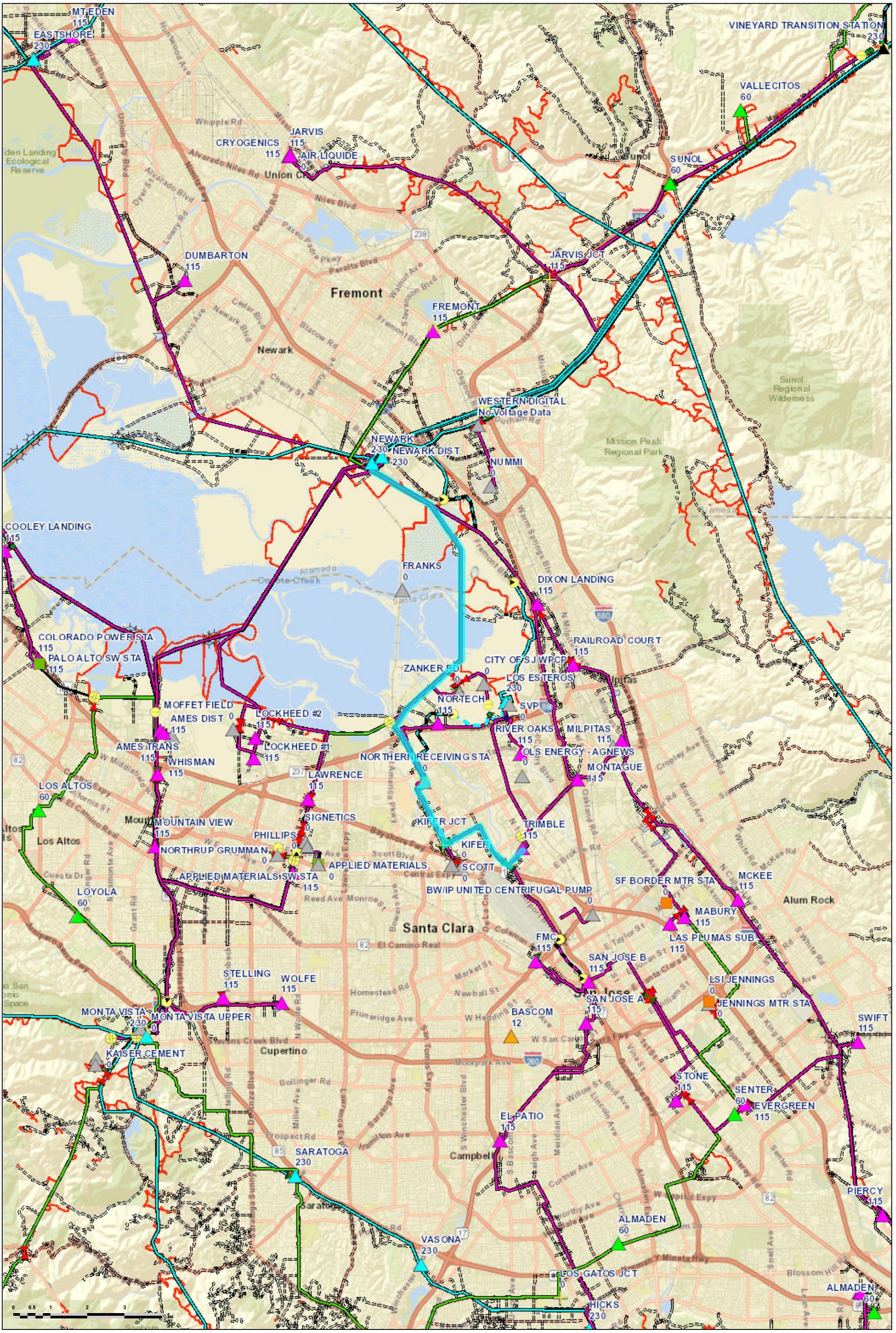
SOUTHEAST EXTERIOR RENDERING

SOUTHWEST EXTERIOR RENDERING

EXTERIOR MATERIAL PALETTES | FIGURE 3.3-7A

ATTACHMENT PD DR-48

PG&E Transmission Interconnection and Reconductoring



ETGIS Web Map

N W E S

My Map

Printed Using ETGIS Web Application

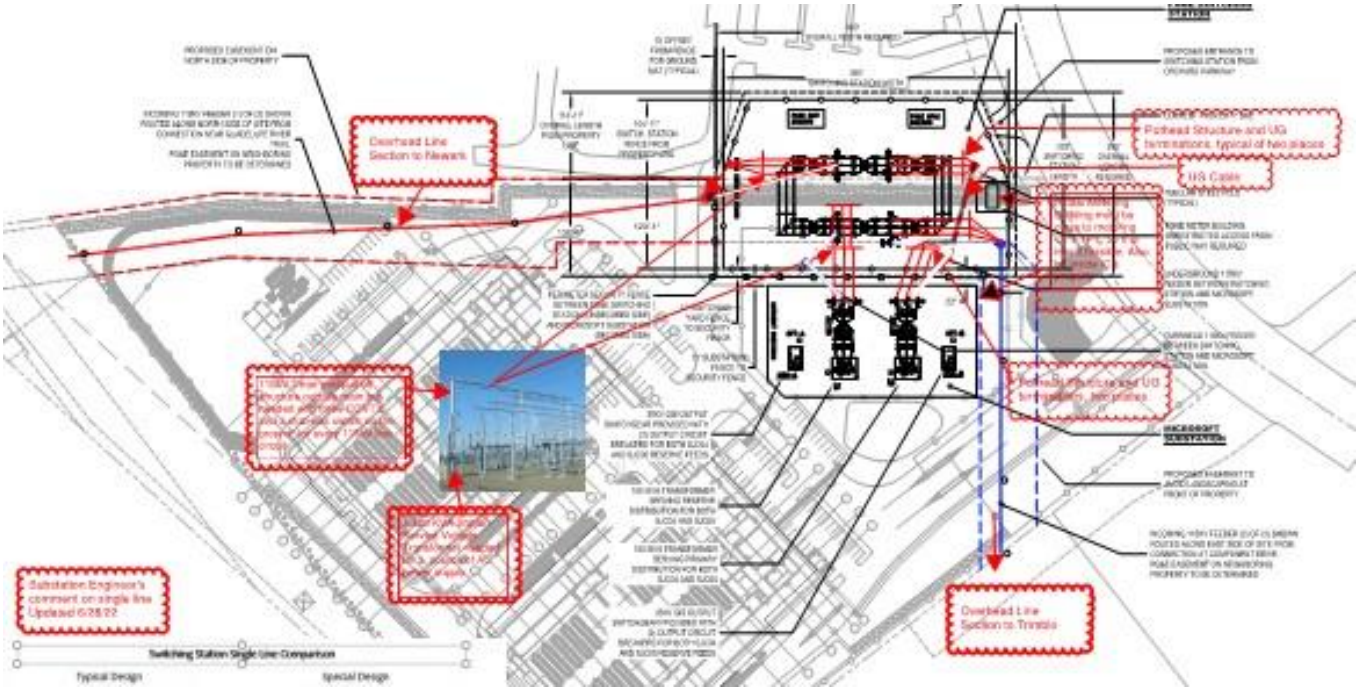
Author: m3ld

Printed on: 10/11/2022

Reference PG&E's GIS for the most current information.

Figure 2-1: Microsoft Site Map

The following is a preliminary and conceptual layout of both PG&E's switching station and Microsoft's substation being used for initial discussions between PG&E and Microsoft:



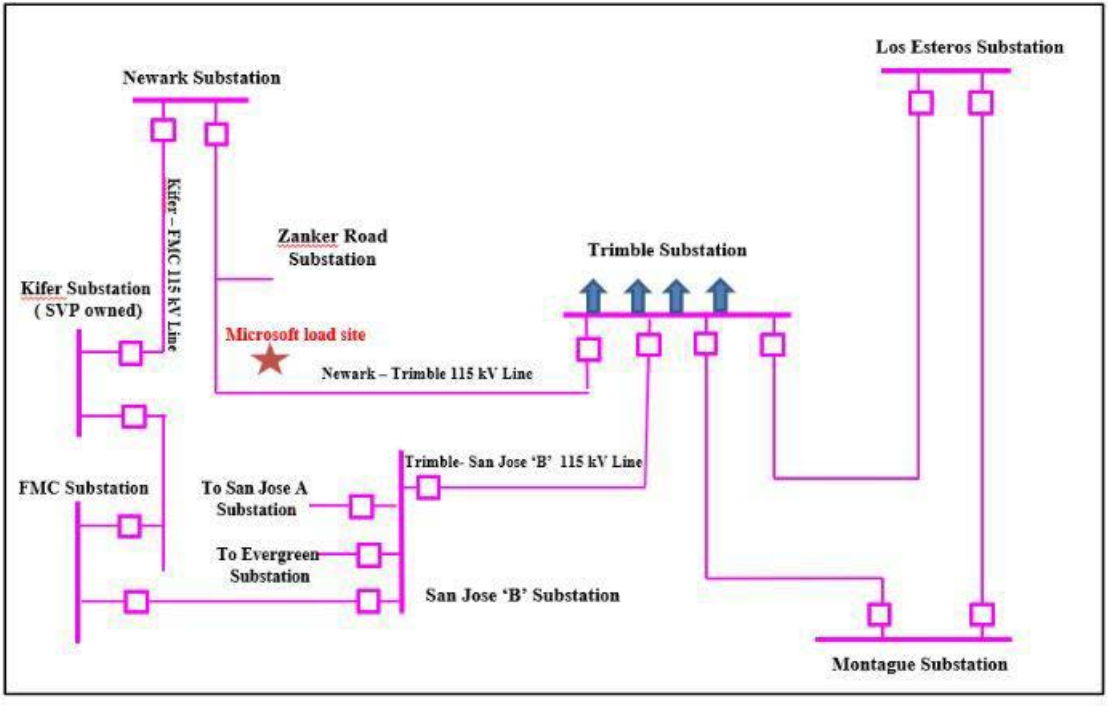


Figure 2-2: Simplified Single Line Diagram

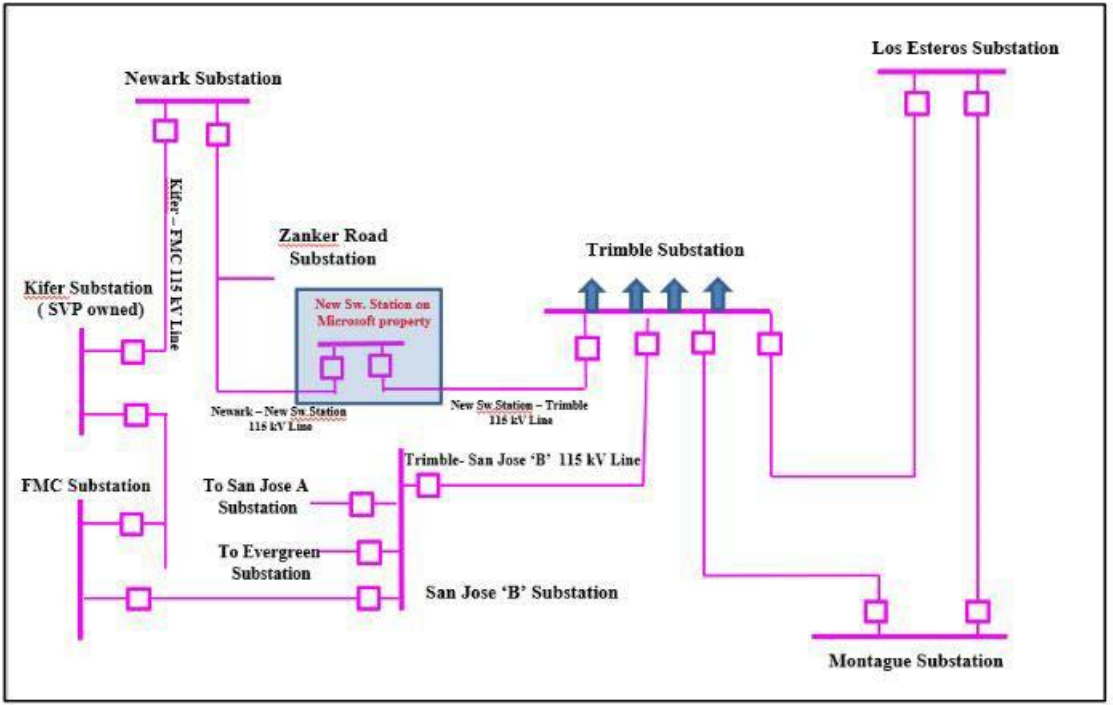
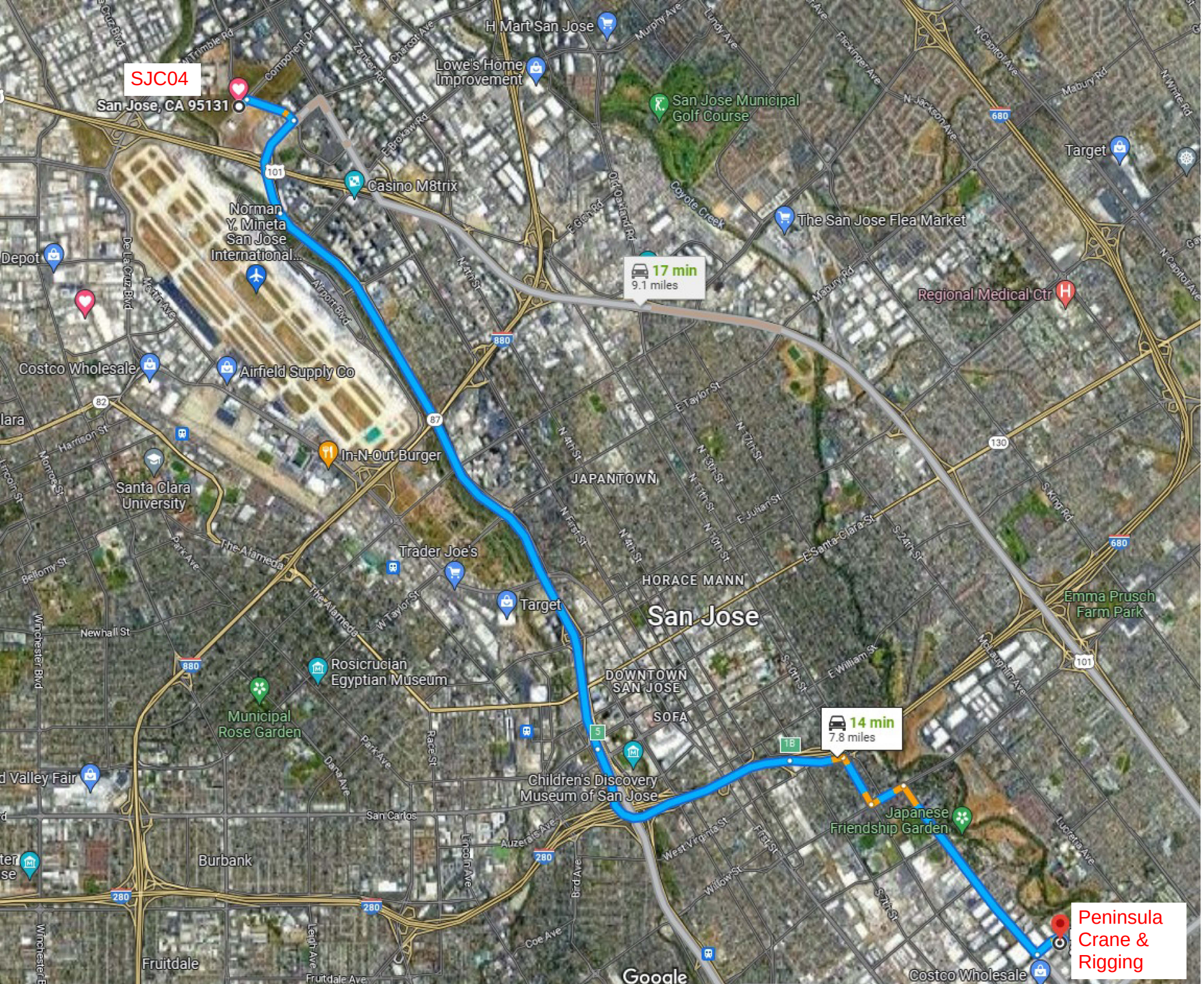


Figure 4-1: Conceptual SLD of looping Newark-Trimble 115 kV via a new BAAH switching station on customer property

ATTACHMENT TRANS DR-57

Offsite Worker Parking and Laydown Bus Routes

Parking:
2825 Lafayette Street
Santa Clara CA 95050


SJC04
San Jose, CA 95131
17 min
9.1 miles
14 min
7.8 miles
Peninsula Crane & Rigging
H Mart San Jose
Lowe's Home Improvement
San Jose Municipal Golf Course
Target
Casino M8trix
Norman Y. Mineta San Jose International...
The San Jose Flea Market
Regional Medical Ctr
Costco Wholesale
Airfield Supply Co
In-N-Out Burger
Santa Clara University
JAPANTOWN
Trader Joe's
Target
HORACE MANN
San Jose
Emma Prusch Farm Park
Rosicrucian Egyptian Museum
Municipal Rose Garden
DOWNTOWN SAN JOSE
SOFA
Children's Discovery Museum of San Jose
Japanese Friendship Garden
Valley Fair
Burbank
Fruitdale
Costco Wholesale
Depot
Harrison St
The Alameda
Newhall St
W Taylor St
E Taylor St
E Julian St
E Santa Clara St
E William St
Park Ave
San Carlos
Auzerais Ave
West Virginia St
Willow St
Coe Ave
Fruitdale Ave
Coyote Creek
Google