APPENDIX A:
COMMENT LETTERS

Comment Letter A1

From: Chop, Zachary@DOT <zachary.chop@dot.ca.gov>
Sent: Monday, December 2, 2019 1:56 PM
To: Gian Martire <GianM@cupertino.org>
Cc: Leong, mark@DOT <mark.Leong@dot.ca.gov>; Lithander, Beck@DOT <Beck.Lithander@dot.ca.gov>
Subject: Westport Mixed Use Project SCH # 2019070377 GTS # 04-SCL-2019-00698 Project ID 16395

Greetings,

The Department of Transportation (Caltrans) thanks the City of Cupertino for the opportunity to provide input in the environmental review process. We have reviewed the Westport Mixed Use Project DEIR and we would like to provide additional comments below:

A1-1

In addition to the encroachment permit requirement, a Maintenance Agreement will also be required for landscaping installed in our ROW. Additionally, a tree within our ROW is marked for removal, this would require prior approval from the District Landscape Architect.

Thanks!

Zachary Chop
Associate Transportation Planner
Office of System & Regional Planning
Caltrans District 4
111 Grand Ave Oakland Ca 94612
(510) 622-1643

Comment Letter A2

From: "Roman, Isabella@DTSC" <Isabella.Roman@dtsc.ca.gov>
Date: December 18, 2019 at 12:12:22 PM PST
To: Gian Martire <GianM@cupertino.org>
Subject: The Westport Mixed-Use Project DEIR Comment

Hello,

I represent a responsible agency reviewing the Draft EIR for the Westport Mixed-Use Project.

I see that two Phase 1 Environmental Site Assessments (ESAs) and a Limited Environmental Site Characterization (ESC) were prepared for the Site. Phase 1 ESAs don't typically present characterization data and the ESC compares soil data against hazardous waste criteria for the purposes of soil disposal. I would recommend collecting additional samples for the purposes of characterizing site media for protection of construction workers and future residents. I would recommend for sampling activities to include soil vapor to eliminate any concerns regarding vapor intrusion. A2-1

HAZ-2 refers to AQ-3 to discuss impacts to nearby schools. Only diesel particulate matter (DPM) is considered as an emission that would have the potential to impact nearby schools. Project construction would disrupt the soil and could potentially migrate to nearby schools. This should be acknowledged as well within the HAZ-2 discussion. I would recommend a dust control and air monitoring plans to be developed to protect construction workers and the nearby schools. A2-2

Please feel free to reach out if you have any questions or concerns.

Sincerely,

Isabella Roman
Environmental Scientist
Site Mitigation and Restoration Program
Department of Toxic Substances Control
700 Heinz Avenue Suite 200
Berkeley, CA 94710
(510)-540-3879

Comment Letter A3

CUPERTINO SANITARY DISTRICT
ESTABLISHED 1956

20863 STEVENS CREEK BOULEVARD, SUITE 100
CUPERTINO, CALIFORNIA 95014-2154
PHONE (408) 253-7071 • Fax (408) 253-5173

December 18, 2019

Gain Martire, Senior Planner
City of Cupertino
10300 Torre Avenue
Cupertino, CA 95014

Re: DRAFT ENVIRONMENTAL IMPACT REPORT FOR WESTPORT MIXED-USE PROJECT

Dear Mr. Martire:

The Cupertino Sanitary District has reviewed the Draft Environmental Impact Report (DEIR) for the Westport Mixed-Use Project. The following comments are provided for your review, incorporation of our comments, and to update the DEIR to produce the Final EIR. A3-1

A3-2

Mitigation Measure UTIL-1:

The statement that reads "The proposed project's estimated wastewater generation shall be calculated using the generation rates used by the San Jose-Santa Clara Water Pollution Control Plant Specific Use Code & Sewer Coefficient table in the May 2007, City of Santa Clara Sanitary Sewer Capacity" is not accurate for estimating peak wet weather flow. These generation rates are used to calculate average flow to the treatment plant. Based on CSD model, peak wet weather flow for a 10-year storm event over average dry flow is 2.95 times the average. It is also very unlikely that CSD will have an agreement to increase our 13.8 mgd permitted peak flow in the foreseeable future. 2-19 A3-3

Mitigation Measure UTIL-2:

Same response comments as UTIL-1. A3-4 2-20

3.4.1.8 Utilities and Service Connections: Wastewater

Please add to last sentence in first paragraph - which discharges through City of Santa Clara joint usage interceptor. Please recalculate the new flow using the most recent data available: single family at 175 gpd; multi-family units at 133 gpd;retail at 0.073 gsf, and townhomes at 55 gallon per person. Please note that the rates are average. To get the peak flow in a pipe system, please multiply average by 2.95 factor. A3-5 3-22

DISTRICT MANAGER-ENGINEER
MARK THOMAS & COMPANY, INC.
BENJAMIN T. PORTER

DISTRICT COUNSEL
ATKINSON • FARASYN, LLP.
MARC HYNES

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4.9.2.1 and 4.9.2.2 Cupertino Sanitary District

In the last paragraph, which states 13.29 mgd. Please see most recent flow report. Please update this using the attached report. Also, for the existing condition, please update using the attached flow report. Also, indicate whether the reference is to average or peak.

A3-6

4.9-3

4.9.4 UTIL-1 Impact Discussion

Please update flows based on the attached report. Also, please separate impact discussion at the wastewater treatment facility and joint capacity issue through the City of Santa Clara. For the wastewater treatment facility, CuSD has 7.85 mgd capacity, which cannot be exceeded regardless of what the total treatment plant capacity is. CuSD does not anticipate an issue with the treatment plant capacity of 7.85 mgd through the City of Cupertino General Plan built-out, but expects capacity issues through the City of Santa Clara. Also, please verify 450 mgd capacity at the treatment plant is correct.

The statement that reduction of the peak wet weather flow from 14.25 mgd to 13.85 mgd by removal of illegal connections is incorrect. The District has not fully evaluated options to reduce I/I and does not expect it to be completed in the near future.

A3-7

4.9-5 through -7

If you have any questions, please feel free to contact me.

Sincerely,
MARK THOMAS

Benjamin T. Porter

Benjamin T. Porter
District Manager-Engineer

Enc: CuSD Hydraulic Modeling report Updated 12/6/2019

Attachment A3-1

CUPERTINO SANITARY DISTRICT

FLOW MODELING ANALYSIS

HOMESTEAD FLUME OUTFALL TO CITY OF SANTA CLARA

CUPERTINO SANITARY DISTRICT

20863 STEVENS CREEK BLVD. SUITE 100

CUPERTINO, CALIFORNIA 95014

TELEPHONE: (408) 253-7071

REGISTERED PROFESSIONAL ENGINEER
BENJAMIN TAYLOR PORTER
C 69302
EXP. 6/30/2020
CIVIL
STATE OF CALIFORNIA

MANAGER-ENGINEER

Benjamin T. Porter

Benjamin T. Porter, P.E.
Mark Thomas & Co. Inc.

December 6, 2019

Updated: December 6, 2019

HYDRAULIC MODELING BACKGROUND

Cupertino Sanitary District utilizes XPSWMM hydraulic modeling software to simulate flow conditions in its system. Cupertino Sanitary District is divided into 30 separate basins as shown on Figure 1 with the flume area divided into eight separate sub-basins.

Basins 17 and 23 discharge to the City of San Jose outfall located on Bollinger Road and do not discharge into the City of Santa Clara outfall. This area includes approximately 2,500 homes, 380 multi-family units, and 50 retail professional offices and commercial uses.

With the exception noted for Basins 17 and 23, all other areas within the District discharge into the City of Santa Clara outfall located on Homestead Road east of Tantau Avenue. At this outfall location, the District has a flow monitoring system to measure flows.

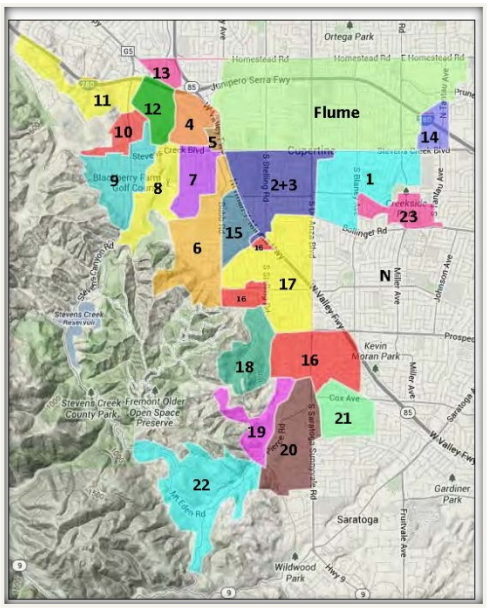

Figure 1. Cupertino Sanitary District Basins

Cupertino Sanitary District has 17 lift stations throughout the District with two largest lift stations located at Homestead Road in Basin 13 and Prospect Road in Basin 16.

FLOW MONITORING SYSTEM AT HOMESTEAD ROAD

The Homestead Flow Monitoring Station is equipped with an 18-inch Parshall Flume as the primary metering device with a flow sensor constructed in 1966. The installation consists of 25-feet of 3’6” W x 2’6” H box culvert on each side of the Parshall Flume. The maximum height of water surface that can be measured in the flume is 2.5-feet which is the maximum gravity flow height in an upstream box culvert, with a corresponding flow rate of 15.87 MGD.

Initially, the flume utilized Q-Trek (Geotivity) and Hydro-Ranger (Miltronic) for flow sensor units. The District determined that the Miltronic unit was outputting higher flow rates than Geotivity but determined the Miltronic unit to be more reliable. This unit was utilized until 2007. In 2007, the flow sensor was replaced with a more advanced and enhanced version (ISCO 2110 – Teledyne) which was calibrated to field conditions. In 2013, the District retained V&A Consultants to recalibrate the sensor and to produce monthly flow reports.

Homestead Flow Monitoring Station recorded flows historically, as provided in Table 1.

Table 1. Historical Flow Measurements at Homestead Flow Monitoring Station

Date	Rainfall (inches)	Average Daily Flow (MGD)	Peak Hourly Flow (MGD)	Average Daily Dry Flow (Sept Month) MGD	Comments
2/7/1998	2.5	6.12	12.20	4.35	Week total rainfall 9.8"
11/8/1999	1.0	4.49	7.50	4.29	
1/24/2000	2.3	6.30	8.30	4.41	2-Day total rainfall 4.3"
3/4/2001	1.6	4.84	8.00	4.52	
11/8/2002	1.5	5.23	10.49	4.70	2-Day total rainfall 2.81"
2/26/2003	UNK	5.96	8.12	4.96	
3/24/2004	UNK	4.11	7.55	4.16	
12/31/2005	UNK	5.40	9.04	4.14	
1/2/2006	UNK	5.67	10.42	4.18	
1/27/2007	0.57	5.08	8.25	4.22	
2/24/2008	0.81	5.44	9.03	4.11	Day prior 0.94"
2/16/2009	0.75	5.65	9.39	4.12	Day prior 2.25"
1/20/2010	1.80	6.14	10.5	4.10	Prior 2 days 0.96" and 1.47"
1/19/2012	0.80	5.71	9.76	4.11	Mid-year – HP closed
12/8/2013	0.44	3.94	6.42	3.74	
12/11/2014	3.42	5.86	9.13	3.69	3 days prior had 3.32" rainfall
2/8/2015	1.96	4.49	7.91	3.44	
3/5/2016	1.70	4.52	7.01	3.46	Month of Feb 2016 very little rain
3/13/2016	0.92	4.90	7.92	3.90	Raining on and off 3/3 to 3/13 – 0.73"
1/8/2017	1.71	5.48	9.18	3.72	Week total rainfall 3.82"
3./8/2018	0.35	4.26	6.66	4.26	Average is for month of March
6/21/2018	0	3.86	6.09	3.79	Average is for month of June
9/5/2018	0	4.02	6.36	3.86	With Apple Campus 2 fully in operation
10/24/2018	0	3.92	6.21	3.87	Most Recent Data as of 10/2018 with Apple Campus 2 fully in operation

DEVELOPMENT OF COMPUTER MODEL

Land use data for the existing condition were input from the Cities of Cupertino and Saratoga General Plans and approved development/land use projects. This input was confirmed with Google Earth overlay to determine accuracy of the existing uses. Pipe networks were input from GIS system and accuracy was confirmed with as-built records and field verification.

Initial dry flow data utilized for the generation of model flow outputs were either calculated, measured dry flows from 30 basins, or estimated flow from tax roll based on water consumption. Measured dry flow data for 30 basins were obtained from the District I/I Study Report prepared by V&A Engineering in 2016.

With this initial data, XPSWMM generated model dry flow rates. These flows were then compared to actual measured flows to validate the model for dry flow conditions. The XPSWMM model was then updated to incorporate flows measured at each basin including refinement of the pipe network system

with further field investigation to correct missing or inconsistent data in the model. Approximately 150 manholes were field-verified to determine actual flow splits because the model defaults to a 50-50 split. As-built information was utilized to accurately depict the as-built condition for each individual pipe network and manhole profile.

With the validation of the dry flow condition, the next step was to simulate wet weather flows. The measured wet weather flows and the gauged rainfall from those events in 2016 were input in the model and used to calibrate the wet weather response of the model in XPSWMM. The dry average, dry peak, wet average, and wet peak flow were calculated and calibrated at each of the 30 basins in the model. Calibration consisted of adjusting the rainfall-derived infiltration and inflow (RDII) RTK values. The RTK values correspond to three unit hydrographs that estimate the fast, medium, and slow RDII responses in the system. These RTK values were calculated in the EPA Sanitary Sewer Overflow Analysis and Planning (SSOAP) tool using the metered flow and rain gauge information from the I/I Study.

These model results were compared with the measured flows. The validated model outputs accurately depicted the existing condition. A comparison of modeled and measured flows is provided in Table 2.

Table 2. Comparison of Modeled and Measured Flows

Existing Condition	Model Flow (MGD)	Measured Flow (MGD)
Dry Average Daily Flow	3.74	3.79 (6/21/2018) 3.86 (9/25/2018) 3.87 (10/24/2018)
Dry Peak Flow	6.19	6.09 (6/221/18) 6.26 (9/25/2018) 6.21 (10/24/2018)
Average Wet Weather Flow to match metered flow (2016 Storm Event from V&A Study)	4.47	4.49
Peak Wet Weather Flow to match metered flow (2016 Storm Event from V&A Study)	7.78	7.92

December 11, 2014 storm was the largest storm event recorded in the last 60 years in the Bay Area. This storm produced 3.49 inches of rain over a 24-hour period. The storm started at about 11 p.m. the night of December 10. The flow metering station recorded the maximum flow of 9.13 MGD at 10 p.m. During this storm event, Homestead Pump Station reached its maximum output and could not handle the entire flow coming into the pump station. The District set up an emergency pumper VAC truck to avoid sanitary sewer overflows for about six hours. Based on our record, this storm event represents approximately a 20-year storm event for the Bay Area Region. For example, Elm Court in the City of Cupertino had water ponding up to 6 feet in the cul-de-sac street area. Likewise, Cupertino Road near Foothill Boulevard was also ponding water up to 2 feet. During this period, a sanitary sewer manhole cover was removed to allow storm water to enter so that the adjacent residential homes would not be flooded. There were recordings higher than 9.13 MGD in the past. The daily rainfall was less than 3.49 inches, but in the days prior to the storm event, there were a few smaller storm events, saturating the soil.

The I/I Report concluded that the storm of March 5, 2016, with a total of 1.71 inches of rain in a 24-hour period, closely represents a two-year storm event and resulted in a recorded peak discharge of 7.01

MGD. On March 13, 2016, one week later, with another 0.92 inches of rain, a peak discharge of 7.92 MGD was recorded. These events were used to further refine the District sanitary sewer model.

Rainfall

The 10-year storms used to model peak wet weather flows in the model were generated using a rainfall pattern used in the Santa Clara County for 2, 10, and 100-year return periods. These design rainfalls are based on the three-day event in December 1955 that is considered to be the largest storm on record for Northern California. The rainfall pattern provides hourly rainfall distribution percentages that can be multiplied by the theoretical 24-hour rainfall depth to obtain the hyetograph for the region. Theoretical 24-Hour 10-Year rainfall depths were obtained for each basin using NOAA rainfall frequency estimates. These rainfall depths were taken at an approximate centroid location for each basin. These rainfall depths are shown in the Appendix. Rainfall depths were gathered at the centroid of each basin. For the District modeling, the rain event was shifted by two hours so that the peak rainfall would occur at the same time as the dry weather flow peak. A representative rainfall hydrograph used to model a 10-year storm is provided in Figure 2. Table 3 below shows the rainfall distribution percentages used to generate all the hyetographs.

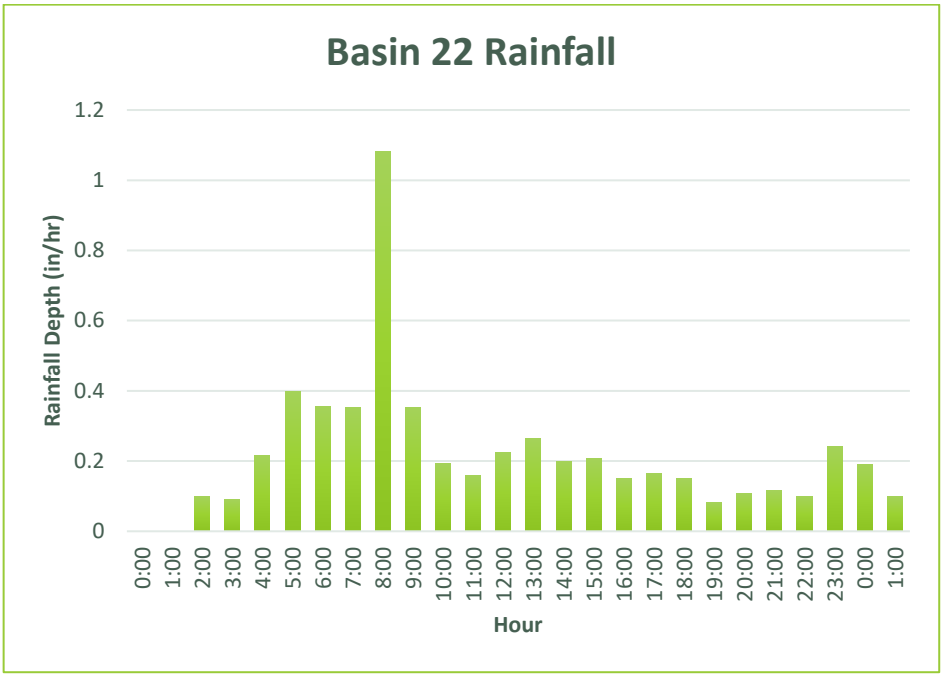

Figure 2. 10-Year Storm Hydrographs for Basin 22

Table 3. Fractions of Total Rainfall for 24 Hour Storm

Hour	Fraction of Total Rainfall
0:00	0.00
1:00	0.00
2:00	0.0178
3:00	0.0163
4:00	0.0387
5:00	0.0712
6:00	0.0634
7:00	0.0632
8:00	0.1932
9:00	0.0627
10:00	0.0343
11:00	0.0286
12:00	0.0400
13:00	0.0472
14:00	0.0357
15:00	0.0372
16:00	0.0267
17:00	0.0296
18:00	0.0267
19:00	0.0148
20:00	0.0193
21:00	0.0207
22:00	0.0178
23:00	0.0430
0:00	0.0341
1:00	0.0178

Existing Groundwater Soil Conditions & Infiltration

The Horton Infiltration method was used to compute the amount of rainfall becoming groundwater in pervious areas. Dry soils contribute a larger maximum initial infiltration than moist soils. For the District's model runs, the pervious areas were treated as either dry sandy soils with dense vegetation for the hillside areas, and dry clayey soils with little vegetation for the rest of the District in its urban service area. Below, in Figure 3, is an example of the Horton Equation parameters for Basin 22.

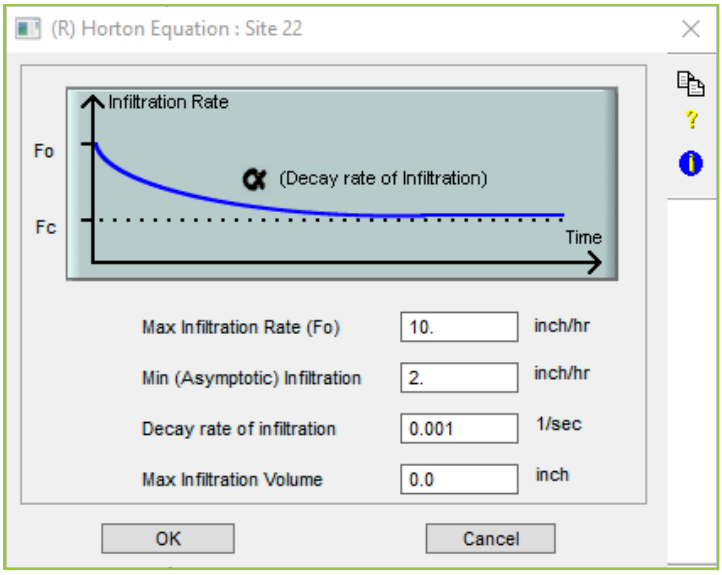

Figure 3. Horton Equation Parameters for Basin 22

Rainfall-Dependent Inflow & Infiltration

Rainfall-dependent inflow and infiltration (RDII) is the portion of rainfall that enters a sanitary sewer system after a rain event. Inflow is the direct flow of surface runoff into the sewer system and infiltration is the groundwater that enters the system through cracks and other defects. Inflow is seen as an almost immediate response and infiltration may take several hours, and sometimes even days, to be seen within the system.

RDII was calculated for this model using the RTK unit hydrograph method. This method fits three triangular unit hydrographs of different response times (fast medium, and slow) and creates one total hydrograph due to the rainfall depth that entered the system. The fast hydrograph represents the inflow response, the medium hydrograph is a combination of inflow and infiltration, and the slow hydrograph is solely infiltration. The RTK method is named after the three parameters R, T, & K. R is the fraction of rainfall that enters the sewer system, T is the time for this rainfall to peak, and K is the ratio of the time of recession for parameter T. Figure 5 below shows a hydrograph consisting of three sets of RTK values.

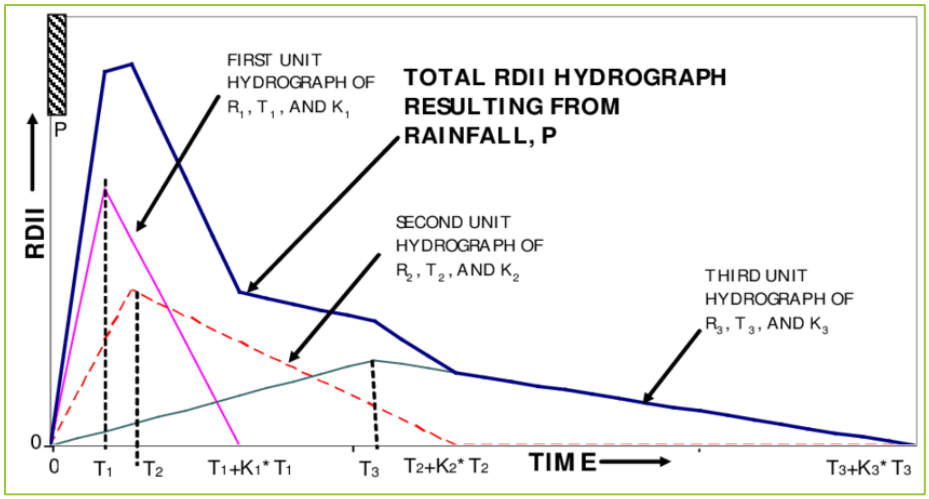

Figure 4. RTK Hydrographs

The RTK values were calibrated for the District's model from the metered rainfall and flow from the District's I/I Study Report. For the District's model, the peak R values were used to model a worst-case scenario within the system. Figure 5 below shows RTK values being input into EPA SWMM for a specific rain event, as well as the RTK values input for an entire basin in XPSWMM.

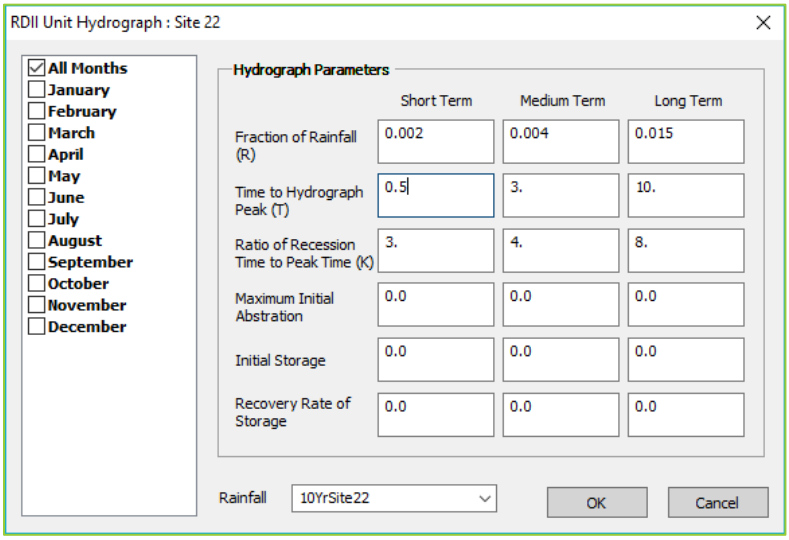

Figure 5. RTK Values for Basin 22

The red line in Figure 6 below represents the wet weather flow only from inflow and infiltration. The yellow line is the total RDII based on the fast, medium, and slow RTK hydrographs. The teal line is the fast hydrograph, the pink line is the medium response hydrograph, and the purple line is the slow hydrograph due to infiltration.

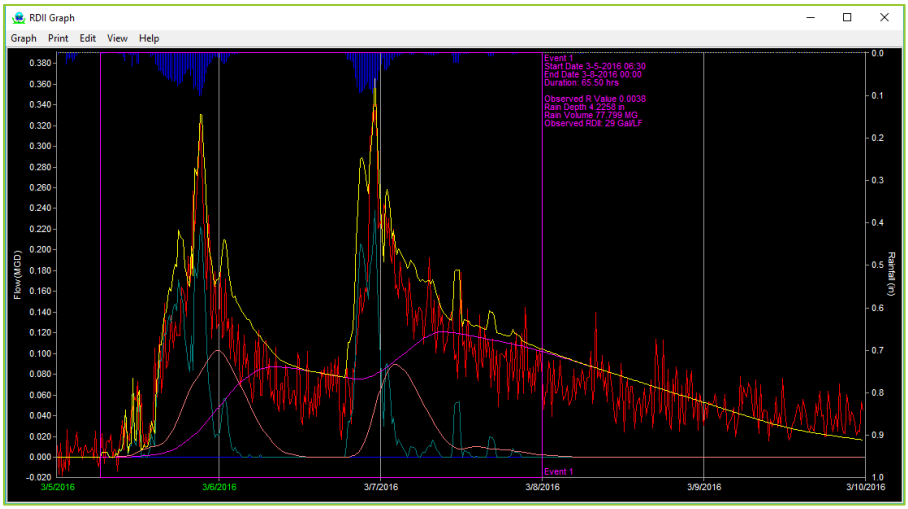

Figure 6. RTK Values for Specific Storm

These RTK values were calculated using a software application named Sanitary Sewer Overflow Analysis and Planning Toolbox (SSOAP). The data input in Figure 7 below shows the window in EPA SSOAP where the user can change the fast, medium, and slow RTK values. The software has an "Auto Apply Changes" option where the hydrographs are updated automatically as the RTK values are changed. This function is helpful when calibrating these values.

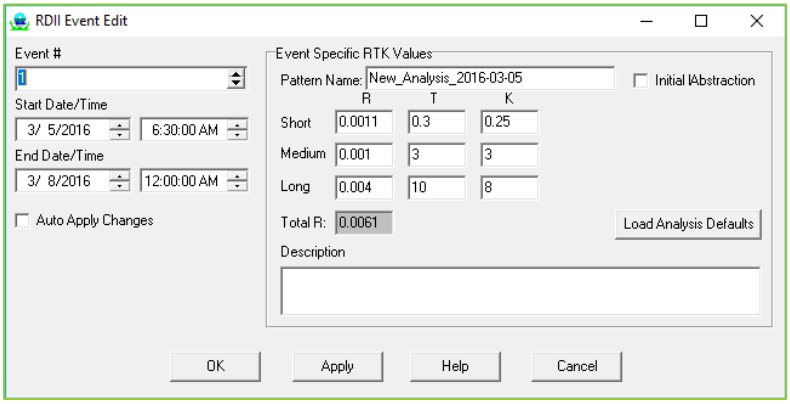

Figure 7. EPA SSOAP

FUTURE BUILD-OUT WITHIN CUPERTINO SANITARY DISTRICT

Based on comments from the City of Santa Clara's consultant related to flow rates used for the February 20, 2019 Report based on the California Green Building Codes being low, the District has reevaluated these flow criteria and has updated the flow rates as follows

Attachment A3-1

FOR RESIDENTIAL DEVELOPMENTS

The City of San Jose completed a Flow Study Report, dated February 2, 2015, for the residential properties tributary to the treatment plant. In summary, the following criteria were utilized to generate flows:

1) Residential Household Sizes: For single family 2.94 ppu and multi-family 2.47 ppu based on 2012 ACS data.

2) Three-year water consumption data (2010-2012) was utilized, with the assumption that 100% of water consumption for the months of January, February, and March would be the wastewater flow (except flows were capped at 400 gpd/household and 300 gpd/household for single family and multi-family, respectively. This resulted in 66 and 60 gpcd for single family and multi-family, respectively).

3) The above two factors were multiplied to yield 194 gpd/household and 148 gpd/household, respectively.

4) For estimating residential flows for future developments, the District has reduced 194 and 148, respectively by 10% to account for improved low-flow fixtures and water conservation. The District flow rate for single family is 175 gpd and 133 gpd for multi-family.

FOR NON-RESIDENTIAL DEVELOPMENTS

1) The District estimated flow rates in 2018 for non-residential uses based on water consumption. The District utilized the entire one-year water consumption for all non-residential uses. Based on the level of outdoor landscaping, the District uses a range of 60% to 95% of the annual water consumption to estimate wastewater flow. If the developments have a separate water meter for outdoor and indoor uses, the District uses 100% of the flow from the indoor water meter as the wastewater flow.

2) Calculated Estimated Flows:

Uses	Number of units	HCF	SF or Units	gallon/SF or gallon/unit
Retail/Commercial	1137	317,446	8,916,180	0.0729625
Restaurant	244	255,203	869,000	0.6018312
Convalescent Home	3	12,049	391	63.2
Hotel	5	31,848	772	84.6

3) Future flow rates are calculated using above criteria and are summarized as follows:

Approved Project - Forum Flowrates (gpd)		
Use	From Calgreen	New CuSD Rates
Restaurant	0	0
Medical/Convalescent	1,059	11,740
Residential	5,423	4,800
Total	6,482	16,540

Approved Project - Hamptons Flowrates (gpd)		
Use	From Calgreen	New CuSD Rates
Restaurant	0	0
Retail/Office	0	0
Residential	43,728	79,800
Total	43,728	79,800

Approved Project - Marina Flowrates (gpd)		
Use	From Calgreen	New CuSD Rates
Restaurant	23,842	14,008
Hotel	8,966	10,370
Residential	8,897	27,265
Total	41,705	51,643

Approved Project - Hyatt Flowrates (gpd)		
Use	From Calgreen	New CuSD Rates
Restaurant	9,888	5,895
Hotel	4,375	12,580
Total	14,263	18,475

Proposed SB 35 Project - Vallco Flowrates (gpd)		
Use	From Calgreen	New CuSD Rates
Restaurant	87,360	52,080
Retail/Office	102,629	157,230
Residential	246,958	319,466
Total	436,946	528,776

Cupertino Future 2040 Build-Out General Plan beyond the approved projects and Vallco - Flowrates (gpd)		
Use	From Calgreen	New CuSD Rates
Restaurant	413,764	246,667
Retail/Office	6,562	31,290
Residential	135,750	240,730
Hotel	4,880	10,370
Total	560,956	529,057

The above dry flows were input into the XPSWMM computer model to generate new flow rates. The New CuSD Rates were input into the model as an average dry flow which is then multiplied by hourly diurnal multipliers based on the use of the facility. An example of a commercial diurnal flow multipliers is shown in the Appendix.

These flows enter the system at an estimated location where these developments will connect and are summarized in Table 4. Table 4 also retained the original flow rates based on the California Green Building Code, which were included in the original report, dated February 20, 2019, for comparison of data between the California Building Codes versus the District's Flow Rates as presented in this report.

Table 4. Model Output Comparison with Existing and Future Conditions

Model Scenarios	Existing Condition Flow (MGD)	Existing Plus Approved Projects (MGD)	Existing Plus Vallco and Approved Projects (MGD)	Existing Plus Vallco, Approved Projects and Full 2040 GP
CAL GREEN CRITERIA: Dry Average Daily Flow – Calibrated flow to match metered flows of 2018	3.90	3.95	4.34	4.68
CUSD NEW FLOW RATE CRITERIA: Dry Average Daily Flow	3.74	3.91	4.44	4.95
CAL GREEN: Dry Peak Flow – Calibrated flow to match metered flows of 2018	6.60	6.69	7.12	7.68
CUSD NEW FLOW RATE CRITERIA: Dry Peak Flow	6.19	6.46	7.32	8.11
CAL GREEN: Average Wet Weather Flow to match metered flow (2-year Storm Event)	5.71	5.77	6.07	6.41
CUSD NEW FLOW RATE CRITERIA: Average Wet Flow	5.71	5.80	6.15	6.47
CAL GREEN: Peak Wet Weather Flow to match metered flow (2-year Storm Event of 1/8/2017- 1.7 inches, 24-hour period, but soil saturation and total of 3.82" in one week prior to storm event). Other 2-year storm event occurred on 3/5/2016.	9.41	9.46	10.00	10.43
CUSD NEW FLOW RATE CRITERIA: Peak Wet Weather to match 2-year storm	9.41	9.51	10.13	10.62
CAL GREEEN: Average Wet Weather Flow for a 10-year Storm Event	8.43	8.50	8.78	9.03
CUSD NEW FLOW RATE CRITERIA: Average wet 10-year storm event	8.71	8.89	9.41	9.84
CAL GREEN: Peak Wet Weather Flow for a 10-year Storm Event	13.29	13.34	13.82	14.02
CUSD NEW FLOW RATE CRITERIA: Peak Wet 10-year Storm	13.14	13.32	14.08	14.61

APPENDIX 1

Flow Hydrographs for the modeled conditions

Hydrographs

XPSWMM values are in CFS (cubic feet per second)

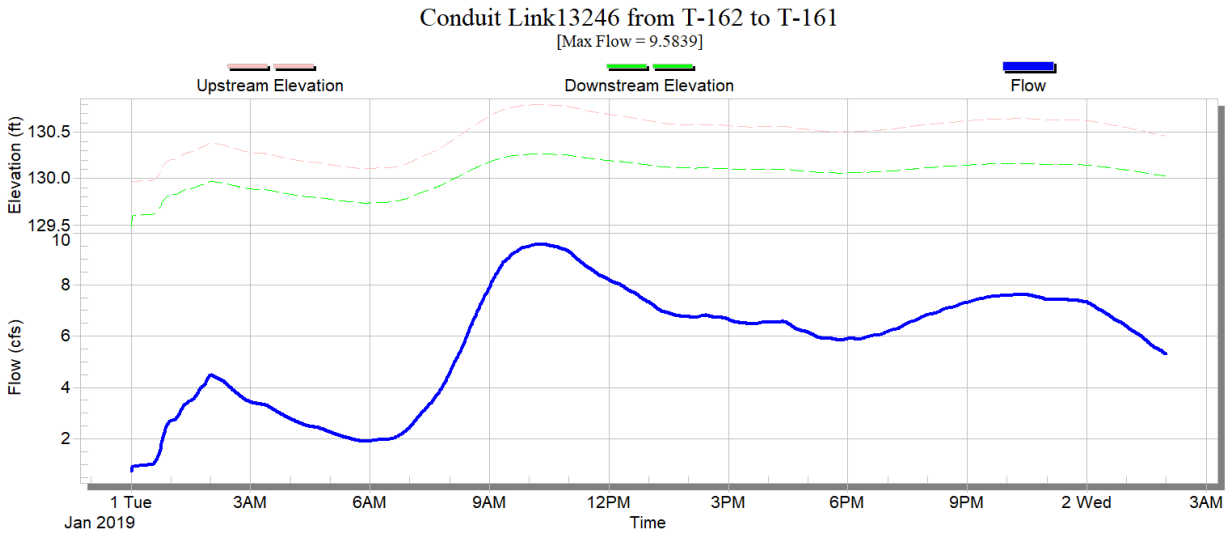

Figure 8. Unit hydrograph for existing condition - Dry

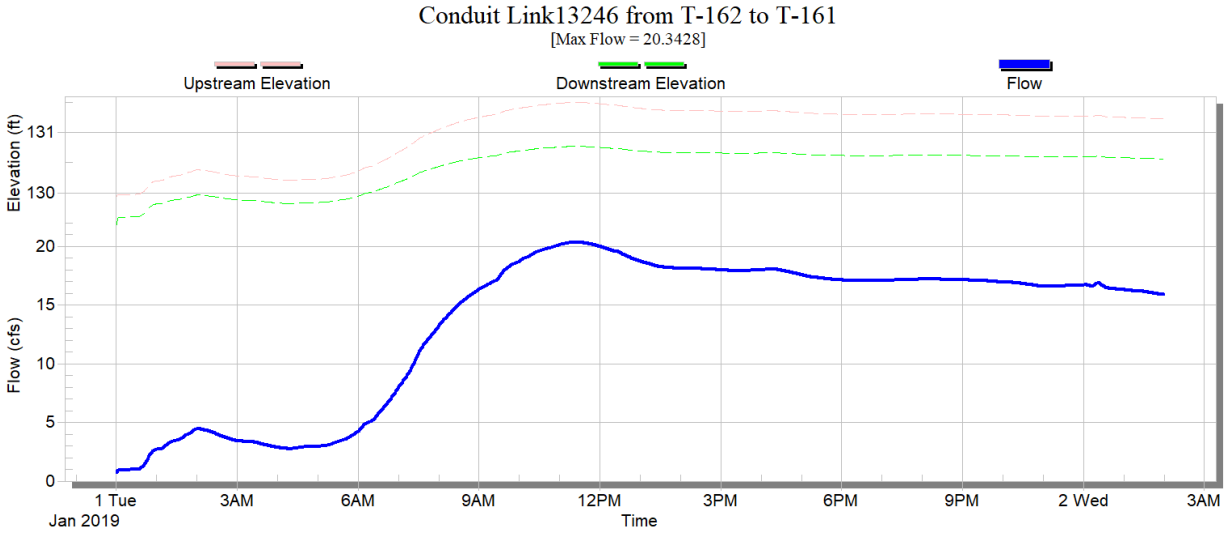

Figure 9. Unit Hydrograph for existing condition – 10 Year Storm

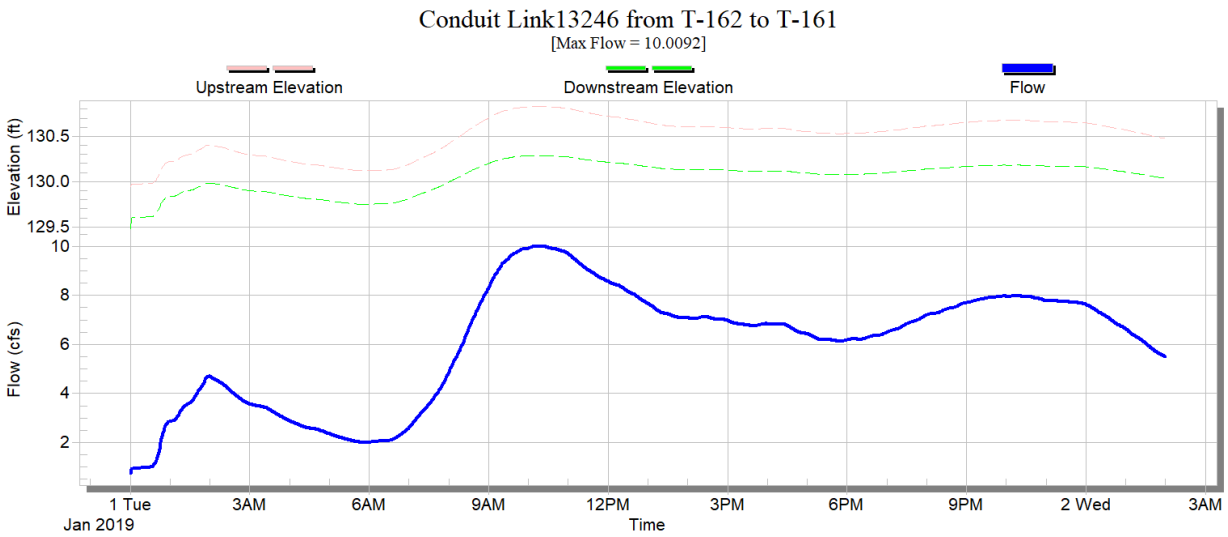

Figure 10. Unit hydrograph for Approved Projects – Dry

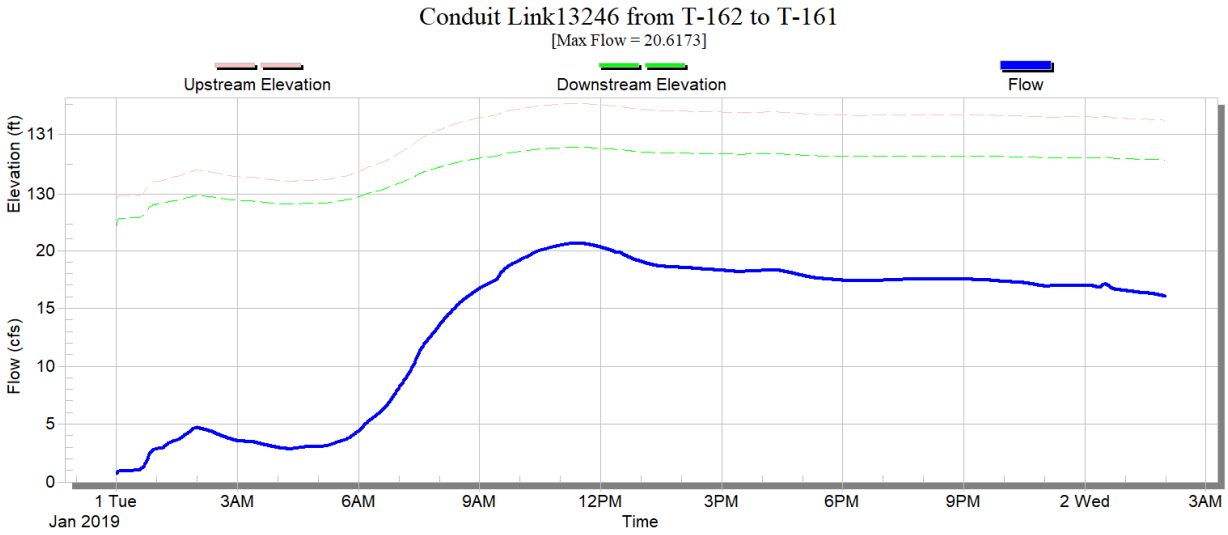

Figure 11. Unit hydrograph for Approved Projects – 10 Year Storm

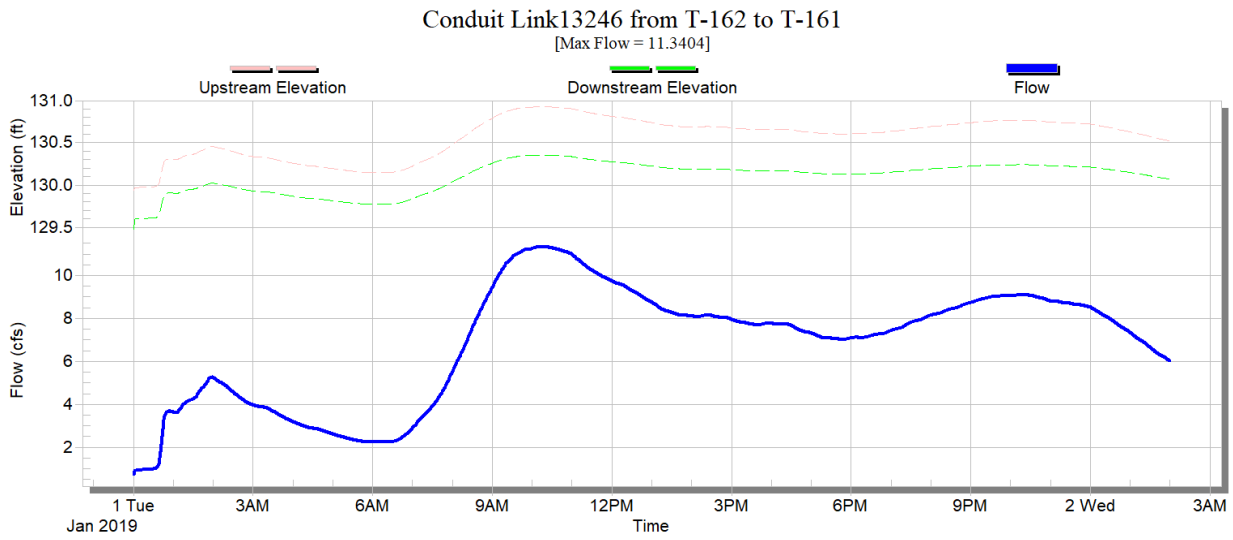

Figure 12. Unit Hydrograph for Approved Projects plus Vallco – Dry

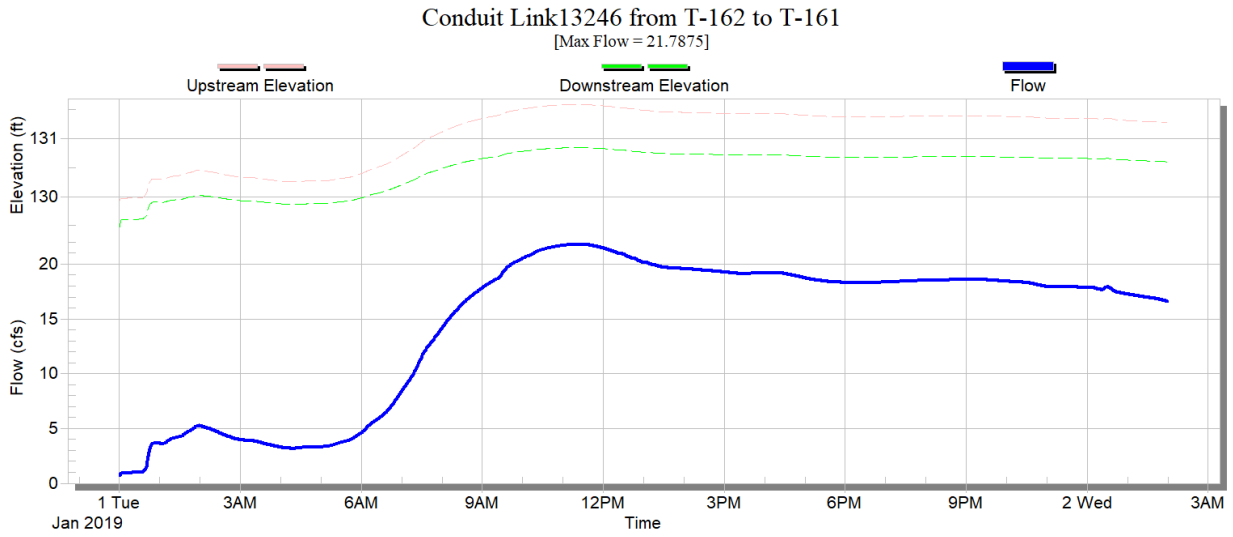

Figure 13. Unit hydrograph for Approved Projects Plus Vallco – 10 Year Storm

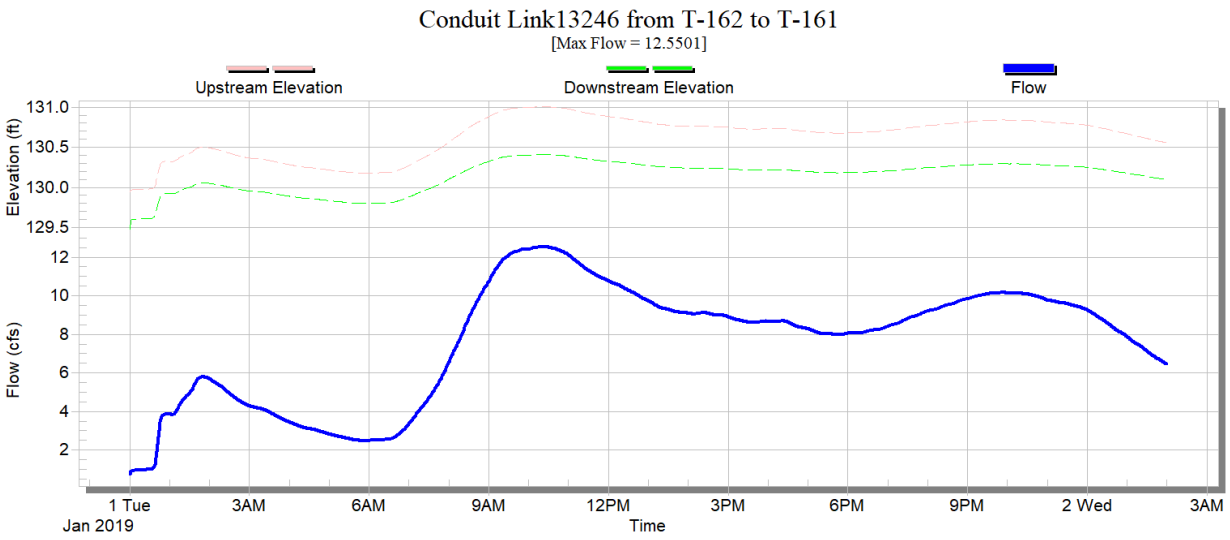

Figure 14. Unit Hydrograph for 2040 Build-out – Dry

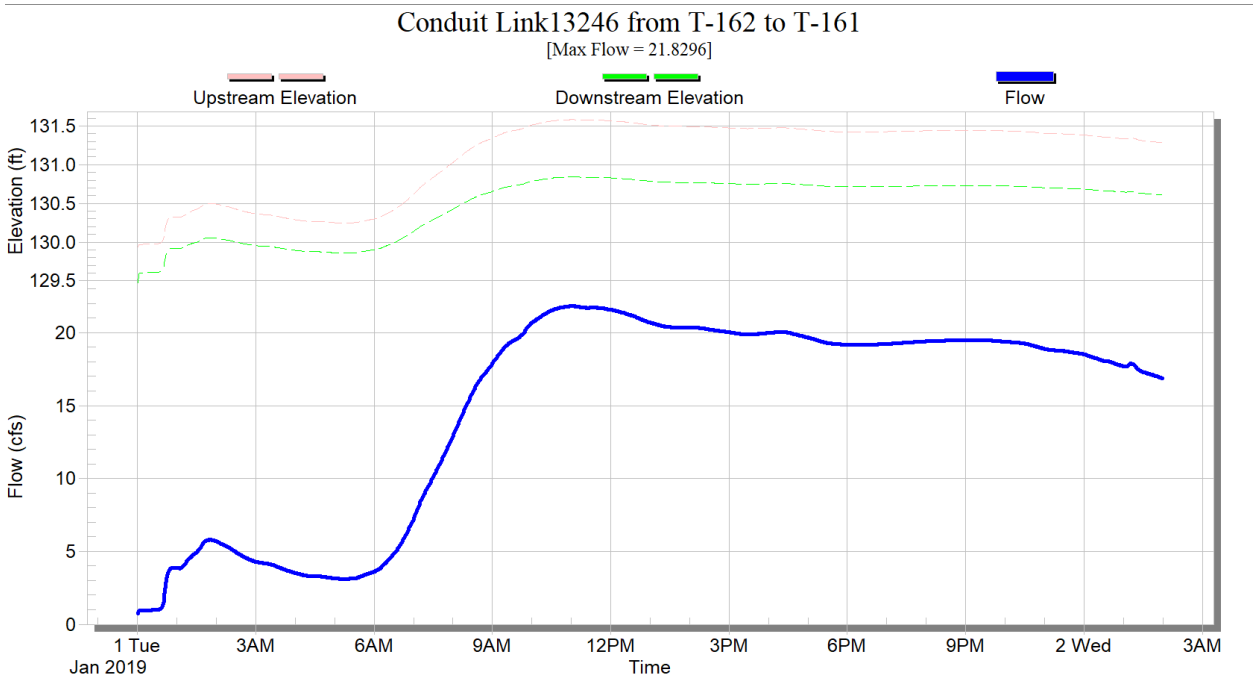

Figure 15. Unit hydrograph with 2040 Build-Out – 10 Year Storm

Attachment A3-1

APPENDIX 2

Rainfall data/information

Rainfall Information

Table D-1: Fractions of Total Rainfall for 24-Hour, 5-Minute Pattern

Time Starting	Fraction of Total Rainfall (%) *MAP=15"*	Fraction of Total Rainfall (%) *MAP=20"*	Fraction of Total Rainfall (%) *MAP=30"*
0:00	0.1412	0.1482	0.1558
1:00	0.1294	0.1358	0.1429
2:00	0.3080	0.3223	0.2945
3:00	0.5667	0.5930	0.6214
4:00	0.5051	0.5285	0.5538
5:00	0.5272	0.5266	0.5324
6:00	4.760	4.060	3.2950
6:10	1.554	1.275	0.9700
6:30	1.085	1.0169	0.9253
7:00	0.5177	0.5229	0.5263
8:00	0.2763	0.2860	0.3410
9:00	0.2302	0.2384	0.2478
10:00	0.3223	0.3337	0.3469
11:00	0.3799	0.3933	0.4089
12:00	0.2878	0.2979	0.3098
13:00	0.2993	0.3099	0.3222
14:00	0.2118	0.2223	0.2338
15:00	0.2353	0.2470	0.2597
16:00	0.2118	0.2223	0.2338
17:00	0.1177	0.1235	0.1299
18:00	0.1530	0.1605	0.1688
19:00	0.1647	0.1729	0.1818
20:00	0.1412	0.1482	0.1558
21:00	0.3412	0.3581	0.3766
22:00	0.2706	0.2840	0.2987
23:00	0.1412	0.1482	0.1558

Figure 16. Rainfall from Santa Clara County 2007 Drainage Manual

Table 5. Rainfall per hour based on Santa Clara County 2007 Drainage Manual. These values are then multiplied by event rainfall depths to obtain hyetographs

Time	Fraction of Total Rainfall (%) MAP=20" (5 minute intervals)	Fraction of Total Rainfall (%) 1 Hour Interval	Fraction of Total Rainfall
0:00	0.1482	1.7784	0.0178
1:00	0.1358	1.6296	0.0163
2:00	0.3223	3.8676	0.0387
3:00	0.593	7.1160	0.0712
4:00	0.5285	6.3420	0.0634
5:00	0.5266	6.3192	0.0632
6:00	4.06	8.1200	0.0812
6:10	1.275	5.1000	0.0510
6:30	1.0169	6.1014	0.0610
7:00	0.5229	6.2748	0.0627
8:00	0.286	3.4320	0.0343
9:00	0.2384	2.8608	0.0286
10:00	0.3337	4.0044	0.0400
11:00	0.3933	4.7196	0.0472
12:00	0.2979	3.5748	0.0357
13:00	0.3099	3.7188	0.0372
14:00	0.2223	2.6676	0.0267
15:00	0.247	2.9640	0.0296
16:00	0.2223	2.6676	0.0267
17:00	0.1235	1.4820	0.0148
18:00	0.1605	1.9260	0.0193
19:00	0.1729	2.0748	0.0207
20:00	0.1482	1.7784	0.0178
21:00	0.3581	4.2972	0.0430
22:00	0.284	3.4080	0.0341
23:00	0.1482	1.7784	0.0178

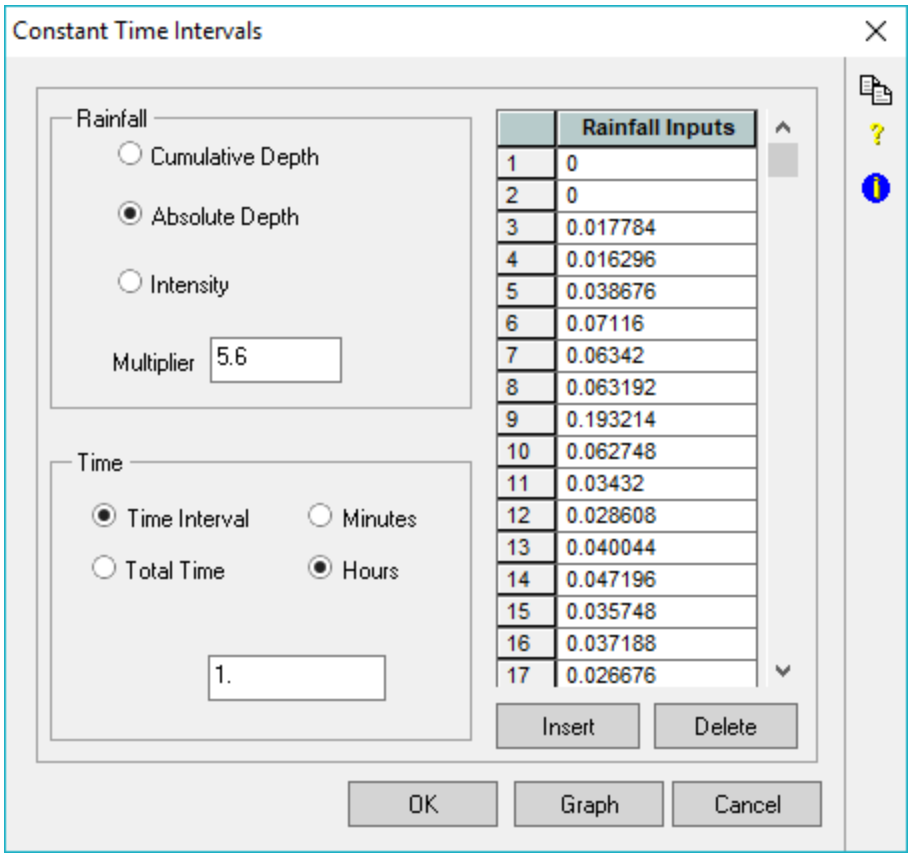

Figure 17. Rainfall per hour based on Santa Clara County 2007 Drainage Manual. These values are then multiplied by event rainfall depths to obtain hyetographs

Diurnal Flow Pattern Example

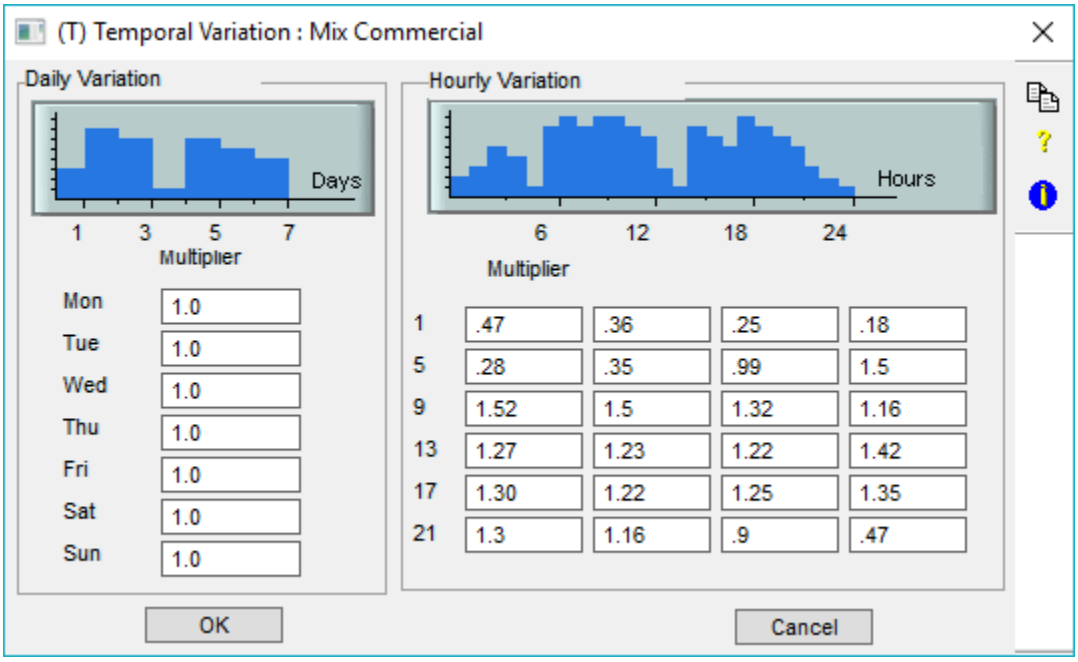

Figure 18. Diurnal Flow Multipliers in XPSWMM 2014

Table 6. 10-Year 24-Hour Rainfall Depths per Basin

Basin/Site	Rainfall Depth (in)
1	3.25
2	3.4
3A	3.4
4A	3.45
5	3.3
6	3.8
7	3.7
9A	3.9
9B	4.2
9C	4.2
10	3.95
11	3.93
12	3.5
14	3.1
15	3.85
16	4.4
18	4.5
19	4.7
20	4.4
21	4.6
22	5.6
24	4.24
25	4.9
26	4.8
27	4.3
28	3.4
29	3.1
30	3.2
Flume	3.2

Comment Letter B1

From: Joseph Hauser <cuptjoe2@comcast.net>
Sent: Monday, November 25, 2019 11:54 AM
To: Gian Martire <GianM@cupertino.org>; Steven Scharf <SScharf@cupertino.org>; Darcy Paul <DPaul@cupertino.org>; Jon Robert Willey <JWilley@cupertino.org>; Liang Chao <LiangChao@cupertino.org>; Rod Sinks <RSinks@cupertino.org>
Subject: Westport EIR

Please add this email to the public record for the Westport Project

As I cannot attend the proposed Westport Cupertino Project Development meetings, I would like to present several comments. B1-1

1. The project, being on Stevens Creek between Mary Ave and the entrance to 85/280 will negatively impact access to the main corridor toward the city center.This potentially impacts access to all the businesses along Stevens Creek Blvd. B1-2

2. The area surrounding the proposed project is already a highly-impacted area for the following activities.

    a The main entrance to De Anza College

    b Cupertino Senior Citizens Center

    c The main entrance to Memorial Park where there are numerous city events each year

    d Entrance to two major highways (85 and 280)

    e Access to the city yard facility

    f Access to the city dog park

    g Access to over 300 residential homes

    h Access to a condo complex

    i Access to the Glenbrook Apartments

    j Bicycle path to the Mary Avenue Bridge

    B1-3

3. The state Density Bonus Law allows this project 3 concessions- not more! They also want to remove protected trees, consolidate all BMR housing into one building, not provide a mix of BMR unit sizes, not provide required amount of retail facing Stevens Creek, etc. This is WAY MORE than 3 concessions. In addition, the height concessions is 100% more than what is allowed. Where is the limit? B1-4

4. There is only one other exit area from the area being impacted. Those exits are on to Stelling Ave., and only has a traffic light on Greenleaf and Stelling. Greenleaf has a dangerously sharp S-curve right by Garden Gate Elementary School. The other exits onto Stelling require drivers to try to get onto Stelling B1-5

when there is a break in the traffic. This is virtually impossible during rush hour. With the additional traffic to be generated by this project, many drivers will find an alternative route through the neighborhood and past Garden Gate School. During rush hour, many parents use Greenleaf to let their children disembark from their cars, or cross streets to the school. This is already dangerous and will only get worse.

B1-5 continued

5. The proposed height limitation of this project is not in keeping with height limitations along highway 85 for at least a mile radius.

B1-6

6. At times the number of cars in the turn lane from Stevens Creek Blvd onto Mary Ave., and the turn lane from Mary onto Stevens Creek Blvd already exceeds the amount of space allocated, thereby causing backups onto regular traffic lanes. This will only get worse.

B1-7

7. There are no buildings in this area with heights larger than 2 stories.

I hope the city will take these points into consideration. As a longtime resident of Cupertino, I have witnessed the area becoming a traffic nightmare, and city promises to residents' better quality of life being largely ignored so that developers can get their way. I am not against reasonable growth, but this project is massive, and does not fit into the area being allocated. It will not only impact the immediate area, but will impact the entire city. Recent events have indicated that residents are mostly fed up with the type of projects the city has approved. I hope this project will be an example of a new attitude by the city.

B1-8

Thank you.

Joseph Hauser

Comment Letter B2

From: Kent Vincent <deanza_travel@yahoo.com>
Sent: Monday, November 25, 2019 8:36 PM
To: Darcy Paul <DPaul@cupertino.org>; Jon Robert Willey <JWilley@cupertino.org>; Rod Sinks <RSinks@cupertino.org>; Steven Scharf <SScharf@cupertino.org>; Liang Chao <LiangChao@cupertino.org>
Subject: De Anza Hotel and Westport Cupertino GPAs

Dear Council member,

Cupertino residents recently received notices for hearings on two development proposals each requiring General Plan Amendments: the De Anza Hotel and Westport Cupertino. I want to encourage the Council to enforce the City's General Plan when ruling on these and all future development proposals. As you know, General Plans are not intended to be project specific but the blueprint for future development throughout the city. Unfortunately, developers have become accustomed to project-specific GPAs in Cupertino via the actions of prior Councils. Cupertino residents elected a Council majority to end this practice and actively enforce the General Plan. While I know you know this, I just want to give you respectful encouragement noting enforcement has the support of your constituents. .

B2-1

I think it is also worth mentioning that freely given project specific GPAs and rezoning encourages property value inflation. Land cost is directly a function of utility and what is, or what is likely to be allowed for development on any given parcel. A Council that holds its ground against GPAs in theory should stabilize land prices so high rise, high density is less of a requirement for development profitability.

Respectfully,

Kent Vincent
Cupertino

Comment Letter B3

From: "harrisau1@gmail.com" <harrisau1@gmail.com>
Date: December 5, 2019 at 1:15:05 AM PST
To: Gian Martire <GianM@cupertino.org>
Cc: Better Cupertino <info@bettercupertino.org>, Harris Au <harrisau1@gmail.com>
Subject: Westport EIR Comments, No more than 50 Residential Units

Dear Sir/Madam,

The Westport proposal to build 242 residential units is way too many. It is obvious that the resulting traffic congestion will be unbearable. Even today the traffic is very heavy during the morning 7-9 am and 4-6 pm periods. Consider all the traffics from Steven's Creek Blvd, HWY 85 and De Anza college.

Besides traffic congestion problems, other issues are in safety for both car and pedestrians, air and noise population, and building height.

The maximum number of residential units in Westport is 50.

B3-1

Thank you for your attention,

Harris au

10393 Noel Ave

Cupertino, CA 95014

Tel 408 921 3339

Comment Letter B4

From: Lee Xu <leelxu@gmail.com>
Sent: Wednesday, December 11, 2019 10:13 PM
To: Gian Martire <GianM@cupertino.org>
Subject: Westport EIR

Dear Sir/Madam,

I am the owner of the house at 21164 Grenola Dr, Cupertino, CA 95014.

Thank you for informing me of the Westport project. I I think the project adds too many new residential units in this already crowded area. Furthermore, the tall building is not in harmony with the surroundings.

B4-1

I vote against the project.

Lee Xu

Comment Letter B5

DANIEL L. CARDOZO
CHRISTINA M. CARO
DANIKA L. DESAI
SARA F. DUDLEY
THOMAS A. ENSLOW
ANDREW J. GRAF
TANYA A. GULESSERIAN
KENDRA D. HARTMANN*
KYLE C. JONES
RACHAEL E. KOSS
NIRIT LOTAN
AARON M. MESSING
WILLIAM C. MUMBY
CAMILLE G. STOUGH

MARC D. JOSEPH
Of Counsel

**Admitted in Colorado*

ADAMS BROADWELL JOSEPH & CARDOZO

A PROFESSIONAL CORPORATION

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SACRAMENTO, CA 95814-4721
TEL: (916) 444-6201
FAX: (916) 444-6209

December 20, 2019

By E-Mail and U.S. Mail

Gian Martire
City of Cupertino
10300 Torre Avenue
Cupertino, CA 95014
gianm@cupertino.org

Re: Westport Mixed-Use Project EIR Comments

Dear Mr. Martire:

We are writing on behalf of Cupertino Residents for Responsible Development to provide comments on the November 2019 Draft Environmental Impact Report ("DEIR") prepared for the Westport Mixed-Use Project proposed by KT Urban. The Project involves demolishing a one-story shopping center and developing an 8.1-acre site for a mixed-use of residential and retail buildings, totaling 242 residential units and 20,000 square feet of retail space. The Project is located at 21267 Stevens Creek Boulevard, approximately 0.1-.03 miles from the De Anza Transit Center. B5-1

According to the DEIR, the Project will require the following approvals from the City of Cupertino ("City"): (1) EIR Certification pursuant to the California Environmental Quality Act ("CEQA"); (2) Development Permit (3) Architectural and Site Approval Permit; (4) Use Permit; (5) Subdivision Map Permit; (6) Heart of the City Exception; (7) tree removal permit; and (8) Encroachment permits from the City and Caltrans.

As explained in these comments, the DEIR does not comply with the requirements of CEQA in several respects: B5-2

First, the DEIR fails to properly analyze and mitigate impacts from air quality and their associated health risks. Specifically, the City failed to properly

analyze construction and operational air emissions by underestimating and failing to support their emission projections. As a result, the City failed to disclose, analyze and mitigate a potentially significant health risk that is evident when the DEIR's errors are corrected. B5-2 continued

Second, the DEIR fails to properly disclose, analyze, and mitigate Greenhouse Gas ("GHG") emissions. The DEIR's analysis uses an inapplicable threshold of significance in violation of CEQA and relies on several erroneous and unsupported assumptions which underestimate the Project's actual GHG impacts. B5-3

Third, the DEIR fails to properly disclose, analyze, and mitigate the Project's traffic impacts. The City improperly calculates VMT, at odds with the City's own general plan and California's technical guidance on VMT and fails to include traffic analysis from a major nearby construction project. B5-4

For each of these reasons, the City may not approve the Project until a revised environmental review document is prepared and re-circulated for public review and comment.

These comments were prepared with the assistance of air quality and GHG experts from Soil Water Air Protection Enterprise ("SWAPE") Matt Hagemann, P.G, C.Hg. and Paul E. Rosenfeld, PhD[1], and traffic and civil engineer Dan Smith.[2] SWAPE and Mr. Smith's comments and curriculum vitae are attached hereto as Exhibits A and B respectively and are fully incorporated herein and submitted to the City herewith. Therefore, the City must separately respond to the technical comments of the experts, in addition to our comments. B5-5

I. STATEMENT OF INTEREST

Cupertino Residents for Responsible Development is an unincorporated association of individuals and labor unions that may be adversely affected by the potential environmental impacts of the Project. The association includes Silicon Valley MEPS and its members and those members' families and other individuals that live, recreate, work and raise their families in Santa Clara County, including in and around the City of Cupertino (collectively "Cupertino Residents"). B5-6

[1] **Exhibit A**: A letter from Matt Hagemann and Paul Rosenfeld to Aaron Messing Re: Comments on the Westport Mixed-Use Project (SCH No. 2019070377), December 20, 2019 ("**SWAPE comments**").
[2] **Exhibit B**: A letter from Daniel Smith to Aaron Messing Re: Westport Mixed Use Project DEIR (SCH 2019070377), December 20, 2019 ("**Smith comments"**).

Cupertino Residents supports the development of mixed-use projects where properly analyzed and carefully planned to minimize impacts on public health and the environment. Mixed-use projects should avoid impacts to air quality, public health, water resources and traffic, and should take all feasible steps to ensure unavoidable impacts are mitigated to the maximum extent feasible. Only by maintaining the highest standards can mixed-use development truly be sustainable.

Individual members of Cupertino Residents and the members of the affiliated labor organizations live, work, recreate and raise their families in Santa Clara County, including in and around the City of Cupertino. These members would be directly affected by the Project's environmental and health and safety impacts. Members of Cupertino Residents may also work on the Project itself. Accordingly, these individuals will be first in line to be exposed to any health and safety hazards created by the Project. They each have a personal interest in protecting the Project area from unnecessary, adverse environmental and public health impacts.

B5-6
continued

The organizational members of Cupertino Residents and their members also have an interest in enforcing environmental laws that encourage sustainable development and ensure a safe working environment for its members. Environmentally detrimental projects can jeopardize future jobs by making it more difficult and more expensive for businesses to expand in the region, and by making it less desirable for businesses to locate and people to live there. Continued degradation can, and has, caused construction moratoriums and other restrictions on growth that, in turn, reduces future employment opportunities.

Finally, the organizational members of Cupertino Residents are concerned with projects that can result in serious environmental harm without providing countervailing economic benefits. CEQA provides a balancing process whereby economic benefits are weighed against significant impacts to the environment.[3] It is in this spirit we offer these comments.

[3] Pub. Resources Code § 21081(a)(3); *Citizens for Sensible Development of Bishop Area v. County of Inyo* (1985) 172 Cal.App.3d 151, 171.

II. THE DEIR LACKS SUBSTANTIAL EVIDENCE TO SUPPORT ITS CONCLUSIONS ON SIGNIFICANT IMPACTS AND FAILS TO DISCLOSE, ANALYZE, AND MITIGATE POTENTIALLY SIGNIFICANT IMPACTS

CEQA requires that an agency analyze the potential environmental impacts of its proposed actions in an environmental impact report ("EIR") (except in certain limited circumstances).[4] The EIR is the very heart of CEQA.[5] "The foremost principle in interpreting CEQA is that the Legislature intended the act to be read so as to afford the fullest possible protection to the environment within the reasonable scope of the statutory language."[6] B5-7

CEQA has two primary purposes. First, CEQA is designed to inform decision makers and the public about the potential, significant environmental effects of a project.[7] "Its purpose is to inform the public and its responsible officials of the environmental consequences of their decisions before they are made. Thus, the EIR "protects not only the environment but also informed self-government."[8] The EIR has been described as "an environmental 'alarm bell' whose purpose it is to alert the public and its responsible officials to environmental changes before they have reached ecological points of no return."[9]

Second, CEQA requires public agencies to avoid or reduce environmental damage when "feasible" by requiring "environmentally superior" alternatives and all feasible mitigation measures.[10] The EIR serves to provide agencies and the public with information about the environmental impacts of a proposed project and to "identify ways that environmental damage can be avoided or significantly reduced."[11] If the project will have a significant effect on the environment, the agency may approve the project only if it finds that it has "eliminated or substantially lessened all significant effects on the environment where feasible" and

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[4] See, e.g., PRC § 21100.
[5] *Dunn-Edwards v. BAAQMD* (1992) 9 Cal.App.4th 644, 652.
[6] *Comtys. for a Better Env' v. Cal. Res. Agency* (2002) 103 Cal. App.4th 98, 109 ("*CBE v. CRA*").
[7] 14 CCR § 15002(a)(1).
[8] *Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal. 3d 553, 564.
[9] *Berkeley Keep Jets Over the Bay v. Bd. of Port Comm'rs*. (2001) 91 Cal. App. 4th 1344, 1354 ("*Berkeley Jets*"); *County of Inyo v. Yorty* (1973) 32 Cal.App.3d 795, 810.
[10] 14 CCR§ 15002(a)(2) and (3); *see also Berkeley Jets*, 91 Cal.App.4th at 1354; *Citizens of Goleta Valley*, 52 Cal.3d at 564.
[11] 14 CCR §15002(a)(2).

that any unavoidable significant effects on the environment are "acceptable due to overriding concerns."[12]

While the courts review an EIR using an "abuse of discretion" standard, "the reviewing court is not to 'uncritically rely on every study or analysis presented by a project proponent in support of its position. *A clearly inadequate or unsupported study is entitled to no judicial deference*."[13] As the courts have explained, "a prejudicial abuse of discretion occurs "if the failure to include relevant information precludes informed decisionmaking and informed public participation, thereby thwarting the statutory goals of the EIR process."[14] B5-7

A. The Project description does not provide any information on the types of retail the Project will include, which render the DEIR's analysis on Air Quality, GHGs, and VMT incomplete

The DEIR states that the Project will contain "two mixed-use buildings" with a combined approximately 20,000 square feet of retail space on their ground levels.[15] Apart from this information, however, no further description or analysis of the future retail component of the Project is provided in the DEIR. B5-8

An accurate and complete project description is necessary to perform an evaluation of the potential environmental effects of a proposed project.[16] Without a complete project description, the environmental analysis will be impermissibly narrow, thus minimizing the project's impacts and undercutting public review.[17] The courts have repeatedly held that "an accurate, stable and finite project description is the *sine qua non* of an informative and legally sufficient [CEQA document]."[18] "Only through an accurate view of the project may affected outsiders and public decision makers balance the proposal's benefit against its environmental

[12] PRC § 21081; 14 CCR § 15092(b)(2)(A) & (B).
[13] *Berkeley Jets*, 91 Cal. App. 4th 1344, 1355 (emphasis added), *quoting, Laurel Heights Improvement Assn. v. Regents of University of California* (1988) 47 Cal.3d 376, 391 409, fn. 12.
[14] *Berkeley Jets*, 91 Cal.App.4th at 1355; *San Joaquin Raptor/Wildlife Rescue Center v. County of Stanislaus* (1994) 27 Cal.App.4th 713, 722; *Galante Vineyards v. Monterey Peninsula Water Management Dist.* (1997) 60 Cal.App.4th 1109, 1117; *County of Amador v. El Dorado County Water Agency* (1999) 76 Cal.App.4th 931, 946.
[15] DEIR, p. 1-1.
[16] *See*, *e.g.*, *Laurel Heights Improvement Association v. Regents of the University of California* (1988) 47 Cal.3d 376.
[17] *See id.*
[18] *County of Inyo v. County of Los Angeles* (1977) 71 Cal.App.3d 185, 193.

costs."[19] CEQA Guidelines § 15378 defines "project" to mean "the whole of an action, which has a potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment."[20]

Without any discussion of the types of retail to be included in the Project, key elements that would comprise the Project's Air Quality, GHG, and Traffic impacts analysis are missing. For example, "[t]he existing shopping plaza, which contains many local serving uses like cheap restaurants, dentists, nail shops, and dance studios, attracts considerably more local trips than a shopping center that has specialty shops that people drive for longer distances to get to. These differences in retail may significantly increase the VMT and GHG impacts of the project, and without more information, the DEIR cannot make reliable conclusions as to those impacts."[21]

B5-8 continued

While a Project is entitled to some flexibility with implementation of the Project beyond the project description, there is no practical reason why the City does not provide broad categories of retail to be included in the Project, such that a significantly more accurate rendering of the Project's impacts could be made.[22] The City must include this information in a recirculated DEIR and make adjustments to its air quality, GHG, and traffic analyses accordingly.

B. The DEIR fails to identify, analyze, and mitigate the Project's air quality impacts and associated health risks

B5-9

Under CEQA, lead agencies must consider a project's impacts on air quality, including whether the project will "expose sensitive receptors to substantial pollutant concentrations."[23] The DEIR's air quality analysis relies on emissions calculated with the California Emission Estimator Model ("CalEEMod") 2016.3.2. The model uses site-specific information, such as land use type, meteorological data,

[19] *Id.* at 192-193.
[20] 14 CCR § 15378.
[21] Smith Comments, p. 1.
[22] *See Stopthemillenniumhollywood.com v. City of Los Angeles* (2019) 39 Cal. App. 5th 1 (finding that a project description was insufficient when there were no practical impediments to why the developer could not have provided an accurate, stable, and finite definition of what it intended to build.).
[23] CEQA Guidelines, Appendix G, Section III: Air Quality.

total lot acreage, project type and typical equipment associated with project type to calculate a project's construction and operational emissions.

After reviewing the DEIR, SWAPE concluded that "several of the values inputted into the model were not consistent with information disclosed in the DEIR" and that the DEIR incorrectly evaluates diesel particulate matter emissions.[24] As a result, the DEIR completely fails to identify and mitigate against a potentially significant health risk impact resulting from Project emissions. The City must remedy this failure by recirculating a DEIR with the potentially significant impact disclosed, analyzed, and mitigated. B5-9 continued

1. The DEIR underestimates air quality impacts

In their review, SWAPE determined that at least three inputs from the DEIR's CalEEMod analysis were underestimated and did not reflect disclosed information about the Project from the DEIR. They also determined that certain mitigation measures outlined by the DEIR are unverified and therefore may underestimate the Project's construction and operational emissions. If adjusted, the revised CalEEMod conclusions result in the finding of a potentially significant health risk impact, explained in section II(B)(3). B5-10

a) Multiple CalEEMod inputs contradict Project estimations from the DEIR

SWAPE notes that while the Project proposes to construct a 148,040 square foot parking garage, the DEIR's CalEEMod inputs only include 92,800 square feet of enclosed parking structure, an underestimation of 55,240 square feet.[25] SWAPE also found that the DEIR's CalEEMod transportation assessment underestimates the weekend trip rate by 242 trips based on the DEIR's own estimation of projected daily trips for the Project.[26] Through both of these underestimations, the DEIR underestimates the Project's construction and operational emissions and leads to an inadequate analysis of health impacts. B5-11

Additionally, SWAPE determined that the pass-by trips expected to occur throughout the Project's operation were double counted by the DEIR's analysis, and

[24] SWAPE Comments, p. 2.
[25] SWAPE Comments, pp. 2-3.
[26] SWAPE Comments, p. 4.

therefore, the Project's operational emissions were underestimated.[27] According to Appendix A of the CalEEMod User's Guide, the primary trips utilize the complete trip lengths associated with each trip type category.[28] Diverted trips are assumed to take a slightly different path than a primary trip and are assumed to be 25% of the primary trip lengths. Pass-by trips are assumed to be 0.1 miles in length and are a result of no diversion from the primary route.[29] Here, the DEIR counts the pass-by trips both in its land use analysis *and* in its transportation assessment.[30] And as a result, "the emissions associated with these trips are underestimated and as a result, the Project's mobile-source operational emissions are underestimated."[31]

B5-11 continued

These underestimations are compounded by the DEIR's failure to include any information about the types of retail the Project will contain. As established above, different types of retail could have substantially different implications for the projections of daily trips or of trip purposes, both of which would have air quality impacts. As a result, the Project's air quality analysis is unreliable and cannot constitute substantial evidence that no significant effect will occur from construction and operation of the Project.

b) Multiple mitigation measures are unverified and may result in underestimated emissions

B5-12

Next, SWAPE identified at least two mitigation measures that are inadequately verified in the CalEEMod inputs, which may result in the DEIR underestimating the Project's air emissions. The Project's CalEEMod output files demonstrate that the model included a 6 percent reduction from "Clean Paved Roads" and a 12 percent moisture content for "Water Unpaved Roads" (Appendix C, pp. 40, 69, 94). The CalEEMod User's Guide requires that any non-default values inputted must be justified,[32] and the DEIR includes a justification: "Per BAAQMD basic control measures."[33]

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[27] SWAPE Comments, p. 6.
[28] "CalEEMod User's Guide, Appendix A: Calculation Details for CalEEMod." *SCAQMD*, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/caleemod-appendixa.pdf?sfvrsn=2, p. 20
[29] "CalEEMod User's Guide, Appendix A: Calculation Details for CalEEMod." *SCAQMD*, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/caleemod-appendixa.pdf?sfvrsn=2, p. 20
[30] SWAPE Comments, pp. 5-6.
[31] SWAPE Comments, p. 6.
[32] "CalEEMod User's Guide." CAPCOA, November 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/01_user-39-s-guide2016-3-2_15november2017.pdf?sfvrsn=4, p. 7, 13.
[33] DEIR, Appendix C, pp. 40, 69, 94.

The DEIR purports to implement BAAQMD Basic Construction Mitigation Measures through Mitigation Measure AQ-2, which requires the preparation of a Construction Management Plan. However, "none of these measures [required in Mitigation Measures AQ-2] discusses the 6 percent or 12 percent reductions included in the model, and as a result, these reduction percentages cannot be verified. Furthermore, none of these measures address the replacement of ground cover, and as a result, the inclusion of this measure is unsubstantiated."[34] As a result, SWAPE concludes "the model may underestimate the Project's construction emissions."[35] B5-13

In addition, SWAPE identified two additional operational mitigation measures that were included in the DEIR's CalEEMod modeling, but no justifications or substantiations are provided for these measures.[36] SWAPE again concludes that "the implementation of these measures cannot be verified, and the model should not be relied upon to determine Project significance."[37]

2. <u>The Health Risk Assessments relied upon by the DEIR cannot constitute substantial evidence</u>

SWAPE's analysis indicates that the DEIR's construction and operational health risk assessments ("HRAs") are incomplete and must be revised in order to be relied upon by the City. B5-14

Although the DEIR concludes that:

> As described above, worst-case construction risk levels based on screening-level modeling (AERSCREEN) and conservative assumptions would be below the BAAQMD's thresholds"[38]

We have already shown above that the CalEEMod model incorrectly underestimates construction emissions. Thus, the DEIR's construction HRA relies on a flawed analysis of air emissions, and the City must revise the air analysis before it can reliably compute the health risks associated with the Project's construction.

[34] SWAPE Comments, p. 7.
[35] SWAPE Comments, p. 7.
[36] SWAPE Comments, pp. 7-8.
[37] SWAPE Comments, p. 8.
[38] DEIR, Appendix C, p. 26.

With respect to the Project's operational health risk analysis, the DEIR only analyzes the risk posed to *future* sensitive receptors *on the Project site*, not to risks posed to *nearby, existing* sensitive receptors as a result of the Project's operation.[39] This stands in contrast with the "recommendations set forth by the Office of Environmental Health and Hazard Assessment's (OEHHA) most recent *Risk Assessment Guidelines: Guidance Manual for Preparation of Health Risk Assessments*, which was cited in the DEIR."[40] OEHHA recommends that exposure from projects lasting more than 6 months should be evaluated for the duration of the project and recommends that an exposure duration of 30 years be used to estimate individual cancer risk for the maximally exposed individual resident (MEIR). Failing to prepare an operational HRA to nearby, existing sensitive receptors is inconsistent with this guidance and thus, the DEIR has failed to provide substantial evidence that no health risk is associated with the Project.[41] B5-15

SWAPE's also found that the DEIR failed "to sum [the excess cancer risk calculated for each age group in order] to evaluate the total cancer risk over the course of the Project's lifetime, including both construction and operation."[42] SWAPE concludes that "[t]his is incorrect and thus, an updated analysis should quantify the Project's construction and operational health risks and then sum them to compare to the BAAQMD threshold of 10 in one million."[43] Without correction, the DEIR fails to comply with OEHHA guidance and its analysis fails to constitute substantial evidence. B5-16

3. <u>A screening-level HRA correcting for the errors in the DEIR's CalEEMod inputs indicates a potentially significant health risk impact</u> B5-17

In contrast to the DEIR's HRAs, SWAPE prepared a screening level HRA using corrected inputs for diesel particulate matter and assumptions "[c]onsistent with recommendations set forth by the 2015 OEHHA guidance."[44] With this data,

[39] SWAPE Comments, p. 9.
[40] DEIR, Appendix C, p. 26; "Risk Assessment Guidelines Guidance Manual for Preparation of Health Risk Assessments." OEHHA, February 2015, *available at:* https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf.
[41] *See* SWAPE Comments, p. 9.
[42] SWAPE Comments, p. 10.
[43] SWAPE Comments, p. 10.
[44] SWAPE Comments, p. 10.

shown below, SWAPE projects that over the course of Project construction and operation, the excess cancer risks posed to adults, children, infants, and during the third trimester of pregnancy "are approximately 4.9, 32, 100, and 4.6 in one million, respectively. The excess cancer risk over the course of a residential lifetime (30 years) at the closest receptor is approximately 140 in one million, thus resulting in a potentially significant health risk impact not previously addressed or identified by the DEIR."[45]

The Maximally Exposed Individual at a Residential Receptor					
Activity	**Duration (years)**	**Concentration (ug/m3)**	**Breathing Rate (L/kg-day)**	**ASF**	**Cancer Risk**
Construction	0.25	0.3953	361	10	4.6E-06
3rd Trimester Duration	***0.25***			***3rd Trimester Exposure***	***4.6E-06***
Construction	1.75	0.3953	1090	10	9.7E-05
Operation	0.25	0.1217	1090	10	4.2E-06
Infant Exposure Duration	***2.00***			***Infant Exposure***	***1.0E-04***
Operation	14.00	0.1217	572	3	3.2E-05
Child Exposure Duration	***14.00***			***Child Exposure***	***3.2E-05***
Operation	14.00	0.1217	261	1	4.9E-06
Adult Exposure Duration	***14.00***			***Adult Exposure***	***4.9E-06***
Lifetime Exposure Duration	**30.00**			**Lifetime Exposure**	**1.4E-04**

B5-17 continued

The City must include this potentially significant impact in its analysis of air quality impacts in a recirculated EIR. Without it, the DEIR violates CEQA's mandate that the City disclose and mitigate the Project's potentially significant impacts.

[45] SWAPE Comments, p. 13.

C. The DEIR fails to disclose, analyze, and mitigate the Project's Greenhouse Gas impacts

The DEIR's greenhouse gas ("GHG") analysis states that the proposed Project would result in a significant impact if it would (1) generate greenhouse gas emissions, either directly or indirectly, that may have a significant effect on the environment or (2) conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.[46] B5-18

We reviewed the GHG analysis with the assistance of SWAPE. As described below, our review found that the DEIR's GHG analysis violates the law and is not supported by substantial evidence. The DEIR's conclusions are not supported for three main reasons. First, the DEIR fails to use a threshold which is applicable to the Project's built-out year, in violation of CEQA. Second, even for the threshold the DEIR did use, its GHG analyses rely on several incorrect assumptions that result in a substantial underestimation of Project-related GHGs, as described below. Third, the DEIR fails to demonstrate consistency with the Cupertino CAP.

1. <u>The GHG analysis relies on an inapplicable threshold in violation of CEQA</u>

Under the CEQA Guidelines, which have been recently updated, a lead agency must analyze a project's impacts on GHG emissions.[47] The Guidelines allow for several approaches to this analysis, both qualitative and quantitative. The Guidelines explicitly mandate, however, that the "analysis should consider a timeframe that is appropriate for the project. The agency's analysis also must reasonably reflect evolving scientific knowledge and state regulatory schemes."[48] B5-19

The DEIR analysis relies on the tiered approach developed by the Bay Area Air Quality Management District ("BAAQMD") for assessing the impacts of land use development projects. If a project is within the jurisdiction of an agency that has a "qualified" GHG reduction strategy, the project can assess consistency of its GHG emissions impacts with the reduction strategy. BAAQMD has adopted screening criteria and significance criteria for development projects that would be applicable for the proposed project. If a project exceeds the BAAQMD Guidelines'

[46] DEIR, p. 4.5-15.
[47] 14 CCR §15064.4.
[48] 14 CCR §15064.4(b)

GHG screening-level sizes, the proposed project would be required to conduct a GHG emissions analysis using the BAAQMD significance criteria of 1,100 million metric tons of carbon dioxide equivalent per year per year (MTCO2e per year). Here, the DEIR analyzed the Project's annual emissions and found they were below the "bright-line" threshold.

BAAQMD's significance threshold, however, is not applicable to the Project, and relying on it violates CEQA. BAAQMD's thresholds, included in the district's 2017 CEQA Guidelines, were developed to comply with the state reduction target as it is embodied in AB 32,[49] which mandates that statewide greenhouse gas emissions be reduced to 1990 levels by the target year 2020.[50] In 2016, the state passed SB 32,[51] which codified a new statewide 2030 GHG emissions reduction target of 40% below 1990 levels. Following the new legislation, the California Air Resources Board ("CARB") adopted in December 2017 a new scoping plan to outline the strategy needed to achieve SB 32 GHG targets. These are the binding "state regulatory scheme" that the CEQA Guidelines require agencies to account for.

B5-19 continued

The BAAQMD Guidelines do not account for or include any numeric threshold for compliance with SB 32 or the scoping plan and are therefore not applicable to projects that will be built and operated beyond the AB 32 target year.[52] Because the Project's first fully operational year would be 2023, and it would continue to operate many years beyond that, the City must analyze the Project for its compatibility with the state's mandated goals for, at the very least, the year 2030.[53]

BAAQMD *itself* advises lead agencies not to rely on its numeric significance thresholds and instead advises they make significance determinations based on the most recent state greenhouse gas reduction targets. For example, in recent comment letters to lead agencies, BAAQMD stated as follows:

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[49] See, California Environmental Quality Act Air Quality Guidelines, Bay Area Air Quality Management District, May 2017, at p. D-27.
[50] California Air Resources Board, Assembly Bill 32 Overview; available at: https://www.arb.ca.gov/cc/ab32/ab32.htm, accessed April 3, 2019.
[51] https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB32
[52] See also *Cleveland National Forest Foundation v. San Diego Assn. of Governments* (2017) 3 Cal.5th 497.
[53] SWAPE Comments, p. 21.

The Air District encourages the City to make a significance determination for greenhouse gas impacts based on the most recent State greenhouse gas targets and CEQA guidance. The Air District's 2010 CEQA guidelines are based on the State's 2020 greenhouse gas targets. These targets have been superseded by the State's 2030 and 2050 climate stabilization goals and by the most recent draft of the AB 32 Scoping Plan written by the California Air Resources Board.[54]

The GHG impact analysis should include an evaluation of the Plan's consistency with the California Air Resources Board 2017 Scoping Plan and State and Air District climate stabilization goals for 2030 and 2050. Please be advised that the Air District is in the process of updating the CEQA guidelines/thresholds and current thresholds for GHGs should not be used for this plan.[55]

B5-19 continued

BAAQMD is in the process of updating its current CEQA Guidelines and thresholds of significance.[56] The Draft EIR must be revised to analyze the Project's compatibility with the reduction targets set in SB 32, which go beyond those set in AB 32. As it is now, the DEIR's analysis violates both CEQA and the Supreme Court rulings on GHG analysis and cannot constitute substantial evidence.

2. <u>The DEIR significantly underestimates GHG emissions from the Project</u>

a) The DEIR does not support its conclusion that the Project will result in a net change of 359 MTCO2e/Year

B5-20

The DEIR claims "that the proposed project would generate 1,843 MTCO2e per year."[57] However, because, the project site is currently developed with

[54] Greg Nudd, BAAQMD, Letter to Joshua McMurray, Oakley, CA, Oakley Logistics Center Project, March 21, 2019; available at: http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa-letters/2019/2019_03_21_city_of_oakley_oakley_logistics_center_nop-pdf.pdf?la=en, accessed April 12, 2019.
[55] Greg Nudd, BAAQMD, Letter to Alicia Parker, City of Oakland, RE: Downtown Oakland Specific Plan - Notice of Preparation of a Draft Environmental Impact Report, February 15, 2019; available at: http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa-letters/2019/downtown_oakland_specific_plan_eir_notice_of_preparation_021519-pdf.pdf?la=en
[56] BAAQMD, CEQA Guidelines Update Underway; available at: http://www.baaqmd.gov/plans-and-climate/california-environmental-quality-act-ceqa/updated-ceqa-guidelines, accessed April 9, 2019.
[57] DEIR, p. 4.5-17.

approximately 71,250 square-feet of shopping center, which generates 1,484 MTCO2e per year, the proposed project's emissions would represent a net increase in GHG emissions of 359 MTCO2e per year."[58] It therefore concludes that the Project "would not result in an increase in GHG emissions that exceed the BAAQMD's bright-line screening threshold of 1,100 MTCO2e per year."[59]

B5-20

However, this net increase assumes, without support in the record, that the current emissions at the Project site will disappear after the Project is completed. This is contrary to common sense and the CEQA requirement that the "lead agency…make a good-faith effort, based on available information, to describe, calculate or estimate the amount of greenhouse gas emissions resulting from a project."[60] Under this mandate, the City must provide substantial evidence to support its conclusion that the Project's existing emissions sources will be extinguished by the new project and not simply displaced.[61] The City has not done so here.

b) The DEIR's GHG analysis relies upon an incorrect and unsubstantiated air model, unsubstantiated assumptions, and unsubstantiated mitigation measures that underestimate GHGs associated with the Project

B5-21

Similar to the conclusion reached in section II(b)(1) of these comments, the DEIR's analysis of GHGs relies on underestimated inputs, unsubstantiated assumptions about the Project's retail components, and unsupported mitigation measures that significantly underestimate the GHG emissions associated with the Project. The City must correct for these underestimations in a recirculated DEIR.

3. <u>The Cupertino CAP Measures are Not Properly Incorporated in The Project</u>

B5-22

CEQA states that for a DEIR to rely on a CAP in its analysis, it must identify which requirements apply to the Project and make those requirements binding and

[58] DEIR, p. 4.5-17.
[59] DEIR, p. 4.5-17.
[60] CEQA Guidelines, § 15064.4, subd. (a)
[61] *See Friends of the Eel River v. Sonoma County Water Agency* (2003) 108 Cal. App. 4th 859 (holding that an environmental baseline is to be construed broadly to ensure the fullest protection to the environment and cannot be narrowly defined by the project site if evidence indicates the Project's environmental damage will occur beyond the boundaries of the Project site.).

enforceable to the Project by listing them as mitigation measures, if they are not already binding and enforceable in the City's CAP:

> An environmental document that relies on a greenhouse gas reduction plan for a cumulative impacts analysis must identify those requirements specified in the plan that apply to the project, and, if those requirements are not otherwise binding and enforceable, incorporate those requirements as mitigation measures applicable to the project.[62]

B5-22

Here, the DEIR fails to demonstrate consistency with the City's CAP as required by CEQA. Although it mentions certain steps taken in coordination with the CAP's community-wide measures, it fails to incorporate any project-level measures from the CAP or include any of the CAP's measures as binding mitigation in the DEIR.[63] SWAPE also indicates that even for the inapplicable community-wide measures relied upon by the DEIR, it also fails to demonstrate consistency with those community-wide measures.[64] Without more, the DEIR has not provided substantial evidence of consistency with the City's CAP.

D. The DEIR fails to disclose, analyze, and mitigate the Project's Traffic Impacts

B5-23

CEQA requires the City to analyze the Project's direct, indirect and cumulative impacts from traffic generated by the Project. We reviewed the DEIR and the Transportation Analysis (TA) with the assistance of Dan Smith, a Civil and Traffic Engineer. Mr. Smith's review found that the City's analysis of transportation impacts is inadequate for several reasons: The TA produces an inaccurate analysis of VMT impacts; and the TA makes no accounting of traffic impacts evident from Cupertino's Vallco Project and EIR; and the DEIR does not disclose many CalEEMod parameters that may have an impact on model outcomes.

[62] 14 CCR § 15183.5.
[63] SWAPE Comments, p. 15.
[64] SWAPE Comments, p. 15.

1. The DEIR's VMT analysis does not accurately analyze VMT impacts

The DEIR purports to comply with Section 15064.3(b)(1) in its conclusion that VMT impacts from the Project would be less than significant.[65] However, the DEIR's analysis appears to contain several deficiencies that call into question the underlying analysis. B5-24

First, the DEIR appears to combine both the residential and commercial land uses in its VMT analysis, despite the CEQA Technical Advisory for VMT advising that "[c]ombining land uses for VMT analysis is not recommended…[because c]ombining land uses for a VMT analysis could streamline certain mixes of uses in a manner disconnected from policy objectives or environmental outcomes. Instead, OPR recommends analyzing each use separately, or simply focusing analysis on the dominant use, and comparing each result to the appropriate threshold."[66] The DEIR fails to do this or justify its decision not to follow the technical advisory, and as a result, the DEIR's VMT analysis is unreliable.

Next, the DEIR's VMT conclusion includes an analysis of the approximate *annual or daily* VMT of the Project and the existing site. However, this too goes against the guidance from the Technical Advisory, which states:

> When assessing climate impacts of some types of land use projects, use of an efficiency metric (e.g., per capita, per employee) may provide a better measure of impact than an absolute numeric threshold.

B5-25

Thus, the Technical Advisory explicitly recommends an assessment of VMT impacts in per capita over absolute numeric impacts for climate related transportation improvements, which is the ultimate goal in the Cupertino General Plan's push for VMT.[67] What's more, in its analysis, the DEIR cites the Cupertino General Plan EIR, which calculated its VMT projections in per capita, not annual or daily.

The City must correct its VMT analysis to include a separate analysis of the projected VMT from residential and retail or on the dominant use. The City must also modify its analysis to reflect a per capita comparison, in line with the Technical

[65] DEIR, p. 4.8-23.
[66] Technical Advisory on Evaluating Transportation Impacts in CEQA, p. 6 (Dec. 2018).
[67] Cupertino General Plan M-23

Advisory, and to be able to better compare to the City's VMT goals, not the existing land use. B5-25 continued

2. The DEIR ignores development from the Vallco Project

Mr. Smith indicates that a large project in Cupertino near the Project site ("Vallco Project") was not included in the DEIR's traffic impacts analysis. Although he notes that some of the Vallco Project's approvals have been repealed, the certifying FEIR for the Vallco Project has not been repealed and there remains the potential that some form of the prior project will be implemented. Specifically, one of the alternatives would "involve 23,417 net new trips daily, including 307 in the AM peak and 2,398 in the PM peak hour that were not present when the counts supporting the Westport DEIR analysis were conducted."[68] Without analyzing the additional impact from the Vallco Project, the Project's traffic analysis is fundamentally incomplete and cannot constitute substantial evidence supporting a conclusion of less than a significant impact. B5-26

3. The DEIR does not include the underlying CalEEMod inputs that would allow for review of the DEIR's VMT analysis

Although the DEIR indicates that VMT "were calculated using California Emissions Estimator Model (CalEEMod)," the DEIR does not contain many relevant CalEEMod inputs for review to determine the validity of the DEIR's VMT conclusions, including trip length or trip purpose.[69] As Mr. Smith notes, "it is important for the public to understand whether data from local traffic models has been employed or the outcome is just the product of default values. The must clarify whether local values have been substituted for default values and if not, why not."[70] Without this information, the DEIR cannot support their conclusion of no significant impact with substantial evidence. B5-27

III. CONCLUSION

The DEIR is inadequate as an environmental document because the City fails to properly disclose, analyze and mitigate the Project's significant impacts on air quality, public health, GHGs and transportation. The City cannot approve the B5-28

[68] Smith Comments, p. 2.
[69] Smith Comments, p. 2.
[70] Smith Comments, p. 2.

Project until it prepares and re-circulates a revised DEIR that resolves these issues and complies with CEQA's requirements. B5-28 continued

Thank you for your consideration of these comments.

Sincerely,

Aaron M. Messing

Attachments

AMM:acp

4766-003acp

EXHIBIT A

SWAPE Technical Consultation, Data Analysis and Litigation Support for the Environment

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December 20, 2019

Aaron Messing
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Subject: Comments on the Westport Mixed-Use Project (SCH No. 2019070377)

Dear Mr. Messing,

We have reviewed the November 2019 Draft Environmental Impact Report ("DEIR") for the Westport Mixed-Use Project ("Project") located in the City of Cupertino ("City"). The Project proposes to construct 18 buildings, including three rowhouse buildings, 13 townhouse buildings, and two mixed-use buildings, with 242 residential units and 20,000 square feet of retail space on the 8.1-acre Project site. B5-29

Our review concludes that the DEIR fails to adequately evaluate the Project's Air Quality, Health Risk, and Greenhouse Gas impacts. As a result, emissions and health risk impacts associated with construction and operation of the proposed Project are underestimated and inadequately addressed. An updated EIR should be prepared to adequately assess and mitigate the potential air quality and health risk impacts that the project may have on the surrounding environment. B5-30

Air Quality

Unsubstantiated Input Parameters Used to Estimate Project Emissions

The DEIR's air quality analysis relies on emissions calculated with CalEEMod.2016.3.2.[1] CalEEMod provides recommended default values based on site-specific information, such as land use type, meteorological data, total lot acreage, project type and typical equipment associated with project type. If more specific project information is known, the user can change the default values and input project-specific values, but the California Environmental Quality Act (CEQA) requires that such changes be B5-31

[1] CAPCOA (November 2017) CalEEMod User's Guide, http://www.aqmd.gov/docs/default-source/caleemod/01_user-39-s-guide2016-3-2_15november2017.pdf?sfvrsn=4.

justified by substantial evidence.[2] Once all of the values are inputted into the model, the Project's construction and operational emissions are calculated, and "output files" are generated. These output files disclose to the reader what parameters were utilized in calculating the Project's air pollutant emissions and make known which default values were changed as well as provide justification for the values selected.[3]

B5-31 continued

Review of the Project's air modeling, provided as Appendix C to the DEIR, demonstrates that the DEIR underestimates emissions associated with Project activities. As previously stated, the DEIR's air quality analysis relies on air pollutant emissions calculated using CalEEMod. When reviewing the Project's CalEEMod output files, provided in the Air Quality and Greenhouse Gas Impact Analysis, we found that several of the values inputted into the model were not consistent with information disclosed in the DEIR. As a result, the Project's construction and operational emissions are underestimated. An updated EIR should be prepared to include an updated air quality analysis that adequately evaluates the impacts that construction and operation of the Project will have on local and regional air quality.

Use of an Underestimated Land Use Size

Review of the Project's CalEEMod output files demonstrates that the size of the proposed parking garage was underestimated within the model, and as a result, emissions may be underestimated by the model.

According to the DEIR the Project proposes to construct a 148,040 square foot parking garage (see excerpt below) (p. 3-12, Table 3-1).

B5-32

TABLE 3-1 PROPOSED DEVELOPMENT BY LAND USE

			Square Footage			
Building Type	Buildings	Units	Residential	Garage	Retail	Common Open Space
Rowhouses	3	19	34,245	10,840		155 square feet per unit
Townhomes	13	69	139,850	39,450		
Residential-Retail Building 1	1	115	193,500	97,750	17,600	
Residential-Retail Building 2	1	39	38,800	n/a	2,400	
Total	**18**	**242**	**406,395**	**148,040**	**20,000**	**37,601**

Note: Square footages are rounded up and include residential and parking.
Source: C2K Architecture Inc. (project applicant), November 2018.

As you can see in the above excerpt, the Project proposes 148,040 square feet of garage. However, review of the CalEEMod output files demonstrates that the model only included 92,800 square feet of enclosed parking structure (see excerpt below) (Appendix C, pp. 39, 68, 93).

[2] CAPCOA (November 2017) CalEEMod User's Guide, http://www.aqmd.gov/docs/default-source/caleemod/01_user-39-s-guide2016-3-2_15november2017.pdf?sfvrsn=4, p. 1, 9.
[3] CAPCOA (November 2017) CalEEMod User's Guide, http://www.aqmd.gov/docs/default-source/caleemod/01_user-39-s-guide2016-3-2_15november2017.pdf?sfvrsn=4, fn 1, p. 11, 12 – 13. A key feature of the CalEEMod program is the "remarks" feature, where the user explains why a default setting was replaced by a "user defined" value. These remarks are included in the report.

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Enclosed Parking Structure	232.00	Space	2.09	92,800.00	0
Parking Lot	117.00	Space	1.05	46,800.00	0
Apartments Low Rise	88.00	Dwelling Unit	5.50	248,000.00	252
Apartments Mid Rise	115.00	Dwelling Unit	3.03	193,500.00	329
Retirement Community	39.00	Dwelling Unit	7.80	38,800.00	112
Strip Mall	20.00	1000sqft	0.46	20,000.00	0

B5-32 continued

As you can see in the excerpt above, the model underestimated the parking garage by 55,240 square feet. As previously stated, the land use type and size features are used throughout CalEEMod to determine default variable and emission factors that go into the model's calculations, such as determining the wall space to be painted (i.e., VOC emissions from architectural coatings) and volume that is heated or cooled (i.e., energy impacts).[4] By underestimating the size of the proposed parking garage, the model underestimates the Project's construction and operational emissions and should not be relied upon to determine Project significance.

Underestimated Sunday trip Rates

Review of the Project's CalEEMod output files demonstrates that the Sunday trip rates for the proposed Project are underestimated. As a result, the Project's mobile-source operational emissions are underestimated.

B5-33

According to the Transportation Assessment (TA), provided as Appendix H to the DEIR, the Project would generate approximately 1,934 total daily trips (see excerpt below) (Appendix H, p. 4, Table 2).

[4] "CalEEMod User's Guide." CAPCOA, November 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/01_user-39-s-guide2016-3-2_15november2017.pdf?sfvrsn=4, p. 18.

Table 2 - Project Trip Generation

Land Uses	ITE Land Use Code	Project Size		WEEKDAY	AM PEAK HOUR				PM PEAK HOUR			
				Daily Trips	Total Peak Hour	IN	/	OUT	Total Peak Hour	IN	/	OUT
Multifamily Housing (Low Rise)	220	-	Dwelling Unit(s)	7.32	0.46	23%	/	77%	0.56	63%	/	37%
Multifamily Housing (Mid-Rise)	221	-	Dwelling Unit(s)	5.44	0.36	26%	/	74%	0.44	61%	/	39%
Senior Adult Housing-Attached	252	-	Dwelling Unit(s)	3.70	0.20	35%	/	65%	0.26	55%	/	45%
Shopping Center	820	-	1,000 Sq Ft GLA	37.75	0.94	62%	/	38%	3.81	48%	/	52%
Existing Conditions												
Shopping Center (100% Occupancy)	820	71.254	1,000 Sq Ft GLA	2690	67	42	/	25	271	130	/	141
Shopping Center (85% Occupancy)[1]	820	60.566	1,000 Sq Ft GLA	2287	57	36	/	21	230	110	/	120
Pass-By Trips for Shopping Center (PM = 34%)[3,4]				(78)	0	0	/	0	(78)	(37)	/	(41)
TOAL EXISTING TRIP CREDIT				2209	57	36	/	21	152	73	/	79
Proposed Conditions												
Multifamily Housing (Low-Rise)	220	88	Dwelling Unit(s)	646	40	9	/	31	49	31	/	18
Multifamily Housing (Mid-Rise)	221	115	Dwelling Unit(s)	626	41	11	/	30	51	31	/	20
Senior Adult Housing-Attached	252	39	Dwelling Unit(s)	146	8	3	/	5	10	6	/	4
Shopping Center	820	20.000	1,000 Sq Ft GLA	756	19	12	/	7	76	36	/	40
Gross Trips Generated before Internal Capture				2,174	108	35	/	73	186	104	/	82
Internal Capture Trips												
Multifamily Housing (Low-Rise)	220	88	Dwelling Unit(s)	(44)	(1)	0	/	(1)	(6)	(4)	/	(2)
Multifamily Housing (Mid-Rise)	221	115	Dwelling Unit(s)	(42)	0	0	/	0	(7)	(5)	/	(2)
Senior Adult Housing-Attached	252	39	Dwelling Unit(s)	(10)	0	0	/	0	(1)	(1)	/	0
Shopping Center	820	20.000	1,000 Sq Ft GLA	(90)	(1)	(1)	/	0	(14)	(4)	/	(10)
Internal Capture Reduction				(186)	(2)	(1)	/	(1)	(28)	(14)	/	(14)
Trip Reductions due to Internal Capture[6]				9%	2%	3%	/	1%	15%	13%	/	17%
Additional Project Trip Reductions												
VTA Major Bus Stop (Daily, AM, PM = 2%)[2]				(28)	(2)	(1)	/	(1)	(2)	(1)	/	(1)
Pass-By Trips for Shopping Center (PM = 34%)[3,4]				(26)	0	0		0	(26)	(12)	/	(14)
Project Trips				1,934	104	33	/	71	130	77	/	53
Existing Trip Credit				(2209)	(57)	(36)	/	(21)	(152)	(73)	/	(79)
Total Project Trips				1934	104	33	/	71	130	77	/	53
Net New Project Trips				(275)	47	(3)	/	50	(22)	4	/	(26)

Notes:
1. Assume current retail is 85% occupied
2. Per VTA Transportation Impact Analysis guidelines, a 2% vehicle trip reduction for housing trips can be applied for a nearby major bus stop
3. Pass-By trip reduction applied to shopping center PM peak hour trips and based on average rates from Appendix E ITE Trip Generation Handbook 3rd Edition
4. Daily pass-by trips only represent PM peak hour pass-by trips because no daily pass-by trip is resented in the ITE Trip Generation Handbook.
5. Trips reductions due to internal capture was calculated using NCHRP 684 methodology
6. Trip generation land uses based on average rates from ITE Trip Generation 10th Edition

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As you can see in the above excerpt, the TA estimated approximately 1,934 daily trips for the Project. However, review of the Project's CalEEMod output files demonstrates that the model calculated a value of 1,692.71 total daily trips for Sunday (see excerpt below) (Appendix C, pp. 58, 87, 112).

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	644.16	630.08	534.16	1,446,817	887,991
Apartments Mid Rise	625.60	734.85	673.90	1,496,873	918,713
Enclosed Parking Structure	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Retirement Community	145.47	79.17	76.05	291,199	178,725
Strip Mall	755.00	840.80	408.60	1,105,392	678,439
Total	2,170.23	2,284.90	1,692.71	4,340,280	2,663,868

As you can see in the above excerpt, the number of total daily trips calculated by the model for Sunday was underestimated by approximately 242 trips and is thus inconsistent with the information provided in the TA. As a result, the model may underestimate the Project's operational emissions and should not be relied upon to determine Project significance.

Use of Incorrect Trip Purpose Percentages

Review of the Project's CalEEMod output files demonstrate that the model double counts the number of pass-by trips expected to occur throughout Project operation. As a result, the model underestimates the Project's operational emissions.

CalEEMod separates the operational trip purposes into three categories: primary, diverted, and pass-by trips. According to Appendix A of the CalEEMod User's Guide, the primary trips utilize the complete trip lengths associated with each trip type category. Diverted trips are assumed to take a slightly different path than a primary trip and are assumed to be 25% of the primary trip lengths. Pass-by trips are assumed to be 0.1 miles in length and are a result of no diversion from the primary route.[5] Review of the Project's CalEEMod output files demonstrates that the trip purpose percentage was divided amongst primary, diverted, and pass-by trip types for the Project's shopping center land use (see excerpt below) (Appendix C, pp. 58, 59, 87, 112).

B5-34

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Low Rise	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3
Apartments Mid Rise	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3
Enclosed Parking Structure	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Retirement Community	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3
Strip Mall	9.50	7.30	7.30	16.60	64.40	19.00	45	40	15

As you can see in the above excerpt, pass-by trips account for 15% of the strip mall land use's trips. However, as demonstrated in the DEIR's Transportation Assessment (TA), pass-by trips for this land use were already accounted for in the Project Trip Generation calculations (see excerpt below) (Appendix H, p. 4, Table 2).

[5] "CalEEMod User's Guide, Appendix A: Calculation Details for CalEEMod." *SCAQMD, available at:* http://www.aqmd.gov/docs/default-source/caleemod/caleemod-appendixa.pdf?sfvrsn=2, p. 20

Table 2 - Project Trip Generation

Land Uses	ITE Land Use Code	Project Size		WEEKDAY	AM PEAK HOUR				PM PEAK HOUR			
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Senior Adult Housing-Attached	252	-	Dwelling Unit(s)	3.70	0.20	35%	/	65%	0.26	55%	/	45%
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Pass-By Trips for Shopping Center (PM = 34%)[3,4]				(78)	0	0	/	0	(78)	(37)	/	(41)
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Gross Trips Generated before Internal Capture				2,174	108	35	/	73	186	104	/	82
Internal Capture Trips												
Multifamily Housing (Low-Rise)	220	88	Dwelling Unit(s)	(44)	(1)	0	/	(1)	(6)	(4)	/	(2)
Multifamily Housing (Mid-Rise)	221	115	Dwelling Unit(s)	(42)	0	0	/	0	(7)	(5)	/	(2)
Senior Adult Housing-Attached	252	39	Dwelling Unit(s)	(10)	0	0	/	0	(1)	(1)	/	0
Shopping Center	820	20.000	1,000 Sq Ft GLA	(90)	(1)	(1)	/	0	(14)	(4)	/	(10)
Internal Capture Reduction				(186)	(2)	(1)	/	(1)	(28)	(14)	/	(14)
Trip Reductions due to Internal Capture[6]				9%	2%	3%	/	1%	15%	13%	/	17%
Additional Project Trip Reductions												
VTA Major Bus Stop (Daily, AM, PM = 2%)[2]				(28)	(2)	(1)	/	(1)	(2)	(1)	/	(1)
Pass-By Trips for Shopping Center (PM = 34%)[3,4]				(26)	0	0		0	(26)	(12)	/	(14)
Project Trips				1,934	104	33	/	71	130	77	/	53
Existing Trip Credit				(2209)	(57)	(36)	/	(21)	(152)	(73)	/	(79)
Total Project Trips				1934	104	33	/	71	130	77	/	53
Net New Project Trips				(275)	47	(3)	/	50	(22)	4	/	(26)

Notes:
1. Assume current retail is 85% occupied
2. Per VTA Transportation Impact Analysis guidelines, a 2% vehicle trip reduction for housing trips can be applied for a nearby major bus stop
3. Pass-By trip reduction applied to shopping center PM peak hour trips and based on average rates from Appendix E ITE Trip Generation Handbook 3rd Edition
4. Daily pass-by trips only represent PM peak hour pass-by trips because no daily pass-by trip is resented in the ITE Trip Generation Handbook.
5. Trips reductions due to internal capture was calculated using NCHRP 684 methodology
6. Trip generation land uses based on average rates from ITE Trip Generation 10th Edition

B-34 continued

Therefore, the CalEEMod model should not have included pass-by trips in the trip purpose percentages for the shopping center land use. By spreading the trip purpose percentages amongst the three categories, the model is accounting for pass-by trips that have already been accounted for in the DEIR's TA. Because the proposed Project's CalEEMod model incorrectly allocates the shopping center land use's trips to the various categories of trip purposes, the emissions associated with these trips are underestimated and as a result, the Project's mobile-source operational emissions are underestimated. An updated CalEEMod model must be prepared in order to accurately estimate the Project's operational emissions.

Unsubstantiated Application of Construction Mitigation Measures

Review of the CalEEMod output files demonstrates that the model included several unsubstantiated construction mitigation measures. As a result, the model may underestimate the Project's construction-related emissions.

B5-35

The Project's CalEEMod output files demonstrate that the model included a 6 percent reduction from "Clean Paved Roads" and a 12 percent moisture content for "Water Unpaved Roads" (see excerpt below) (Appendix C, pp. 40, 69, 94).

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	6
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	12

As you can see in the above excerpt, the mode included 6 percent reduction in construction dust based on "Clean Paved Roads" and a 12 percent moisture content based on "Water Unpaved Roads." Furthermore, the model included the "Replace Ground Cover" mitigation measure (see excerpt below) (Appendix C, pp. 45, 74, 99).

B-35 continued

3.1 Mitigation Measures Construction

Replace Ground Cover
Water Exposed Area
Water Unpaved Roads
Reduce Vehicle Speed on Unpaved Roads
Clean Paved Roads

As you can see in the excerpt above, the "Replace Ground Cover" mitigation measure was included in the model. As previously stated, the CalEEMod User's Guide requires that any non-default values inputted must be justified.[6] According to the "User Entered Comments & NonDefault Data" table, the justification provided for these changes is: "Per BAAQMD basic control measures" (Appendix C, pp. 40, 69, 94). According to Mitigation Measure AQ-2 in the DEIR, the Project would prepare a Construction Management Plan (CMP) including the BAAQMD Basic Construction Mitigation Measures (p. 2-8, Table 2-2). However, none of these measures discusses the 6 percent or 12 percent reductions included in the model, and as a result, these reduction percentages cannot be verified. Furthermore, none of these measures address the replacement of ground cover, and as a result, the inclusion of this measure is unsubstantiated. Through the inclusion of unverified construction mitigation measures, the CalEEMod model may underestimate the Project's construction emissions and should not be relied upon to determine Project significance.

Unsubstantiated Application of Mobile Mitigation Measures

Review of the CalEEMod output files demonstrates that the model included several unsubstantiated mobile mitigation measures. As a result, the model may underestimate the Project's mobile-related operational emissions.

B5-36

[6] "CalEEMod User's Guide." CAPCOA, November 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/01_user-39-s-guide2016-3-2_15november2017.pdf?sfvrsn=4, p. 7, 13.

The Project's CalEEMod output files demonstrates that the model included several mobile-related operational mitigation measures, including "Increase Density" and "Increase Diversity" (see excerpt below) (Appendix C, pp. 58, 86, 111).

4.1 Mitigation Measures Mobile

Increase Density

Increase Diversity

Improve Destination Accessibility

Improve Pedestrian Network

B5-36

As you can see in the excerpt above, the "Increase Density" and "Increase Diversity" mitigation measures were included in the model. As previously stated, the CalEEMod User's Guide requires that any non-default values inputted must be justified.[7] However, review of the "User Entered Comments & Non-Default Data" table demonstrates that no justification is provided for these measures. Furthermore, the DEIR fails to substantiate these mitigation measures. As a result, the implementation of these measures cannot be verified, and the model should not be relied upon to determine Project significance.

Diesel Particulate Matter Health Risk Emissions Inadequately Evaluated

The DEIR conducts a construction health risk assessment (HRA) and determines that the construction-related health risk posed to the maximally exposed individual receptor (MEIR) would be approximately 2.23 in one million (Appendix C, p. 26). Specifically, regarding the Project's construction health risk, the DEIR states:

> "The highest calculated carcinogenic risk from project construction is 2.23 per million based on an annual PM_{10} concentration of 0.012 $\mu g/m^3$" (Appendix C, p. 26).

B5-37

The DEIR goes on to conclude:

> "As described above, worst-case construction risk levels based on screening-level modeling (AERSCREEN) and conservative assumptions would be below the BAAQMD's thresholds" (Appendix C, p. 26).

However, this analysis is incorrect. As discussed above, the construction HRA relies on a flawed CalEEMod model that incorrectly underestimates construction emissions. Thus, the health risk associated with the Project's construction may also be underestimated.

Regarding the Project's operational health risk, the DEIR states,

[7] "CalEEMod User's Guide." CAPCOA, November 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/01_user-39-s-guide2016-3-2_15november2017.pdf?sfvrsn=4, p. 7, 13.

"The highest calculated carcinogenic risk as a result of the project is 9.82 per million for 70-year exposure" (Appendix C, p. 27)

However, this analysis calculated the risk posed to future sensitive receptors *on the Project site* as a result of the Project's close proximity to SR-85 (see excerpt below) (Appendix C, p. 28, Table 8).

Table 8: Operational Health Risk				
Emissions Sources	**$PM_{2.5}$ ($\mu g/m^3$)**	**Cancer Risk (per million**	**Chronic Hazard**	**Acute Hazard**
Mobile Sources				
SR-85	0.07	9.82	0.008	0.003
Stevens Creek Boulevard	0.02	5.21	0.003	0.001
Stationary Sources				
Cupertino Union 76 (gas dispensing facility)	0	0.23	0.04	0
De Anza Community College (generator)	0.02	0.59	0.06	0
De Anza Community College (gas dispensing facility)	0	0.46	0.04	0
BAAQMD Threshold	*0.3*	*10*	*1.0*	*1.0*
Threshold Exceeded?	**No**	**No**	**No**	**No**
Cumulative Health Risk Values	0.11	16.31	0.151	0.004
BAAQMD Cumulative Threshold	*0.8*	*100*	*10*	*10*
Threshold Exceeded?	**No**	**No**	**No**	**No**

B5-37 continued

Thus, the DEIR failed to conduct an HRA quantifying the risk posed to *nearby, existing* sensitive receptors as a result of the Project's operation. By failing to prepare an operational HRA to nearby, existing sensitive receptors, the DEIR is inconsistent with recommendations set forth by the Office of Environmental Health and Hazard Assessment's (OEHHA) most recent *Risk Assessment Guidelines: Guidance Manual for Preparation of Health Risk Assessments*, which was cited in the DEIR (Appendix C, p. 26).[8] This guidance document describes the types of projects that warrant the preparation of a health risk assessment.[9] Once construction of the Project is complete, the Project will operate for a long period of time. During operation, the Project will generate vehicle trips, which will generate additional exhaust emissions, thus continuing to expose nearby sensitive receptors to emissions. The OEHHA document recommends that exposure from projects lasting more than 6 months should be evaluated for the duration of the project, and recommends that an exposure duration of 30 years be used to estimate individual cancer risk for the maximally exposed individual resident (MEIR).[10] Even though we were not provided with the expected lifetime of the Project, we can reasonably assume that the Project will operate for at least 30 years, if not more. Therefore, health risks from Project operation should have also been evaluated by the DEIR, as a 30-year exposure duration vastly exceeds the 6-month requirement set forth by OEHHA. These recommendations reflect the most recent health risk policy, and

[8] "Risk Assessment Guidelines Guidance Manual for Preparation of Health Risk Assessments." OEHHA, February 2015, *available at:* https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf
[9] "Risk Assessment Guidelines Guidance Manual for Preparation of Health Risk Assessments." OEHHA, February 2015, *available at:* https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf
[10] "Risk Assessment Guidelines Guidance Manual for Preparation of Health Risk Assessments." OEHHA, February 2015, *available at:* https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf p. 8-6, 8-15.

as such, an updated assessment of health risks posed to nearby sensitive receptors from Project operation should be included in a revised CEQA evaluation for the Project.

Finally, the DEIR fails to sum the cancer risk calculated for each age group. According to OEHHA guidance, "the excess cancer risk is calculated separately for each age grouping and then summed to yield cancer risk at the receptor location."[11] However, review of the construction HRA conducted in the DEIR demonstrates that, while each age bin was calculated, the DEIR failed to sum them to evaluate the total cancer risk over the course of the Project's lifetime, including both construction and operation. This is incorrect and thus, an updated analysis should quantify the Project's construction and operational health risks and then sum them to compare to the BAAQMD threshold of 10 in one million.[12]

B5-37 continued

Screening-Level Assessment Indicates Significant Impact

In an effort to demonstrate the potential health risk posed by Project construction and operation to nearby sensitive receptors, we prepared a simple screening-level HRA. The results of our assessment, as described below, provide substantial evidence that the Project's construction and operational DPM emissions may result in a potentially significant health risk impact that was not previously identified.

In order to conduct our screening level risk assessment, we relied upon AERSCREEN, which is a screening level air quality dispersion model.[13] The model replaced SCREEN3, and AERSCREEN is included in the OEHHA[14] and the California Air Pollution Control Officers Associated (CAPCOA)[15] guidance as the appropriate air dispersion model for Level 2 health risk screening assessments ("HRSAs"). A Level 2 HRSA utilizes a limited amount of site-specific information to generate maximum reasonable downwind concentrations of air contaminants to which nearby sensitive receptors may be exposed. If an unacceptable air quality hazard is determined to be possible using AERSCREEN, a more refined modeling approach is required prior to approval of the Project.

B5-38

We prepared a preliminary HRA of the Project's construction and operational health-related impact to sensitive receptors using the annual PM_{10} exhaust estimates from the SWAPE annual CalEEMod output files. According to the Air Quality Assessment, the closest residential receptor is located approximately 90 feet, or 27 meters, north of the Project site (p. 4.1-10, Table 4.1-5). Consistent with recommendations set forth by the 2015 OEHHA guidance cited in the DEIR, we assumed that residential exposure begins during the third trimester stage of life. The SWAPE construction CalEEMod output files indicate that construction activities will generate approximately 464 pounds of DPM over the approximately 730-day construction period. The AERSCREEN model relies on a continuous average

[11] "Guidance Manual for preparation of Health Risk Assessments." OEHHA, February 2015, *available at:* https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf p. 8-4
[12] "California Environmental Quality Act Air Quality Guidelines." BAAQMD, May 2017, *available at:* http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en
[13] "AERSCREEN Released as the EPA Recommended Screening Model," USEPA, April 11, 2011, *available at:* http://www.epa.gov/ttn/scram/guidance/clarification/20110411_AERSCREEN_Release_Memo.pdf
[14] "Risk Assessment Guidelines Guidance Manual for Preparation of Health Risk Assessments." OEHHA, February 2015, *available at:* https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf
[15] "Health Risk Assessments for Proposed Land Use Projects," CAPCOA, July 2009, *available at:* http://www.capcoa.org/wp-content/uploads/2012/03/CAPCOA_HRA_LU_Guidelines_8-6-09.pdf

emission rate to simulate maximum downward concentrations from point, area, and volume emission sources. To account for the variability in equipment usage and truck trips over Project construction, we calculated an average DPM emission rate by the following equation:

$$Emission\ Rate\ \left(\frac{grams}{second}\right) = \frac{463.8\ lbs}{730\ days} \times \frac{453.6\ grams}{lbs} \times \frac{1\ day}{24\ hours} \times \frac{1\ hour}{3{,}600\ seconds} = \mathbf{0.003336\ g/s}$$

Using this equation, we estimated a construction emission rate of 0.003336 grams per second (g/s). Subtracting the 730-day construction duration from the total residential duration of 30 years, we assumed that after Project construction, the MEIR would be exposed to the Project's operational DPM for an additional 28 years. SWAPE's updated operational CalEEMod emissions indicate that operational activities will generate approximately 71 pounds of DPM per year throughout operation. Applying the same equation used to estimate the construction DPM rate, we estimated the following emission rate for Project operation:

B5-38 continued

$$Emission\ Rate\ \left(\frac{grams}{second}\right) = \frac{71.4\ lbs}{365\ days} \times \frac{453.6\ grams}{lbs} \times \frac{1\ day}{24\ hours} \times \frac{1\ hour}{3{,}600\ seconds} = \mathbf{0.001027\ g/s}$$

Using this equation, we estimated an operational emission rate of 0.00012 g/s. Construction and operational activity was simulated as an 8.1 -acre rectangular area source in AERSCREEN with dimensions of 264 meters by 124 meters. A release height of three meters was selected to represent the height of exhaust stacks on operational equipment and other heavy-duty vehicles, and an initial vertical dimension of one and a half meters was used to simulate instantaneous plume dispersion upon release. An urban meteorological setting was selected with model-default inputs for wind speed and direction distribution.

The AERSCREEN model generates maximum reasonable estimates of single-hour DPM concentrations from the Project site. EPA guidance suggests that in screening procedures, the annualized average concentration of an air pollutant be estimated by multiplying the single-hour concentration by 10%.[16] As previously stated, there are residential receptors located approximately 25 meters from the Project boundary. However, the maximally exposed receptor, according to AERSCREEN, is located 125 meters from the Project site. The single-hour concentration estimated by AERSCREEN for Project construction is approximately 3.953 µg/m^3 DPM at approximately 125 meters downwind. Multiplying this single-hour concentration by 10%, we get an annualized average concentration of 0.3953 µg/m^3 for Project construction at the maximally exposed sensitive receptor. For Project operation, the single-hour concentration estimated by AERSCREEN is 1.217 µg/m^3 DPM at approximately 125 meters downwind. Multiplying this single-hour concentration by 10%, we get an annualized average concentration of 0.1217 µg/m^3 for Project operation at the maximally exposed sensitive receptor.

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[16] "Screening Procedures for Estimating the Air Quality Impact of Stationary Sources Revised." EPA, 1992, *available at*: http://www.epa.gov/ttn/scram/guidance/guide/EPA-454R-92-019_OCR.pdf; *see also* "Risk Assessment Guidelines Guidance Manual for Preparation of Health Risk Assessments." OEHHA, February 2015, *available at:* https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf p. 4-36.

Consistent with the most recent OEHHA guidance, as cited by the DEIR, we used Age Sensitivity Factors (ASFs) to account for the heightened susceptibility of young children to the carcinogenic toxicity of air pollution (Appendix C, p. 26).[17] According to the most updated guidance, quantified cancer risk should be multiplied by a factor of ten during the third trimester of pregnancy and during the first two years of life (infant) and should be multiplied by a factor of three during the child stage of life (2 to 16 years). Furthermore, in accordance with the OEHHA guidance, we used the 95th percentile breathing rates for infants.[18] We used a cancer potency factor of 1.1 (mg/kg-day)$^{-1}$ and an averaging time of 25,550 days. OEHHA recommends that a 30-year exposure duration be used as the basis for estimating cancer risk at the MEIR.[19] Also consistent with OEHHA guidance, exposure to the MEIR was assumed to begin in the third trimester to provide the most conservative estimate of air quality hazards. Finally, according to SCAQMD guidance, we used a Fraction of Time At Home (FAH) Value of 0.85 for the 3rd trimester and infant receptors, 0.72 for child receptors, and 0.73 for adult receptors.[20] The results of our calculations are shown below.

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The Maximally Exposed Individual at a Residential Receptor

Activity	Duration (years)	Concentration (ug/m3)	Breathing Rate (L/kg-day)	ASF	Cancer Risk
Construction	0.25	0.3953	361	10	4.6E-06
3rd Trimester Duration	***0.25***			***3rd Trimester Exposure***	***4.6E-06***
Construction	1.75	0.3953	1090	10	9.7E-05
Operation	0.25	0.1217	1090	10	4.2E-06
Infant Exposure Duration	***2.00***			***Infant Exposure***	***1.0E-04***
Operation	14.00	0.1217	572	3	3.2E-05
Child Exposure Duration	***14.00***			***Child Exposure***	***3.2E-05***
Operation	14.00	0.1217	261	1	4.9E-06
Adult Exposure Duration	***14.00***			***Adult Exposure***	***4.9E-06***
Lifetime Exposure Duration	**30.00**			**Lifetime Exposure**	**1.4E-04**

[17] "Risk Assessment Guidelines Guidance Manual for Preparation of Health Risk Assessments." OEHHA, February 2015, *available at:* https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf.
[18] "Air Toxics NSR Program Health Risk Assessment Guidelines." BAAQMD, December 2016, *available at:* http://www.baaqmd.gov/~/media/files/planning-and-research/permit-modeling/hra_guidelines_12_7_2016_clean-pdf.pdf?la=en, p. 3.
"Risk Assessment Guidelines Guidance Manual for Preparation of Health Risk Assessments." OEHHA, February 2015, *available at:* https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf
[19]"Risk Assessment Guidelines Guidance Manual for preparation of Health Risk Assessments." OEHHA, February 2015, *available at:* https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf, p. 8-6.
[20] "Air Toxics NSR Program Health Risk Assessment Guidelines." BAAQMD, December 2016, *available at:* http://www.baaqmd.gov/~/media/files/planning-and-research/permit-modeling/hra_guidelines_12_7_2016_clean-pdf.pdf?la=en, p. 4-5.

As indicated in the table above, the excess cancer risk posed to adults, children, infants, and during the third trimester of pregnancy at the closest receptor, located approximately 25 meters away, over the course of Project construction and operation, are approximately 4.9, 32, 100, and 4.6 in one million, respectively. The excess cancer risk over the course of a residential lifetime (30 years) at the closest receptor is approximately 140 in one million, thus resulting in a potentially significant health risk impact not previously addressed or identified by the DEIR.

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An agency must include an analysis of health risks that connects the Project's air emissions with the health risk posed by those emissions. Our analysis represents a screening-level HRA, which is known to be conservative and tends to err on the side of health protection. [21] The purpose of the screening-level construction HRA shown above is to demonstrate the link between the proposed Project's emissions and the potential health risk. Our screening-level HRA demonstrates that construction of the Project could result in a potentially significant health risk impact, when correct exposure assumptions and up-to-date, applicable guidance are used. Therefore, since our screening-level construction HRA indicates a potentially significant impact, the City should prepare an EIR with a revised HRA which makes a reasonable effort to connect the Project's air quality emissions and the potential health risks posed to nearby receptors. Thus, the City should prepare an updated, quantified air pollution model as well as an updated, quantified refined health risk assessment which adequately and accurately evaluates health risk impacts associated with both Project construction and operation.

Greenhouse Gas

Failure to Adequately Evaluate Greenhouse Gas Impacts

The DEIR concludes that the Project's GHG impact would be less than significant based on the BAAQMD bright-line threshold of 1,100 MT CO_2e/year, stating:

> "The proposed project would not result in an increase in GHG emissions that exceed the BAAQMD's bright-line screening threshold of 1,100 MTCO_2e per year" (4.5-17).

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Furthermore, the DEIR relies upon the Project's consistency with CARB's 2017 Scoping Plan, MTC/ABAG's Plan Bay Area 2040, and the Cupertino CAP (p. 4.5-17, 4.5-18, 4.5-19). However, this analysis and subsequent less than significant impact conclusion is incorrect for several reasons:

(1) CARB's 2017 Scoping Plan and MTC/ABAG's Plan Bay Area 2040 cannot be relied upon to determine Project significance;
(2) The DEIR fails to demonstrate consistency with the Cupertino CAP;
(3) The DEIR relies upon an outdated and inapplicable threshold; and
(4) The DEIR's quantitative GHG analysis relies upon an incorrect and unsubstantiated air model;

[21] "Risk Assessment Guidelines Guidance Manual for Preparation of Health Risk Assessments." OEHHA, February 2015, *available at:* https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf, p. 1-5

(1) CARB's 2017 Scoping Plan and MTC/ABAG's Plan Bay Area 2040 are not Climate Action Plans (CAPs)

The DEIR determines that the Project demonstrates consistency with CARB's 2017 Scoping Plan and MTC/ABAG's Plan Bay Area 2040. However, this does not qualify as Climate Action Plan (CAP). CEQA Guidelines § 15064.4(b)(3) allows a lead agency to consider "[t]he extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions (*see, e.g., section 15183.5(b)*)" (Emph. added). When adopting this language, the California Natural Resources Agency ("Resources Agency") explained in its 2018 Final Statement of Reasons for Regulatory Action ("2018 Statement of Reason")[22] that it explicitly added referenced to section 15183.5(b) because it was "needed to clarify that lead agencies may rely on plans *prepared pursuant to section 15183.5* in evaluating a project's [GHG] emissions … [and] consistent with the Agency's Final Statement of Reasons for the addition of section 15064.4, which states that 'proposed section 15064.4 is intended to be *read in conjunction with . . . proposed section 15183.5*. Those sections each indicate that local and regional plans may be developed to reduce GHG emissions.'" 2018 Final Statement of Reason, p. 19 (emph. added); *see also* 2009 Final Statement of Reasons for Regulatory Action, p. 27.[23] When read in conjunction, CEQA Guidelines §§ 15064.4(b)(3) and 15183.5(b)(1) make clear qualified GHG reduction plans (also commonly referred to as a Climate Action Plan ["CAP"]) should include the following features:

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(1) **Inventory**: Quantify GHG emissions, both existing and projected over a specified time period, resulting from activities (e.g., projects) within a defined geographic area (e.g., lead agency jurisdiction);
(2) **Establish GHG Reduction Goal**: Establish a level, based on substantial evidence, below which the contribution to GHG emissions from activities covered by the plan would not be cumulatively considerable;
(3) **Analyze Project Types**: Identify and analyze the GHG emissions resulting from specific actions or categories of actions anticipated within the geographic area;
(4) **Craft Performance Based Mitigation Measures**: Specify measures or a group of measures, including performance standards, that substantial evidence demonstrates, if implemented on a project-by-project basis, would collectively achieve the specified emissions level;
(5) **Monitoring**: Establish a mechanism to monitor the CAP progress toward achieving said level and to require amendment if the plan is not achieving specified levels;

The above-listed CAP features provide the necessary *substantial evidence demonstrating a project's incremental contribution is not cumulative considerable*, as required under CEQA Guidelines §

[22] Resources Agency (Nov. 2018) Final Statement of Reasons For Regulatory Action: Amendments To The State CEQA Guidelines, http://resources.ca.gov/ceqa/docs/2018_CEQA_Final_Statement_of%20Reasons_111218.pdf.
[23] Resources Agency (Dec. 2009) Final Statement of Reasons for Regulatory Action, p. 27 ("Those sections each indicate that local and regional plans may be developed to reduce GHG emissions. If such plans reduce community-wide emissions to a level that is less than significant, a later project that complies with the requirements in such a plan may be found to have a less than significant impact."), http://resources.ca.gov/ceqa/docs/Final_Statement_of_Reasons.pdf.

15064.4(b)(3).[24] Here, however, the DEIR fails to demonstrate that the CARB's 2017 Scoping Plan and MTC/ABAG's Plan Bay Area 2040 include the above-listed requirements to be considered a qualified CAPs for the City. As such, the DEIR leaves an analytical gap showing that compliance with said plans can be used for a project-level significance determination. Thus, the DEIR's GHG analysis regarding the CARB's 2017 Scoping Plan and MTC/ABAG's Plan Bay Area 2040 should not be relied upon to determine Project significance.

B5-41 continued

(2) The DEIR Fails to Demonstrate Consistency with the Cupertino CAP

As discussed above, the DEIR relies upon the Project's consistency with the Cupertino CAP to determine that the Project's GHG impact would be less than significant. Specifically, the DEIR states,

> "As an infill redevelopment priority housing development on a designated PDA and TPA the proposed project would be consistent with the ***overall intent*** of the CAP to support reductions in GHG emissions and the proposed project would not conflict any goals or measures to reduce GHG emissions in the CAP and impacts would be *less than significant*" (emphasis added) (p. 4.5-19).

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However, while the DEIR describes how the Project would be consistent with the "overall intent" of the Cupertino CAP by not conflicting with several community-wide measures, the DEIR fails to address consistency with ***all*** community-wide measures listed in the CAP (p. 4.5-19). In addition, the CAP fails to provide specific, project-level measures. Specifically, the DEIR lists several measures from the Cupertino CAP to demonstrate compliance, however, review of the Cupertino CAP reveals that these measures are "community-wide reduction measures."[25] Thus, the DEIR incorrectly relies on "community-wide" measures, rather than specific project-level measures, to determine compliance with the CAP.

Notwithstanding the DEIR's reliance on inapplicable "community-wide" measures, the DEIR fails to demonstrate consistency with all of the CAP's "community-wide" measures (see table below).

[24] *See Mission Bay Alliance v. Office of Community Investment & Infrastructure* (2016) 6 Cal.App.5th 160, 200-201 (Upheld qualitative GHG analysis when based on city's adopted its greenhouse gas strategy that contained "multiple elements" of CEQA Guidelines § 15183.5(b), "quantification of [city's] baseline levels of [GHG] emissions and planned reductions[,]" approved by the regional air district, and "[a]t the heart" of the city's greenhouse gas strategy was "specific regulations" and measures to be implemented on a "project-by-project basis … designed to achieve the specified citywide emission level.").

[25] " Climate Action Plan." City of Cupertino, January 2015, *available at:* https://www.cupertino.org/home/showdocument?id=9605, p. 68.

Measure	DEIR Consistency
Cupertino CAP	
Community-Wide Measures	
Measure C-E-1 Energy Use Data and Analysis *Increase resident and building owner/tenant/operator knowledge about how, when, and where building energy is used.* *2035 GHG Reduction Potential: 850 MT CO_2e/yr*	Here, the DEIR fails to mention how the Project would increase resident and building owner/tenant/operator knowledge about how, when, and where building energy is used.
Measure C-E-2 Retrofit Financing *Promote existing and support development of new private financing options for home and commercial building retrofits and renewable energy development.* *2035 GHG Reduction Potential: 10,525 MT CO_2e/yr*	Here, the DEIR fails to mention how the Project would promote existing and support development of new private financing options for home and commercial building retrofits and renewable energy development.
Measure C-E-3 Home & Commercial Building Retrofit Outreach *Develop aggressive outreach program to drive voluntary participation in energy- and water-efficiency retrofits.* *Supporting Measure*	Here, the DEIR fails to mention how the Project would Develop aggressive outreach program to drive voluntary participation in energy- and water-efficiency retrofits.
Measure C-E-4 Energy Assurance & Resiliency Plan *Develop a long-term community-wide energy conservation plan that considers future opportunities to influence building energy efficiency through additional or enhanced building regulations.*	Here, the DEIR fails to mention how the Project would develop a long-term community-wide energy conservation plan that considers future opportunities to influence building energy efficiency through additional or enhanced building regulations.

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Supporting Measure	
Measure C-E-5 Community-Wide Solar Photovoltaic Development *Encourage voluntary community-wide solar photovoltaic development through regulatory barrier reduction and public outreach campaigns.* *2035 GHG Reduction Potential: 4,400 MT CO_2e/yr*	Here, the DEIR states that "[t]he proposed buildings would comply with Title 24 solar requirements and would meet solar ready standards. While the requirements under Title 24 do not require installation of solar-energy systems, buildings are required to be built to accept the installation of such a system" (p. 4.5-19). However, the DEIR fails to demonstrate how the Project would encourage voluntary community-wide solar photovoltaic development through regulatory barrier reduction and public outreach campaigns. Furthermore, the DEIR fails to quantify reductions or indicate that the Project will be able to achieve the 2035 GHG Reduction Potential as indicated in the CAP.
Measure C-E-6 Community-Wide Solar Hot Water Development *Encourage communitywide solar hot water development through regulatory barrier reduction and public outreach campaigns.* *2035 GHG Reduction Potential: 925 MT CO_2e/yr*	Here, the DEIR fails to mention how the Project would encourage communitywide solar hot water development through regulatory barrier reduction and public outreach campaigns. In addition, the DEIR fails to quantify reductions or indicate that the Project will be able to achieve the 2035 GHG Reduction Potential as indicated in the CAP.
Measure C-E-7 Community Choice Energy Option *Partner with other Santa Clara County jurisdictions to evaluate the development of a regional CCE option, including identification of the geographic scope, potential costs to participating jurisdictions and residents, and potential liabilities.* *2035 GHG Reduction Potential: 56,875 MT CO_2e/yr*	Here, the DEIR fails to mention how the Project would partner with other Santa Clara County jurisdictions to evaluate the development of a regional CCE option, including identification of the geographic scope, potential costs to participating jurisdictions and residents, and potential liabilities. In addition, the DEIR fails to quantify reductions or indicate that the Project will be able to achieve the 2035 GHG Reduction Potential as indicated in the CAP.

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continued

Measure C-T-2 Bikeshare Program *Explore feasibility of developing local bikeshare program.* *Supporting Measure*	Here, the DEIR fails to mention how the Project would explore feasibility of developing local bikeshare program.
Measure C-T-3 Transportation Demand Management *Provide informational resources to local businesses subject to SB 1339 transportation demand management program requirements and encourage additional voluntary participation in the program.* *2035 GHG Reduction Potential: 2,375 MT CO_2e/yr*	Here, the DEIR fails to mention how the Project would provide informational resources to local businesses subject to SB 1339 transportation demand management program requirements and encourage additional voluntary participation in the program. In addition, the DEIR fails to quantify reductions or indicate that the Project will be able to achieve the 2035 GHG Reduction Potential as indicated in the CAP.
Measure C-T-4 Transit Route Expansion *Explore options to develop local community shuttle or community-wide car sharing to fill gaps in existing transit network.* *Supporting Measure*	Here, the DEIR fails to mention how the Project would explore options to develop local community shuttle or community-wide car sharing to fill gaps in existing transit network.
Measure C-T-5 Transit Priority *Improve transit service reliability and speed.* *Supporting Measure*	Here, the DEIR fails to mention how the Project would improve transit service reliability and speed.
Measure C-T-6 Transit-Oriented Development *Continue to encourage development that takes advantage of its location near local transit options (e.g., major bus stops) through higher densities and intensities to increase ridership potential.* *Supporting Measure*	Here, the DEIR states, "As an infill project on a currently developed site within a designated PDA and TPA (CAP Measure C-T-6, Transit-Oriented Development), the proposed project would support efforts to reduce GHG emissions from VMT (CAP Goal 1, Reduce Energy Use)" (4.5-19). However, this fails to specifically demonstrate how the Project would encourage development that takes advantage of its location near local transit options (e.g., major bus stops) through higher densities and intensities to increase ridership potential. As a result, we cannot

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	verify whether the Project would be consistent with Measure C-T-6.
Measure C-T-7 Community-Wide Alternative Fuel Vehicles *Encourage community-wide use of alternative fuel vehicles through expansion of alternative vehicle refueling infrastructure.* *2035 GHG Reduction Potential: 10,225 MT CO_2e/yr*	Here, the DEIR states that the Project would "install Electric Vehicle Supply Equipment for the charging of electric vehicles" (4.5-19). However, the DEIR fails to quantify reductions or indicate that the Project will be able to achieve the 2035 GHG Reduction Potential as indicated in the CAP.
Measure C-W-1 Recycled Water Irrigation Program *Explore opportunities to use recycled water for irrigation purposes to reduce potable water demands.* *Supporting Measure*	Although the DEIR discusses best management practices for water conservation to achieve the City's water conservation goals, the DEIR fails to address recycled water irrigation (p. 4.5-19).
Measure C-SW-1 Zero Waste Goal *Maximize solid waste diversion community-wide through preparation of a zero-waste strategic plan.* *Supporting Measure*	Here, the DEIR fails to mention how the Project would maximize solid waste diversion community-wide through preparation of a zero-waste strategic plan.
Measure C-SW-2 Food Scrap and Compostable Paper Diversion *Continue to promote the collection of food scraps and compostable paper through the City's organics collection program.* *2035 GHG Reduction Potential: 750 MT CO_2e/yr*	Here, the DEIR fails to mention how the Project would continue to promote the collection of food scraps and compostable paper through the City's organics collection program. In addition, the DEIR fails to quantify reductions or indicate that the Project will be able to achieve the 2035 GHG Reduction Potential as indicated in the CAP.

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Measure C-SW-3 Construction & Demolition Waste Diversion Program *Continue to enforce diversion requirements in City's Construction & Demolition Debris Diversion and Green Building Ordinances.* *2035 GHG Reduction Potential: 550 MT CO_2e/yr*	Here, while the DEIR discusses construction and demolition waste diversion, the DEIR fails to quantify reductions or indicate that the Project will be able to achieve the 2035 GHG Reduction Potential as indicated in the CAP.
Measure C-G-1 Urban Forest Program *Support development and maintenance of a healthy, vibrant urban forest through outreach, incentives, and strategic leadership.* *2035 GHG Reduction Potential: 725 MT CO_2e/yr*	Here, the DEIR fails to mention how the Project would support development and maintenance of a healthy, vibrant urban forest through outreach, incentives, and strategic leadership. In addition, the DEIR fails to quantify reductions or indicate that the Project will be able to achieve the 2035 GHG Reduction Potential as indicated in the CAP.

B5-42 continued

As you can see in the table above, the DEIR fails to provide sufficient information and analysis, or reconcile Project inconsistencies with various measures under the Cupertino CAP. As a result, we cannot verify that the Project would be fully consistent with the Cupertino CAP, and Project's GHG analysis should be relied upon to determine Project significance.

(3) The DEIR Relies Upon an Outdated and Inapplicable Threshold

In an effort to evaluate Project emissions, the DEIR includes a quantification of the Project's estimated emissions and compares them to the BAAQMD's bright-line screening threshold of 1,100 metric tons of CO_2 equivalents per year (MT CO_2e/year). Based on this evaluation, the DEIR concludes that Project's net GHG emissions would be approximately 359 MT CO_2e, which would not exceed the BAAQMD's bright-line screening threshold. The DEIR thus concludes that "project related GHG emissions would be *less than significant*" (p. 4.5-17) (see excerpt below) (p. 4.5-17, Table 4.5-6).

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TABLE 4.5-6 PROPOSED PROJECT GREENHOUSE GAS EMISSIONS

Category	MTCO$_2$e[a]		
	Existing	Project	Net Change
Area[b]	<1	8	8
Energy	232	648	416
On-Road Mobile Sources[c]	1,214	1,102	-112
Waste[d]	19	33	14
Water/Wastewater	19	51	32
Total[e]	1,484	1,843	359
BAAQMD Bright-Line Threshold	NA	NA	1,100 MTCO$_2$e/year
Exceeds BAAQMD Thresholds?	NA	NA	No

As the above excerpt demonstrates, the DEIR compared the Project's quantified GHG emissions to the BAAQMD's bright-line screening threshold of 1,100 MT CO_2e/year. However, the DEIR's use of this threshold is incorrect, as the threshold was developed for the air district's planned reductions for 2020, and thus, only applies to projects that will be operational by 2020.[26] According to the DEIR, "[c]onstruction of the proposed project would occur in two phases over a 16-month period and is anticipated to be completed by the year 2023" (p. 3-27). As such, the BAAQMD's bright-line screening threshold for 2020 would not apply to the proposed Project, which is not anticipated to become operational until 2023.

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(4) The DEIR's GHG Analysis Relies Upon an Incorrect and Unsubstantiated Air Model

In addition to the DEIR's inability to rely on various plans and policies to demonstrate less than significant GHG impacts, the DEIR utilizes an incorrect CalEEMod to analysis the Project's GHG impact. As discussed above, the DEIR's CalEEMod model relies upon incorrect input parameters to estimate the Project's criteria air pollutant and GHG emissions, resulting in an underestimation of Project emissions. Therefore, we find the DEIR's quantitative GHG analysis to be incorrect and unreliable. An updated EIR should be prepared, using correct, project-specific modeling to adequately assess and mitigate the Project's GHG impact.

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SWAPE has received limited discovery regarding this project. Additional information may become available in the future; thus, we retain the right to revise or amend this report when additional information becomes available. Our professional services have been performed using that degree of care and skill ordinarily exercised, under similar circumstances, by reputable environmental consultants practicing in this or similar localities at the time of service. No other warranty, expressed or implied, is made as to the scope of work, work methodologies and protocols, site conditions, analytical testing results, and findings presented. This report reflects efforts which were limited to information that was reasonably accessible at the time of the work, and may contain informational gaps, inconsistencies, or otherwise be incomplete due to the unavailability or uncertainty of information obtained or provided by third parties.

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Sincerely,

Matt Hagemann, P.G., C.Hg.

Paul E. Rosenfeld, Ph.D.

[26] "California Environmental Quality Act Air Quality Guidelines." BAAQMD, May 2017, *available at:* http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en, p. D-20.

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Geologic and Hydrogeologic Characterization
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Industrial Stormwater Compliance
CEQA Review

Education:

M.S. Degree, Geology, California State University Los Angeles, Los Angeles, CA, 1984.
B.A. Degree, Geology, Humboldt State University, Arcata, CA, 1982.

Professional Certifications:

California Professional Geologist
California Certified Hydrogeologist
Qualified SWPPP Developer and Practitioner

Professional Experience:

Matt has 30 years of experience in environmental policy, contaminant assessment and remediation, stormwater compliance, and CEQA review. He spent nine years with the U.S. EPA in the RCRA and Superfund programs and served as EPA's Senior Science Policy Advisor in the Western Regional Office where he identified emerging threats to groundwater from perchlorate and MTBE. While with EPA, Matt also served as a Senior Hydrogeologist in the oversight of the assessment of seven major military facilities undergoing base closure. He led numerous enforcement actions under provisions of the Resource Conservation and Recovery Act (RCRA) and directed efforts to improve hydrogeologic characterization and water quality monitoring. For the past 15 years, as a founding partner with SWAPE, Matt has developed extensive client relationships and has managed complex projects that include consultation as an expert witness and a regulatory specialist, and a manager of projects ranging from industrial stormwater compliance to CEQA review of impacts from hazardous waste, air quality and greenhouse gas emissions.

Positions Matt has held include:

- Founding Partner, Soil/Water/Air Protection Enterprise (SWAPE) (2003 – present);
- Geology Instructor, Golden West College, 2010 – 2104, 2017;
- Senior Environmental Analyst, Komex H2O Science, Inc. (2000 -- 2003);

- Executive Director, Orange Coast Watch (2001 – 2004);
- Senior Science Policy Advisor and Hydrogeologist, U.S. Environmental Protection Agency (1989–1998);
- Hydrogeologist, National Park Service, Water Resources Division (1998 – 2000);
- Adjunct Faculty Member, San Francisco State University, Department of Geosciences (1993 – 1998);
- Instructor, College of Marin, Department of Science (1990 – 1995);
- Geologist, U.S. Forest Service (1986 – 1998); and
- Geologist, Dames & Moore (1984 – 1986).

Senior Regulatory and Litigation Support Analyst:

With SWAPE, Matt's responsibilities have included:

- Lead analyst and testifying expert in the review of over 300 environmental impact reports and negative declarations since 2003 under CEQA that identify significant issues with regard to hazardous waste, water resources, water quality, air quality, greenhouse gas emissions, and geologic hazards. Make recommendations for additional mitigation measures to lead agencies at the local and county level to include additional characterization of health risks and implementation of protective measures to reduce worker exposure to hazards from toxins and Valley Fever.
- Stormwater analysis, sampling and best management practice evaluation at more than 100 industrial facilities.
- Expert witness on numerous cases including, for example, MTBE litigation, air toxins at hazards at a school, CERCLA compliance in assessment and remediation, and industrial stormwater contamination.
- Technical assistance and litigation support for vapor intrusion concerns.
- Lead analyst and testifying expert in the review of environmental issues in license applications for large solar power plants before the California Energy Commission.
- Manager of a project to evaluate numerous formerly used military sites in the western U.S.
- Manager of a comprehensive evaluation of potential sources of perchlorate contamination in Southern California drinking water wells.
- Manager and designated expert for litigation support under provisions of Proposition 65 in the review of releases of gasoline to sources drinking water at major refineries and hundreds of gas stations throughout California.

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continued

With Komex H2O Science Inc., Matt's duties included the following:

- Senior author of a report on the extent of perchlorate contamination that was used in testimony by the former U.S. EPA Administrator and General Counsel.
- Senior researcher in the development of a comprehensive, electronically interactive chronology of MTBE use, research, and regulation.
- Senior researcher in the development of a comprehensive, electronically interactive chronology of perchlorate use, research, and regulation.
- Senior researcher in a study that estimates nationwide costs for MTBE remediation and drinking water treatment, results of which were published in newspapers nationwide and in testimony against provisions of an energy bill that would limit liability for oil companies.
- Research to support litigation to restore drinking water supplies that have been contaminated by MTBE in California and New York.

- Expert witness testimony in a case of oil production-related contamination in Mississippi.
- Lead author for a multi-volume remedial investigation report for an operating school in Los Angeles that met strict regulatory requirements and rigorous deadlines.
- Development of strategic approaches for cleanup of contaminated sites in consultation with clients and regulators.

Executive Director:

As Executive Director with Orange Coast Watch, Matt led efforts to restore water quality at Orange County beaches from multiple sources of contamination including urban runoff and the discharge of wastewater. In reporting to a Board of Directors that included representatives from leading Orange County universities and businesses, Matt prepared issue papers in the areas of treatment and disinfection of wastewater and control of the discharge of grease to sewer systems. Matt actively participated in the development of countywide water quality permits for the control of urban runoff and permits for the discharge of wastewater. Matt worked with other nonprofits to protect and restore water quality, including Surfrider, Natural Resources Defense Council and Orange County CoastKeeper as well as with business institutions including the Orange County Business Council.

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continued

Hydrogeology:

As a Senior Hydrogeologist with the U.S. Environmental Protection Agency, Matt led investigations to characterize and cleanup closing military bases, including Mare Island Naval Shipyard, Hunters Point Naval Shipyard, Treasure Island Naval Station, Alameda Naval Station, Moffett Field, Mather Army Airfield, and Sacramento Army Depot. Specific activities were as follows:

- Led efforts to model groundwater flow and contaminant transport, ensured adequacy of monitoring networks, and assessed cleanup alternatives for contaminated sediment, soil, and groundwater.
- Initiated a regional program for evaluation of groundwater sampling practices and laboratory analysis at military bases.
- Identified emerging issues, wrote technical guidance, and assisted in policy and regulation development through work on four national U.S. EPA workgroups, including the Superfund Groundwater Technical Forum and the Federal Facilities Forum.

At the request of the State of Hawaii, Matt developed a methodology to determine the vulnerability of groundwater to contamination on the islands of Maui and Oahu. He used analytical models and a GIS to show zones of vulnerability, and the results were adopted and published by the State of Hawaii and County of Maui.

As a hydrogeologist with the EPA Groundwater Protection Section, Matt worked with provisions of the Safe Drinking Water Act and NEPA to prevent drinking water contamination. Specific activities included the following:

- Received an EPA Bronze Medal for his contribution to the development of national guidance for the protection of drinking water.
- Managed the Sole Source Aquifer Program and protected the drinking water of two communities through designation under the Safe Drinking Water Act. He prepared geologic reports, conducted

public hearings, and responded to public comments from residents who were very concerned about the impact of designation.

- Reviewed a number of Environmental Impact Statements for planned major developments, including large hazardous and solid waste disposal facilities, mine reclamation, and water transfer.

Matt served as a hydrogeologist with the RCRA Hazardous Waste program. Duties were as follows:

- Supervised the hydrogeologic investigation of hazardous waste sites to determine compliance with Subtitle C requirements.
- Reviewed and wrote "part B" permits for the disposal of hazardous waste.
- Conducted RCRA Corrective Action investigations of waste sites and led inspections that formed the basis for significant enforcement actions that were developed in close coordination with U.S. EPA legal counsel.
- Wrote contract specifications and supervised contractor's investigations of waste sites.

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continued

With the National Park Service, Matt directed service-wide investigations of contaminant sources to prevent degradation of water quality, including the following tasks:

- Applied pertinent laws and regulations including CERCLA, RCRA, NEPA, NRDA, and the Clean Water Act to control military, mining, and landfill contaminants.
- Conducted watershed-scale investigations of contaminants at parks, including Yellowstone and Olympic National Park.
- Identified high-levels of perchlorate in soil adjacent to a national park in New Mexico and advised park superintendent on appropriate response actions under CERCLA.
- Served as a Park Service representative on the Interagency Perchlorate Steering Committee, a national workgroup.
- Developed a program to conduct environmental compliance audits of all National Parks while serving on a national workgroup.
- Co-authored two papers on the potential for water contamination from the operation of personal watercraft and snowmobiles, these papers serving as the basis for the development of nation-wide policy on the use of these vehicles in National Parks.
- Contributed to the Federal Multi-Agency Source Water Agreement under the Clean Water Action Plan.

Policy:

Served senior management as the Senior Science Policy Advisor with the U.S. Environmental Protection Agency, Region 9.

Activities included the following:

- Advised the Regional Administrator and senior management on emerging issues such as the potential for the gasoline additive MTBE and ammonium perchlorate to contaminate drinking water supplies.
- Shaped EPA's national response to these threats by serving on workgroups and by contributing to guidance, including the Office of Research and Development publication, Oxygenates in Water: Critical Information and Research Needs.
- Improved the technical training of EPA's scientific and engineering staff.
- Earned an EPA Bronze Medal for representing the region's 300 scientists and engineers in negotiations with the Administrator and senior management to better integrate scientific

principles into the policy-making process.
- Established national protocol for the peer review of scientific documents.

Geology:

With the U.S. Forest Service, Matt led investigations to determine hillslope stability of areas proposed for timber harvest in the central Oregon Coast Range. Specific activities were as follows:

- Mapped geology in the field, and used aerial photographic interpretation and mathematical models to determine slope stability.
- Coordinated his research with community members who were concerned with natural resource protection.
- Characterized the geology of an aquifer that serves as the sole source of drinking water for the city of Medford, Oregon.

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As a consultant with Dames and Moore, Matt led geologic investigations of two contaminated sites (later listed on the Superfund NPL) in the Portland, Oregon, area and a large hazardous waste site in eastern Oregon. Duties included the following:

- Supervised year-long effort for soil and groundwater sampling.
- Conducted aquifer tests.
- Investigated active faults beneath sites proposed for hazardous waste disposal.

Teaching:

From 1990 to 1998, Matt taught at least one course per semester at the community college and university levels:

- At San Francisco State University, held an adjunct faculty position and taught courses in environmental geology, oceanography (lab and lecture), hydrogeology, and groundwater contamination.
- Served as a committee member for graduate and undergraduate students.
- Taught courses in environmental geology and oceanography at the College of Marin.

Matt is currently a part time geology instructor at Golden West College in Huntington Beach, California where he taught from 2010 to 2014 and in 2017.

Invited Testimony, Reports, Papers and Presentations:

Hagemann, M.F., 2008. Disclosure of Hazardous Waste Issues under CEQA. Presentation to the Public Environmental Law Conference, Eugene, Oregon.

Hagemann, M.F., 2008. Disclosure of Hazardous Waste Issues under CEQA. Invited presentation to U.S. EPA Region 9, San Francisco, California.

Hagemann, M.F., 2005. Use of Electronic Databases in Environmental Regulation, Policy Making and Public Participation. Brownfields 2005, Denver, Coloradao.

Hagemann, M.F., 2004. Perchlorate Contamination of the Colorado River and Impacts to Drinking Water in Nevada and the Southwestern U.S. Presentation to a meeting of the American Groundwater Trust, Las Vegas, NV (served on conference organizing committee).

Hagemann, M.F., 2004. Invited testimony to a California Senate committee hearing on air toxins at schools in Southern California, Los Angeles.

Brown, A., Farrow, J., Gray, A. and **Hagemann, M.**, 2004. An Estimate of Costs to Address MTBE Releases from Underground Storage Tanks and the Resulting Impact to Drinking Water Wells. Presentation to the Ground Water and Environmental Law Conference, National Groundwater Association.

Hagemann, M.F., 2004. Perchlorate Contamination of the Colorado River and Impacts to Drinking Water in Arizona and the Southwestern U.S. Presentation to a meeting of the American Groundwater Trust, Phoenix, AZ (served on conference organizing committee).

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Hagemann, M.F., 2003. Perchlorate Contamination of the Colorado River and Impacts to Drinking Water in the Southwestern U.S. Invited presentation to a special committee meeting of the National Academy of Sciences, Irvine, CA.

Hagemann, M.F., 2003. Perchlorate Contamination of the Colorado River. Invited presentation to a tribal EPA meeting, Pechanga, CA.

Hagemann, M.F., 2003. Perchlorate Contamination of the Colorado River. Invited presentation to a meeting of tribal repesentatives, Parker, AZ.

Hagemann, M.F., 2003. Impact of Perchlorate on the Colorado River and Associated Drinking Water Supplies. Invited presentation to the Inter-Tribal Meeting, Torres Martinez Tribe.

Hagemann, M.F., 2003. The Emergence of Perchlorate as a Widespread Drinking Water Contaminant. Invited presentation to the U.S. EPA Region 9.

Hagemann, M.F., 2003. A Deductive Approach to the Assessment of Perchlorate Contamination. Invited presentation to the California Assembly Natural Resources Committee.

Hagemann, M.F., 2003. Perchlorate: A Cold War Legacy in Drinking Water. Presentation to a meeting of the National Groundwater Association.

Hagemann, M.F., 2002. From Tank to Tap: A Chronology of MTBE in Groundwater. Presentation to a meeting of the National Groundwater Association.

Hagemann, M.F., 2002. A Chronology of MTBE in Groundwater and an Estimate of Costs to Address Impacts to Groundwater. Presentation to the annual meeting of the Society of Environmental Journalists.

Hagemann, M.F., 2002. An Estimate of the Cost to Address MTBE Contamination in Groundwater (and Who Will Pay). Presentation to a meeting of the National Groundwater Association.

Hagemann, M.F., 2002. An Estimate of Costs to Address MTBE Releases from Underground Storage Tanks and the Resulting Impact to Drinking Water Wells. Presentation to a meeting of the U.S. EPA and State Underground Storage Tank Program managers.

Hagemann, M.F., 2001. From Tank to Tap: A Chronology of MTBE in Groundwater. Unpublished report.

Hagemann, M.F., 2001. Estimated Cleanup Cost for MTBE in Groundwater Used as Drinking Water. Unpublished report.

Hagemann, M.F., 2001. Estimated Costs to Address MTBE Releases from Leaking Underground Storage Tanks. Unpublished report.

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Hagemann, M.F., and VanMouwerik, M., 1999. Potential Water Quality Concerns Related to Snowmobile Usage. Water Resources Division, National Park Service, Technical Report.

VanMouwerik, M. and **Hagemann, M.F**. 1999, Water Quality Concerns Related to Personal Watercraft Usage. Water Resources Division, National Park Service, Technical Report.

Hagemann, M.F., 1999, Is Dilution the Solution to Pollution in National Parks? The George Wright Society Biannual Meeting, Asheville, North Carolina.

Hagemann, M.F., 1997, The Potential for MTBE to Contaminate Groundwater. U.S. EPA Superfund Groundwater Technical Forum Annual Meeting, Las Vegas, Nevada.

Hagemann, M.F., and Gill, M., 1996, Impediments to Intrinsic Remediation, Moffett Field Naval Air Station, Conference on Intrinsic Remediation of Chlorinated Hydrocarbons, Salt Lake City.

Hagemann, M.F., Fukunaga, G.L., 1996, The Vulnerability of Groundwater to Anthropogenic Contaminants on the Island of Maui, Hawaii. Hawaii Water Works Association Annual Meeting, Maui, October 1996.

Hagemann, M. F., Fukanaga, G. L., 1996, Ranking Groundwater Vulnerability in Central Oahu, Hawaii. Proceedings, Geographic Information Systems in Environmental Resources Management, Air and Waste Management Association Publication VIP-61.

Hagemann, M.F., 1994. Groundwater Characterization and Cleanup at Closing Military Bases in California. Proceedings, California Groundwater Resources Association Meeting.

Hagemann, M.F. and Sabol, M.A., 1993. Role of the U.S. EPA in the High Plains States Groundwater Recharge Demonstration Program. Proceedings, Sixth Biennial Symposium on the Artificial Recharge of Groundwater.

Hagemann, M.F., 1993. U.S. EPA Policy on the Technical Impracticability of the Cleanup of DNAPL-contaminated Groundwater. California Groundwater Resources Association Meeting.

Hagemann, M.F., 1992. Dense Nonaqueous Phase Liquid Contamination of Groundwater: An Ounce of Prevention... Proceedings, Association of Engineering Geologists Annual Meeting, v. 35.

Other Experience:

Selected as subject matter expert for the California Professional Geologist licensing examinations, 2009-2011.

SWAPE Technical Consultation, Data Analysis and Litigation Support for the Environment

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Paul Rosenfeld, Ph.D.

Chemical Fate and Transport & Air Dispersion Modeling

Principal Environmental Chemist

Risk Assessment & Remediation Specialist

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Education

Ph.D. Soil Chemistry, University of Washington, 1999. Dissertation on VOC filtration.

M.S. Environmental Science, U.C. Berkeley, 1995. Thesis on organic waste economics.

B.A. Environmental Studies, U.C. Santa Barbara, 1991. Thesis on wastewater treatment.

Professional Experience

Dr. Rosenfeld is the Co-Founder and Principal Environmental Chemist at Soil Water Air Protection Enterprise (SWAPE). His focus is the fate and transport of environmental contaminants, risk assessment, and ecological restoration. His project experience ranges from monitoring and modeling of pollution sources as they relate to human and ecological health. Dr. Rosenfeld has investigated and designed remediation programs and risk assessments for contaminated sites containing, petroleum, MtBE and fuel oxygenates, chlorinated solvents, pesticides, radioactive waste, PCBs, PAHs, dioxins, furans, volatile organics, semi-volatile organics, perchlorate, heavy metals, asbestos, PFOA, unusual polymers, and odor. Significant projects performed by Dr. Rosenfeld include the following:

Litigation Support

Client: Missouri Department of Natural Resources (Jefferson City, Missouri)
Serving as an expert in evaluating air pollution and odor emissions from a Republic Landfill in St. Louis, Missouri. Conducted. Project manager overseeing daily, weekly and comprehensive sampling of odor and chemicals.

Client: Louisiana Department of Transportation and Development (Baton Rouge, Louisiana)
Serving as an expert witness, conducting groundwater modeling of an ethylene dichloride DNAPL and soluble plume resulting from spill caused by Conoco Phillips.

Client: Missouri Department of Natural Resources (St. Louis, Missouri)
Serving as a consulting expert and potential testifying expert regarding a landfill fire directly adjacent to another landfill containing radioactive waste. Implemented an air monitoring program testing for over 100 different compounds using approximately 12 different analytical methods.

Client: Baron & Budd, P.C. (Dallas, Texas) and Weitz & Luxeinberg (New York, New York)
Served as a consulting expert in MTBE Federal Multi District Litigation (MDL) in New York. Consolidated ground water data, created maps for test cases, constructed damage model, evaluated taste and odor threshold levels. Resulted in a settlement of over $440 million.

Client: The Buzbee Law Firm (Houston, Texas)
Served as a as an expert in ongoing litigation involving over 50,000+ plaintiffs who are seeking compensation for chemical exposure and reduction in property value resulting from chemicals released from the BP facility.

Client: Environmental Litigation Group (Birmingham, Alabama)
Serving as an expert on property damage, medical monitoring and toxic tort claims that have been filed on behalf of over 13,000 plaintiffs who were exposed to PCBs and dioxins/furans resulting from emissions from Monsanto and Cerro Copper's operations in Sauget, Illinois. Developed AERMOD models to demonstrate plaintiff's exposure.

Client: Baron & Budd P.C. (Dallas Texas) and Korein Tillery (St. Louis, Missouri)
Served as a consulting expert for a Class Action defective product claim filed in Madison County, Illinois against Syngenta and five other manufacturers for atrazine. Evaluated health issues associated with atrazine and deterimied treatment cost for filtration of public drinking water supplies. Resulted in $105 million dollar settlement.

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Client: The Buzbee Law Firm (Houston, Texas)
Served as a consulting expert in catalyst release and refinery emissions cases against the BP Refinery in Texas City. A jury verdict for 10 employees exposed to catalyst via BP's irresponsible behavior.

Client: Baron & Budd, P.C. (Dallas, Texas)
Served as a consulting expert to calculate the Maximum Allowable Dose Level (MADL) and No Significant Risk Level (NSRL), based on Cal EPA and OEHHA guidelines, for Polychlorinated Biphenyls (PCBs) in fish oil dietary supplements.

Client: Girardi Keese (Los Angeles, California)
Served as an expert testifying on hydrocarbon exposure of a woman who worked on a fuel barge operated by Chevron. Demonstrated that the plaintiff was exposed to excessive amounts of benzene.

Client: Mason & Cawood (Annapolis, Maryland) and Girardi & Keese (Los Angeles, California)
Serving as an expert consultant on the Battlefield Golf Club fly ash disposal site in Chesapeake, VA, where arsenic, other metals and radionuclides are leaching into groundwater, and ash is blowing off-site onto the surrounding communities.

Client: California Earth Mineral Corporation (Culver City, California)
Evaluating the montmorillonite clay deposit located near El Centro, California. Working as a Defense Expert representing an individual who owns a 2,500 acre parcel that will potentially be seized by the United States Navy via eminent domain.

Client: Matthews & Associates (Houston, Texas)
Serving as an expert witness, preparing air model demonstrating residential exposure via emissions from fracking in natural gas wells in Duncan, Texas.

Client: Baron & Budd P.C. (Dallas, Texas) and Korein Tillery (St. Louis, Missouri)
Served as a consulting expert for analysis of private wells relating to litigation regarding compensation of private well owners for MTBE testing. Coordinated data acquisition and GIS analysis evaluating private well proximity to leaking underground storage tanks.

Client: Lurie & Park LLP (Los Angeles, California)
Served as an expert witness evaluating a vapor intrusion toxic tort case that resulted in a settlement. The Superfund site is a 4 ½ mile groundwater plume of chlorinated solvents in Whittier, California.

Client: Mason & Cawood (Annapolis, Maryland)
Evaluated data from the Hess Gasoline Station in northern Baltimore, Maryland that had a release resulting in flooding of plaintiff's homes with gasoline-contaminated water, foul odor, and biofilm growth.

Client: The Buzbee Law Firm (Houston, Texas)
Evaluated air quality resulting from grain processing emissions in Muscatine, Iowa.

Client: Anderson Kill & Olick, P.C. (Ventura, California)
Evaluated historical exposure and lateral and vertical extent of contamination resulting from a ~150 million gallon Exxon Mobil tank farm located near Watts, California.

Client: Packard Law Firm (Petaluma, California)
Served as an expert witness, evaluated lead in Proposition 65 Case where various products were found to have elevated lead levels.

Client: The Buzbee Law Firm (Houston, Texas)
Evaluated data resulting from an oil spill in Port Arthur, Texas.

Client: Nexsen Pruet, LLC (Charleston, South Carolina)
Serving as expert in chlorine exposure in a railroad tank car accident where approximately 120,000 pounds of chlorine were released.

Client: Girardi & Keese (Los Angeles, California)
Serving as an expert investigating hydrocarbon exposure and property damage for ~600 individuals and ~280 properties in Carson, California where homes were constructed above a large tank farm formerly owned by Shell.

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Client: Brent Coon Law Firm (Cleveland, Ohio)
Served as an expert, calculating an environmental exposure to benzene, PAHs, and VOCs from a Chevron Refinery in Hooven, Ohio. Conducted AERMOD modeling to determine cumulative dose.

Client: Lundy Davis (Lake Charles, Louisiana)
Served as consulting expert on an oil field case representing the lease holder of a contaminated oil field. Conducted field work evaluating oil field contamination in Sulphur, Louisiana. Property is owned by Conoco Phillips, but leased by Yellow Rock, a small oil firm.

Client: Cox Cox Filo (Lake Charles, Louisiana)
Served as testifying expert on a multimillion gallon oil spill in Lake Charles which occurred on June 19, 2006, resulting in hydrocarbon vapor exposure to hundreds of workers and residents. Prepared air model and calculated exposure concentration. Demonstrated that petroleum odor alone can result in significant health harms.

Client: Cotchett Pitre & McCarthy (San Francisco, California)
Served as testifying expert representing homeowners who unknowingly purchased homes built on an old oil field in Santa Maria, California. Properties have high concentrations of petroleum hydrocarbons in subsurface soils resulting in diminished property value.

Client: Law Offices Of Anthony Liberatore P.C. (Los Angeles, California)
Served as testifying expert representing individuals who rented homes on the Inglewood Oil Field in California. Plaintiffs were exposed to hydrocarbon contaminated water and air, and experienced health harms associated with the petroleum exposure.

Client: Orange County District Attorney (Orange County, California)
Coordinated a review of 143 ARCO gas stations in Orange County to assist the District Attorney's prosecution of CCR Title 23 and California Health and Safety Code violators.

Client: Environmental Litigation Group (Birmingham, Alabama)
Served as a testifying expert in a health effects case against ABC Coke/Drummond Company for polluting a community with PAHs, benzene, particulate matter, heavy metals, and coke oven emissions. Created air dispersion models and conducted attic dust sampling, exposure modeling, and risk assessment for plaintiffs.

Client: Masry & Vitatoe (Westlake Village, California), Engstrom Lipscomb Lack (Los Angeles, Califronia) and Baron & Budd P.C. (Dallas, Texas)
Served as a consulting expert in Proposition 65 lawsuit filed against major oil companies for benzene and toluene releases from gas stations and refineries resulting in contaminated groundwater. Settlement included over $110 million dollars in injunctive relief.

Client: Tommy Franks Law Firm (Austin, Texas)
Served as expert evaluating groundwater contamination which resulted from the hazardous waste injection program and negligent actions of Morton Thiokol and Rohm Hass. Evaluated drinking water contamination and community exposure.

Client: Baron & Budd P.C. (Dallas, Texas) and Sher Leff (San Francisco, California)
Served as consulting expert for several California cities that filed defective product cases against Dow Chemical and Shell for 1,2,3-trichloropropane groundwater contamination. Generated maps showing capture zones of impacted wells for various municipalities.

Client: Weitz & Luxenberg (New York, New York)
Served as expert on Property Damage and Nuisance claims resulting from emissions from the Countywide Landfill in Ohio. The landfill had an exothermic reaction or fire resulting from aluminum dross dumping, and the EPA fined the landfill $10,000,000 dollars.

Client: Baron & Budd P.C. (Dallas, Texas)
Served as a consulting expert for a groundwater contamination case in Pensacola, Florida where fluorinated compounds contaminated wells operated by Escambia County.

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Client: Environmental Litigation Group (Birmingham, Alabama)
Served as an expert on groundwater case where Exxon Mobil and Helena Chemical released ethylene dichloride into groundwater resulting in a large plume. Prepared report on the appropriate treatment technology and cost, and flaws with the proposed on-site remediation.

Client: Environmental Litigation Group (Birmingham, Alabama)
Served as an expert on air emissions released when a Bartlo Packaging Incorporated facility in West Helena, Arkansas exploded resulting in community exposure to pesticides and smoke from combustion of pesticides.

Client: Omara & Padilla (San Diego, California)
Served as a testifying expert on nuisance case against Nutro Dogfood Company that constructed a large dog food processing facility in the middle of a residential community in Victorville, California with no odor control devices. The facility has undergone significant modifications, including installation of a regenerative thermal oxidizer.

Client: Environmental Litigation Group (Birmingham, Alabama)
Serving as an expert on property damage and medical monitoring claims that have been filed against International Paper resulting from chemical emissions from facilities located in Bastrop, Louisiana; Prattville, Alabama; and Georgetown, South Carolina.

Client: Estep and Shafer L.C. (Kingwood, West Virginia)
Served as expert calculating acid emissions doses to residents resulting from coal-fired power plant emissions in West V
irginia using various air models.

Client: Watts Law Firm (Austin, Texas), Woodfill & Pressler (Houston, Texas) and Woska & Associates (Oklahoma City, Oklahoma)
Served as testifying expert on community and worker exposure to CCA, creosote, PAHs, and dioxins/furans from a BNSF and Koppers Facility in Somerville, Texas. Conducted field sampling, risk assessment, dose assessment and air modeling to quantify exposure to workers and community members.

Client: Environmental Litigation Group (Birmingham, Alabama)
Served as expert regarding community exposure to CCA, creosote, PAHs, and dioxins/furans from a Louisiana Pacific wood treatment facility in Florala, Alabama. Conducted blood sampling and environmental sampling to determine environmental exposure to dioxins/furans and PAHs.

Client: Sanders Law Firm (Colorado Springs, Colorado) and Vamvoras & Schwartzberg (Lake Charles, Louisiana)
Served as an expert calculating chemical exposure to over 500 workers from large ethylene dichloride spill in Lake Charles, Louisiana at the Conoco Phillips Refinery.

Client: Baron & Budd P.C. (Dallas, Texas)
Served as consulting expert in a defective product lawsuit against Dow Agroscience focusing on Clopyralid, a recalcitrant herbicide that damaged numerous compost facilities across the United States.

Client: Sullivan Papain Block McGrath & Cannavo (New York, New York) and The Cochran Firm (Dothan, Mississippi)

Served as an expert regarding community exposure to metals, PAHs PCBs, and dioxins/furans from the burning of Ford paint sludge and municipal solid waste in Ringwood, New Jersey.

Client: Rose, Klein & Marias LLP (Los Angeles, California)
Served as an expert in 55 Proposition 65 cases against individual facilities in the Port of Los Angeles and Port of Long Beach. Prepared air dispersion and risk models to demonstrate that each facility emits diesel particulate matter that results in risks exceeding 1/100,000, hence violating the Proposition 65 Statute.

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Client: Rose, Klein & Marias LLP (Los Angeles, California) and Environmental Law Foundation (San Francisco, California)
Served as an expert in a Proposition 65 case against potato chip manufacturers. Conducted an analysis of several brands of potato chips for acrylamide concentrations and found that all samples exceeded Proposition 65 No Significant Risk Levels.

Client: Gonzales & Robinson (Westlake Village, California)
Served as a testifying expert in a toxic tort case against Chevron (Ortho) for allowing a community to be contaminated with lead arsenate pesticide. Created air dispersion and soil vadose zone transport models, and evaluated bioaccumulation of lead arsenate in food.

Client: Environment Now (Santa Monica, California)
Served as expert for Environment Now to convince the State of California to file a nuisance claim against automobile manufactures to recover MediCal damages from expenditures on asthma-related health care costs.

Client: Trutanich Michell (Long Beach, California)
Served as expert representing San Pedro Boat Works in the Port of Los Angeles. Prepared air dispersion, particulate air dispersion, and storm water discharge models to demonstrate that Kaiser Bulk Loading is responsible for copper concentrate accumulating in the bay sediment.

Client: Azurix of North America (Fort Myers, Florida)
Provided expert opinions, reports and research pertaining to a proposed County Ordinance requiring biosolids applicators to measure VOC and odor concentrations at application sites' boundaries.

Client: MCP Polyurethane (Pittsburg, Kansas)
Provided expert opinions and reports regarding metal-laden landfill runoff that damaged a running track by causing the reversion of the polyurethane due to its catalytic properties.

Risk Assessment And Air Modeling

Client: Hager, Dewick & Zuengler, S.C. (Green Bay, Wisconsin)
Conducted odor audit of rendering facility in Green Bay, Wisconsin.

Client: ABT-Haskell (San Bernardino, California)
Prepared air dispersion model for a proposed state-of-the-art enclosed compost facility. Prepared a traffic analysis and developed odor detection limits to predict 1, 8, and 24-hour off-site concentrations of sulfur, ammonia, and amine.

Client: Jefferson PRP Group (Los Angeles, California)
Evaluated exposure pathways for chlorinated solvents and hexavalent chromium for human health risk assessment of Los Angeles Academy (formerly Jefferson New Middle School) operated by Los Angeles Unified School District.

Client: Covanta (Susanville, California)
Prepared human health risk assessment for Covanta Energy focusing on agricultural worker exposure to caustic fertilizer.

Client: CIWMB (Sacramento, California)
Used dispersion models to estimate traveling distance and VOC concentrations downwind from a composting facility for the California Integrated Waste Management Board.

Client: Carboquimeca (Bogotá, Columbia)
Evaluated exposure pathways for human health risk assessment for a confidential client focusing on significant concentrations of arsenic and chlorinated solvents present in groundwater used for drinking water.

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Client: Navy Base Realignment and Closure Team (Treasure Island, California)
Used Johnson-Ettinger model to estimate indoor air PCB concentrations and compared estimated values with empirical data collected in homes.

Client: San Diego State University (San Diego, California)
Measured CO_2 flux from soils amended with different quantities of biosolids compost at Camp Pendleton to determine CO_2 credit values for coastal sage under fertilized and non-fertilized conditions.

Client: Navy Base Realignment and Closure Team (MCAS Tustin, California)
Evaluated cumulative risk of a multiple pathway scenario for a child resident and a construction worker. Evaluated exposure to air and soil via particulate and vapor inhalation, incidental soil ingestion, and dermal contact with soil.

Client: MCAS Miramar (San Diego, California)
Evaluated exposure pathways of metals in soil by comparing site data to background data. Risk assessment incorporated multiple pathway scenarios assuming child resident and construction worker particulate and vapor inhalation, soil ingestion, and dermal soil contact.

Client: Naval Weapons Station (Seal Beach, California)
Used a multiple pathway model to generate dust emission factors from automobiles driving on dirt roads. Calculated bioaccumulation of metals, PCBs, dioxin congeners and pesticides to estimate human and ecological risk.

Client: King County, Douglas County (Washington State)
Measured PM_{10} and $PM_{2.5}$ emissions from windblown soil treated with biosolids and a polyacrylamide polymer in Douglas County, Washington. Used Pilat Mark V impactor for measurement and compared data to EPA particulate regulations.

Client: King County (Seattle, Washington)
Created emission inventory for several compost and wastewater facilities comparing VOC, particulate, and fungi concentrations to NIOSH values estimating risk to workers and individuals at neighboring facilities.

Air Pollution Investigation and Remediation

Client: Republic Landfill (Santa Clarita, California)
Managed a field investigation of odor around a landfill during 30+ events. Used hedonic tone, butanol scale, dilution-to-threshold values, and odor character to evaluate odor sources and character and intensity.

Client: California Biomass (Victorville, California)
Managed a field investigation of odor around landfill during 9+ events. Used hedonic tone, butanol scale, dilution-to-threshold values, and odor character to evaluate odor sources, character and intensity.

Client: ABT-Haskell (Redlands, California)
Assisted in permitting a compost facility that will be completely enclosed with a complex scrubbing system using acid scrubbers, base scrubbers, biofilters, heat exchangers and chlorine to reduce VOC emissions by 99 percent.

Client: Synagro (Corona, California)
Designed and monitored 30-foot by 20-foot by 6-foot biofilter for VOC control at an industrial composting facility in Corona, California to reduce VOC emissions by 99 percent.

Client: Jeff Gage (Tacoma, Washington)
Conducted emission inventory at industrial compost facility using GC/MS analyses for VOCs. Evaluated effectiveness of VOC and odor control systems and estimated human health risk.

Client: Daishowa America (Port Angeles Mill, Washington)
Analyzed industrial paper sludge and ash for VOCs, heavy metals and nutrients to develop a land application program. Metals were compared to federal guidelines to determine maximum allowable land application rates.

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Client: Jeff Gage (Puyallup, Washington)
Measured effectiveness of biofilters at composting facility and conducted EPA dispersion models to estimate traveling distance of odor and human health risk from exposure to volatile organics.

Surface Water, Groundwater, and Wastewater Investigation/Remediation

Client: Confidential (Downey, California)
Managed groundwater investigation to determine horizontal extent of 1,000 foot TCE plume associated with a metal finishing shop.

Client: Confidential (West Hollywood, California)
Designing soil vapor extraction system that is currently being installed for confidential client. Managing groundwater investigation to determine horizontal extent of TCE plume associated with dry cleaning.

Client: Synagro Technologies (Sacramento, California)
Managed groundwater investigation to determine if biosolids application impacted salinity and nutrient concentrations in groundwater.

Client: Navy Base Realignment and Closure Team (Treasure Island, California)
Assisted in the design and remediation of PCB, chlorinated solvent, hydrocarbon and lead contaminated groundwater and soil on Treasure Island. Negotiated screening levels with DTSC and Water Board. Assisted in the preparation of FSP/QAPP, RI/FS, and RAP documents and assisted in CEQA document preparation.

Client: Navy Base Realignment and Closure Team (MCAS Tustin, California)
Assisted in the design of groundwater monitoring systems for chlorinated solvents at Tustin MCAS. Contributed to the preparation of FS for groundwater treatment.

Client: Mission Cleaning Facility (Salinas, California)
Prepared a RAP and cost estimate for using an oxygen releasing compound (ORC) and molasses to oxidize diesel fuel in soil and groundwater at Mission Cleaning in Salinas.

Client: King County (Washington)
Established and monitored experimental plots at a US EPA Superfund Site in wetland and upland mine tailings contaminated with zinc and lead in Smelterville, Idaho. Used organic matter and pH adjustment for wetland remediation and erosion control.

Client: City of Redmond (Richmond, Washington)
Collected storm water from compost-amended and fertilized turf to measure nutrients in urban runoff. Evaluated effectiveness of organic matter-lined detention ponds on reduction of peak flow during storm events. Drafted compost amended landscape installation guidelines to promote storm water detention and nutrient runoff reduction.

Client: City of Seattle (Seattle, Washington)
Measured VOC emissions from Renton wastewater treatment plant in Washington. Ran GC/MS, dispersion models, and sensory panels to characterize, quantify, control and estimate risk from VOCs.

Client: Plumas County (Quincy, California)

Installed wetland to treat contaminated water containing 1% copper in an EPA Superfund site. Revegetated 10 acres of acidic and metal laden sand dunes resulting from hydraulic mining. Installed and monitored piezometers in wetland estimating metal loading.

Client: Adams Egg Farm (St. Kitts, West Indies)
Designed, constructed, and maintained 3 anaerobic digesters at Springfield Egg Farm, St. Kitts. Digesters treated chicken excrement before effluent discharged into sea. Chicken waste was converted into methane cooking gas.

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Client: BLM (Kremmling, Colorado)
Collected water samples for monitoring program along upper stretch of the Colorado River. Rafted along river and protected water quality by digging and repairing latrines.

Soil Science and Restoration Projects

Client: Hefner, Stark & Marois, LLP (Sacramento, California)
Facilitated in assisting Hefner, Stark & Marois, LLP in working with the Regional Water Quality board to determine how to utilize Calcium Participate as a by-product of processing sugar beets.

Client: Kinder Morgan (San Diego County, California)
Designed and monitored the restoration of a 110-acre project on Camp Pendleton along a 26-mile pipeline. Managed crew of 20, planting coastal sage, riparian, wetland, native grassland, and marsh ecosystems. Negotiated with the CDFW concerning species planting list and success standards.

Client: NAVY BRAC (Orote Landfill, Guam)
Designed and monitored pilot landfill cap mimicking limestone forest. Measured different species' root-penetration into landfill cap. Plants were used to evapotranspirate water, reducing water leaching through soil profile.

Client: LA Sanitation District Puente Hills Landfill (Whittier, California)
Monitored success of upland and wetland mitigation at Puente Hills Landfill operated by Sanitation Districts of Los Angeles. Negotiated with the Army Corps of Engineers and CDFG to obtain an early sign-off.

Client: City of Escondido (Escondido, California)
Designed, managed, installed, and monitored a 20-acre coastal sage scrub restoration project at Kit Carson Park, Escondido, California.

Client: Home Depot (Encinitas, California)
Designed, managed, installed and monitored a 15-acre coastal sage scrub and wetland restoration project at Home Depot in Encinitas, California.

Client: Alvarado Water Filtration Plant (San Diego, California)
Planned, installed and monitored 2-acre riparian and coastal sage scrub mitigation in San Diego California.

Client: Monsanto and James River Corporation (Clatskanie, Oregon)
Served as a soil scientist on a 50,000-acre hybrid poplar farm. Worked on genetically engineering study of Poplar trees to see if glyphosate resistant poplar clones were economically viable.

Client: World Wildlife Fund (St. Kitts, West Indies)
Managed 2-year biodiversity study, quantifying and qualifying the various flora and fauna in St. Kitts' expanding volcanic rainforest. Collaborated with skilled botanists, ornithologists and herpetologists.

Publications

Chen, J. A., Zapata, A R., Sutherland, A. J., Molmen, D. R,. Chow, B. S., Wu, L. E., **Rosenfeld, P. E.,** Hesse, R. C., (2012) Sulfur Dioxide and Volatile Organic Compound Exposure To A Community In Texas City Texas Evaluated Using Aermod and Empirical Data. American Journal of Environmental Science, 2012, 8 (6), 622-632

Rosenfeld, P.E. & Feng, L. (2011). *The Risks of Hazardous Waste*, Amsterdam: Elsevier Publishing.

Cheremisinoff, N.P., & **Rosenfeld, P.E.** (2011). *Handbook of Pollution Prevention and Cleaner Production: Best Practices in the Agrochemical Industry*, Amsterdam: Elsevier Publishing.

Gonzalez, J., Feng, L., Sutherland, A., Waller, C., Sok, H., Hesse, R., **Rosenfeld, P.** (2011). PCBs and Dioxins/Furans in Attic Dust Collected Near Former PCB Production and Secondary Copper Facilities in Sauget, IL. *Procedia Environmental Sciences* 4(2011):113-125.

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Cheremisinoff, N.P., & **Rosenfeld, P.E.** (2010). *Handbook of Pollution Prevention and Cleaner Production: Best Practices in the Wood and Paper Industries*, Amsterdam: Elsevier Publishing.

Cheremisinoff, N.P., & **Rosenfeld, P.E.** (2009). *Handbook of Pollution Prevention and Cleaner Production: Best Practices in the Petroleum Industry*, Amsterdam: Elsevier Publishing.

Wu, C., Tam, L., Clark, J., **Rosenfeld, P**. (2009). 'Dioxin and furan blood lipid concentrations in populations living near four wood treatment facilities in the United States', in Brebbia, C.A. and Popov, V., eds., *Air Pollution XVII: Proceedings of the Seventeenth International Conference on Modelling, Monitoring and Management of Air Pollution*, Tallinn, Estonia. 20-22 July, 2009, Southampton, Boston. WIT Press.

Tam L. K.., Wu C. D., Clark J. J. and **Rosenfeld, P.E.** (2008) A Statistical Analysis Of Attic Dust And Blood Lipid Concentrations Of Tetrachloro-p-Dibenzodioxin (TCDD) Toxicity Equivalency Quotients (TEQ) In Two Populations Near Wood Treatment Facilities. Organohalogen Compounds, Volume 70 (2008) page 002254.

Tam L. K.., Wu C. D., Clark J. J. and **Rosenfeld, P.E.** (2008) Methods For Collect Samples For Assessing Dioxins And Other Environmental Contaminants In Attic Dust: A Review. Organohalogen Compounds, Volume 70 (2008) page 000527.

Hensley, A.R. A. Scott, J. J. J. Clark, **P. E. Rosenfeld** (2007) "Attic Dust and Human Blood Samples Collected near a Former Wood Treatment Facility" Environmental Research. 105, pp 194-197.
Rosenfeld, P.E., J. J. J. Clark, A. R. Hensley, M. Suffet. (2007) "The Use of an Odor Wheel Classification for Evaluation of Human Health Risk Criteria for Compost Facilities" –Water Science & Technology 55(5): 345-357.

Rosenfeld, P. E., M. Suffet. (2007) **"**The Anatomy Of Odour Wheels For Odours Of Drinking Water, Wastewater, Compost And The Urban Environment **"** Water Science & Technology 55(5): 335-344.

Sullivan, P. J. Clark, J.J.J., Agardy, F. J., **Rosenfeld, P.E.,** (2007) "Toxic Legacy, Synthetic Toxins in the Food, Water, and Air in American Cities," Elsevier Publishing, Boston Massachusetts.

Rosenfeld P.E., and Suffet, I.H. (Mel) (2007) "Anatomy Of An Odor Wheel" Water Science and Technology, In Press.

Rosenfeld, P.E., Clark, J.J.J., Hensley A.R., Suffet, I.H. (Mel) (2007) "The use of an odor wheel classification for evaluation of human health risk criteria for compost facilities." Water Science And Technology, In Press.

Hensley A.R., Scott, A., **Rosenfeld P.E.,** Clark, J.J.J. (2006) "Dioxin Containing Attic Dust And Human Blood Samples Collected Near A Former Wood Treatment Facility." The 26th International Symposium on Halogenated Persistent Organic Pollutants – DIOXIN2006, August 21 – 25, 2006. Radisson SAS Scandinavia Hotel in Oslo Norway.

Rosenfeld, P.E., and Suffet I.H. (2004) "Control of Compost Odor Using High Carbon Wood Ash", Water Science and Technology, Vol. 49, No. 9. pp. 171-178.

Rosenfeld, P.E., Clark J. J. and Suffet, I.H. (2004) "Value of and Urban Odor Wheel." (2004). WEFTEC 2004. New Orleans, October 2 - 6, 2004.

Rosenfeld, P.E., and Suffet, I.H. (2004) "Understanding Odorants Associated With Compost, Biomass Facilities, and the Land Application of Biosolids" Water Science and Technology. Vol. 49, No. 9. pp 193-199.

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Rosenfeld, P.E., and Suffet I.H. (2004) "Control of Compost Odor Using High Carbon Wood Ash", Water Science and Technology, Vol. 49, No. 9. pp. 171-178.

Rosenfeld, P. E., Grey, M. A., Sellew, P. (2004) Measurement of Biosolids Odor and Odorant Emissions from Windrows, Static Pile and Biofilter. Water Environment Research. 76 (4): 310-315 JUL-AUG 2004.

Rosenfeld, P. E., Grey, M., (2003) Two stage biofilter for biosolids composting odor control. Seventh International In Situ And On Site Bioremediation Symposium. Batelle Conference Orlando Florida. June 2 and June 6, 2003.

Rosenfeld, P.E., Grey, M and Suffet, M. 2002. "Controlling Odors Using High Carbon Wood Ash." Biocycle, March 2002, Page 42.

Rosenfeld, P.E., Grey, M and Suffet, M. (2002). "Compost Demonstration Project, Sacramento, California Using High-Carbon Wood Ash to Control Odor at a Green Materials Composting Facility Integrated Waste Management Board Public Affairs Office, Publications Clearinghouse (MS–6), Sacramento, CA Publication #442-02-008. April 2002.

Rosenfeld, P.E., and C.L. Henry. 2001. Characterization of odor emissions from three different biosolids. Water Soil and Air pollution. Vol. 127 Nos. 1-4, pp. 173-191.

Rosenfeld, P.E., and Henry C. L., 2000. Wood ash control of odor emissions from biosolids application. Journal of Environmental Quality. 29:1662-1668.

Rosenfeld, P.E., C.L. Henry and D. Bennett. 2001. Wastewater dewatering polymer affect on biosolids odor emissions and microbial activity. Water Environment Research. 73: 363-367.

Rosenfeld, P.E., and C.L. Henry. 2001. Activated Carbon and Wood Ash Sorption of Wastewater, Compost, and Biosolids Odorants Water Environment Research, 73: 388-392.

Rosenfeld, P.E., and Henry C. L., 2001. High carbon wood ash effect on biosolids microbial activity and odor. Water Environment Research. Volume 131 No. 1-4, pp. 247-262.

Rosenfeld, P.E, C.L. Henry, R. Harrison. 1998. Oat and Grass Seed Germination and Nitrogen and Sulfur Emissions Following Biosolids Incorporation With High-Carbon Wood-Ash. Water Environment Federation 12th Annual Residuals and Biosolids Management Conference Proceedings. Bellevue Washington.

Chollack, T. and **P. Rosenfeld.** 1998. Compost Amendment Handbook For Landscaping. Prepared for and distributed by the City of Redmond, Washington State.

P. Rosenfeld. 1992. The Mount Liamuiga Crater Trail. Heritage Magazine of St. Kitts, Vol. 3 No. 2.

P. Rosenfeld. 1993. High School Biogas Project to Prevent Deforestation On St. Kitts. Biomass Users Network, Vol. 7, No. 1, 1993.

P. Rosenfeld. 1992. British West Indies, St. Kitts. Surf Report, April issue.

P. Rosenfeld. 1998. Characterization, Quantification, and Control of Odor Emissions From Biosolids Application To Forest Soil. Doctoral Thesis. University of Washington College of Forest Resources.

P. Rosenfeld. 1994. Potential Utilization of Small Diameter Trees On Sierra County Public Land. Masters thesis reprinted by the Sierra County Economic Council. Sierra County, California.

P. Rosenfeld. 1991. How to Build a Small Rural Anaerobic Digester & Uses Of Biogas In The First And Third World. Bachelors Thesis. University of California.

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England Environmental Agency, 2002. Landfill Gas Control Technologies. Publishing Organization Environment Agency, Rio House, Waterside Drive, Aztec West, Almondsbury BRISTOL, BS32 4UD.

Presentations

Sok, H.L.; Waller, C.C.; Feng, L.; Gonzalez, J.; Sutherland, A.J.; Wisdom-Stack, T.; Sahai, R.K.; Hesse, R.C.; **Rosenfeld, P.E.** "Atrazine: A Persistent Pesticide in Urban Drinking Water." Urban Environmental Pollution, Boston, MA, June 20-23, 2010.

Feng, L.; Gonzalez, J.; Sok, H.L.; Sutherland, A.J.; Waller, C.C.; Wisdom-Stack, T.; Sahai, R.K.; La, M.; Hesse, R.C.; **Rosenfeld, P.E.** "Bringing Environmental Justice to East St. Louis, Illinois." Urban Environmental Pollution, Boston, MA, June 20-23, 2010.

Rosenfeld, P.E. (2009) "Perfluoroctanoic Acid (PFOA) and Perfluoroactane Sulfonate (PFOS) Contamination in Drinking Water From the Use of Aqueous Film Forming Foams (AFFF) at Airports in the United States" Presentation at the 2009 Ground Water Summit and 2009 Ground Water Protection Council Spring Meeting, April 19-23, 2009. Tuscon, AZ.

Rosenfeld, P.E. (2009) "Cost to Filter Atrazine Contamination from Drinking Water in the United States" Contamination in Drinking Water From the Use of Aqueous Film Forming Foams (AFFF) at Airports in the United States" Presentation at the 2009 Ground Water Summit and 2009 Ground Water Protection Council Spring Meeting, April 19-23, 2009. Tuscon, AZ.

Rosenfeld, P. E. (2007) "Moss Point Community Exposure To Contaminants From A Releasing Facility" Platform Presentation at the 23rd Annual International Conferences on Soils Sediment and Water, October 15-18, 2007. University of Massachusetts, Amherst MA.

Rosenfeld, P. E. (2007) "The Repeated Trespass of Tritium-Contaminated Water Into A Surrounding Community Form Repeated Waste Spills From A Nuclear Power Plant" Platform Presentation at the 23rd Annual International Conferences on Soils Sediment and Water, October 15-18, 2007. University of Massachusetts, Amherst MA.

Rosenfeld, P. E. (2007) "Somerville Community Exposure To Contaminants From Wood Treatment Facility Emissions" Poster Presentation at the 23rd Annual International Conferences on Soils Sediment and Water, October 15-18, 2007. University of Massachusetts, Amherst MA.

Rosenfeld P. E. "Production, Chemical Properties, Toxicology, & Treatment Case Studies of 1,2,3-Trichloropropane (TCP)" – Platform Presentation at the Association for Environmental Health and Sciences (AEHS) Annual Meeting, San Diego, CA, 3/2007.

Rosenfeld P. E. "Blood and Attic Sampling for Dioxin/Furan, PAH, and Metal Exposure in Florala, Alabama" – Platform Presentation at the AEHS Annual Meeting, San Diego, CA, 3/2007.

Hensley A.R., Scott, A., **Rosenfeld P.E.,** Clark, J.J.J. (2006) "Dioxin Containing Attic Dust And Human Blood Samples Collected Near A Former Wood Treatment Facility." APHA 134 Annual Meeting & Exposition, Boston Massachusetts. November 4 to 8th, 2006.

Paul Rosenfeld Ph.D. "Fate, Transport and Persistence of PFOA and Related Chemicals." Mealey's C8/PFOA Science, Risk & Litigation Conference" October 24, 25. The Rittenhouse Hotel, Philadelphia.

Paul Rosenfeld Ph.D. "Brominated Flame Retardants in Groundwater: Pathways to Human Ingestion, Toxicology and Remediation PEMA Emerging Contaminant Conference. September 19. Hilton Hotel, Irvine California.

Paul Rosenfeld Ph.D. "Fate, Transport, Toxicity, And Persistence of 1,2,3-TCP." PEMA Emerging Contaminant Conference. September 19. Hilton Hotel in Irvine, California.

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continued

Paul Rosenfeld Ph.D. "Fate, Transport and Persistence of PDBEs." Mealey's Groundwater Conference. September 26, 27. Ritz Carlton Hotel, Marina Del Ray, California.

Paul Rosenfeld Ph.D. "Fate, Transport and Persistence of PFOA and Related Chemicals." International Society of Environmental Forensics: Focus On Emerging Contaminants. June 7,8. Sheraton Oceanfront Hotel, Virginia Beach, Virginia.

Paul Rosenfeld Ph.D. "Rate Transport, Persistence and Toxicology of PFOA and Related Perfluorochemicals". 2005 National Groundwater Association Ground Water And Environmental Law Conference. July 21-22, 2005. Wyndham Baltimore Inner Harbor, Baltimore Maryland.

Paul Rosenfeld Ph.D. "Brominated Flame Retardants in Groundwater: Pathways to Human Ingestion, Toxicology and Remediation." 2005 National Groundwater Association Ground Water And Environmental Law Conference. July 21-22, 2005. Wyndham Baltimore Inner Harbor, Baltimore Maryland.

Paul Rosenfeld, Ph.D. and James Clark Ph.D. and Rob Hesse R.G. Tert-butyl Alcohol Liability and Toxicology, A National Problem and Unquantified Liability. National Groundwater Association. Environmental Law Conference. May 5-6, 2004. Congress Plaza Hotel, Chicago Illinois.

Paul Rosenfeld, Ph.D., 2004. Perchlorate Toxicology. Presentation to a meeting of the American Groundwater Trust. March 7th, 2004. Pheonix Arizona.

Hagemann, M.F., **Paul Rosenfeld, Ph.D.** and Rob Hesse, 2004. Perchlorate Contamination of the Colorado River. Invited presentation to a meeting of tribal representatives, Parker, AZ.

Paul Rosenfeld, Ph.D. A National Damage Assessment Model For PCE and Dry Cleaners. Drycleaner Symposium. California Ground Water Association. Radison Hotel, Sacramento, California. April 7, 2004.

Paul Rosenfeld, Ph.D. and James Clark Ph.D. Understanding Historical Use, Chemical Properties, Toxicity and Regulatory Guidance of 1,4 Dioxane. National Groundwater Association. Southwest Focus Conference. Water Supply and Emerging Contaminants. February 20-21, 2003. Hyatt Regency Phoenix Arizona.

Paul Rosenfeld, Ph.D. Underground Storage Tank Litigation and Remediation. California CUPA Forum. Marriott Hotel. Anaheim California. February 6-7, 2003.

Paul Rosenfeld, Ph.D. Underground Storage Tank Litigation and Remediation. EPA Underground Storage Tank Roundtable. Sacramento California. October 23, 2002.

Rosenfeld, P.E. and Suffet, M. 2002. Understanding Odor from Compost, Wastewater and Industrial Processes. Sixth Annual Symposium On Off Flavors in the Aquatic Environment. International Water Association. Barcelona Spain. October 7- 10.

Rosenfeld, P.E. and Suffet, M. 2002. Using High Carbon Wood Ash to Control Compost Odor. Sixth Annual Symposium On Off Flavors in the Aquatic Environment. International Water Association. Barcelona Spain. October 7- 10.

Rosenfeld, P.E. and Grey, M. A. 2002. Biocycle Composting For Coastal Sage Restoration. Northwest Biosolids Management Association. Vancouver Washington. September 22-24.

Rosenfeld, P.E. and Grey, M. A. 2002. Soil Science Society Annual Conference. Indianapolis, Maryland. November 11-14.

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Rosenfeld. P.E. 2000. Two stage biofilter for biosolids composting odor control. Water Environment Federation. Anaheim California. September 16, 2000.

Rosenfeld. P. E. 2000. Wood ash and biofilter control of compost odor. Biofest. October 16, 2000.Ocean Shores, California.

Rosenfeld, P. E. 2000. Bioremediation Using Organic Soil Amendments. California Resource Recovery Association. Sacramento California.

Rosenfeld, P.E., C.L. Henry, R. Harrison. 1998. Oat and Grass Seed Germination and Nitrogen and Sulfur Emissions Following Biosolids Incorporation With High-Carbon Wood-Ash. Water Environment Federation 12th Annual Residuals and Biosolids Management Conference Proceedings. Bellevue Washington.

Rosenfeld, P.E., and C.L. Henry. 1999. An evaluation of ash incorporation with biosolids for odor reduction. Soil Science Society of America. Salt Lake City Utah.

Rosenfeld, P.E., C.L. Henry, R. Harrison. 1998. Comparison of Microbial Activity and Odor Emissions from Three Different Biosolids Applied to Forest Soil. Brown and Caldwell, Seattle Washington.

Rosenfeld, P.E., C.L. Henry. 1998. Characterization, Quantification, and Control of Odor Emissions from Biosolids Application To Forest Soil. Biofest Lake Chelan, Washington.

Rosenfeld, P.E., C.L. Henry, R. B. Harrison, and R. Dills. 1997. Comparison of Odor Emissions From Three Different Biosolids Applied to Forest Soil. Soil Science Society of America, Anaheim California.

Professional History

Soil Water Air Protection Enterprise (SWAPE); 2003 to present; Founding And Managing Partner
UCLA School of Public Health; 2007 to 2010; Lecturer (Asst Res)
UCLA School of Public Health; 2003 to 2006; Adjunct Professor
UCLA Environmental Science and Engineering Program; 2002-2004; Doctoral Intern Coordinator
UCLA Institute of the Environment, 2001-2002; Research Associate
Komex H_2O Science, 2001 to 2003; Senior Remediation Scientist
National Groundwater Association, 2002-2004; Lecturer
San Diego State University, 1999-2001; Adjunct Professor
Anteon Corp., San Diego, 2000-2001; Remediation Project Manager
Ogden (now Amec), San Diego, 2000-2000; Remediation Project Manager
Bechtel, San Diego, California, 1999 – 2000; Risk Assessor
King County, Seattle, 1996 – 1999; Scientist
James River Corp., Washington, 1995-96; Scientist
Big Creek Lumber, Davenport, California, 1995; Scientist
Plumas Corp., California and USFS, Tahoe 1993-1995; Scientist
Peace Corps and World Wildlife Fund, St. Kitts, West Indies, 1991-1993; Scientist
Bureau of Land Management, Kremmling Colorado 1990; Scientist

Teaching Experience

UCLA Department of Environmental Health (Summer 2003 through 2010) Taught Environmental Health Science 100 to students, including undergrad, medical doctors, public health professionals and nurses. Course focuses on the health effects of environmental contaminants.

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National Ground Water Association, Successful Remediation Technologies. Custom Course In Sante Fe, New Mexico. May 21, 2002. Focused on fate and transport of fuel contaminants associated with underground storage tanks.

National Ground Water Association; Successful Remediation Technologies Course in Chicago Illinois. April 1, 2002. Focused on fate and transport of contaminants associated with Superfund and RCRA sites.

California Integrated Waste Management Board, April and May, 2001. Alternative Landfill Caps Seminar in San Diego, Ventura, and San Francisco. Focused on both prescriptive and innovative landfill cover design.

UCLA Department of Environmental Engineering, February 5 2002 Seminar on Successful Remediation Technologies focusing on Groundwater Remediation.

University Of Washington, Soil Science Program, Teaching Assistant for several courses including: Soil Chemistry, Organic Soil Amendments, and Soil Stability.

U.C. Berkeley, Environmental Science Program Teaching Assistant for Environmental Science 10.

Academic Grants Awarded

California Integrated Waste Management Board. $41,000 grant awarded to UCLA Institute of the Environment. Goal: To investigate effect of high carbon wood ash on volatile organic emissions from compost. 2001.

Synagro Technologies, Corona California: $10,000 grant awarded to San Diego State University. Goal: investigate effect of biosolids for restoration and remediation of degraded coastal sage soils. 2000.

King County, Department of Research and Technology, Washington State. $100,000 grant awarded to University of Washington: Goal: To investigate odor emissions from biosolids application and the effect of polymers and ash on VOC emissions. 1998.

Northwest Biosolids Management Association, Washington State. $20,000 grant awarded to investigate effect of polymers and ash on VOC emissions from biosolids. 1997.

James River Corporation, Oregon: $10,000 grant was awarded to investigate the success of genetically engineered Poplar trees with resistance to round-up. 1996.

United State Forest Service, Tahoe National Forest: $15,000 grant was awarded to investigating fire ecology of the Tahoe National Forest. 1995.

Kellogg Foundation, Washington D.C. $500 grant was awarded to construct a large anaerobic digester on St. Kitts in West Indies. 1993.

Cases that Dr. Rosenfeld Provided Deposition or Trial Testimony

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continued

In the Court of Common Pleas of Tuscarawas County Ohio
John Michael Abicht, et al., *Plaintiffs,* vs. Republic Services, Inc., et al., *Defendants*
Case Number: 2008 CT 10 0741 (Cons. w/ 2009 CV 10 0987)

In the Court of Common Pleas for the Second Judicial Circuit, State of South Carolina, County of Aiken
David Anderson, et al., *Plaintiffs,* vs. Norfolk Southern Corporation, et al., *Defendants.*
Case Number: 2007-CP-02-1584

In the Circuit Court of Jefferson County Alabama
Jaeanette Moss Anthony, et al., *Plaintiffs*, vs. Drummond Company Inc., et al., *Defendants*
Civil action No. CV 2008-2076

In the Ninth Judicial District Court, Parish of Rapides, State of Louisiana
Roger Price, et al., *Plaintiffs*, vs. Roy O. Martin, L.P., et al., *Defendants*.
Civil Suit Number 224,041 Division G

In the United States District Court, Western District Lafayette Division
Ackle et al., *Plaintiffs*, vs. Citgo Petroleum Corporation, et al., *Defendants*.
Case Number 2:07CV1052

In the United States District Court for the Southern District of Ohio
Carolyn Baker, et al., *Plaintiffs*, vs. Chevron Oil Company, et al., *Defendants*.
Case Number 1:05 CV 227

In the Fourth Judicial District Court, Parish of Calcasieu, State of Louisiana
Craig Steven Arabie, et al., *Plaintiffs*, vs. Citgo Petroleum Corporation, et al., *Defendants*.
Case Number 07-2738 G

In the Fourteenth Judicial District Court, Parish of Calcasieu, State of Louisiana
Leon B. Brydels, *Plaintiffs*, vs. Conoco, Inc., et al., *Defendants.*
Case Number 2004-6941 Division A

In the District Court of Tarrant County, Texas, 153rd Judicial District
Linda Faust, *Plaintiff*, vs. Burlington Northern Santa Fe Rail Way Company, Witco Chemical Corporation A/K/A Witco Corporation, Solvents and Chemicals, Inc. and Koppers Industries, Inc., *Defendants*.
Case Number 153-212928-05

In the Superior Court of the State of California in and for the County of San Bernardino
Leroy Allen, et al., *Plaintiffs*, vs. Nutro Products, Inc., a California Corporation and DOES 1 to 100, inclusive, *Defendants*.
John Loney, Plaintiff, vs. James H. Didion, Sr.; Nutro Products, Inc.; DOES 1 through 20, inclusive, *Defendants*.
Case Number VCVVS044671

In the United States District Court for the Middle District of Alabama, Northern Division
James K. Benefield, et al., *Plaintiffs*, vs. International Paper Company, *Defendant*.
Civil Action Number 2:09-cv-232-WHA-TFM

In the Superior Court of the State of California in and for the County of Los Angeles
Leslie Hensley and Rick Hensley, *Plaintiffs*, vs. Peter T. Hoss, as trustee on behalf of the Cone Fee Trust; Plains Exploration & Production Company, a Delaware corporation; Rayne Water Conditioning, Inc., a California corporation; and DOES 1 through 100, *Defendants.*
Case Number SC094173

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In the Superior Court of the State of California in and for the County of Santa Barbara, Santa Maria Branch
Clifford and Shirley Adelhelm, et al., all individually, *Plaintiffs*, vs. Unocal Corporation, a Delaware Corporation; Union Oil Company of California, a California corporation; Chevron Corporation, a California corporation; ConocoPhillips, a Texas corporation; Kerr-McGee Corporation, an Oklahoma corporation; and DOES 1 though 100, *Defendants.*
Case Number 1229251 (Consolidated with case number 1231299)

In the United States District Court for Eastern District of Arkansas, Eastern District of Arkansas
Harry Stephens Farms, Inc, and Harry Stephens, individual and as managing partner of Stephens Partnership, *Plaintiffs*, vs. Helena Chemical Company, and Exxon Mobil Corp., successor to Mobil Chemical Co., *Defendants.*
Case Number 2:06-CV-00166 JMM (Consolidated with case number 4:07CV00278 JMM)

In the United States District Court for the Western District of Arkansas, Texarkana Division
Rhonda Brasel, et al., *Plaintiffs*, vs. Weyerhaeuser Company and DOES 1 through 100, *Defendants.*
Civil Action Number 07-4037

In The Superior Court of the State of California County of Santa Cruz
Constance Acevedo, et al. *Plaintiffs* Vs. California Spray Company, et al. *Defendants*
Case No CV 146344

In the District Court of Texas 21st Judicial District of Burleson County
Dennis Davis, *Plaintiff*, vs. Burlington Northern Santa Fe Rail Way Company, *Defendant.*
Case Number 25,151

In the United States District Court of Southern District of Texas Galveston Division
Kyle Cannon, Eugene Donovan, Genaro Ramirez, Carol Sassler, and Harvey Walton, each Individually and on behalf of those similarly situated, *Plaintiffs*, vs. BP Products North America, Inc., *Defendant.*
Case 3:10-cv-00622

Start date and time 12/17/19 11:49:53

AERSCREEN 16216

Westport Construction

Westport Construction

---------- DATA ENTRY VALIDATION ----------

** AREADATA **	METRIC	ENGLISH
Emission Rate:	0.334E-02 g/s	0.265E-01 lb/hr
Area Height:	3.00 meters	9.84 feet
Area Source Length:	264.00 meters	866.14 feet
Area Source Width:	124.00 meters	406.82 feet
Vertical Dimension:	1.50 meters	4.92 feet
Model Mode:	URBAN	
Population:	60777	
Dist to Ambient Air:	1.0 meters	3. feet

** BUILDING DATA **

No Building Downwash Parameters

** TERRAIN DATA **

No Terrain Elevations

Source Base Elevation: 0.0 meters 0.0 feet

Probe distance: 5000. meters 16404. feet

No flagpole receptors

No discrete receptors used

** FUMIGATION DATA **

No fumigation requested

** METEOROLOGY DATA **

Min/Max Temperature: 250.0 / 310.0 K -9.7 / 98.3 Deg F

Minimum Wind Speed: 0.5 m/s

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 Anemometer Height:   10.000 meters

 Dominant Surface Profile: Urban

 Dominant Climate Type:    Average Moisture

 Surface friction velocity (u*): not adjusted

DEBUG OPTION ON




 AERSCREEN output file:

 Westport_Construction.out



 *** AERSCREEN Run is Ready to Begin




 No terrain used, AERMAP will not be run

**************************************************

SURFACE CHARACTERISTICS & MAKEMET

Obtaining surface characteristics...
```

Using AERMET seasonal surface characteristics for Urban with Average Moisture

Season	Albedo	Bo	zo
Winter	0.35	1.50	1.000
Spring	0.14	1.00	1.000
Summer	0.16	2.00	1.000
Autumn	0.18	2.00	1.000

Creating met files aerscreen_01_01.sfc & aerscreen_01_01.pfl

Creating met files aerscreen_02_01.sfc & aerscreen_02_01.pfl

Creating met files aerscreen_03_01.sfc & aerscreen_03_01.pfl

Creating met files aerscreen_04_01.sfc & aerscreen_04_01.pfl

Buildings and/or terrain present or rectangular area source, skipping probe

FLOWSECTOR started 12/17/19 11:50:45

****

Running AERMOD

Processing Winter

Processing surface roughness sector 1

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**************************************************

Processing wind flow sector   1

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector   0

    ********   WARNING MESSAGES   ********

               ***  NONE  ***

**************************************************

Processing wind flow sector   2

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector   5

    ********   WARNING MESSAGES   ********

               ***  NONE  ***

**************************************************

Processing wind flow sector   3

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector  10

    ********   WARNING MESSAGES   ********

               ***  NONE  ***
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**************************************************

Processing wind flow sector   4

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector  15

    ********   WARNING MESSAGES   ********

               ***  NONE  ***

**************************************************

Processing wind flow sector   5

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector  20

    ********   WARNING MESSAGES   ********

               ***  NONE  ***

**************************************************

Processing wind flow sector   6

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector  25

    ********   WARNING MESSAGES   ********

               ***  NONE  ***

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Processing wind flow sector   7

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector  30

    ********   WARNING MESSAGES   ********
               ***  NONE  ***
 ******************************************

  Running AERMOD
 Processing Spring

Processing surface roughness sector  1

**************************************************
Processing wind flow sector   1

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector   0

    ********   WARNING MESSAGES   ********
               ***  NONE  ***

**************************************************
Processing wind flow sector   2

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector   5
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```
    ********   WARNING MESSAGES   ********

               ***  NONE  ***


**************************************************

Processing wind flow sector   3


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector  10


    ********   WARNING MESSAGES   ********

               ***  NONE  ***


**************************************************

Processing wind flow sector   4


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector  15


    ********   WARNING MESSAGES   ********

               ***  NONE  ***


**************************************************

Processing wind flow sector   5


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector  20
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    ********   WARNING MESSAGES   ********

               ***  NONE  ***


**************************************************

Processing wind flow sector   6


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector  25


    ********   WARNING MESSAGES   ********

               ***  NONE  ***


**************************************************

Processing wind flow sector   7


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector  30


    ********   WARNING MESSAGES   ********

               ***  NONE  ***

 ****************************************


  Running AERMOD

 Processing Summer


Processing surface roughness sector  1
```

```
**************************************************

Processing wind flow sector   1

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector   0

    ********   WARNING MESSAGES   ********

               ***  NONE  ***

**************************************************

Processing wind flow sector   2

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector   5

    ********   WARNING MESSAGES   ********

               ***  NONE  ***

**************************************************

Processing wind flow sector   3

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector  10

    ********   WARNING MESSAGES   ********

               ***  NONE  ***

**************************************************
```

```
Processing wind flow sector   4

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector  15

    ********   WARNING MESSAGES   ********
               ***  NONE  ***

**************************************************
Processing wind flow sector   5

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector  20

    ********   WARNING MESSAGES   ********
               ***  NONE  ***

**************************************************
Processing wind flow sector   6

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector  25

    ********   WARNING MESSAGES   ********
               ***  NONE  ***

**************************************************
Processing wind flow sector   7
```

```
 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector  30

    ********   WARNING MESSAGES   ********

               ***  NONE  ***

 *****************************************

  Running AERMOD

 Processing Autumn

Processing surface roughness sector  1

**************************************************

Processing wind flow sector   1

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector   0

    ********   WARNING MESSAGES   ********

               ***  NONE  ***

**************************************************

Processing wind flow sector   2

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector   5
```

```
    ********   WARNING MESSAGES   ********

               ***  NONE  ***


**************************************************

Processing wind flow sector   3


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector  10


    ********   WARNING MESSAGES   ********

               ***  NONE  ***


**************************************************

Processing wind flow sector   4


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector  15


    ********   WARNING MESSAGES   ********

               ***  NONE  ***


**************************************************

Processing wind flow sector   5


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector  20


    ********   WARNING MESSAGES   ********
```

```
               ***  NONE  ***

**************************************************
Processing wind flow sector   6

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector  25

    ********   WARNING MESSAGES   ********
               ***  NONE  ***

**************************************************
Processing wind flow sector   7

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector  30

    ********   WARNING MESSAGES   ********
               ***  NONE  ***

FLOWSECTOR   ended 12/17/19 11:51:01

REFINE       started 12/17/19 11:51:01

 AERMOD Finishes Successfully for REFINE stage 3 Winter sector   0

    ********   WARNING MESSAGES   ********
```

*** NONE ***

REFINE ended 12/17/19 11:51:03

****

AERSCREEN Finished Successfully

With no errors or warnings

Check log file for details

****

Ending date and time 12/17/19 11:51:05

Concentration			Distance	Elevation	Diag	Season/Month	Zo sector		Date					
H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	HT	REF TA	HT	
0.30567E+01		1.00	0.00	5.0		Winter	0-360	10011001						
-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0	
0.32789E+01		25.00	0.00	0.0		Winter	0-360	10011001						
-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0	
0.34819E+01		50.00	0.00	0.0		Winter	0-360	10011001						
-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0	
0.36578E+01		75.00	0.00	0.0		Winter	0-360	10011001						
-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0	
0.38122E+01		100.00	0.00	5.0		Winter	0-360	10011001						
-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0	
0.39530E+01		125.00	0.00	5.0		Winter	0-360	10011001						
-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0	
* 0.39924E+01		133.00	0.00	5.0		Winter	0-360	10011001						
-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0	
0.35022E+01		150.00	0.00	25.0		Winter	0-360	10011001						
-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0	
0.25927E+01		175.00	0.00	20.0		Winter	0-360	10011001						
-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0	
0.21191E+01		200.00	0.00	0.0		Winter	0-360	10011001						
-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0	
0.18376E+01		225.00	0.00	0.0		Winter	0-360	10011001						
-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0	
0.16145E+01		250.00	0.00	0.0		Winter	0-360	10011001						
-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0	
0.14341E+01		275.00	0.00	0.0		Winter	0-360	10011001						
-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0	
0.12856E+01		300.00	0.00	0.0		Winter	0-360	10011001						
-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0	
0.11620E+01		325.00	0.00	0.0		Winter	0-360	10011001						
-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0	
0.10570E+01		350.00	0.00	0.0		Winter	0-360	10011001						
-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0			

```
310.0    2.0
   0.96798E+00       375.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.89043E+00       400.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.82322E+00       425.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.76409E+00       450.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.71257E+00       475.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.66612E+00       500.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.62481E+00       525.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.58796E+00       550.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.55435E+00       575.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.52416E+00       600.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.49690E+00       625.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.47187E+00       650.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.44866E+00       675.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.42746E+00       700.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.40801E+00       725.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.39012E+00       750.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.37361E+00       775.00      0.00   0.0        Winter       0-360   10011001
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-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.35816E+00       800.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.34374E+00       825.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.33030E+00       850.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.31770E+00       875.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.30593E+00       900.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.29493E+00       925.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.28462E+00       950.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.27494E+00       975.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.26580E+00      1000.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.25711E+00      1025.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.24891E+00      1050.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.24116E+00      1075.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.23384E+00      1100.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.22690E+00      1125.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.22032E+00      1150.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.21408E+00      1175.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
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   0.20811E+00      1200.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.20241E+00      1225.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.19698E+00      1250.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.19180E+00      1275.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.18686E+00      1300.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.18214E+00      1325.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.17761E+00      1350.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.17324E+00      1375.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.16905E+00      1400.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.16504E+00      1425.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.16120E+00      1450.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.15751E+00      1475.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.15396E+00      1500.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.15057E+00      1525.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.14729E+00      1550.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.14413E+00      1575.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.14109E+00      1600.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
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310.0    2.0
   0.13817E+00      1625.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.13535E+00      1650.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.13263E+00      1675.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.13001E+00      1700.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.12747E+00      1725.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.12502E+00      1750.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.12266E+00      1775.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.12037E+00      1800.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.11815E+00      1825.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.11600E+00      1850.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.11391E+00      1875.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.11188E+00      1900.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.10992E+00      1925.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.10802E+00      1950.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.10617E+00      1975.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.10437E+00      2000.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.10262E+00      2025.00      0.00   0.0        Winter       0-360   10011001
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-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.10092E+00      2050.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.99271E-01      2075.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.97667E-01      2100.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.96107E-01      2125.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.94590E-01      2150.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.93114E-01      2175.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.91678E-01      2200.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.90281E-01      2225.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.88924E-01      2250.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.87601E-01      2275.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.86310E-01      2300.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.85952E-01      2325.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.84702E-01      2350.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.83484E-01      2375.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.82295E-01      2400.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.81136E-01      2425.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
```

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   0.80004E-01      2450.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.78900E-01      2475.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.77822E-01      2500.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.76769E-01      2525.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.75740E-01      2550.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.74735E-01      2575.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.73753E-01      2600.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.72793E-01      2625.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.71855E-01      2650.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.70937E-01      2675.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.70039E-01      2700.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.69161E-01      2725.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.68302E-01      2750.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.67461E-01      2775.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.66638E-01      2800.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.65832E-01      2825.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.65043E-01      2850.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
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310.0    2.0
   0.64270E-01      2875.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.63513E-01      2900.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.62771E-01      2925.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.62044E-01      2950.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.61331E-01      2975.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.60633E-01      3000.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.59948E-01      3025.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.59277E-01      3050.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.58618E-01      3075.00      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.57972E-01      3100.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.57338E-01      3125.00      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.56717E-01      3150.00      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.56106E-01      3174.99      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.55507E-01      3199.99      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.54919E-01      3225.00      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.54342E-01      3250.00      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.53775E-01      3275.00      0.00   0.0        Winter       0-360   10011001
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-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.53218E-01      3300.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.52672E-01      3325.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.52134E-01      3350.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.51607E-01      3375.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.51088E-01      3400.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.50579E-01      3425.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.50078E-01      3450.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.49585E-01      3475.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.49102E-01      3500.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.48626E-01      3525.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.48158E-01      3550.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.47698E-01      3575.00      0.00  15.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.47245E-01      3600.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.46800E-01      3625.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.46362E-01      3650.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.45931E-01      3675.00      0.00  20.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
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   0.45507E-01      3700.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.45089E-01      3725.00      0.00  15.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.44679E-01      3750.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.44274E-01      3775.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.43876E-01      3800.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.43484E-01      3825.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.43099E-01      3849.99      0.00  15.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.42718E-01      3875.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.42344E-01      3900.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.41976E-01      3925.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.41613E-01      3950.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.41255E-01      3975.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.40903E-01      4000.00      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.40556E-01      4025.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.40213E-01      4050.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.39876E-01      4075.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.39544E-01      4100.00      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
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310.0    2.0
   0.39217E-01      4125.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.38894E-01      4150.00      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.38576E-01      4175.00      0.00  25.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.38262E-01      4200.00      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.37953E-01      4225.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.37648E-01      4250.00      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.37347E-01      4275.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.37050E-01      4300.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.36757E-01      4325.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.36469E-01      4350.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.36184E-01      4375.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.35903E-01      4400.00      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.35626E-01      4425.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.35352E-01      4450.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.35083E-01      4475.00      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.34816E-01      4500.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.34553E-01      4525.00      0.00   0.0        Winter       0-360   10011001
```

```
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.34294E-01      4550.00      0.00  15.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.34038E-01      4575.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.33785E-01      4600.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.33535E-01      4625.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.33289E-01      4650.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.33046E-01      4675.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.32806E-01      4700.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.32569E-01      4725.00      0.00  25.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.32334E-01      4750.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.32103E-01      4775.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.31875E-01      4800.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.31649E-01      4825.00      0.00  15.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.31426E-01      4850.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.31206E-01      4875.00      0.00  30.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.30988E-01      4900.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.30773E-01      4924.99      0.00  15.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
```

```
   0.30561E-01      4950.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.30351E-01      4975.00      0.00  15.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.30144E-01      5000.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
```

Start date and time 12/17/19 11:51:12

AERSCREEN 16216

Westport Operation

Westport Operation

---------- DATA ENTRY VALIDATION ----------

** AREADATA **	METRIC	ENGLISH
Emission Rate:	0.103E-02 g/s	0.815E-02 lb/hr
Area Height:	3.00 meters	9.84 feet
Area Source Length:	264.00 meters	866.14 feet
Area Source Width:	124.00 meters	406.82 feet
Vertical Dimension:	1.50 meters	4.92 feet
Model Mode:	URBAN	
Population:	60777	
Dist to Ambient Air:	1.0 meters	3. feet

** BUILDING DATA **

No Building Downwash Parameters

** TERRAIN DATA **

No Terrain Elevations

Source Base Elevation: 0.0 meters 0.0 feet

Probe distance: 5000. meters 16404. feet

No flagpole receptors

No discrete receptors used

** FUMIGATION DATA **

No fumigation requested

** METEOROLOGY DATA **

Min/Max Temperature: 250.0 / 310.0 K -9.7 / 98.3 Deg F

Minimum Wind Speed: 0.5 m/s

```
 Anemometer Height:   10.000 meters

 Dominant Surface Profile: Urban

 Dominant Climate Type:    Average Moisture

 Surface friction velocity (u*): not adjusted

DEBUG OPTION ON




 AERSCREEN output file:

 Westport_Operation.out



 *** AERSCREEN Run is Ready to Begin




 No terrain used, AERMAP will not be run

************************************************

SURFACE CHARACTERISTICS & MAKEMET

Obtaining surface characteristics...
```

Using AERMET seasonal surface characteristics for Urban with Average Moisture

Season	Albedo	Bo	zo
Winter	0.35	1.50	1.000
Spring	0.14	1.00	1.000
Summer	0.16	2.00	1.000
Autumn	0.18	2.00	1.000

Creating met files aerscreen_01_01.sfc & aerscreen_01_01.pfl

Creating met files aerscreen_02_01.sfc & aerscreen_02_01.pfl

Creating met files aerscreen_03_01.sfc & aerscreen_03_01.pfl

Creating met files aerscreen_04_01.sfc & aerscreen_04_01.pfl

Buildings and/or terrain present or rectangular area source, skipping probe

FLOWSECTOR started 12/17/19 11:51:53

****

Running AERMOD

Processing Winter

Processing surface roughness sector 1

```
**************************************************

Processing wind flow sector   1

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector   0

    ********   WARNING MESSAGES   ********

               ***  NONE  ***

**************************************************

Processing wind flow sector   2

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector   5

    ********   WARNING MESSAGES   ********

               ***  NONE  ***

**************************************************

Processing wind flow sector   3

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector  10

    ********   WARNING MESSAGES   ********

               ***  NONE  ***
```

```
**************************************************

Processing wind flow sector   4

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector  15

    ********   WARNING MESSAGES   ********

               ***  NONE  ***

**************************************************

Processing wind flow sector   5

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector  20

    ********   WARNING MESSAGES   ********

               ***  NONE  ***

**************************************************

Processing wind flow sector   6

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector  25

    ********   WARNING MESSAGES   ********

               ***  NONE  ***

**************************************************
```

```
Processing wind flow sector   7

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector  30

    ********   WARNING MESSAGES   ********
               ***  NONE  ***
 ******************************************

  Running AERMOD
 Processing Spring

Processing surface roughness sector  1

**************************************************
Processing wind flow sector   1

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector   0

    ********   WARNING MESSAGES   ********
               ***  NONE  ***

**************************************************
Processing wind flow sector   2

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector   5
```

```
    ********   WARNING MESSAGES   ********

               ***  NONE  ***


**************************************************

Processing wind flow sector   3


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector  10


    ********   WARNING MESSAGES   ********

               ***  NONE  ***


**************************************************

Processing wind flow sector   4


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector  15


    ********   WARNING MESSAGES   ********

               ***  NONE  ***


**************************************************

Processing wind flow sector   5


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector  20
```

```
    ********   WARNING MESSAGES   ********

               ***  NONE  ***


**************************************************

Processing wind flow sector   6


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector  25


    ********   WARNING MESSAGES   ********

               ***  NONE  ***


**************************************************

Processing wind flow sector   7


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector  30


    ********   WARNING MESSAGES   ********

               ***  NONE  ***

 ****************************************


  Running AERMOD

 Processing Summer


Processing surface roughness sector  1
```

```
**************************************************

Processing wind flow sector   1

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector   0

    ********   WARNING MESSAGES   ********

               ***  NONE  ***

**************************************************

Processing wind flow sector   2

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector   5

    ********   WARNING MESSAGES   ********

               ***  NONE  ***

**************************************************

Processing wind flow sector   3

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector  10

    ********   WARNING MESSAGES   ********

               ***  NONE  ***

**************************************************
```

```
Processing wind flow sector   4

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector  15

    ********   WARNING MESSAGES   ********
               ***  NONE  ***

**************************************************
Processing wind flow sector   5

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector  20

    ********   WARNING MESSAGES   ********
               ***  NONE  ***

**************************************************
Processing wind flow sector   6

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector  25

    ********   WARNING MESSAGES   ********
               ***  NONE  ***

**************************************************
Processing wind flow sector   7
```

```
 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector  30

    ********   WARNING MESSAGES   ********

               ***  NONE  ***

 *****************************************

  Running AERMOD

 Processing Autumn

Processing surface roughness sector  1

**************************************************

Processing wind flow sector   1

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector   0

    ********   WARNING MESSAGES   ********

               ***  NONE  ***

**************************************************

Processing wind flow sector   2

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector   5
```

```
    ********   WARNING MESSAGES   ********

               ***  NONE  ***


**************************************************

Processing wind flow sector   3


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector  10


    ********   WARNING MESSAGES   ********

               ***  NONE  ***


**************************************************

Processing wind flow sector   4


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector  15


    ********   WARNING MESSAGES   ********

               ***  NONE  ***


**************************************************

Processing wind flow sector   5


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector  20


    ********   WARNING MESSAGES   ********
```

```
               ***  NONE  ***

**************************************************
Processing wind flow sector   6

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector  25

    ********   WARNING MESSAGES   ********
               ***  NONE  ***

**************************************************
Processing wind flow sector   7

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector  30

    ********   WARNING MESSAGES   ********
               ***  NONE  ***

FLOWSECTOR   ended 12/17/19 11:52:10

REFINE       started 12/17/19 11:52:10

 AERMOD Finishes Successfully for REFINE stage 3 Winter sector   0

    ********   WARNING MESSAGES   ********
```

*** NONE ***

REFINE ended 12/17/19 11:52:12

****

AERSCREEN Finished Successfully

With no errors or warnings

Check log file for details

****

Ending date and time 12/17/19 11:52:14

```
 Concentration     Distance Elevation  Diag  Season/Month   Zo sector       Date
 H0     U*     W*  DT/DZ ZICNV ZIMCH  M-O LEN    Z0  BOWEN ALBEDO  REF WS     HT
REF TA     HT
   0.94100E+00         1.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.10094E+01        25.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.10719E+01        50.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.11261E+01        75.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.11736E+01       100.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.12169E+01       125.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
*  0.12291E+01       133.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.10782E+01       150.00      0.00  25.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.79816E+00       175.00      0.00  20.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.65237E+00       200.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.56572E+00       225.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.49702E+00       250.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.44148E+00       275.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.39577E+00       300.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.35772E+00       325.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.32540E+00       350.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
```

```
310.0    2.0
   0.29799E+00       375.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.27412E+00       400.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.25343E+00       425.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.23523E+00       450.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.21937E+00       475.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.20507E+00       500.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.19235E+00       525.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.18100E+00       550.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.17066E+00       575.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.16136E+00       600.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.15297E+00       625.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.14526E+00       650.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.13812E+00       675.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.13159E+00       700.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.12561E+00       725.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.12010E+00       750.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.11502E+00       775.00      0.00   0.0        Winter       0-360   10011001
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-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.11026E+00       800.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.10582E+00       825.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.10168E+00       850.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.97804E-01       875.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.94182E-01       900.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.90794E-01       925.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.87620E-01       950.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.84639E-01       975.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.81828E-01      1000.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.79151E-01      1025.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.76627E-01      1050.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.74242E-01      1075.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.71987E-01      1100.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.69852E-01      1125.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.67826E-01      1150.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.65903E-01      1175.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
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   0.64067E-01      1200.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.62312E-01      1225.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.60640E-01      1250.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.59046E-01      1275.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.57526E-01      1300.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.56073E-01      1325.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.54676E-01      1350.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.53331E-01      1375.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.52043E-01      1400.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.50809E-01      1425.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.49625E-01      1450.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.48489E-01      1475.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.47398E-01      1500.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.46355E-01      1525.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.45344E-01      1550.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.44371E-01      1575.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.43436E-01      1600.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
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310.0    2.0
   0.42536E-01      1625.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.41668E-01      1650.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.40831E-01      1675.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.40023E-01      1700.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.39242E-01      1725.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.38488E-01      1750.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.37760E-01      1775.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.37055E-01      1800.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.36373E-01      1825.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.35709E-01      1850.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.35066E-01      1875.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.34443E-01      1900.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.33839E-01      1925.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.33254E-01      1950.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.32686E-01      1975.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.32131E-01      2000.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.31592E-01      2025.00      0.00   0.0        Winter       0-360   10011001
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-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.31069E-01      2050.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.30561E-01      2075.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.30067E-01      2100.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.29586E-01      2125.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.29120E-01      2150.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.28665E-01      2175.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.28223E-01      2200.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.27793E-01      2225.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.27375E-01      2250.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.26968E-01      2275.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.26571E-01      2300.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.26460E-01      2325.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.26076E-01      2350.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.25701E-01      2375.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.25335E-01      2400.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.24978E-01      2425.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
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   0.24629E-01      2450.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.24289E-01      2475.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.23958E-01      2500.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.23633E-01      2525.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.23317E-01      2550.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.23007E-01      2575.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.22705E-01      2600.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.22409E-01      2625.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.22120E-01      2650.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.21838E-01      2675.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.21562E-01      2700.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.21291E-01      2725.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.21027E-01      2750.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.20768E-01      2775.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.20514E-01      2800.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.20266E-01      2825.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.20024E-01      2850.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
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310.0    2.0
   0.19786E-01      2875.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.19553E-01      2900.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.19324E-01      2925.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.19100E-01      2950.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.18881E-01      2975.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.18666E-01      3000.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.18455E-01      3025.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.18248E-01      3050.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.18046E-01      3075.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.17847E-01      3100.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.17652E-01      3125.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.17460E-01      3150.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.17272E-01      3175.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.17088E-01      3200.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.16907E-01      3225.00      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.16729E-01      3250.00      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.16555E-01      3275.00      0.00   0.0        Winter       0-360   10011001
```

-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.16383E-01   3300.00   0.00   0.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.16215E-01   3325.00   0.00   0.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.16050E-01   3350.00   0.00   5.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.15887E-01   3375.00   0.00   0.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.15728E-01   3400.00   0.00   5.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.15571E-01   3425.00   0.00   0.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.15417E-01   3450.00   0.00   0.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.15265E-01   3475.00   0.00   0.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.15116E-01   3500.00   0.00   0.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.14969E-01   3525.00   0.00   0.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.14825E-01   3550.00   0.00   0.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.14684E-01   3575.00   0.00   0.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.14544E-01   3600.00   0.00   0.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.14407E-01   3625.00   0.00   0.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.14272E-01   3650.00   0.00   0.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.14140E-01   3675.00   0.00   0.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0

```
   0.14009E-01      3700.00      0.00  20.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.13881E-01      3725.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.13754E-01      3750.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.13630E-01      3775.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.13507E-01      3800.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.13387E-01      3825.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.13268E-01      3850.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.13151E-01      3875.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.13036E-01      3900.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.12922E-01      3925.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.12811E-01      3950.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.12700E-01      3975.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.12592E-01      4000.00      0.00  15.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.12485E-01      4025.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.12380E-01      4050.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.12276E-01      4075.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.12174E-01      4100.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
```

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310.0    2.0
   0.12073E-01      4125.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.11974E-01      4150.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.11876E-01      4175.00      0.00  25.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.11779E-01      4200.00      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.11684E-01      4225.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.11590E-01      4250.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.11497E-01      4275.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.11406E-01      4300.00      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.11316E-01      4325.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.11227E-01      4350.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.11139E-01      4375.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.11053E-01      4400.00      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.10967E-01      4425.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.10883E-01      4450.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.10800E-01      4475.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.10718E-01      4500.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.10637E-01      4525.00      0.00   5.0        Winter       0-360   10011001
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-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.10557E-01      4550.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.10479E-01      4575.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.10401E-01      4600.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.10324E-01      4625.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.10248E-01      4650.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.10173E-01      4675.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.10099E-01      4700.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.10026E-01      4725.00      0.00  25.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.99541E-02      4750.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.98829E-02      4775.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.98126E-02      4800.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.97431E-02      4825.00      0.00  15.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.96745E-02      4850.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.96067E-02      4875.00      0.00  30.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.95398E-02      4900.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.94736E-02      4924.99      0.00  15.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
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   0.94082E-02      4950.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.93436E-02      4975.00      0.00  15.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.92798E-02      5000.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
```

Westport

Santa Clara County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Enclosed Parking Structure	148.04	1000sqft	3.40	148,040.00	0
Parking Lot	117.00	Space	1.05	46,800.00	0
Apartments Low Rise	88.00	Dwelling Unit	5.50	248,000.00	252
Apartments Mid Rise	115.00	Dwelling Unit	3.03	193,500.00	329
Retirement Community	39.00	Dwelling Unit	7.80	38,800.00	112
Strip Mall	20.00	1000sqft	0.46	20,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	4			**Operational Year**	2020
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Matches DEIR's model. See SWAPE comment about parking garage.

Construction Phase - Matches DEIR's model.

Grading -

Demolition - Matches DEIR's model.

Vehicle Trips - Matches DEIR's model.

Woodstoves - Matches DEIR's model.

Construction Off-road Equipment Mitigation - See SWAPE comment about construction mitigation measures.

Mobile Land Use Mitigation - See SWAPE comment about mobile mitigation measures.

Area Mitigation -

Water Mitigation - Matches DEIR's model.

Waste Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	20.00	109.00
tblConstructionPhase	NumDays	370.00	381.00
tblConstructionPhase	NumDays	20.00	22.00
tblConstructionPhase	NumDays	35.00	88.00
tblConstructionPhase	NumDays	20.00	22.00
tblConstructionPhase	PhaseEndDate	10/26/2020	12/31/2020
tblConstructionPhase	PhaseEndDate	8/31/2020	12/31/2020
tblConstructionPhase	PhaseEndDate	1/28/2019	1/30/2019
tblConstructionPhase	PhaseEndDate	4/1/2019	6/17/2019
tblConstructionPhase	PhaseEndDate	9/28/2020	7/17/2019
tblConstructionPhase	PhaseEndDate	2/11/2019	2/13/2019
tblConstructionPhase	PhaseStartDate	9/29/2020	8/1/2020

tblConstructionPhase	PhaseStartDate	4/2/2019	7/18/2019
tblConstructionPhase	PhaseStartDate	2/12/2019	2/14/2019
tblConstructionPhase	PhaseStartDate	9/1/2020	6/18/2019
tblConstructionPhase	PhaseStartDate	1/29/2019	1/31/2019
tblFireplaces	NumberWood	14.96	0.00
tblFireplaces	NumberWood	19.55	0.00
tblFireplaces	NumberWood	6.63	0.00
tblGrading	MaterialExported	0.00	69,000.00
tblLandUse	LandUseSquareFeet	88,000.00	248,000.00
tblLandUse	LandUseSquareFeet	115,000.00	193,500.00
tblLandUse	LandUseSquareFeet	39,000.00	38,800.00
tblVehicleTrips	PB_TP	15.00	0.00
tblVehicleTrips	PR_TP	45.00	60.00
tblVehicleTrips	SU_TR	6.07	6.76
tblVehicleTrips	SU_TR	5.86	5.02
tblVehicleTrips	SU_TR	1.95	3.31
tblVehicleTrips	SU_TR	20.43	31.65
tblVehicleTrips	WD_TR	6.59	7.32
tblVehicleTrips	WD_TR	6.65	5.44
tblVehicleTrips	WD_TR	2.40	3.73
tblVehicleTrips	WD_TR	44.32	37.75

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.5465	6.3394	3.8741	0.0111	0.7446	0.2319	0.9765	0.2772	0.2154	0.4926	0.0000	1,021.5433	1,021.5433	0.1589	0.0000	1,025.5151
2020	3.9719	3.6037	3.4792	8.6600e-003	0.3473	0.1588	0.5061	0.0936	0.1497	0.2433	0.0000	778.9596	778.9596	0.0909	0.0000	781.2315
Maximum	**3.9719**	**6.3394**	**3.8741**	**0.0111**	**0.7446**	**0.2319**	**0.9765**	**0.2772**	**0.2154**	**0.4926**	**0.0000**	**1,021.5433**	**1,021.5433**	**0.1589**	**0.0000**	**1,025.5151**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.5465	6.3394	3.8741	0.0111	0.7446	0.2319	0.9765	0.2772	0.2154	0.4926	0.0000	1,021.5428	1,021.5428	0.1589	0.0000	1,025.5145
2020	3.9719	3.6037	3.4792	8.6600e-003	0.3473	0.1588	0.5061	0.0936	0.1497	0.2433	0.0000	778.9592	778.9592	0.0909	0.0000	781.2312
Maximum	**3.9719**	**6.3394**	**3.8741**	**0.0111**	**0.7446**	**0.2319**	**0.9765**	**0.2772**	**0.2154**	**0.4926**	**0.0000**	**1,021.5428**	**1,021.5428**	**0.1589**	**0.0000**	**1,025.5145**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-1-2019	3-31-2019	2.2172	2.2172
2	4-1-2019	6-30-2019	2.5899	2.5899
3	7-1-2019	9-30-2019	0.9855	0.9855
4	10-1-2019	12-31-2019	1.0936	1.0936
5	1-1-2020	3-31-2020	0.9797	0.9797
6	4-1-2020	6-30-2020	0.9709	0.9709
7	7-1-2020	9-30-2020	2.4393	2.4393
		Highest	2.5899	2.5899

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	2.3937	0.0276	1.9800	6.8000e-004		0.0384	0.0384		0.0384	0.0384	3.7744	7.4719	11.2463	0.0206	8.0000e-005	11.7863
Energy	0.0126	0.1078	0.0468	6.9000e-004		8.7000e-003	8.7000e-003		8.7000e-003	8.7000e-003	0.0000	736.7642	736.7642	0.0301	8.0100e-003	739.9035
Mobile	0.5756	2.3600	6.5771	0.0202	1.7496	0.0204	1.7700	0.4684	0.0191	0.4875	0.0000	1,848.8172	1,848.8172	0.0679	0.0000	1,850.5154
Waste						0.0000	0.0000		0.0000	0.0000	26.8598	0.0000	26.8598	1.5874	0.0000	66.5439
Water						0.0000	0.0000		0.0000	0.0000	5.4722	38.1972	43.6694	0.5638	0.0136	61.8251
Total	**2.9819**	**2.4954**	**8.6038**	**0.0216**	**1.7496**	**0.0675**	**1.8171**	**0.4684**	**0.0662**	**0.5346**	**36.1064**	**2,631.2505**	**2,667.3569**	**2.2698**	**0.0217**	**2,730.5741**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	2.3747	0.0248	1.8072	1.2000e-004		0.0102	0.0102		0.0102	0.0102	0.0000	7.4719	7.4719	2.9600e-003	8.0000e-005	7.5708
Energy	0.0126	0.1078	0.0468	6.9000e-004		8.7000e-003	8.7000e-003		8.7000e-003	8.7000e-003	0.0000	736.7642	736.7642	0.0301	8.0100e-003	739.9035
Mobile	0.5381	2.0924	5.6343	0.0165	1.3997	0.0168	1.4165	0.3747	0.0157	0.3904	0.0000	1,505.1366	1,505.1366	0.0583	0.0000	1,506.5928
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	4.3778	32.0931	36.4708	0.4511	0.0109	51.0014
Total	**2.9254**	**2.2250**	**7.4882**	**0.0173**	**1.3997**	**0.0357**	**1.4354**	**0.3747**	**0.0347**	**0.4094**	**4.3778**	**2,281.4658**	**2,285.8436**	**0.5424**	**0.0190**	**2,305.0684**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**1.89**	**10.83**	**12.97**	**20.01**	**20.00**	**47.11**	**21.01**	**20.00**	**47.67**	**23.43**	**87.88**	**13.29**	**14.30**	**76.10**	**12.48**	**15.58**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2019	1/30/2019	5	22	
2	Site Preparation	Site Preparation	1/31/2019	2/13/2019	5	10	
3	Grading	Grading	2/14/2019	6/17/2019	5	88	
4	Building Construction	Building Construction	7/18/2019	12/31/2020	5	381	
5	Paving	Paving	6/18/2019	7/17/2019	5	22	
6	Architectural Coating	Architectural Coating	8/1/2020	12/31/2020	5	109	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 220

Acres of Paving: 4.45

Residential Indoor: 972,608; Residential Outdoor: 324,203; Non-Residential Indoor: 30,000; Non-Residential Outdoor: 10,000; Striped Parking Area: 11,690 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Demolition	Excavators	3	8.00	158	0.38
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Excavators	2	8.00	158	0.38
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Paving	Pavers	2	8.00	130	0.42
Paving	Rollers	2	8.00	80	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Paving Equipment	2	8.00	132	0.36
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	324.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	8,625.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	262.00	61.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	52.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0351	0.0000	0.0351	5.3100e-003	0.0000	5.3100e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0387	0.3936	0.2427	4.3000e-004		0.0197	0.0197		0.0184	0.0184	0.0000	38.0890	38.0890	0.0106	0.0000	38.3539
Total	**0.0387**	**0.3936**	**0.2427**	**4.3000e-004**	**0.0351**	**0.0197**	**0.0548**	**5.3100e-003**	**0.0184**	**0.0237**	**0.0000**	**38.0890**	**38.0890**	**0.0106**	**0.0000**	**38.3539**

3.2 Demolition - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.4700e-003	0.0504	9.9600e-003	1.3000e-004	2.7500e-003	1.9000e-004	2.9400e-003	7.5000e-004	1.9000e-004	9.4000e-004	0.0000	12.4845	12.4845	5.9000e-004	0.0000	12.4991
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.0000e-004	4.5000e-004	4.6100e-003	1.0000e-005	1.3100e-003	1.0000e-005	1.3200e-003	3.5000e-004	1.0000e-005	3.6000e-004	0.0000	1.1584	1.1584	3.0000e-005	0.0000	1.1592
Total	**2.0700e-003**	**0.0509**	**0.0146**	**1.4000e-004**	**4.0600e-003**	**2.0000e-004**	**4.2600e-003**	**1.1000e-003**	**2.0000e-004**	**1.3000e-003**	**0.0000**	**13.6429**	**13.6429**	**6.2000e-004**	**0.0000**	**13.6583**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0351	0.0000	0.0351	5.3100e-003	0.0000	5.3100e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0387	0.3936	0.2427	4.3000e-004		0.0197	0.0197		0.0184	0.0184	0.0000	38.0889	38.0889	0.0106	0.0000	38.3538
Total	**0.0387**	**0.3936**	**0.2427**	**4.3000e-004**	**0.0351**	**0.0197**	**0.0548**	**5.3100e-003**	**0.0184**	**0.0237**	**0.0000**	**38.0889**	**38.0889**	**0.0106**	**0.0000**	**38.3538**

3.2 Demolition - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.4700e-003	0.0504	9.9600e-003	1.3000e-004	2.7500e-003	1.9000e-004	2.9400e-003	7.5000e-004	1.9000e-004	9.4000e-004	0.0000	12.4845	12.4845	5.9000e-004	0.0000	12.4991
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.0000e-004	4.5000e-004	4.6100e-003	1.0000e-005	1.3100e-003	1.0000e-005	1.3200e-003	3.5000e-004	1.0000e-005	3.6000e-004	0.0000	1.1584	1.1584	3.0000e-005	0.0000	1.1592
Total	**2.0700e-003**	**0.0509**	**0.0146**	**1.4000e-004**	**4.0600e-003**	**2.0000e-004**	**4.2600e-003**	**1.1000e-003**	**2.0000e-004**	**1.3000e-003**	**0.0000**	**13.6429**	**13.6429**	**6.2000e-004**	**0.0000**	**13.6583**

3.3 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0217	0.2279	0.1103	1.9000e-004		0.0120	0.0120		0.0110	0.0110	0.0000	17.0843	17.0843	5.4100e-003	0.0000	17.2195
Total	**0.0217**	**0.2279**	**0.1103**	**1.9000e-004**	**0.0903**	**0.0120**	**0.1023**	**0.0497**	**0.0110**	**0.0607**	**0.0000**	**17.0843**	**17.0843**	**5.4100e-003**	**0.0000**	**17.2195**

3.3 Site Preparation - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.3000e-004	2.4000e-004	2.5100e-003	1.0000e-005	7.1000e-004	0.0000	7.2000e-004	1.9000e-004	0.0000	1.9000e-004	0.0000	0.6319	0.6319	2.0000e-005	0.0000	0.6323
Total	**3.3000e-004**	**2.4000e-004**	**2.5100e-003**	**1.0000e-005**	**7.1000e-004**	**0.0000**	**7.2000e-004**	**1.9000e-004**	**0.0000**	**1.9000e-004**	**0.0000**	**0.6319**	**0.6319**	**2.0000e-005**	**0.0000**	**0.6323**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0217	0.2279	0.1103	1.9000e-004		0.0120	0.0120		0.0110	0.0110	0.0000	17.0843	17.0843	5.4100e-003	0.0000	17.2195
Total	**0.0217**	**0.2279**	**0.1103**	**1.9000e-004**	**0.0903**	**0.0120**	**0.1023**	**0.0497**	**0.0110**	**0.0607**	**0.0000**	**17.0843**	**17.0843**	**5.4100e-003**	**0.0000**	**17.2195**

3.3 Site Preparation - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.3000e-004	2.4000e-004	2.5100e-003	1.0000e-005	7.1000e-004	0.0000	7.2000e-004	1.9000e-004	0.0000	1.9000e-004	0.0000	0.6319	0.6319	2.0000e-005	0.0000	0.6323
Total	**3.3000e-004**	**2.4000e-004**	**2.5100e-003**	**1.0000e-005**	**7.1000e-004**	**0.0000**	**7.2000e-004**	**1.9000e-004**	**0.0000**	**1.9000e-004**	**0.0000**	**0.6319**	**0.6319**	**2.0000e-005**	**0.0000**	**0.6323**

3.4 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.3855	0.0000	0.3855	0.1588	0.0000	0.1588	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2085	2.3989	1.4686	2.7300e-003		0.1048	0.1048		0.0965	0.0965	0.0000	245.0858	245.0858	0.0775	0.0000	247.0244
Total	**0.2085**	**2.3989**	**1.4686**	**2.7300e-003**	**0.3855**	**0.1048**	**0.4904**	**0.1588**	**0.0965**	**0.2553**	**0.0000**	**245.0858**	**245.0858**	**0.0775**	**0.0000**	**247.0244**

3.4 Grading - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0392	1.3427	0.2652	3.4400e-003	0.0731	5.1500e-003	0.0783	0.0201	4.9300e-003	0.0250	0.0000	332.3406	332.3406	0.0156	0.0000	332.7299
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.2000e-003	2.3800e-003	0.0246	7.0000e-005	6.9800e-003	5.0000e-005	7.0300e-003	1.8600e-003	4.0000e-005	1.9000e-003	0.0000	6.1783	6.1783	1.7000e-004	0.0000	6.1825
Total	**0.0424**	**1.3451**	**0.2898**	**3.5100e-003**	**0.0801**	**5.2000e-003**	**0.0853**	**0.0220**	**4.9700e-003**	**0.0269**	**0.0000**	**338.5189**	**338.5189**	**0.0157**	**0.0000**	**338.9124**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.3855	0.0000	0.3855	0.1588	0.0000	0.1588	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2085	2.3989	1.4686	2.7300e-003		0.1048	0.1048		0.0965	0.0965	0.0000	245.0855	245.0855	0.0775	0.0000	247.0241
Total	**0.2085**	**2.3989**	**1.4686**	**2.7300e-003**	**0.3855**	**0.1048**	**0.4904**	**0.1588**	**0.0965**	**0.2553**	**0.0000**	**245.0855**	**245.0855**	**0.0775**	**0.0000**	**247.0241**

3.4 Grading - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0392	1.3427	0.2652	3.4400e-003	0.0731	5.1500e-003	0.0783	0.0201	4.9300e-003	0.0250	0.0000	332.3406	332.3406	0.0156	0.0000	332.7299
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.2000e-003	2.3800e-003	0.0246	7.0000e-005	6.9800e-003	5.0000e-005	7.0300e-003	1.8600e-003	4.0000e-005	1.9000e-003	0.0000	6.1783	6.1783	1.7000e-004	0.0000	6.1825
Total	**0.0424**	**1.3451**	**0.2898**	**3.5100e-003**	**0.0801**	**5.2000e-003**	**0.0853**	**0.0220**	**4.9700e-003**	**0.0269**	**0.0000**	**338.5189**	**338.5189**	**0.0157**	**0.0000**	**338.9124**

3.5 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1405	1.2542	1.0212	1.6000e-003		0.0768	0.0768		0.0722	0.0722	0.0000	139.8870	139.8870	0.0341	0.0000	140.7389
Total	**0.1405**	**1.2542**	**1.0212**	**1.6000e-003**		**0.0768**	**0.0768**		**0.0722**	**0.0722**	**0.0000**	**139.8870**	**139.8870**	**0.0341**	**0.0000**	**140.7389**

3.5 Building Construction - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0178	0.4583	0.1230	1.0000e-003	0.0239	3.2900e-003	0.0272	6.9000e-003	3.1500e-003	0.0101	0.0000	95.4747	95.4747	4.7400e-003	0.0000	95.5931
Worker	0.0566	0.0422	0.4355	1.2100e-003	0.1236	8.2000e-004	0.1245	0.0329	7.5000e-004	0.0336	0.0000	109.4478	109.4478	2.9800e-003	0.0000	109.5223
Total	**0.0744**	**0.5005**	**0.5585**	**2.2100e-003**	**0.1475**	**4.1100e-003**	**0.1516**	**0.0398**	**3.9000e-003**	**0.0437**	**0.0000**	**204.9224**	**204.9224**	**7.7200e-003**	**0.0000**	**205.1153**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1405	1.2542	1.0212	1.6000e-003		0.0768	0.0768		0.0722	0.0722	0.0000	139.8868	139.8868	0.0341	0.0000	140.7388
Total	**0.1405**	**1.2542**	**1.0212**	**1.6000e-003**		**0.0768**	**0.0768**		**0.0722**	**0.0722**	**0.0000**	**139.8868**	**139.8868**	**0.0341**	**0.0000**	**140.7388**

3.5 Building Construction - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0178	0.4583	0.1230	1.0000e-003	0.0239	3.2900e-003	0.0272	6.9000e-003	3.1500e-003	0.0101	0.0000	95.4747	95.4747	4.7400e-003	0.0000	95.5931
Worker	0.0566	0.0422	0.4355	1.2100e-003	0.1236	8.2000e-004	0.1245	0.0329	7.5000e-004	0.0336	0.0000	109.4478	109.4478	2.9800e-003	0.0000	109.5223
Total	**0.0744**	**0.5005**	**0.5585**	**2.2100e-003**	**0.1475**	**4.1100e-003**	**0.1516**	**0.0398**	**3.9000e-003**	**0.0437**	**0.0000**	**204.9224**	**204.9224**	**7.7200e-003**	**0.0000**	**205.1153**

3.5 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2777	2.5134	2.2072	3.5300e-003		0.1463	0.1463		0.1376	0.1376	0.0000	303.4091	303.4091	0.0740	0.0000	305.2596
Total	**0.2777**	**2.5134**	**2.2072**	**3.5300e-003**		**0.1463**	**0.1463**		**0.1376**	**0.1376**	**0.0000**	**303.4091**	**303.4091**	**0.0740**	**0.0000**	**305.2596**

3.5 Building Construction - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0317	0.9099	0.2423	2.1800e-003	0.0526	4.5100e-003	0.0571	0.0152	4.3100e-003	0.0195	0.0000	208.9189	208.9189	9.5800e-003	0.0000	209.1585
Worker	0.1140	0.0819	0.8590	2.5800e-003	0.2722	1.7600e-003	0.2740	0.0724	1.6200e-003	0.0740	0.0000	233.4409	233.4409	5.7300e-003	0.0000	233.5841
Total	**0.1457**	**0.9918**	**1.1013**	**4.7600e-003**	**0.3248**	**6.2700e-003**	**0.3310**	**0.0876**	**5.9300e-003**	**0.0935**	**0.0000**	**442.3598**	**442.3598**	**0.0153**	**0.0000**	**442.7425**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2777	2.5134	2.2072	3.5300e-003		0.1463	0.1463		0.1376	0.1376	0.0000	303.4087	303.4087	0.0740	0.0000	305.2592
Total	**0.2777**	**2.5134**	**2.2072**	**3.5300e-003**		**0.1463**	**0.1463**		**0.1376**	**0.1376**	**0.0000**	**303.4087**	**303.4087**	**0.0740**	**0.0000**	**305.2592**

3.5 Building Construction - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0317	0.9099	0.2423	2.1800e-003	0.0526	4.5100e-003	0.0571	0.0152	4.3100e-003	0.0195	0.0000	208.9189	208.9189	9.5800e-003	0.0000	209.1585
Worker	0.1140	0.0819	0.8590	2.5800e-003	0.2722	1.7600e-003	0.2740	0.0724	1.6200e-003	0.0740	0.0000	233.4409	233.4409	5.7300e-003	0.0000	233.5841
Total	**0.1457**	**0.9918**	**1.1013**	**4.7600e-003**	**0.3248**	**6.2700e-003**	**0.3310**	**0.0876**	**5.9300e-003**	**0.0935**	**0.0000**	**442.3598**	**442.3598**	**0.0153**	**0.0000**	**442.7425**

3.6 Paving - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0160	0.1677	0.1613	2.5000e-004		9.0700e-003	9.0700e-003		8.3400e-003	8.3400e-003	0.0000	22.5227	22.5227	7.1300e-003	0.0000	22.7009
Paving	1.3800e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0174**	**0.1677**	**0.1613**	**2.5000e-004**		**9.0700e-003**	**9.0700e-003**		**8.3400e-003**	**8.3400e-003**	**0.0000**	**22.5227**	**22.5227**	**7.1300e-003**	**0.0000**	**22.7009**

3.6 Paving - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.0000e-004	4.5000e-004	4.6100e-003	1.0000e-005	1.3100e-003	1.0000e-005	1.3200e-003	3.5000e-004	1.0000e-005	3.6000e-004	0.0000	1.1584	1.1584	3.0000e-005	0.0000	1.1592
Total	**6.0000e-004**	**4.5000e-004**	**4.6100e-003**	**1.0000e-005**	**1.3100e-003**	**1.0000e-005**	**1.3200e-003**	**3.5000e-004**	**1.0000e-005**	**3.6000e-004**	**0.0000**	**1.1584**	**1.1584**	**3.0000e-005**	**0.0000**	**1.1592**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0160	0.1677	0.1613	2.5000e-004		9.0700e-003	9.0700e-003		8.3400e-003	8.3400e-003	0.0000	22.5227	22.5227	7.1300e-003	0.0000	22.7008
Paving	1.3800e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0174**	**0.1677**	**0.1613**	**2.5000e-004**		**9.0700e-003**	**9.0700e-003**		**8.3400e-003**	**8.3400e-003**	**0.0000**	**22.5227**	**22.5227**	**7.1300e-003**	**0.0000**	**22.7008**

3.6 Paving - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.0000e-004	4.5000e-004	4.6100e-003	1.0000e-005	1.3100e-003	1.0000e-005	1.3200e-003	3.5000e-004	1.0000e-005	3.6000e-004	0.0000	1.1584	1.1584	3.0000e-005	0.0000	1.1592
Total	**6.0000e-004**	**4.5000e-004**	**4.6100e-003**	**1.0000e-005**	**1.3100e-003**	**1.0000e-005**	**1.3200e-003**	**3.5000e-004**	**1.0000e-005**	**3.6000e-004**	**0.0000**	**1.1584**	**1.1584**	**3.0000e-005**	**0.0000**	**1.1592**

3.7 Architectural Coating - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	3.5260					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0132	0.0918	0.0998	1.6000e-004		6.0500e-003	6.0500e-003		6.0500e-003	6.0500e-003	0.0000	13.9152	13.9152	1.0800e-003	0.0000	13.9422
Total	**3.5392**	**0.0918**	**0.0998**	**1.6000e-004**		**6.0500e-003**	**6.0500e-003**		**6.0500e-003**	**6.0500e-003**	**0.0000**	**13.9152**	**13.9152**	**1.0800e-003**	**0.0000**	**13.9422**

3.7 Architectural Coating - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.4100e-003	6.7600e-003	0.0709	2.1000e-004	0.0225	1.5000e-004	0.0226	5.9800e-003	1.3000e-004	6.1100e-003	0.0000	19.2754	19.2754	4.7000e-004	0.0000	19.2873
Total	**9.4100e-003**	**6.7600e-003**	**0.0709**	**2.1000e-004**	**0.0225**	**1.5000e-004**	**0.0226**	**5.9800e-003**	**1.3000e-004**	**6.1100e-003**	**0.0000**	**19.2754**	**19.2754**	**4.7000e-004**	**0.0000**	**19.2873**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	3.5260					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0132	0.0918	0.0998	1.6000e-004		6.0500e-003	6.0500e-003		6.0500e-003	6.0500e-003	0.0000	13.9152	13.9152	1.0800e-003	0.0000	13.9422
Total	**3.5392**	**0.0918**	**0.0998**	**1.6000e-004**		**6.0500e-003**	**6.0500e-003**		**6.0500e-003**	**6.0500e-003**	**0.0000**	**13.9152**	**13.9152**	**1.0800e-003**	**0.0000**	**13.9422**

3.7 Architectural Coating - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.4100e-003	6.7600e-003	0.0709	2.1000e-004	0.0225	1.5000e-004	0.0226	5.9800e-003	1.3000e-004	6.1100e-003	0.0000	19.2754	19.2754	4.7000e-004	0.0000	19.2873
Total	**9.4100e-003**	**6.7600e-003**	**0.0709**	**2.1000e-004**	**0.0225**	**1.5000e-004**	**0.0226**	**5.9800e-003**	**1.3000e-004**	**6.1100e-003**	**0.0000**	**19.2754**	**19.2754**	**4.7000e-004**	**0.0000**	**19.2873**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Improve Destination Accessibility

Improve Pedestrian Network

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.5381	2.0924	5.6343	0.0165	1.3997	0.0168	1.4165	0.3747	0.0157	0.3904	0.0000	1,505.1366	1,505.1366	0.0583	0.0000	1,506.5928
Unmitigated	0.5756	2.3600	6.5771	0.0202	1.7496	0.0204	1.7700	0.4684	0.0191	0.4875	0.0000	1,848.8172	1,848.8172	0.0679	0.0000	1,850.5154

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	644.16	630.08	594.88	1,466,851	1,173,481
Apartments Mid Rise	625.60	734.85	577.30	1,465,000	1,172,000
Enclosed Parking Structure	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Retirement Community	145.47	79.17	129.09	308,699	246,959
Strip Mall	755.00	840.80	633.00	1,464,485	1,171,588
Total	2,170.23	2,284.90	1,934.27	4,705,036	3,764,028

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Low Rise	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3
Apartments Mid Rise	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3
Enclosed Parking Structure	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Retirement Community	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3
Strip Mall	9.50	7.30	7.30	16.60	64.40	19.00	60	40	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.604810	0.038204	0.185149	0.108513	0.015498	0.004981	0.012268	0.020156	0.002083	0.001571	0.005363	0.000620	0.000785
Apartments Mid Rise	0.604810	0.038204	0.185149	0.108513	0.015498	0.004981	0.012268	0.020156	0.002083	0.001571	0.005363	0.000620	0.000785
Enclosed Parking Structure	0.604810	0.038204	0.185149	0.108513	0.015498	0.004981	0.012268	0.020156	0.002083	0.001571	0.005363	0.000620	0.000785
Parking Lot	0.604810	0.038204	0.185149	0.108513	0.015498	0.004981	0.012268	0.020156	0.002083	0.001571	0.005363	0.000620	0.000785
Retirement Community	0.604810	0.038204	0.185149	0.108513	0.015498	0.004981	0.012268	0.020156	0.002083	0.001571	0.005363	0.000620	0.000785
Strip Mall	0.604810	0.038204	0.185149	0.108513	0.015498	0.004981	0.012268	0.020156	0.002083	0.001571	0.005363	0.000620	0.000785

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Westport - Santa Clara County, Annual

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	612.0962	612.0962	0.0277	5.7300e-003	614.4946
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	612.0962	612.0962	0.0277	5.7300e-003	614.4946
NaturalGas Mitigated	0.0126	0.1078	0.0468	6.9000e-004		8.7000e-003	8.7000e-003		8.7000e-003	8.7000e-003	0.0000	124.6680	124.6680	2.3900e-003	2.2900e-003	125.4089
NaturalGas Unmitigated	0.0126	0.1078	0.0468	6.9000e-004		8.7000e-003	8.7000e-003		8.7000e-003	8.7000e-003	0.0000	124.6680	124.6680	2.3900e-003	2.2900e-003	125.4089

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Low Rise	897499	4.8400e-003	0.0414	0.0176	2.6000e-004		3.3400e-003	3.3400e-003		3.3400e-003	3.3400e-003	0.0000	47.8940	47.8940	9.2000e-004	8.8000e-004	48.1786
Apartments Mid Rise	993537	5.3600e-003	0.0458	0.0195	2.9000e-004		3.7000e-003	3.7000e-003		3.7000e-003	3.7000e-003	0.0000	53.0189	53.0189	1.0200e-003	9.7000e-004	53.3340
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Retirement Community	397755	2.1400e-003	0.0183	7.8000e-003	1.2000e-004		1.4800e-003	1.4800e-003		1.4800e-003	1.4800e-003	0.0000	21.2257	21.2257	4.1000e-004	3.9000e-004	21.3519
Strip Mall	47400	2.6000e-004	2.3200e-003	1.9500e-003	1.0000e-005		1.8000e-004	1.8000e-004		1.8000e-004	1.8000e-004	0.0000	2.5294	2.5294	5.0000e-005	5.0000e-005	2.5445
Total		**0.0126**	**0.1078**	**0.0468**	**6.8000e-004**		**8.7000e-003**	**8.7000e-003**		**8.7000e-003**	**8.7000e-003**	**0.0000**	**124.6680**	**124.6680**	**2.4000e-003**	**2.2900e-003**	**125.4089**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Low Rise	897499	4.8400e-003	0.0414	0.0176	2.6000e-004		3.3400e-003	3.3400e-003		3.3400e-003	3.3400e-003	0.0000	47.8940	47.8940	9.2000e-004	8.8000e-004	48.1786
Apartments Mid Rise	993537	5.3600e-003	0.0458	0.0195	2.9000e-004		3.7000e-003	3.7000e-003		3.7000e-003	3.7000e-003	0.0000	53.0189	53.0189	1.0200e-003	9.7000e-004	53.3340
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Retirement Community	397755	2.1400e-003	0.0183	7.8000e-003	1.2000e-004		1.4800e-003	1.4800e-003		1.4800e-003	1.4800e-003	0.0000	21.2257	21.2257	4.1000e-004	3.9000e-004	21.3519
Strip Mall	47400	2.6000e-004	2.3200e-003	1.9500e-003	1.0000e-005		1.8000e-004	1.8000e-004		1.8000e-004	1.8000e-004	0.0000	2.5294	2.5294	5.0000e-005	5.0000e-005	2.5445
Total		**0.0126**	**0.1078**	**0.0468**	**6.8000e-004**		**8.7000e-003**	**8.7000e-003**		**8.7000e-003**	**8.7000e-003**	**0.0000**	**124.6680**	**124.6680**	**2.4000e-003**	**2.2900e-003**	**125.4089**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	382694	111.3302	5.0300e-003	1.0400e-003	111.7664
Apartments Mid Rise	474760	138.1132	6.2500e-003	1.2900e-003	138.6544
Enclosed Parking Structure	839387	244.1872	0.0110	2.2800e-003	245.1440
Parking Lot	16380	4.7651	2.2000e-004	4.0000e-005	4.7838
Retirement Community	177042	51.5036	2.3300e-003	4.8000e-004	51.7054
Strip Mall	213800	62.1969	2.8100e-003	5.8000e-004	62.4406
Total		**612.0962**	**0.0277**	**5.7100e-003**	**614.4946**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	382694	111.3302	5.0300e-003	1.0400e-003	111.7664
Apartments Mid Rise	474760	138.1132	6.2500e-003	1.2900e-003	138.6544
Enclosed Parking Structure	839387	244.1872	0.0110	2.2800e-003	245.1440
Parking Lot	16380	4.7651	2.2000e-004	4.0000e-005	4.7838
Retirement Community	177042	51.5036	2.3300e-003	4.8000e-004	51.7054
Strip Mall	213800	62.1969	2.8100e-003	5.8000e-004	62.4406
Total		**612.0962**	**0.0277**	**5.7100e-003**	**614.4946**

6.0 Area Detail

6.1 Mitigation Measures Area

Use only Natural Gas Hearths

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	2.3747	0.0248	1.8072	1.2000e-004		0.0102	0.0102		0.0102	0.0102	0.0000	7.4719	7.4719	2.9600e-003	8.0000e-005	7.5708
Unmitigated	2.3937	0.0276	1.9800	6.8000e-004		0.0384	0.0384		0.0384	0.0384	3.7744	7.4719	11.2463	0.0206	8.0000e-005	11.7863

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.3526					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.9665					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0195	6.7300e-003	0.1745	5.9000e-004		0.0285	0.0285		0.0285	0.0285	3.7744	4.5317	8.3061	0.0177	8.0000e-005	8.7741
Landscaping	0.0552	0.0209	1.8055	1.0000e-004		9.9200e-003	9.9200e-003		9.9200e-003	9.9200e-003	0.0000	2.9403	2.9403	2.8800e-003	0.0000	3.0122
Total	**2.3938**	**0.0276**	**1.9800**	**6.9000e-004**		**0.0384**	**0.0384**		**0.0384**	**0.0384**	**3.7744**	**7.4719**	**11.2463**	**0.0206**	**8.0000e-005**	**11.7863**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.3526					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.9665					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	4.6000e-004	3.9100e-003	1.6700e-003	2.0000e-005		3.2000e-004	3.2000e-004		3.2000e-004	3.2000e-004	0.0000	4.5317	4.5317	9.0000e-005	8.0000e-005	4.5586
Landscaping	0.0552	0.0209	1.8055	1.0000e-004		9.9200e-003	9.9200e-003		9.9200e-003	9.9200e-003	0.0000	2.9403	2.9403	2.8800e-003	0.0000	3.0122
Total	**2.3747**	**0.0248**	**1.8072**	**1.2000e-004**		**0.0102**	**0.0102**		**0.0102**	**0.0102**	**0.0000**	**7.4719**	**7.4719**	**2.9700e-003**	**8.0000e-005**	**7.5708**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	36.4708	0.4511	0.0109	51.0014
Unmitigated	43.6694	0.5638	0.0136	61.8251

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	5.73355 / 3.61463	14.5247	0.1874	4.5300e-003	20.5598
Apartments Mid Rise	7.49271 / 4.72367	18.9811	0.2449	5.9200e-003	26.8679
Enclosed Parking Structure	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Retirement Community	2.54101 / 1.60194	6.4371	0.0831	2.0100e-003	9.1117
Strip Mall	1.48145 / 0.907986	3.7265	0.0484	1.1700e-003	5.2857
Total		**43.6694**	**0.5638**	**0.0136**	**61.8251**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	4.58684 / 3.39414	12.1313	0.1500	3.6300e-003	16.9614
Apartments Mid Rise	5.99417 / 4.43552	15.8534	0.1960	4.7400e-003	22.1655
Enclosed Parking Structure	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Retirement Community	2.03281 / 1.50422	5.3764	0.0665	1.6100e-003	7.5170
Strip Mall	1.18516 / 0.852599	3.1097	0.0387	9.4000e-004	4.3576
Total		**36.4708**	**0.4511**	**0.0109**	**51.0014**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	26.8598	1.5874	0.0000	66.5439

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	40.48	8.2171	0.4856	0.0000	20.3575
Apartments Mid Rise	52.9	10.7382	0.6346	0.0000	26.6035
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Retirement Community	17.94	3.6417	0.2152	0.0000	9.0221
Strip Mall	21	4.2628	0.2519	0.0000	10.5609
Total		**26.8598**	**1.5874**	**0.0000**	**66.5439**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise		0.0000	0.0000	0.0000	0.0000
Apartments Mid Rise		0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure		0.0000	0.0000	0.0000	0.0000
Parking Lot		0.0000	0.0000	0.0000	0.0000
Retirement Community		0.0000	0.0000	0.0000	0.0000
Strip Mall		0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Westport

Santa Clara County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Enclosed Parking Structure	148.04	1000sqft	3.40	148,040.00	0
Parking Lot	117.00	Space	1.05	46,800.00	0
Apartments Low Rise	88.00	Dwelling Unit	5.50	248,000.00	252
Apartments Mid Rise	115.00	Dwelling Unit	3.03	193,500.00	329
Retirement Community	39.00	Dwelling Unit	7.80	38,800.00	112
Strip Mall	20.00	1000sqft	0.46	20,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	4			**Operational Year**	2020
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Matches DEIR's model. See SWAPE comment about parking garage.

Construction Phase - Matches DEIR's model.

Grading -

Demolition - Matches DEIR's model.

Vehicle Trips - Matches DEIR's model.

Woodstoves - Matches DEIR's model.

Construction Off-road Equipment Mitigation - See SWAPE comment about construction mitigation measures.

Mobile Land Use Mitigation - See SWAPE comment about mobile mitigation measures.

Area Mitigation -

Water Mitigation - Matches DEIR's model.

Waste Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	20.00	109.00
tblConstructionPhase	NumDays	370.00	381.00
tblConstructionPhase	NumDays	20.00	22.00
tblConstructionPhase	NumDays	35.00	88.00
tblConstructionPhase	NumDays	20.00	22.00
tblConstructionPhase	PhaseEndDate	10/26/2020	12/31/2020
tblConstructionPhase	PhaseEndDate	8/31/2020	12/31/2020
tblConstructionPhase	PhaseEndDate	1/28/2019	1/30/2019
tblConstructionPhase	PhaseEndDate	4/1/2019	6/17/2019
tblConstructionPhase	PhaseEndDate	9/28/2020	7/17/2019
tblConstructionPhase	PhaseEndDate	2/11/2019	2/13/2019
tblConstructionPhase	PhaseStartDate	9/29/2020	8/1/2020

tblConstructionPhase	PhaseStartDate	4/2/2019	7/18/2019
tblConstructionPhase	PhaseStartDate	2/12/2019	2/14/2019
tblConstructionPhase	PhaseStartDate	9/1/2020	6/18/2019
tblConstructionPhase	PhaseStartDate	1/29/2019	1/31/2019
tblFireplaces	NumberWood	14.96	0.00
tblFireplaces	NumberWood	19.55	0.00
tblFireplaces	NumberWood	6.63	0.00
tblGrading	MaterialExported	0.00	69,000.00
tblLandUse	LandUseSquareFeet	88,000.00	248,000.00
tblLandUse	LandUseSquareFeet	115,000.00	193,500.00
tblLandUse	LandUseSquareFeet	39,000.00	38,800.00
tblVehicleTrips	PB_TP	15.00	0.00
tblVehicleTrips	PR_TP	45.00	60.00
tblVehicleTrips	SU_TR	6.07	6.76
tblVehicleTrips	SU_TR	5.86	5.02
tblVehicleTrips	SU_TR	1.95	3.31
tblVehicleTrips	SU_TR	20.43	31.65
tblVehicleTrips	WD_TR	6.59	7.32
tblVehicleTrips	WD_TR	6.65	5.44
tblVehicleTrips	WD_TR	2.40	3.73
tblVehicleTrips	WD_TR	44.32	37.75

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	5.7250	85.2206	40.2499	0.1409	18.2141	2.5021	20.6054	9.9699	2.3063	12.1699	0.0000	14,538.2744	14,538.2744	2.3478	0.0000	14,596.9697
2020	68.4688	28.6275	28.6614	0.0696	2.9924	1.2788	4.2712	0.8031	1.2093	2.0124	0.0000	6,891.3899	6,891.3899	0.7862	0.0000	6,911.0459
Maximum	**68.4688**	**85.2206**	**40.2499**	**0.1409**	**18.2141**	**2.5021**	**20.6054**	**9.9699**	**2.3063**	**12.1699**	**0.0000**	**14,538.2744**	**14,538.2744**	**2.3478**	**0.0000**	**14,596.9697**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	5.7250	85.2206	40.2499	0.1409	18.2141	2.5021	20.6054	9.9699	2.3063	12.1699	0.0000	14,538.2744	14,538.2744	2.3478	0.0000	14,596.9697
2020	68.4688	28.6275	28.6614	0.0696	2.9924	1.2788	4.2712	0.8031	1.2093	2.0124	0.0000	6,891.3899	6,891.3899	0.7862	0.0000	6,911.0459
Maximum	**68.4688**	**85.2206**	**40.2499**	**0.1409**	**18.2141**	**2.5021**	**20.6054**	**9.9699**	**2.3063**	**12.1699**	**0.0000**	**14,538.2744**	**14,538.2744**	**2.3478**	**0.0000**	**14,596.9697**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	16.0975	1.3337	44.8349	0.0854		4.1597	4.1597		4.1597	4.1597	589.3162	932.8356	1,522.1518	2.8073	0.0164	1,597.2350
Energy	0.0690	0.5906	0.2566	3.7700e-003		0.0477	0.0477		0.0477	0.0477		753.0026	753.0026	0.0144	0.0138	757.4774
Mobile	3.4626	14.5522	41.4712	0.1206	10.9218	0.1233	11.0451	2.9155	0.1157	3.0312		12,146.3400	12,146.3400	0.4627		12,157.9062
Total	**19.6291**	**16.4766**	**86.5627**	**0.2097**	**10.9218**	**4.3307**	**15.2525**	**2.9155**	**4.3231**	**7.2386**	**589.3162**	**13,832.1782**	**14,421.4944**	**3.2844**	**0.0303**	**14,512.6186**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	13.4024	0.9345	20.3599	5.5400e-003		0.1671	0.1671		0.1671	0.1671	0.0000	932.8356	932.8356	0.0524	0.0164	939.0455
Energy	0.0690	0.5906	0.2566	3.7700e-003		0.0477	0.0477		0.0477	0.0477		753.0026	753.0026	0.0144	0.0138	757.4774
Mobile	3.2356	12.8703	35.7986	0.0981	8.7374	0.1016	8.8390	2.3324	0.0953	2.4277		9,882.6913	9,882.6913	0.3986		9,892.6570
Total	**16.7070**	**14.3954**	**56.4151**	**0.1074**	**8.7374**	**0.3164**	**9.0538**	**2.3324**	**0.3101**	**2.6424**	**0.0000**	**11,568.5295**	**11,568.5295**	**0.4655**	**0.0303**	**11,589.1798**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**14.89**	**12.63**	**34.83**	**48.79**	**20.00**	**92.69**	**40.64**	**20.00**	**92.83**	**63.50**	**100.00**	**16.37**	**19.78**	**85.83**	**0.00**	**20.14**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2019	1/30/2019	5	22	
2	Site Preparation	Site Preparation	1/31/2019	2/13/2019	5	10	
3	Grading	Grading	2/14/2019	6/17/2019	5	88	
4	Building Construction	Building Construction	7/18/2019	12/31/2020	5	381	
5	Paving	Paving	6/18/2019	7/17/2019	5	22	
6	Architectural Coating	Architectural Coating	8/1/2020	12/31/2020	5	109	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 220

Acres of Paving: 4.45

Residential Indoor: 972,608; Residential Outdoor: 324,203; Non-Residential Indoor: 30,000; Non-Residential Outdoor: 10,000; Striped Parking Area: 11,690 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Demolition	Excavators	3	8.00	158	0.38
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Excavators	2	8.00	158	0.38
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Paving	Pavers	2	8.00	130	0.42
Paving	Rollers	2	8.00	80	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Paving Equipment	2	8.00	132	0.36
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	324.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	8,625.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	262.00	61.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	52.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.1881	0.0000	3.1881	0.4827	0.0000	0.4827			0.0000			0.0000
Off-Road	3.5134	35.7830	22.0600	0.0388		1.7949	1.7949		1.6697	1.6697		3,816.8994	3,816.8994	1.0618		3,843.4451
Total	**3.5134**	**35.7830**	**22.0600**	**0.0388**	**3.1881**	**1.7949**	**4.9830**	**0.4827**	**1.6697**	**2.1524**		**3,816.8994**	**3,816.8994**	**1.0618**		**3,843.4451**

3.2 Demolition - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1360	4.6042	0.9471	0.0116	0.2574	0.0178	0.2752	0.0705	0.0170	0.0876		1,238.9588	1,238.9588	0.0603		1,240.4649
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0606	0.0443	0.4276	1.1500e-003	0.1232	7.9000e-004	0.1240	0.0327	7.2000e-004	0.0334		114.6523	114.6523	3.1700e-003		114.7314
Total	**0.1966**	**4.6485**	**1.3747**	**0.0128**	**0.3806**	**0.0186**	**0.3992**	**0.1032**	**0.0178**	**0.1210**		**1,353.6110**	**1,353.6110**	**0.0634**		**1,355.1964**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.1881	0.0000	3.1881	0.4827	0.0000	0.4827			0.0000			0.0000
Off-Road	3.5134	35.7830	22.0600	0.0388		1.7949	1.7949		1.6697	1.6697	0.0000	3,816.8994	3,816.8994	1.0618		3,843.4451
Total	**3.5134**	**35.7830**	**22.0600**	**0.0388**	**3.1881**	**1.7949**	**4.9830**	**0.4827**	**1.6697**	**2.1524**	**0.0000**	**3,816.8994**	**3,816.8994**	**1.0618**		**3,843.4451**

3.2 Demolition - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1360	4.6042	0.9471	0.0116	0.2574	0.0178	0.2752	0.0705	0.0170	0.0876		1,238.9588	1,238.9588	0.0603		1,240.4649
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0606	0.0443	0.4276	1.1500e-003	0.1232	7.9000e-004	0.1240	0.0327	7.2000e-004	0.0334		114.6523	114.6523	3.1700e-003		114.7314
Total	**0.1966**	**4.6485**	**1.3747**	**0.0128**	**0.3806**	**0.0186**	**0.3992**	**0.1032**	**0.0178**	**0.1210**		**1,353.6110**	**1,353.6110**	**0.0634**		**1,355.1964**

3.3 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	4.3350	45.5727	22.0630	0.0380		2.3904	2.3904		2.1991	2.1991		3,766.4529	3,766.4529	1.1917		3,796.2445
Total	**4.3350**	**45.5727**	**22.0630**	**0.0380**	**18.0663**	**2.3904**	**20.4566**	**9.9307**	**2.1991**	**12.1298**		**3,766.4529**	**3,766.4529**	**1.1917**		**3,796.2445**

3.3 Site Preparation - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0727	0.0532	0.5131	1.3800e-003	0.1479	9.4000e-004	0.1488	0.0392	8.7000e-004	0.0401		137.5827	137.5827	3.8000e-003		137.6777
Total	**0.0727**	**0.0532**	**0.5131**	**1.3800e-003**	**0.1479**	**9.4000e-004**	**0.1488**	**0.0392**	**8.7000e-004**	**0.0401**		**137.5827**	**137.5827**	**3.8000e-003**		**137.6777**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	4.3350	45.5727	22.0630	0.0380		2.3904	2.3904		2.1991	2.1991	0.0000	3,766.4529	3,766.4529	1.1917		3,796.2445
Total	**4.3350**	**45.5727**	**22.0630**	**0.0380**	**18.0663**	**2.3904**	**20.4566**	**9.9307**	**2.1991**	**12.1298**	**0.0000**	**3,766.4529**	**3,766.4529**	**1.1917**		**3,796.2445**

3.3 Site Preparation - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0727	0.0532	0.5131	1.3800e-003	0.1479	9.4000e-004	0.1488	0.0392	8.7000e-004	0.0401		137.5827	137.5827	3.8000e-003		137.6777
Total	**0.0727**	**0.0532**	**0.5131**	**1.3800e-003**	**0.1479**	**9.4000e-004**	**0.1488**	**0.0392**	**8.7000e-004**	**0.0401**		**137.5827**	**137.5827**	**3.8000e-003**		**137.6777**

3.4 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.7620	0.0000	8.7620	3.6099	0.0000	3.6099			0.0000			0.0000
Off-Road	4.7389	54.5202	33.3768	0.0620		2.3827	2.3827		2.1920	2.1920		6,140.0195	6,140.0195	1.9426		6,188.5854
Total	**4.7389**	**54.5202**	**33.3768**	**0.0620**	**8.7620**	**2.3827**	**11.1447**	**3.6099**	**2.1920**	**5.8020**		**6,140.0195**	**6,140.0195**	**1.9426**		**6,188.5854**

3.4 Grading - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.9052	30.6414	6.3030	0.0774	1.7128	0.1184	1.8312	0.4694	0.1133	0.5827		8,245.3852	8,245.3852	0.4010		8,255.4091
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0808	0.0591	0.5701	1.5400e-003	0.1643	1.0500e-003	0.1653	0.0436	9.6000e-004	0.0445		152.8697	152.8697	4.2200e-003		152.9752
Total	**0.9861**	**30.7004**	**6.8731**	**0.0789**	**1.8771**	**0.1195**	**1.9965**	**0.5130**	**0.1143**	**0.6273**		**8,398.2550**	**8,398.2550**	**0.4052**		**8,408.3843**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.7620	0.0000	8.7620	3.6099	0.0000	3.6099			0.0000			0.0000
Off-Road	4.7389	54.5202	33.3768	0.0620		2.3827	2.3827		2.1920	2.1920	0.0000	6,140.0195	6,140.0195	1.9426		6,188.5854
Total	**4.7389**	**54.5202**	**33.3768**	**0.0620**	**8.7620**	**2.3827**	**11.1447**	**3.6099**	**2.1920**	**5.8020**	**0.0000**	**6,140.0195**	**6,140.0195**	**1.9426**		**6,188.5854**

3.4 Grading - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.9052	30.6414	6.3030	0.0774	1.7128	0.1184	1.8312	0.4694	0.1133	0.5827		8,245.3852	8,245.3852	0.4010		8,255.4091
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0808	0.0591	0.5701	1.5400e-003	0.1643	1.0500e-003	0.1653	0.0436	9.6000e-004	0.0445		152.8697	152.8697	4.2200e-003		152.9752
Total	**0.9861**	**30.7004**	**6.8731**	**0.0789**	**1.8771**	**0.1195**	**1.9965**	**0.5130**	**0.1143**	**0.6273**		**8,398.2550**	**8,398.2550**	**0.4052**		**8,408.3843**

3.5 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.3612	21.0788	17.1638	0.0269		1.2899	1.2899		1.2127	1.2127		2,591.5802	2,591.5802	0.6313		2,607.3635
Total	**2.3612**	**21.0788**	**17.1638**	**0.0269**		**1.2899**	**1.2899**		**1.2127**	**1.2127**		**2,591.5802**	**2,591.5802**	**0.6313**		**2,607.3635**

3.5 Building Construction - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3077	7.7026	2.2104	0.0165	0.4130	0.0558	0.4688	0.1189	0.0534	0.1723		1,742.9322	1,742.9322	0.0914		1,745.2174
Worker	1.0587	0.7740	7.4687	0.0201	2.1523	0.0137	2.1660	0.5709	0.0126	0.5835		2,002.5932	2,002.5932	0.0553		2,003.9754
Total	**1.3664**	**8.4766**	**9.6792**	**0.0366**	**2.5652**	**0.0696**	**2.6348**	**0.6898**	**0.0661**	**0.7558**		**3,745.5254**	**3,745.5254**	**0.1467**		**3,749.1927**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.3612	21.0788	17.1638	0.0269		1.2899	1.2899		1.2127	1.2127	0.0000	2,591.5802	2,591.5802	0.6313		2,607.3635
Total	**2.3612**	**21.0788**	**17.1638**	**0.0269**		**1.2899**	**1.2899**		**1.2127**	**1.2127**	**0.0000**	**2,591.5802**	**2,591.5802**	**0.6313**		**2,607.3635**

3.5 Building Construction - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3077	7.7026	2.2104	0.0165	0.4130	0.0558	0.4688	0.1189	0.0534	0.1723		1,742.9322	1,742.9322	0.0914		1,745.2174
Worker	1.0587	0.7740	7.4687	0.0201	2.1523	0.0137	2.1660	0.5709	0.0126	0.5835		2,002.5932	2,002.5932	0.0553		2,003.9754
Total	**1.3664**	**8.4766**	**9.6792**	**0.0366**	**2.5652**	**0.0696**	**2.6348**	**0.6898**	**0.0661**	**0.7558**		**3,745.5254**	**3,745.5254**	**0.1467**		**3,749.1927**

3.5 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.1198	19.1860	16.8485	0.0269		1.1171	1.1171		1.0503	1.0503		2,553.0631	2,553.0631	0.6229		2,568.6345
Total	**2.1198**	**19.1860**	**16.8485**	**0.0269**		**1.1171**	**1.1171**		**1.0503**	**1.0503**		**2,553.0631**	**2,553.0631**	**0.6229**		**2,568.6345**

3.5 Building Construction - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2494	6.9390	1.9794	0.0164	0.4130	0.0347	0.4477	0.1189	0.0332	0.1521		1,731.8150	1,731.8150	0.0840		1,733.9138
Worker	0.9687	0.6831	6.6769	0.0195	2.1523	0.0134	2.1657	0.5709	0.0124	0.5833		1,940.0214	1,940.0214	0.0481		1,941.2237
Total	**1.2181**	**7.6221**	**8.6563**	**0.0359**	**2.5653**	**0.0481**	**2.6134**	**0.6898**	**0.0456**	**0.7353**		**3,671.8363**	**3,671.8363**	**0.1320**		**3,675.1375**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.1198	19.1860	16.8485	0.0269		1.1171	1.1171		1.0503	1.0503	0.0000	2,553.0631	2,553.0631	0.6229		2,568.6345
Total	**2.1198**	**19.1860**	**16.8485**	**0.0269**		**1.1171**	**1.1171**		**1.0503**	**1.0503**	**0.0000**	**2,553.0631**	**2,553.0631**	**0.6229**		**2,568.6345**

3.5 Building Construction - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2494	6.9390	1.9794	0.0164	0.4130	0.0347	0.4477	0.1189	0.0332	0.1521		1,731.8150	1,731.8150	0.0840		1,733.9138
Worker	0.9687	0.6831	6.6769	0.0195	2.1523	0.0134	2.1657	0.5709	0.0124	0.5833		1,940.0214	1,940.0214	0.0481		1,941.2237
Total	**1.2181**	**7.6221**	**8.6563**	**0.0359**	**2.5653**	**0.0481**	**2.6134**	**0.6898**	**0.0456**	**0.7353**		**3,671.8363**	**3,671.8363**	**0.1320**		**3,675.1375**

3.6 Paving - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4544	15.2441	14.6648	0.0228		0.8246	0.8246		0.7586	0.7586		2,257.0025	2,257.0025	0.7141		2,274.8548
Paving	0.1251					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.5795**	**15.2441**	**14.6648**	**0.0228**		**0.8246**	**0.8246**		**0.7586**	**0.7586**		**2,257.0025**	**2,257.0025**	**0.7141**		**2,274.8548**

3.6 Paving - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0606	0.0443	0.4276	1.1500e-003	0.1232	7.9000e-004	0.1240	0.0327	7.2000e-004	0.0334		114.6523	114.6523	3.1700e-003		114.7314
Total	**0.0606**	**0.0443**	**0.4276**	**1.1500e-003**	**0.1232**	**7.9000e-004**	**0.1240**	**0.0327**	**7.2000e-004**	**0.0334**		**114.6523**	**114.6523**	**3.1700e-003**		**114.7314**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4544	15.2441	14.6648	0.0228		0.8246	0.8246		0.7586	0.7586	0.0000	2,257.0025	2,257.0025	0.7141		2,274.8548
Paving	0.1251					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.5795**	**15.2441**	**14.6648**	**0.0228**		**0.8246**	**0.8246**		**0.7586**	**0.7586**	**0.0000**	**2,257.0025**	**2,257.0025**	**0.7141**		**2,274.8548**

3.6 Paving - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0606	0.0443	0.4276	1.1500e-003	0.1232	7.9000e-004	0.1240	0.0327	7.2000e-004	0.0334		114.6523	114.6523	3.1700e-003		114.7314
Total	**0.0606**	**0.0443**	**0.4276**	**1.1500e-003**	**0.1232**	**7.9000e-004**	**0.1240**	**0.0327**	**7.2000e-004**	**0.0334**		**114.6523**	**114.6523**	**3.1700e-003**		**114.7314**

3.7 Architectural Coating - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	64.6964					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2422	1.6838	1.8314	2.9700e-003		0.1109	0.1109		0.1109	0.1109		281.4481	281.4481	0.0218		281.9928
Total	**64.9386**	**1.6838**	**1.8314**	**2.9700e-003**		**0.1109**	**0.1109**		**0.1109**	**0.1109**		**281.4481**	**281.4481**	**0.0218**		**281.9928**

3.7 Architectural Coating - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1923	0.1356	1.3252	3.8600e-003	0.4272	2.6600e-003	0.4298	0.1133	2.4500e-003	0.1158		385.0424	385.0424	9.5500e-003		385.2810
Total	**0.1923**	**0.1356**	**1.3252**	**3.8600e-003**	**0.4272**	**2.6600e-003**	**0.4298**	**0.1133**	**2.4500e-003**	**0.1158**		**385.0424**	**385.0424**	**9.5500e-003**		**385.2810**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	64.6964					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2422	1.6838	1.8314	2.9700e-003		0.1109	0.1109		0.1109	0.1109	0.0000	281.4481	281.4481	0.0218		281.9928
Total	**64.9386**	**1.6838**	**1.8314**	**2.9700e-003**		**0.1109**	**0.1109**		**0.1109**	**0.1109**	**0.0000**	**281.4481**	**281.4481**	**0.0218**		**281.9928**

3.7 Architectural Coating - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1923	0.1356	1.3252	3.8600e-003	0.4272	2.6600e-003	0.4298	0.1133	2.4500e-003	0.1158		385.0424	385.0424	9.5500e-003		385.2810
Total	**0.1923**	**0.1356**	**1.3252**	**3.8600e-003**	**0.4272**	**2.6600e-003**	**0.4298**	**0.1133**	**2.4500e-003**	**0.1158**		**385.0424**	**385.0424**	**9.5500e-003**		**385.2810**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Improve Destination Accessibility

Improve Pedestrian Network

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	3.2356	12.8703	35.7986	0.0981	8.7374	0.1016	8.8390	2.3324	0.0953	2.4277		9,882.6913	9,882.6913	0.3986		9,892.6570
Unmitigated	3.4626	14.5522	41.4712	0.1206	10.9218	0.1233	11.0451	2.9155	0.1157	3.0312		12,146.3400	12,146.3400	0.4627		12,157.9062

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	644.16	630.08	594.88	1,466,851	1,173,481
Apartments Mid Rise	625.60	734.85	577.30	1,465,000	1,172,000
Enclosed Parking Structure	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Retirement Community	145.47	79.17	129.09	308,699	246,959
Strip Mall	755.00	840.80	633.00	1,464,485	1,171,588
Total	2,170.23	2,284.90	1,934.27	4,705,036	3,764,028

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Low Rise	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3
Apartments Mid Rise	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3
Enclosed Parking Structure	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Retirement Community	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3
Strip Mall	9.50	7.30	7.30	16.60	64.40	19.00	60	40	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.604810	0.038204	0.185149	0.108513	0.015498	0.004981	0.012268	0.020156	0.002083	0.001571	0.005363	0.000620	0.000785
Apartments Mid Rise	0.604810	0.038204	0.185149	0.108513	0.015498	0.004981	0.012268	0.020156	0.002083	0.001571	0.005363	0.000620	0.000785
Enclosed Parking Structure	0.604810	0.038204	0.185149	0.108513	0.015498	0.004981	0.012268	0.020156	0.002083	0.001571	0.005363	0.000620	0.000785
Parking Lot	0.604810	0.038204	0.185149	0.108513	0.015498	0.004981	0.012268	0.020156	0.002083	0.001571	0.005363	0.000620	0.000785
Retirement Community	0.604810	0.038204	0.185149	0.108513	0.015498	0.004981	0.012268	0.020156	0.002083	0.001571	0.005363	0.000620	0.000785
Strip Mall	0.604810	0.038204	0.185149	0.108513	0.015498	0.004981	0.012268	0.020156	0.002083	0.001571	0.005363	0.000620	0.000785

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0690	0.5906	0.2566	3.7700e-003		0.0477	0.0477		0.0477	0.0477		753.0026	753.0026	0.0144	0.0138	757.4774
NaturalGas Unmitigated	0.0690	0.5906	0.2566	3.7700e-003		0.0477	0.0477		0.0477	0.0477		753.0026	753.0026	0.0144	0.0138	757.4774

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Low Rise	2458.9	0.0265	0.2266	0.0964	1.4500e-003		0.0183	0.0183		0.0183	0.0183		289.2825	289.2825	5.5400e-003	5.3000e-003	291.0015
Apartments Mid Rise	2722.02	0.0294	0.2509	0.1068	1.6000e-003		0.0203	0.0203		0.0203	0.0203		320.2375	320.2375	6.1400e-003	5.8700e-003	322.1405
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Retirement Community	1089.74	0.0118	0.1004	0.0427	6.4000e-004		8.1200e-003	8.1200e-003		8.1200e-003	8.1200e-003		128.2047	128.2047	2.4600e-003	2.3500e-003	128.9666
Strip Mall	129.863	1.4000e-003	0.0127	0.0107	8.0000e-005		9.7000e-004	9.7000e-004		9.7000e-004	9.7000e-004		15.2780	15.2780	2.9000e-004	2.8000e-004	15.3688
Total		**0.0690**	**0.5906**	**0.2566**	**3.7700e-003**		**0.0477**	**0.0477**		**0.0477**	**0.0477**		**753.0026**	**753.0026**	**0.0144**	**0.0138**	**757.4774**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Low Rise	2.4589	0.0265	0.2266	0.0964	1.4500e-003		0.0183	0.0183		0.0183	0.0183		289.2825	289.2825	5.5400e-003	5.3000e-003	291.0015
Apartments Mid Rise	2.72202	0.0294	0.2509	0.1068	1.6000e-003		0.0203	0.0203		0.0203	0.0203		320.2375	320.2375	6.1400e-003	5.8700e-003	322.1405
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Retirement Community	1.08974	0.0118	0.1004	0.0427	6.4000e-004		8.1200e-003	8.1200e-003		8.1200e-003	8.1200e-003		128.2047	128.2047	2.4600e-003	2.3500e-003	128.9666
Strip Mall	0.129863	1.4000e-003	0.0127	0.0107	8.0000e-005		9.7000e-004	9.7000e-004		9.7000e-004	9.7000e-004		15.2780	15.2780	2.9000e-004	2.8000e-004	15.3688
Total		**0.0690**	**0.5906**	**0.2566**	**3.7700e-003**		**0.0477**	**0.0477**		**0.0477**	**0.0477**		**753.0026**	**753.0026**	**0.0144**	**0.0138**	**757.4774**

6.0 Area Detail

6.1 Mitigation Measures Area

Use only Natural Gas Hearths

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	13.4024	0.9345	20.3599	5.5400e-003		0.1671	0.1671		0.1671	0.1671	0.0000	932.8356	932.8356	0.0524	0.0164	939.0455
Unmitigated	16.0975	1.3337	44.8349	0.0854		4.1597	4.1597		4.1597	4.1597	589.3162	932.8356	1,522.1518	2.8073	0.0164	1,597.2350

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.9320					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	10.7754					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	2.7773	1.1018	24.7739	0.0843		4.0495	4.0495		4.0495	4.0495	589.3162	896.8235	1,486.1397	2.7721	0.0164	1,560.3425
Landscaping	0.6127	0.2320	20.0610	1.0600e-003		0.1103	0.1103		0.1103	0.1103		36.0121	36.0121	0.0352		36.8926
Total	**16.0975**	**1.3337**	**44.8349**	**0.0854**		**4.1597**	**4.1597**		**4.1597**	**4.1597**	**589.3162**	**932.8356**	**1,522.1518**	**2.8073**	**0.0164**	**1,597.2350**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.9320					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	10.7754					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0822	0.7025	0.2989	4.4800e-003		0.0568	0.0568		0.0568	0.0568	0.0000	896.8235	896.8235	0.0172	0.0164	902.1529
Landscaping	0.6127	0.2320	20.0610	1.0600e-003		0.1103	0.1103		0.1103	0.1103		36.0121	36.0121	0.0352		36.8926
Total	**13.4024**	**0.9345**	**20.3599**	**5.5400e-003**		**0.1671**	**0.1671**		**0.1671**	**0.1671**	**0.0000**	**932.8356**	**932.8356**	**0.0524**	**0.0164**	**939.0455**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Westport

Santa Clara County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Enclosed Parking Structure	148.04	1000sqft	3.40	148,040.00	0
Parking Lot	117.00	Space	1.05	46,800.00	0
Apartments Low Rise	88.00	Dwelling Unit	5.50	248,000.00	252
Apartments Mid Rise	115.00	Dwelling Unit	3.03	193,500.00	329
Retirement Community	39.00	Dwelling Unit	7.80	38,800.00	112
Strip Mall	20.00	1000sqft	0.46	20,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	4			**Operational Year**	2020
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Matches DEIR's model. See SWAPE comment about parking garage.

Construction Phase - Matches DEIR's model.

Grading -

Demolition - Matches DEIR's model.

Vehicle Trips - Matches DEIR's model.

Woodstoves - Matches DEIR's model.

Construction Off-road Equipment Mitigation - See SWAPE comment about construction mitigation measures.

Mobile Land Use Mitigation - See SWAPE comment about mobile mitigation measures.

Area Mitigation -

Water Mitigation - Matches DEIR's model.

Waste Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	20.00	109.00
tblConstructionPhase	NumDays	370.00	381.00
tblConstructionPhase	NumDays	20.00	22.00
tblConstructionPhase	NumDays	35.00	88.00
tblConstructionPhase	NumDays	20.00	22.00
tblConstructionPhase	PhaseEndDate	10/26/2020	12/31/2020
tblConstructionPhase	PhaseEndDate	8/31/2020	12/31/2020
tblConstructionPhase	PhaseEndDate	1/28/2019	1/30/2019
tblConstructionPhase	PhaseEndDate	4/1/2019	6/17/2019
tblConstructionPhase	PhaseEndDate	9/28/2020	7/17/2019
tblConstructionPhase	PhaseEndDate	2/11/2019	2/13/2019
tblConstructionPhase	PhaseStartDate	9/29/2020	8/1/2020

tblConstructionPhase	PhaseStartDate	4/2/2019	7/18/2019
tblConstructionPhase	PhaseStartDate	2/12/2019	2/14/2019
tblConstructionPhase	PhaseStartDate	9/1/2020	6/18/2019
tblConstructionPhase	PhaseStartDate	1/29/2019	1/31/2019
tblFireplaces	NumberWood	14.96	0.00
tblFireplaces	NumberWood	19.55	0.00
tblFireplaces	NumberWood	6.63	0.00
tblGrading	MaterialExported	0.00	69,000.00
tblLandUse	LandUseSquareFeet	88,000.00	248,000.00
tblLandUse	LandUseSquareFeet	115,000.00	193,500.00
tblLandUse	LandUseSquareFeet	39,000.00	38,800.00
tblVehicleTrips	PB_TP	15.00	0.00
tblVehicleTrips	PR_TP	45.00	60.00
tblVehicleTrips	SU_TR	6.07	6.76
tblVehicleTrips	SU_TR	5.86	5.02
tblVehicleTrips	SU_TR	1.95	3.31
tblVehicleTrips	SU_TR	20.43	31.65
tblVehicleTrips	WD_TR	6.59	7.32
tblVehicleTrips	WD_TR	6.65	5.44
tblVehicleTrips	WD_TR	2.40	3.73
tblVehicleTrips	WD_TR	44.32	37.75

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	5.6953	84.4564	39.8173	0.1423	18.2141	2.4999	20.6054	9.9699	2.3041	12.1699	0.0000	14,690.7429	14,690.7429	2.3290	0.0000	14,748.9669
2020	68.3869	28.3999	29.0533	0.0721	2.9924	1.2783	4.2707	0.8031	1.2088	2.0119	0.0000	7,142.2944	7,142.2944	0.7845	0.0000	7,161.9078
Maximum	**68.3869**	**84.4564**	**39.8173**	**0.1423**	**18.2141**	**2.4999**	**20.6054**	**9.9699**	**2.3041**	**12.1699**	**0.0000**	**14,690.7429**	**14,690.7429**	**2.3290**	**0.0000**	**14,748.9669**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	5.6953	84.4564	39.8173	0.1423	18.2141	2.4999	20.6054	9.9699	2.3041	12.1699	0.0000	14,690.7429	14,690.7429	2.3290	0.0000	14,748.9669
2020	68.3869	28.3999	29.0533	0.0721	2.9924	1.2783	4.2707	0.8031	1.2088	2.0119	0.0000	7,142.2944	7,142.2944	0.7845	0.0000	7,161.9078
Maximum	**68.3869**	**84.4564**	**39.8173**	**0.1423**	**18.2141**	**2.4999**	**20.6054**	**9.9699**	**2.3041**	**12.1699**	**0.0000**	**14,690.7429**	**14,690.7429**	**2.3290**	**0.0000**	**14,748.9669**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	16.0975	1.3337	44.8349	0.0854		4.1597	4.1597		4.1597	4.1597	589.3162	932.8356	1,522.1518	2.8073	0.0164	1,597.2350
Energy	0.0690	0.5906	0.2566	3.7700e-003		0.0477	0.0477		0.0477	0.0477		753.0026	753.0026	0.0144	0.0138	757.4774
Mobile	3.9810	13.7500	41.3695	0.1295	10.9218	0.1225	11.0443	2.9155	0.1149	3.0304		13,039.6480	13,039.6480	0.4571		13,051.0763
Total	**20.1474**	**15.6744**	**86.4610**	**0.2186**	**10.9218**	**4.3299**	**15.2517**	**2.9155**	**4.3223**	**7.2378**	**589.3162**	**14,725.4863**	**15,314.8025**	**3.2789**	**0.0303**	**15,405.7887**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	13.4024	0.9345	20.3599	5.5400e-003		0.1671	0.1671		0.1671	0.1671	0.0000	932.8356	932.8356	0.0524	0.0164	939.0455
Energy	0.0690	0.5906	0.2566	3.7700e-003		0.0477	0.0477		0.0477	0.0477		753.0026	753.0026	0.0144	0.0138	757.4774
Mobile	3.7485	12.2330	34.9156	0.1053	8.7374	0.1008	8.8382	2.3324	0.0945	2.4269		10,611.3864	10,611.3864	0.3891		10,621.1126
Total	**17.2199**	**13.7581**	**55.5321**	**0.1146**	**8.7374**	**0.3156**	**9.0530**	**2.3324**	**0.3093**	**2.6417**	**0.0000**	**12,297.2246**	**12,297.2246**	**0.4559**	**0.0303**	**12,317.6355**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**14.53**	**12.23**	**35.77**	**47.56**	**20.00**	**92.71**	**40.64**	**20.00**	**92.84**	**63.50**	**100.00**	**16.49**	**19.70**	**86.10**	**0.00**	**20.05**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2019	1/30/2019	5	22	
2	Site Preparation	Site Preparation	1/31/2019	2/13/2019	5	10	
3	Grading	Grading	2/14/2019	6/17/2019	5	88	
4	Building Construction	Building Construction	7/18/2019	12/31/2020	5	381	
5	Paving	Paving	6/18/2019	7/17/2019	5	22	
6	Architectural Coating	Architectural Coating	8/1/2020	12/31/2020	5	109	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 220

Acres of Paving: 4.45

Residential Indoor: 972,608; Residential Outdoor: 324,203; Non-Residential Indoor: 30,000; Non-Residential Outdoor: 10,000; Striped Parking Area: 11,690 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Demolition	Excavators	3	8.00	158	0.38
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Excavators	2	8.00	158	0.38
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Paving	Pavers	2	8.00	130	0.42
Paving	Rollers	2	8.00	80	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Paving Equipment	2	8.00	132	0.36
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	324.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	8,625.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	262.00	61.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	52.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.1881	0.0000	3.1881	0.4827	0.0000	0.4827			0.0000			0.0000
Off-Road	3.5134	35.7830	22.0600	0.0388		1.7949	1.7949		1.6697	1.6697		3,816.8994	3,816.8994	1.0618		3,843.4451
Total	**3.5134**	**35.7830**	**22.0600**	**0.0388**	**3.1881**	**1.7949**	**4.9830**	**0.4827**	**1.6697**	**2.1524**		**3,816.8994**	**3,816.8994**	**1.0618**		**3,843.4451**

3.2 Demolition - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1323	4.4910	0.8758	0.0118	0.2574	0.0175	0.2748	0.0705	0.0167	0.0872		1,259.8364	1,259.8364	0.0574		1,261.2707
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0570	0.0363	0.4590	1.2500e-003	0.1232	7.9000e-004	0.1240	0.0327	7.2000e-004	0.0334		124.7967	124.7967	3.3800e-003		124.8812
Total	**0.1893**	**4.5272**	**1.3348**	**0.0131**	**0.3806**	**0.0183**	**0.3988**	**0.1032**	**0.0174**	**0.1206**		**1,384.6331**	**1,384.6331**	**0.0608**		**1,386.1519**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.1881	0.0000	3.1881	0.4827	0.0000	0.4827			0.0000			0.0000
Off-Road	3.5134	35.7830	22.0600	0.0388		1.7949	1.7949		1.6697	1.6697	0.0000	3,816.8994	3,816.8994	1.0618		3,843.4451
Total	**3.5134**	**35.7830**	**22.0600**	**0.0388**	**3.1881**	**1.7949**	**4.9830**	**0.4827**	**1.6697**	**2.1524**	**0.0000**	**3,816.8994**	**3,816.8994**	**1.0618**		**3,843.4451**

3.2 Demolition - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1323	4.4910	0.8758	0.0118	0.2574	0.0175	0.2748	0.0705	0.0167	0.0872		1,259.8364	1,259.8364	0.0574		1,261.2707
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0570	0.0363	0.4590	1.2500e-003	0.1232	7.9000e-004	0.1240	0.0327	7.2000e-004	0.0334		124.7967	124.7967	3.3800e-003		124.8812
Total	**0.1893**	**4.5272**	**1.3348**	**0.0131**	**0.3806**	**0.0183**	**0.3988**	**0.1032**	**0.0174**	**0.1206**		**1,384.6331**	**1,384.6331**	**0.0608**		**1,386.1519**

3.3 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	4.3350	45.5727	22.0630	0.0380		2.3904	2.3904		2.1991	2.1991		3,766.4529	3,766.4529	1.1917		3,796.2445
Total	**4.3350**	**45.5727**	**22.0630**	**0.0380**	**18.0663**	**2.3904**	**20.4566**	**9.9307**	**2.1991**	**12.1298**		**3,766.4529**	**3,766.4529**	**1.1917**		**3,796.2445**

3.3 Site Preparation - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0685	0.0435	0.5508	1.5000e-003	0.1479	9.4000e-004	0.1488	0.0392	8.7000e-004	0.0401		149.7561	149.7561	4.0500e-003		149.8574
Total	**0.0685**	**0.0435**	**0.5508**	**1.5000e-003**	**0.1479**	**9.4000e-004**	**0.1488**	**0.0392**	**8.7000e-004**	**0.0401**		**149.7561**	**149.7561**	**4.0500e-003**		**149.8574**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	4.3350	45.5727	22.0630	0.0380		2.3904	2.3904		2.1991	2.1991	0.0000	3,766.4529	3,766.4529	1.1917		3,796.2445
Total	**4.3350**	**45.5727**	**22.0630**	**0.0380**	**18.0663**	**2.3904**	**20.4566**	**9.9307**	**2.1991**	**12.1298**	**0.0000**	**3,766.4529**	**3,766.4529**	**1.1917**		**3,796.2445**

3.3 Site Preparation - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0685	0.0435	0.5508	1.5000e-003	0.1479	9.4000e-004	0.1488	0.0392	8.7000e-004	0.0401		149.7561	149.7561	4.0500e-003		149.8574
Total	**0.0685**	**0.0435**	**0.5508**	**1.5000e-003**	**0.1479**	**9.4000e-004**	**0.1488**	**0.0392**	**8.7000e-004**	**0.0401**		**149.7561**	**149.7561**	**4.0500e-003**		**149.8574**

3.4 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.7620	0.0000	8.7620	3.6099	0.0000	3.6099			0.0000			0.0000
Off-Road	4.7389	54.5202	33.3768	0.0620		2.3827	2.3827		2.1920	2.1920		6,140.0195	6,140.0195	1.9426		6,188.5854
Total	**4.7389**	**54.5202**	**33.3768**	**0.0620**	**8.7620**	**2.3827**	**11.1447**	**3.6099**	**2.1920**	**5.8020**		**6,140.0195**	**6,140.0195**	**1.9426**		**6,188.5854**

3.4 Grading - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.8803	29.8879	5.8286	0.0787	1.7128	0.1162	1.8289	0.4694	0.1111	0.5805		8,384.3278	8,384.3278	0.3818		8,393.8733
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0761	0.0484	0.6120	1.6700e-003	0.1643	1.0500e-003	0.1653	0.0436	9.6000e-004	0.0445		166.3956	166.3956	4.5000e-003		166.5083
Total	**0.9564**	**29.9362**	**6.4405**	**0.0803**	**1.8771**	**0.1172**	**1.9943**	**0.5130**	**0.1121**	**0.6251**		**8,550.7234**	**8,550.7234**	**0.3863**		**8,560.3815**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.7620	0.0000	8.7620	3.6099	0.0000	3.6099			0.0000			0.0000
Off-Road	4.7389	54.5202	33.3768	0.0620		2.3827	2.3827		2.1920	2.1920	0.0000	6,140.0195	6,140.0195	1.9426		6,188.5854
Total	**4.7389**	**54.5202**	**33.3768**	**0.0620**	**8.7620**	**2.3827**	**11.1447**	**3.6099**	**2.1920**	**5.8020**	**0.0000**	**6,140.0195**	**6,140.0195**	**1.9426**		**6,188.5854**

3.4 Grading - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.8803	29.8879	5.8286	0.0787	1.7128	0.1162	1.8289	0.4694	0.1111	0.5805		8,384.3278	8,384.3278	0.3818		8,393.8733
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0761	0.0484	0.6120	1.6700e-003	0.1643	1.0500e-003	0.1653	0.0436	9.6000e-004	0.0445		166.3956	166.3956	4.5000e-003		166.5083
Total	**0.9564**	**29.9362**	**6.4405**	**0.0803**	**1.8771**	**0.1172**	**1.9943**	**0.5130**	**0.1121**	**0.6251**		**8,550.7234**	**8,550.7234**	**0.3863**		**8,560.3815**

3.5 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.3612	21.0788	17.1638	0.0269		1.2899	1.2899		1.2127	1.2127		2,591.5802	2,591.5802	0.6313		2,607.3635
Total	**2.3612**	**21.0788**	**17.1638**	**0.0269**		**1.2899**	**1.2899**		**1.2127**	**1.2127**		**2,591.5802**	**2,591.5802**	**0.6313**		**2,607.3635**

3.5 Building Construction - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2939	7.5952	1.9461	0.0169	0.4130	0.0550	0.4680	0.1189	0.0526	0.1715		1,787.5267	1,787.5267	0.0848		1,789.6473
Worker	0.9963	0.6333	8.0166	0.0219	2.1523	0.0137	2.1660	0.5709	0.0126	0.5835		2,179.7827	2,179.7827	0.0590		2,181.2580
Total	**1.2902**	**8.2285**	**9.9627**	**0.0388**	**2.5652**	**0.0687**	**2.6340**	**0.6898**	**0.0653**	**0.7550**		**3,967.3094**	**3,967.3094**	**0.1438**		**3,970.9054**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.3612	21.0788	17.1638	0.0269		1.2899	1.2899		1.2127	1.2127	0.0000	2,591.5802	2,591.5802	0.6313		2,607.3635
Total	**2.3612**	**21.0788**	**17.1638**	**0.0269**		**1.2899**	**1.2899**		**1.2127**	**1.2127**	**0.0000**	**2,591.5802**	**2,591.5802**	**0.6313**		**2,607.3635**

3.5 Building Construction - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2939	7.5952	1.9461	0.0169	0.4130	0.0550	0.4680	0.1189	0.0526	0.1715		1,787.5267	1,787.5267	0.0848		1,789.6473
Worker	0.9963	0.6333	8.0166	0.0219	2.1523	0.0137	2.1660	0.5709	0.0126	0.5835		2,179.7827	2,179.7827	0.0590		2,181.2580
Total	**1.2902**	**8.2285**	**9.9627**	**0.0388**	**2.5652**	**0.0687**	**2.6340**	**0.6898**	**0.0653**	**0.7550**		**3,967.3094**	**3,967.3094**	**0.1438**		**3,970.9054**

3.5 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.1198	19.1860	16.8485	0.0269		1.1171	1.1171		1.0503	1.0503		2,553.0631	2,553.0631	0.6229		2,568.6345
Total	**2.1198**	**19.1860**	**16.8485**	**0.0269**		**1.1171**	**1.1171**		**1.0503**	**1.0503**		**2,553.0631**	**2,553.0631**	**0.6229**		**2,568.6345**

3.5 Building Construction - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2370	6.8598	1.7373	0.0168	0.4130	0.0342	0.4472	0.1189	0.0327	0.1516		1,776.9232	1,776.9232	0.0780		1,778.8720
Worker	0.9107	0.5592	7.2059	0.0212	2.1523	0.0134	2.1657	0.5709	0.0124	0.5833		2,111.7368	2,111.7368	0.0517		2,113.0287
Total	**1.1477**	**7.4190**	**8.9432**	**0.0380**	**2.5653**	**0.0476**	**2.6128**	**0.6898**	**0.0451**	**0.7348**		**3,888.6599**	**3,888.6599**	**0.1296**		**3,891.9007**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.1198	19.1860	16.8485	0.0269		1.1171	1.1171		1.0503	1.0503	0.0000	2,553.0631	2,553.0631	0.6229		2,568.6345
Total	**2.1198**	**19.1860**	**16.8485**	**0.0269**		**1.1171**	**1.1171**		**1.0503**	**1.0503**	**0.0000**	**2,553.0631**	**2,553.0631**	**0.6229**		**2,568.6345**

3.5 Building Construction - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2370	6.8598	1.7373	0.0168	0.4130	0.0342	0.4472	0.1189	0.0327	0.1516		1,776.9232	1,776.9232	0.0780		1,778.8720
Worker	0.9107	0.5592	7.2059	0.0212	2.1523	0.0134	2.1657	0.5709	0.0124	0.5833		2,111.7368	2,111.7368	0.0517		2,113.0287
Total	**1.1477**	**7.4190**	**8.9432**	**0.0380**	**2.5653**	**0.0476**	**2.6128**	**0.6898**	**0.0451**	**0.7348**		**3,888.6599**	**3,888.6599**	**0.1296**		**3,891.9007**

3.6 Paving - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4544	15.2441	14.6648	0.0228		0.8246	0.8246		0.7586	0.7586		2,257.0025	2,257.0025	0.7141		2,274.8548
Paving	0.1251					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.5795**	**15.2441**	**14.6648**	**0.0228**		**0.8246**	**0.8246**		**0.7586**	**0.7586**		**2,257.0025**	**2,257.0025**	**0.7141**		**2,274.8548**

3.6 Paving - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0570	0.0363	0.4590	1.2500e-003	0.1232	7.9000e-004	0.1240	0.0327	7.2000e-004	0.0334		124.7967	124.7967	3.3800e-003		124.8812
Total	**0.0570**	**0.0363**	**0.4590**	**1.2500e-003**	**0.1232**	**7.9000e-004**	**0.1240**	**0.0327**	**7.2000e-004**	**0.0334**		**124.7967**	**124.7967**	**3.3800e-003**		**124.8812**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4544	15.2441	14.6648	0.0228		0.8246	0.8246		0.7586	0.7586	0.0000	2,257.0025	2,257.0025	0.7141		2,274.8548
Paving	0.1251					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.5795**	**15.2441**	**14.6648**	**0.0228**		**0.8246**	**0.8246**		**0.7586**	**0.7586**	**0.0000**	**2,257.0025**	**2,257.0025**	**0.7141**		**2,274.8548**

3.6 Paving - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0570	0.0363	0.4590	1.2500e-003	0.1232	7.9000e-004	0.1240	0.0327	7.2000e-004	0.0334		124.7967	124.7967	3.3800e-003		124.8812
Total	**0.0570**	**0.0363**	**0.4590**	**1.2500e-003**	**0.1232**	**7.9000e-004**	**0.1240**	**0.0327**	**7.2000e-004**	**0.0334**		**124.7967**	**124.7967**	**3.3800e-003**		**124.8812**

3.7 Architectural Coating - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	64.6964					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2422	1.6838	1.8314	2.9700e-003		0.1109	0.1109		0.1109	0.1109		281.4481	281.4481	0.0218		281.9928
Total	**64.9386**	**1.6838**	**1.8314**	**2.9700e-003**		**0.1109**	**0.1109**		**0.1109**	**0.1109**		**281.4481**	**281.4481**	**0.0218**		**281.9928**

3.7 Architectural Coating - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1808	0.1110	1.4302	4.2100e-003	0.4272	2.6600e-003	0.4298	0.1133	2.4500e-003	0.1158		419.1233	419.1233	0.0103		419.3798
Total	**0.1808**	**0.1110**	**1.4302**	**4.2100e-003**	**0.4272**	**2.6600e-003**	**0.4298**	**0.1133**	**2.4500e-003**	**0.1158**		**419.1233**	**419.1233**	**0.0103**		**419.3798**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	64.6964					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2422	1.6838	1.8314	2.9700e-003		0.1109	0.1109		0.1109	0.1109	0.0000	281.4481	281.4481	0.0218		281.9928
Total	**64.9386**	**1.6838**	**1.8314**	**2.9700e-003**		**0.1109**	**0.1109**		**0.1109**	**0.1109**	**0.0000**	**281.4481**	**281.4481**	**0.0218**		**281.9928**

3.7 Architectural Coating - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1808	0.1110	1.4302	4.2100e-003	0.4272	2.6600e-003	0.4298	0.1133	2.4500e-003	0.1158		419.1233	419.1233	0.0103		419.3798
Total	**0.1808**	**0.1110**	**1.4302**	**4.2100e-003**	**0.4272**	**2.6600e-003**	**0.4298**	**0.1133**	**2.4500e-003**	**0.1158**		**419.1233**	**419.1233**	**0.0103**		**419.3798**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Improve Destination Accessibility

Improve Pedestrian Network

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	3.7485	12.2330	34.9156	0.1053	8.7374	0.1008	8.8382	2.3324	0.0945	2.4269		10,611.3864	10,611.3864	0.3891		10,621.1126
Unmitigated	3.9810	13.7500	41.3695	0.1295	10.9218	0.1225	11.0443	2.9155	0.1149	3.0304		13,039.6480	13,039.6480	0.4571		13,051.0763

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	644.16	630.08	594.88	1,466,851	1,173,481
Apartments Mid Rise	625.60	734.85	577.30	1,465,000	1,172,000
Enclosed Parking Structure	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Retirement Community	145.47	79.17	129.09	308,699	246,959
Strip Mall	755.00	840.80	633.00	1,464,485	1,171,588
Total	2,170.23	2,284.90	1,934.27	4,705,036	3,764,028

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Low Rise	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3
Apartments Mid Rise	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3
Enclosed Parking Structure	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Retirement Community	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3
Strip Mall	9.50	7.30	7.30	16.60	64.40	19.00	60	40	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.604810	0.038204	0.185149	0.108513	0.015498	0.004981	0.012268	0.020156	0.002083	0.001571	0.005363	0.000620	0.000785
Apartments Mid Rise	0.604810	0.038204	0.185149	0.108513	0.015498	0.004981	0.012268	0.020156	0.002083	0.001571	0.005363	0.000620	0.000785
Enclosed Parking Structure	0.604810	0.038204	0.185149	0.108513	0.015498	0.004981	0.012268	0.020156	0.002083	0.001571	0.005363	0.000620	0.000785
Parking Lot	0.604810	0.038204	0.185149	0.108513	0.015498	0.004981	0.012268	0.020156	0.002083	0.001571	0.005363	0.000620	0.000785
Retirement Community	0.604810	0.038204	0.185149	0.108513	0.015498	0.004981	0.012268	0.020156	0.002083	0.001571	0.005363	0.000620	0.000785
Strip Mall	0.604810	0.038204	0.185149	0.108513	0.015498	0.004981	0.012268	0.020156	0.002083	0.001571	0.005363	0.000620	0.000785

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0690	0.5906	0.2566	3.7700e-003		0.0477	0.0477		0.0477	0.0477		753.0026	753.0026	0.0144	0.0138	757.4774
NaturalGas Unmitigated	0.0690	0.5906	0.2566	3.7700e-003		0.0477	0.0477		0.0477	0.0477		753.0026	753.0026	0.0144	0.0138	757.4774

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Low Rise	2458.9	0.0265	0.2266	0.0964	1.4500e-003		0.0183	0.0183		0.0183	0.0183		289.2825	289.2825	5.5400e-003	5.3000e-003	291.0015
Apartments Mid Rise	2722.02	0.0294	0.2509	0.1068	1.6000e-003		0.0203	0.0203		0.0203	0.0203		320.2375	320.2375	6.1400e-003	5.8700e-003	322.1405
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Retirement Community	1089.74	0.0118	0.1004	0.0427	6.4000e-004		8.1200e-003	8.1200e-003		8.1200e-003	8.1200e-003		128.2047	128.2047	2.4600e-003	2.3500e-003	128.9666
Strip Mall	129.863	1.4000e-003	0.0127	0.0107	8.0000e-005		9.7000e-004	9.7000e-004		9.7000e-004	9.7000e-004		15.2780	15.2780	2.9000e-004	2.8000e-004	15.3688
Total		**0.0690**	**0.5906**	**0.2566**	**3.7700e-003**		**0.0477**	**0.0477**		**0.0477**	**0.0477**		**753.0026**	**753.0026**	**0.0144**	**0.0138**	**757.4774**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Low Rise	2.4589	0.0265	0.2266	0.0964	1.4500e-003		0.0183	0.0183		0.0183	0.0183		289.2825	289.2825	5.5400e-003	5.3000e-003	291.0015
Apartments Mid Rise	2.72202	0.0294	0.2509	0.1068	1.6000e-003		0.0203	0.0203		0.0203	0.0203		320.2375	320.2375	6.1400e-003	5.8700e-003	322.1405
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Retirement Community	1.08974	0.0118	0.1004	0.0427	6.4000e-004		8.1200e-003	8.1200e-003		8.1200e-003	8.1200e-003		128.2047	128.2047	2.4600e-003	2.3500e-003	128.9666
Strip Mall	0.129863	1.4000e-003	0.0127	0.0107	8.0000e-005		9.7000e-004	9.7000e-004		9.7000e-004	9.7000e-004		15.2780	15.2780	2.9000e-004	2.8000e-004	15.3688
Total		**0.0690**	**0.5906**	**0.2566**	**3.7700e-003**		**0.0477**	**0.0477**		**0.0477**	**0.0477**		**753.0026**	**753.0026**	**0.0144**	**0.0138**	**757.4774**

6.0 Area Detail

6.1 Mitigation Measures Area

Use only Natural Gas Hearths

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	13.4024	0.9345	20.3599	5.5400e-003		0.1671	0.1671		0.1671	0.1671	0.0000	932.8356	932.8356	0.0524	0.0164	939.0455
Unmitigated	16.0975	1.3337	44.8349	0.0854		4.1597	4.1597		4.1597	4.1597	589.3162	932.8356	1,522.1518	2.8073	0.0164	1,597.2350

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.9320					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	10.7754					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	2.7773	1.1018	24.7739	0.0843		4.0495	4.0495		4.0495	4.0495	589.3162	896.8235	1,486.1397	2.7721	0.0164	1,560.3425
Landscaping	0.6127	0.2320	20.0610	1.0600e-003		0.1103	0.1103		0.1103	0.1103		36.0121	36.0121	0.0352		36.8926
Total	**16.0975**	**1.3337**	**44.8349**	**0.0854**		**4.1597**	**4.1597**		**4.1597**	**4.1597**	**589.3162**	**932.8356**	**1,522.1518**	**2.8073**	**0.0164**	**1,597.2350**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.9320					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	10.7754					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0822	0.7025	0.2989	4.4800e-003		0.0568	0.0568		0.0568	0.0568	0.0000	896.8235	896.8235	0.0172	0.0164	902.1529
Landscaping	0.6127	0.2320	20.0610	1.0600e-003		0.1103	0.1103		0.1103	0.1103		36.0121	36.0121	0.0352		36.8926
Total	**13.4024**	**0.9345**	**20.3599**	**5.5400e-003**		**0.1671**	**0.1671**		**0.1671**	**0.1671**	**0.0000**	**932.8356**	**932.8356**	**0.0524**	**0.0164**	**939.0455**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

EXHIBIT B

SMITH ENGINEERING & MANAGEMENT

December 20, 2019

Mr. Aaron Messing
Adams Broadwell Joseph & Cardozo
601 Gateway Boulevard, Suite 1000
South San Francisco, CA 94080-7037

Subject: Westport Mixed Use Project DEIR (SCH 2019070377)

P19052

Dear Mr. Messing:

Per your request, I reviewed the Draft Environmental Impact Report (the "DEIR") for the Westport Mixed Use Project, located in Cupertino (the "City"). My review is specific to the Transportation and Circulation matters. B5-51

My qualifications to perform this review include registration as a Civil and Traffic Engineer in California and over 50 years professional consulting engineering practice in the traffic and parking field. I have both prepared and reviewed the transportation and circulation sections of CEQA environmental review documents. My professional resume is attached hereto.

My technical comments follow.

The DEIR Project Description is Incomplete

The DEIR's project description does not include any discussion of the types of retail that would be included in the Project. The existing shopping plaza, which contains many local serving uses like cheap restaurants, dentists, nail shops, and dance studios, attracts considerably more local trips than a shopping center that has specialty shops that people drive for longer distances to get to. These differences in retail may significantly increase the VMT and GHG impacts of the project and without more information, the DEIR cannot make reliable conclusions as to those impacts. Please confirm what elements of local data and what default data were used in the VMT analysis. B5-52

The DEIR Makes No Evident Assumption of Development on the Vallco Site.

At the time of issuance of the Notice Of Preparation (NOP) for the Westport EIR (July 11, 2019), the Cupertino City Council had repealed the Vallco General Plan Amendment, B5-53

the Specific Plan and the Development agreement that had previously been adopted by the Council in September, 2018. Resolution No. 18-104 certifying the Final EIR on the Vallco site has not been subsequently repealed. While the repeal actions make certain that the Specific Plan in its proposed form will not move forward, this does not mean Vallco will remain in its substantially vacant current condition, a condition that prevailed at the time the traffic counts the Westport Project DEIR were taken. It does, however, make more likely that an alternative studied in the Vallco EIR, the Occupied / Re-tenanted Mall, would become the long term use. That option, would, according to the Vallco DEIR, involve 23,417 net new trips daily, including 307 in the AM peak and 2,398 in the PM peak hour that were not present when the counts supporting the Westport DEIR analysis were conducted. These are a sufficient number of trips generated close to the Westport site to alter the findings of the Westport traffic analysis. It is not clear that the Westport analysis has accounted for any revitalized use of the Vallco site.

B5-53 continued

The Summary Reporting of the VMT Analysis Raises Questions

The DEIR discloses that the Project's vehicle miles traveled generation (VMT) was analyzed using the CAEEMOD, an air pollutant prediction model, and that the Project would reduce VMT generated by development at the site by 120,000 miles annually or 327 per day, as compared to a continuation of the existing use of the site. This seems logical in that the small reduction in the net daily trips generated at the site would be expected to reduce VMT by a small number of miles per day.

B5-54

However, neither the Transportation section of the DEIR nor its Appendix H Transportation Analysis presents the CAEEMOD run sheets for inspection. All that is presented is a summarization of the model outcomes with respect to VMT. Since CAEEMOD is known to have generalized default values for trip generation and average trip length for various land uses for which superior current and local values for trip generation and average trip length can be substituted, it is important for the public to understand whether data from local traffic models has been employed or the outcome is just the product of default values. The must clarify whether local values have been substituted for default values and if not, why not. We do note that there are CAEEMOD run sheets located in Appendix C and that the weekday trip generation in them appears to be consistent with the trip generation analysis contained in the transportation section. However, other aspects like trip length or trip purpose may be default values.

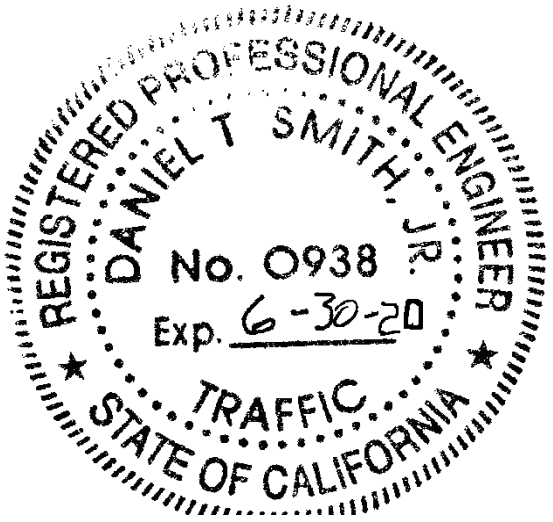
Conclusion

This completes my current comments on the Westport Mixed Use Project DEIR. For the reasons stated above, the DEIR is inadequate and must be revised and recirculated in draft status.

B5-55

Sincerely,

Smith Engineering & Management
A California Corporation



Daniel T. Smith Jr., P.E.
President

DANIEL T. SMITH, Jr.
President

EDUCATION

Bachelor of Science, Engineering and Applied Science, Yale University, 1967
Master of Science, Transportation Planning, University of California, Berkeley, 1968

PROFESSIONAL REGISTRATION

California No. 21913 (Civil)
California No. 938 (Traffic)
Nevada No. 7969 (Civil, Ret.)
Washington No. 29337 (Civil, Ret.)
Arizona No. 22131 (Civil, Ret.)

PROFESSIONAL EXPERIENCE

Smith Engineering & Management, 1993 to present. President.
DKS Associates, 1979 to 1993. Founder, Vice President, Principal Transportation Engineer.
De Leuw, Cather & Company, 1968 to 1979. Senior Transportation Planner.
Personal specialties and project experience include:

Litigation Consulting. Provides consultation, investigations and expert witness testimony in highway design, transit design and traffic engineering matters including condemnations involving transportation access issues; traffic accidents involving highway design or traffic engineering factors; land use and development matters involving access and transportation impacts; parking and other traffic and transportation matters.

Urban Corridor Studies/Alternatives Analysis. Principal-in-charge for State Route (SR) 102 Feasibility Study, a 35-mile freeway alignment study north of Sacramento. Consultant on I-280 Interstate Transfer Concept Program, San Francisco, an AA/EIS for completion of I-280, demolition of Embarcadero freeway, substitute light rail and commuter rail projects. Principal-in-charge, SR 238 corridor freeway/expressway design/environmental study, Hayward (Calif.). Project manager, Sacramento Northeast Area multi-modal transportation corridor study. Transportation planner for I-80N West Terminal Study, and Harbor Drive Traffic Study, Portland, Oregon. Project manager for design of surface segment of Woodward Corridor LRT, Detroit, Michigan. Directed staff on I-80 National Strategic Corridor Study (Sacramento-San Francisco), US 101-Sonoma freeway operations study, SR 92 freeway operations study, I-880 freeway operations study, SR 152 alignment studies, Sacramento RTD light rail systems study, Tasman Corridor LRT AA/EIS, Fremont-Warm Springs BART extension plan/EIR, SRs 70/99 freeway alternatives study, and Richmond Parkway (SR 93) design study.

Area Transportation Plans. Principal-in charge for transportation element of City of Los Angeles General Plan Framework, shaping nations largest city two decades into 21'st century. Project manager for the transportation element of 300-acre Mission Bay development in downtown San Francisco. Mission Bay involves 7 million gsf office/commercial space, 8,500 dwelling units, and community facilities. Transportation features include relocation of commuter rail station; extension of MUNI-Metro LRT; a multi-modal terminal for LRT, commuter rail and local bus; removal of a quarter mile elevated freeway; replacement by new ramps and a boulevard; an internal roadway network overcoming constraints imposed by an internal tidal basin; freeway structures and rail facilities; and concept plans for 20,000 structured parking spaces. Principal-in-charge for circulation plan to accommodate 9 million gsf of office/commercial growth in downtown Bellevue (Wash.). Principal-in-charge for 64 acre, 2 million gsf multi-use complex for FMC adjacent to San Jose International Airport. Project manager for transportation element of Sacramento Capitol Area Plan for the state governmental complex, and for Downtown Sacramento Redevelopment Plan. Project manager for Napa (Calif.) General Plan Circulation Element and Downtown Riverfront Redevelopment Plan, on parking program for downtown Walnut Creek, on downtown transportation plan for San Mateo and redevelopment plan for downtown Mountain View (Calif.), for traffic circulation and safety plans for California cities of Davis, Pleasant Hill and Hayward, and for Salem, Oregon.

Transportation Centers. Project manager for Daly City Intermodal Study which developed a $7 million surface bus terminal, traffic access, parking and pedestrian circulation improvements at the Daly City BART station plus development of functional plans for a new BART station at Colma. Project manager for design of multi-modal terminal (commuter rail, light rail, bus) at Mission Bay, San Francisco. In Santa Clarita Long Range Transit Development Program, responsible for plan to relocate system's existing timed-transfer hub and development of three satellite transfer hubs. Performed airport ground transportation system evaluations for San Francisco International, Oakland International, Sea-Tac International, Oakland International, Los Angeles International, and San Diego Lindberg.

Campus Transportation. Campus transportation planning assignments for UC Davis, UC Berkeley, UC Santa Cruz and UC San Francisco Medical Center campuses; San Francisco State University; University of San Francisco; and the University of Alaska and others. Also developed master plans for institutional campuses including medical centers, headquarters complexes and research & development facilities.

Special Event Facilities. Evaluations and design studies for football/baseball stadiums, indoor sports arenas, horse and motor racing facilities, theme parks, fairgrounds and convention centers, ski complexes and destination resorts throughout western United States.

Parking. Parking programs and facilities for large area plans and individual sites including downtowns, special event facilities, university and institutional campuses and other large site developments; numerous parking feasibility and operations studies for parking structures and surface facilities; also, resident preferential parking .

Transportation System Management & Traffic Restraint. Project manager on FHWA program to develop techniques and guidelines for neighborhood street traffic limitation. Project manager for Berkeley, (Calif.), Neighborhood Traffic Study, pioneered application of traffic restraint techniques in the U.S. Developed residential traffic plans for Menlo Park, Santa Monica, Santa Cruz, Mill Valley, Oakland, Palo Alto, Piedmont, San Mateo County, Pasadena, Santa Ana and others. Participated in development of photo/radar speed enforcement device and experimented with speed humps. Co-author of Institute of Transportation Engineers reference publication on neighborhood traffic control.

Bicycle Facilities. Project manager to develop an FHWA manual for bicycle facility design and planning, on bikeway plans for Del Mar, (Calif.), the UC Davis and the City of Davis. Consultant to bikeway plans for Eugene, Oregon, Washington, D.C., Buffalo, New York, and Skokie, Illinois. Consultant to U.S. Bureau of Reclamation for development of hydraulically efficient, bicycle safe drainage inlets. Consultant on FHWA research on effective retrofits of undercrossing and overcrossing structures for bicyclists, pedestrians, and handicapped.

MEMBERSHIPS

Institute of Transportation Engineers Transportation Research Board

PUBLICATIONS AND AWARDS

Residential Street Design and Traffic Control, with W. Homburger *et al.* Prentice Hall, 1989.

Co-recipient, Progressive Architecture Citation, *Mission Bay Master Plan*, with I.M. Pei WRT Associated, 1984.

Residential Traffic Management, State of the Art Report, U.S. Department of Transportation, 1979.

Improving The Residential Street Environment, with Donald Appleyard et al., U.S. Department of Transportation, 1979.

Strategic Concepts in Residential Neighborhood Traffic Control, International Symposium on Traffic Control Systems, Berkeley, California, 1979.

Planning and Design of Bicycle Facilities: Pitfalls and New Directions, Transportation Research Board, Research Record 570, 1976.

Co-recipient, Progressive Architecture Award, *Livable Urban Streets, San Francisco Bay Area and London*, with Donald Appleyard, 1979.

Comment Letter B6

To: Gian Martire, Senior Planner
City of Cupertino
10300 Torre Avenue
Cupertino, CA 95014
Phone: (408) 777-3319
Email: GianM@cupertino.org

Subject: The Westport Mixed-Use Project Draft EIR public comment (SCH#2019070377)

To Mr. Gian Martire:

Overall the Initial Study (IS) and Environmental Impact Report (EIR) for the Westport Mixed-Use Project is well written from a CEQA standpoint. I mostly have non-CEQA questions and comments for the City as a whole and some more project-related information seeking comments/questions. B6-1

Schools

Cupertino is a residential city with pockets of office spaces. CUSD is one of the largest school districts in Northern California. Even though we are in a highly affluent area, the high enrollment coupled with the low-incoming enrollment due primarily to the high-cost of living and home prices is causing financial difficulties and skewed enrollment at schools for CUSD (some school enrollment is super high, others it's dwindling due to low incoming enrollment). Will this project help the CUSD problem or make it worse? Even though the developer pays developer fees to CUSD, there is a cap on the amount of fees CUSD can acquire due to SB 50. It doesn't look like the City of Cupertino has any significant goals or policies in the General Plan to encourage more collaboration with CUSD or FUHSD when it comes to development. B6-2

Parking

The only definitive mention of parking is for bicycle parking (117 bicycle parking spaces). A single-level underground parking lot is mentioned along with density bonuses and such which are factored into the total parking spaces. There is no mention of the total number of parking spaces proposed. There is no discussion on Parking. Although not a CEQA-specific issue per se, this is a concern. Will there be enough spaces for the 242 residential units? There are 88 units (19 rowhouses and 69 townhomes) that will have their own garage. This brings the number of units using the underground parking to 154 residential units. Will there be enough parking provided for the proposed residential units on-site? How many parking spaces are proposed? B6-3

Traffic and Pedestrians along Mary Avenue

There is an existing blind curve on Mary Avenue where there is an existing pedestrian crosswalk with a signal. With this project, traffic will increase and only exacerbate safety issues for those crossing Mary Ave. Will this signalized pedestrian crossing be maintained or improved? B6-4

Traffic along Stevens Creek Boulevard

Currently, during morning hours (especially during the hours to take school-aged children to school between 7:45 a.m. and 9:00 a.m.), there is a backup along westbound Stevens Creek Boulevard. There is an existing exit lane to the freeway-onramp which becomes congested when vehicles try to turn right onto Stevens Creek Boulevard through lanes (the first and second lanes). What traffic calming measures B6-5

will be implemented to help ease this existing congestion? Development of this project would increase traffic along this roadway. Is there space along Mary Avenue to have two right turn lanes onto Stevens Creek Boulevard? One right turn lane for through traffic and one right turn lane for freeway-onramp only traffic that could be utilized specifically during the morning hours?

B6-5 continued

Thanks,

Michelle Dunn
106xx Hale Place
Cupertino, CA 95014