ATTACHMENT D: Transportation Impact Study

FEHR PEERS

MEMORANDUM

Date: June 23, 2017

To: Nathaniel Taylor, Lamphier-Gregory

From: Sam Tabibnia, Ron Ramos, and Natalie Chyba

Subject: 1431 Jefferson Street –Transportation Impact Study

OK16-0150

This memorandum summarizes the Transportation Impact Study (TIS) that Fehr & Peers completed for the proposed 1431 Jefferson Street project in Oakland. Based on City of Oakland's latest significant criteria, the proposed project would not cause significant impacts to the transportation network.

This document provides a brief description of the proposed proejct, followed by an analysis of project impacts under CEQA and a discussion of planning-related non-CEQA issues including effects of the project on traffic operations, access and circulation, and parking,

PROJECT DESCRIPTION

The proposed project is located on the west side of Jefferson Street between 14th and 15th Streets in Downtown Oakland. The project would consist of a 276-room hotel with 2,105 square-feet of ground-level retail space (which this analysis conservatively assumes as restaurant). The hotel would provide 133 traditional rooms and 143 long stay rooms. This analysis conservatively assumes that all rooms would be traditional rooms because they would generate more trips.

According to the site plan dated November 17, 2016, the proposed project would also include a 98-space five-level aboveground garage accessed through a driveway on 15th Street. The project would replace an existing 5,000 square-foot convenient store and a surface public parking lot.

PROJECT ANALYSIS

According to the City of Oakland's *Update to CEQA Thresholds of Significance and Transportation Impact Review Guidelines* dated April 14, 2017, a project would have a significant effect on the environment if it would:

1. Conflict with a plan, ordinance, or policy addressing the safety or performance of the circulation system, including transit, roadways, bicycle lanes, and pedestrian paths (except for automobile level of service or other measures of vehicle delay); or
2. Cause substantial additional VMT per capita, per service population, or other appropriate efficiency measure; or
3. Substantially induce additional automobile travel by increasing physical roadway capacity in congested areas (i.e., by adding new mixed-flow lanes) or by adding new roadways to the network.

CONFLICTS WITH PLANS, ORDINANCES, OR POLICIES RELATING TO SAFETY, OR PERFORMANCE OF THE CIRCULATION SYSTEM

The proposed project is consistent with applicable plans, ordinances, and policies, and would not cause a significant impact by conflicting with adopted plans, ordinances, or policies addressing the safety and performance of the circulation system, including transit, roadways, bicycle lanes, and pedestrian paths (except for automobile level of service or other measures of vehicle delay).

The LUTE, as well as the City's Public Transit and Alternative Mode and Complete Streets policies, states a strong preference for encouraging the use of non-automobile transportation modes, such as transit, bicycling, and walking. The proposed project would encourage the use of non-automobile transportation modes by providing a hotel and commercial uses with minimal parking in a dense, walkable urban environment that is well-served by local and regional transit.

The proposed project is consistent with both the City's Pedestrian Master Plan and Bicycle Master Plan as it would not make major modifications to existing pedestrian or bicycle facilities in the surrounding areas and would not adversely affect installation of future facilities. Further, because the proposed project would generate more than 50 peak-hour trips, preparation and implementation of SCA-TRANS-1: Transportation and Parking Demand Management (#71) is required.

Overall, the Proposed Project would not conflict with adopted plans, ordinances, or policies addressing the safety and performance of the circulation system. This is a less-than-significant impact and no mitigation measures are required.

CAUSE SUBSTANTIAL ADDITIONAL VEHICLE MILES TRAVELED

On September 21, 2016, the City of Oakland's Planning Commission directed staff to update the City of Oakland's California Environmental Quality Act (CEQA) Thresholds of Significance Guidelines related to transportation impacts in order to implement the directive from Senate Bill 743 (Steinberg 2013) to modify local environmental review processes by removing automobile delay, as described solely by level of service (LOS) or similar measures of vehicular capacity or traffic congestion, as a significant impact on the environment pursuant to CEQA. The Planning Commission direction aligns with draft proposed guidance from the Governor's Office of Planning and Research and the City's approach to transportation impact analysis with adopted plans and polices related to transportation, which promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses.

VMT Screening

Many factors affect travel behavior, including density of development, diversity of land uses, design of the transportation network, access to regional destinations, distance to high-quality transit, development scale, demographics, and transportation demand management. Typically, low-density development that is located at a great distance from other land uses, in areas with poor access to non-single occupancy vehicle travel modes generate more automobile travel compared to development located in urban areas, where a higher density of development, a mix of land uses, and travel options other than private vehicles are available.

Given these travel behavior factors, most of Oakland has lower VMT per capita and VMT per employee ratios than the remainder of the nine-county San Francisco Bay Area region. Further, some neighborhoods of Oakland have lower VMT ratios than others of the city.

VMT Estimate

Neighborhoods within Oakland are expressed geographically in transportation analysis zones, or TAZs. The Metropolitan Transportation Commission (MTC) Travel Model includes 116 TAZs within Oakland that vary in size from a few city blocks in the downtown core, to multiple blocks in outer

neighborhoods, to even larger geographic areas in lower density areas in the hills. TAZs are used in transportation planning models for transportation analysis and other planning purposes.

The MTC Travel Model is a model that assigns all predicted trips within, across, or to or from the nine-county San Francisco Bay Area region onto the roadway network and the transit system by mode (single-driver and carpool vehicle, biking, walking, or transit) and transit carrier (bus, rail) for a particular scenario.

The travel behavior from the MTC Travel Model is modeled based on the following inputs:

- Socioeconomic data developed by the Association of Bay Area Governments (ABAG)
- Population data created using 2000 US Census and modified using the open source PopSyn software
- Zonal accessibility measurements for destinations of interest
- Travel characteristics and automobile ownership rates derived from the 2000 Bay Area Travel Survey
- Observed vehicle counts and transit boardings.

The daily VMT output from the MTC Travel Model for residential and office uses comes from a tour-based analysis. The tour-based analysis examines the entire chain of trips over the course of a day, not just trips to and from the project site. In this way, all of the VMT for an individual resident or employee is included; not just trips into and out of the person's home or workplace. For example: a resident leaves their apartment in the morning, stops for coffee, and then goes to the office. In the afternoon they head out to lunch, and then return to the office, with a stop at the drycleaners on the way. After work they go to the gym to work out, and then join some friends at a restaurant for dinner before returning home. The tour-based approach would add up the total amount driven and assign the daily VMT to this resident for the total number of miles driven on the entire "tour".

Based on the MTC Travel Model, the regional average daily VMT per capita is 15.0 under 2020 conditions and 13.8 under 2040 conditions, and the regional average daily VMT per worker is 21.8 under 2020 conditions and 20.3 under 2040 conditions.

Thresholds of Significance for VMT

The following are thresholds of significance related to substantial additional VMT:

- For residential projects, a project would cause substantial additional VMT if it exceeds existing regional household VMT per capita minus 15 percent.
- For office projects, a project would cause substantial additional VMT if it exceeds the existing regional VMT per employee minus 15 percent.
- For retail projects, a project would cause substantial additional VMT if it results a net increase in total VMT..

VMT impacts would be less than significant for a project if any of the following identified screening criteria are met:

1. Small Projects: The project generates fewer than 100 vehicle trips per day.
2. Low-VMT Areas: The project meets map-based screening criteria by being located in an area that exhibits below threshold VMT, or 15 percent or more below the regional average.
3. Near Transit Stations: The project is located in a Transit Priority Area or within a one-half mile of a Major Transit Corridor or Stop[1] and satisfies the following:
    - Has a Floor Area Ratio (FAR) of more than 0.75
    - Does not include more parking for use by residents, customers, or employees of the project than other typical nearby uses, or more than required by the City (if parking minimums pertain to the site) or allowed without a conditional use permit (if minimums and/or maximums pertain to the site).
    - Is consistent with the applicable Sustainable Communities Strategy (as determined by the lead agency, with input from the Metropolitan Transportation Commission)

[1] Major transit stop is defined in CEQA Section 21064.3 as a rail transit station, a ferry terminal served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods.

VMT Impact Analysis

The Project would include 276 hotel rooms and 2,105 square feet of ground floor commercial space. Per City of Oakland's 2017 CEQA Thresholds of Significance and Transportation Impact Review Guidelines, the hotel component of the project is considered residential for the screening analysis. Since the project would provide less than 80,000 square feet of retail space, the retail is considered to be local serving and the VMT per worker criterion is used to screen the VMT for the commercial component of the project.

The Project satisfies the Criteria #2 (Low-VMT Area) and #3 (Near Transit Station), as detailed below.

Criterion #1: Small Projects

The project would generate more than 100 trips per day and therefore does not meet criterion #1.

Criterion #2: Low-VMT Area

Table 1 describes the 2020 and 2040 VMT for TAZ 970, the TAZ in which the project is located as well as applicable VMT thresholds of 15 percent below the regional average.

TABLE 1: DAILY VEHICLE MILES TRAVELED PER CAPITA

Land Use	Bay Area				TAZ 970	
	2020		2040			
	Regional Average	Regional Average minus 15%	Regional Average	Regional Average minus 15%	2020	2040
Residential (VMT per Capita)[1]	15.0	12.8	13.8	11.7	3.2	2.5
Commercial (VMT per worker)[2]	21.8	18.5	20.3	17.3	12.5	10.6

Notes:

1. MTC Model results at analytics.mtc.ca.gov/foswiki/Main/PlanBayAreaVmtPerCapita and accessed in November 2016.
2. MTC Model results at analytics.mtc.ca.gov/foswiki/Main/PlanBayAreaVmtPerWorker and accessed in November 2016.

Source: Fehr & Peers, 2016.

As shown in Table 1, the 2020 and 2040 average daily VMT per capita and VMT per worker in the project TAZ is more than 15 percent below the regional averages. Therefore, it is presumed that the proposed project would not result in substantial additional VMT and project impacts with respect to VMT would be less-than-significant.

Criterion #3: Near Transit Stations

The project would be located about 0.4 miles from the 12th Street BART Station. Additionally, the project is within about 0.3 miles of bus stop along 14th Street (Route 14 with 15 minute peak headways) and Broadway (Routes 6 and 51A with 10 minute peak headways, and Routes 72, 72M, and 72R, with 10 to 12 minute peak headways). The project meets Criterion #3 because it would satisfy the following three conditions for this criterion:

- The project has an FAR of 11.6, which is greater than 0.75.
- The Project would include a 98-space parking structure. The City of Oakland Municipal Code 17.116 does not provide any parking requirements for hotels in the CBD-P and CBD-X zones. According to the Code 17.116.080, the commercial component of the proposed project would require a minimum of zero and a maximum of one parking space per 300 square feet of ground floor area in the CBD-P and CBD-X zones. The number of parking spaces provided by the proposed project would be below the maximum parking supply allowed by the Municipal Code. Therefore, the project would not provide more parking for use by residents, customers, or employees than other typical nearby uses, nor would it provide more parking than required by the City Code.
- The Project is located within the Downtown Priority Development Area (PDA) as defined by Plan Bay Area, and is therefore consistent with the region's Sustainable Communities Strategy

VMT Screening Conclusion

The Project would satisfy the Low-VMT Area Criterion (#2) and the Near Transit Stations (#3) criteria and is therefore presumed to have a less-than-significant impact on VMT.

SUBSTANTIALLY INDUCE ADDITIONAL AUTOMOBILE TRAVEL

The proposed project would not modify the roadway network surrounding the project site. Therefore, it would not increase the physical roadway capacity and would not add new roadways

to the network, and would have a less-than-significant impact on inducing additional automobile traffic.

PLANNING-RELATED NON-CEQA ISSUES DISCUSSION

This section discusses transportation-related topics that are not considerations under CEQA but are evaluated to inform decision makers and the public about these issues.

PROJECT TRAFFIC IMPACT ANALYSIS

Although the City of Oakland is not considering automobile congestion as a CEQA topic, this document evaluates the impacts of the proposed project on intersection operations to inform decision makers and the public.

Existing Traffic Conditions

Traffic data, consisting of automobile turning movement, as well as pedestrian and bicycle counts, were collected on a clear day, while area schools were in normal session. The traffic data collection was conducted from 7:00 AM to 9:00 AM (weekday AM) and from 4:00 PM to 6:00 PM (weekday PM) in February 2017, at the three study intersections. **Appendix A** presents the existing traffic volume counts. For all study intersections, the peak hour (i.e., the hour with the highest traffic volumes) within each peak period was selected for evaluation.

Figure 1 presents existing intersection lane configurations, traffic control, and peak hour traffic volumes, as well as the peak hour pedestrian and bicycle volumes at the study intersections.

Based on the volumes and roadway configurations presented on **Figure 1**, Fehr & Peers calculated the Level of Service (LOS)[2] at the study intersections using the 2010 *Highway Capacity Manual* (HCM) methodologies. **Table 2** summarizes the existing intersection analysis results. The

[2] The operations of roadway facilities are typically described with the term level of service (LOS), a qualitative description of traffic flow based on factors such as speed, travel time, delay, and freedom to maneuver. Six levels are defined from LOS A, which reflects free-flow conditions where there is very little interaction between vehicles, to LOS F, where the vehicle demand exceeds the capacity and high levels of vehicle delay result. LOS E represents "at-capacity" operations. When traffic volumes exceed the intersection capacity, stop-and-go conditions result and a vehicle may wait through multiple signal cycles before passing through the intersection; these operations are designated as LOS F.

three study intersections currently operate at LOS B or better during weekday AM and PM peak hours. **Appendix B** provides the detailed LOS calculation sheets.

TABLE 2: EXISTING INTERSECTION LEVELS OF SERVICE

Intersection	Control[1]	Peak Hour	Delay[2]	LOS
1. MLK Jr. Way/15th Street	TWSC	AM PM	1.3 (10.1) 1.0 (10.0)	A (B) A (B)
2. Jefferson Street/15th Street	TWSC	AM PM	2.5 (11.2) 2.3 (10.2)	A (B) A (B)
3. Jefferson Street/14th Street	Signalized	AM PM	11.8 11.7	B B

Notes:
1. Signal = intersection is controlled by a traffic signal; TWSC = intersection is two-way stop controlled
2. For signalized intersections, average intersection delay and LOS based on the 2010 HCM method is shown. For TWSC intersections, average intersection delay and LOS is displayed with the worst turning movement delay and LOS in parenthesis.

Source: Fehr & Peers, 2017.

Vehicular Trip Generation

Trip generation is the process of estimating the number of vehicles that would likely access the project on any given day. Since the existing convenience store would be demolished, the trip generation accounts for the trips that would be eliminated. **Table 3** summarizes the trip generation for the proposed project. **Table 4** summarizes the trip generation for the existing convenience store on the site. **Table 5** summarizes the net change in trip generation for the site. Trip generation data published by the Institute of Transportation Engineers (ITE) in the *Trip Generation Manual* (Ninth Edition) was used as a starting point to estimate the vehicle trip generation.

ITE's *Trip Generation Manual* (Ninth Edition) is primarily based on data collected at single-use suburban sites where the automobile is often the only travel mode. However, the project site is in a dense mixed-use urban environment where many trips are walk, bike, or transit trips. Since the project is about 0.4 miles from the 12th Street BART Station, this analysis reduces the ITE based

trip generation by 43 percent to account for non-vehicular trips. This reduction is consistent with the City of Oakland's *Transportation Impact Study Guidelines* (November 2013)[3] and is based on the Bay Area Travel Survey (BATS) 2000, which shows that the non-automobile mode share within one-half mile of a BART Station in Alameda County is about 43 percent. This reduction is further confirmed by a 2011 research study which found that reducing ITE based trip generation using BATS data results in a more accurate estimation of trip generation for urban mixed-use developments versus using ITE based trip generation alone.[4]

TABLE 3: PROJECT VEHICLE TRIP GENERATION SUMMARY

Land Use	Units[1]	ITE Code	Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Hotel	276 RM	310 [2]	2,460	107	78	185	95	99	194
Restaurant	1.6 KSF	932 [3]	200	9	8	17	10	6	16
Subtotal			2,660	116	86	202	105	105	210
Non-Auto Reduction (-43%)[4]			-1,150	-50	-37	-87	-45	-45	-90
Adjusted Project Trips			**1,510**	**66**	**49**	**115**	**60**	**60**	**120**

Notes:

1. RM = Rooms, KSF = 1,000 square feet.
2. ITE Trip Generation (9th Edition) land use category 310 (Hotel- Adj. Streets, 7-9 AM, 4-6 PM):
   Daily: T = 8.92*(X)
   AM Peak Hour: T = 0.67*(X) (58% in, 42% out)
   PM Peak Hour: T = 0.70*(X) (49% in, 51% out)
3. ITE Trip Generation (9th Edition) land use category 932 (High-Turnover (Sit-Down) Restaurant):
   Daily: T = 127.15*(X)
   AM Peak Hour: T = 10.81*(X) (55% in, 45% out)
   PM Peak Hour: T = 9.85*(X) (60% in, 40% out)
4. The 43% reduction is based on data from the *City of Oakland Transportation Impact Study Guidelines* for development in an urban environment within 0.5 miles of a BART Station.

Source: Fehr & Peers, 2016.

[3] City of Oakland published the latest *Transportation Impact Review Guidelines* in April 2017. The analysis presented in this section was completed prior to the publication of the latest guidelines and is therefore consistent with the previous guidelines published in November 2013 and the Interim VMT Guidelines dated October 2016. However, using the April 2017 guidelines does not change the conclusions of this analysis.

[4] *Evaluation of the Operation and Accuracy of Five Available Smart Growth Trip Generation Methodologies.* Institute of Transportation Studies, UC Davis, 2011.

Pass-by trips are trips attracted to a site from adjacent roadways as an intermediate stop on the way to a final destination. Pass-by trips alter travel patterns in the immediate study area, but do not add new vehicle trips to the roadway network, and should therefore be excluded from trip generation estimates. According to ITE's *Trip Generation Handbook* (3rd Edition), the average weekday PM peak hour pass-by rate is 43 percent for restaurant and 61 percent for a convenience market land uses. An overall reduction of 61 percent was assumed for daily, AM and PM peak hour trips for the existing convenient market. This analysis is conservative and does not account pass-by trips for the restaurant component of the proposed project.

TABLE 4: EXISTING BUILDINGS VEHICLE TRIP GENERATION SUMMARY

Land Use	Units[1]	ITE Code	Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Convenience Market	5 KSF	852 [2]	2,440	78	78	156	85	88	173
Subtotal			2,440	78	78	156	85	88	173
Non-Auto Reduction (-43%)[3]			-1,050	-34	-34	-68	-37	-37	-74
Subtotal			1,390	44	44	88	48	51	99
Pass-by-reduction[4]			-850	-27	-27	-54	-30	-30	-60
Adjusted Project Trips			**540**	**17**	**17**	**34**	**18**	**21**	**39**

Notes:

1. KSF = 1,000 square feet.
2. ITE Trip Generation (9th Edition) land use category 852 (Convenience Market (Open 15-16 Hours) – Adj. Streets, 7-9 AM, 4-6 PM):
   Daily: T = 486.78 (X)
   AM Peak Hour: T = 31.02 (X) (50% in, 50% out)
   PM Peak Hour: T = 34.57 (X) (49% in, 51% out)
3. The 43% reduction is based on data from the *City of Oakland Transportation Impact Study Guidelines* for development in an urban environment within 0.5 miles of a BART Station.
4. PM peak hour pass-by rates based on ITE Trip Generation Handbook (3rd Edition). The weekday PM peak hour average pass-by rates for land use category 852 is 61%. Pass-by rates applied to dally, AM and PM peak hour trips.

Source: Fehr & Peers, 2016.

The proposed project would eliminate about 40 existing public parking spaces. The trip generation estimates conservatively do not account for the existing trips generated by the existing parking lot. Although the demolition of the public parking spaces is expected to eliminate

some of the automobile trips, other off-street parking facilities in the vicinity would accommodate most of the motorists that currently park at the project site. Thus, these motorists would continue to travel to and from this area after the demolition of the existing garage.

As summarized in **Table 5,** the net trip generation for the proposed development is approximately 970 daily, 81 AM peak hour, and 81 PM peak hour net new trips.

TABLE 5: FINAL VEHICLE TRIP GENERATION SUMMARY

Land Use	Daily	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Proposed Project [1]	1,510	66	49	115	60	60	120
Existing Buildings [2]	-540	-17	-17	-34	-18	-21	-39
Total Net New Trips	**970**	**49**	**32**	**81**	**42**	**39**	**81**

Notes:
1. See Table 3 for details.
2. See Table 4 for details.

Source: Fehr & Peers, 2016.

Non-Vehicular Trip Generation

Consistent with City of Oakland Transportation Impact Study Guidelines, Table 6 presents the estimates of project trip generation for all travel modes.

TABLE 6: TRIP GENERATION BY TRAVEL MODE

Mode	Mode Share Adjustment Factors[1]	Daily	Weekday AM Peak Hour	Weekday PM Peak Hour
Automobile	57.0%	970	81	81
Transit	30.4%	520	43	43
Bike	3.9%	70	6	6
Walk	23.0%	390	33	33
Total Trips		**1,950**	**163**	**163**

Notes:
1. Based on *City of Oakland Transportation Impact Study Guidelines* assuming project site is in an urban environment within 0.5 miles of a BART Station. Per the City's TIS Guidelines, all mode share factors represent the ratio of each mode to the unadjusted ITE trip rate for automobile trips. The adjustment factors do not represent a portion of the total unadjusted ITE trip generation for automobiles and the factors do not sum to 100 percent.

Source: Fehr & Peers, 2016.

Trip Distribution and Study Intersection Selection

The trip distribution and assignment process is used to estimate how the trips generated by the project would be distributed across the roadway network. Based on existing travel patterns, locations of complementary land uses, results of the Alameda County Transportation Commission's (ACTC) Travel Demand Model, and the one-way street network and turn restrictions in Downtown Oakland, directions of approach to and departure from the project site were determined. **Figure 2** shows the resulting trip distribution.

Trips generated by the proposed project, as summarized in **Table 5**, were assigned to the roadway network according to the trip distribution shown on **Figure 2**. **Figure 3** shows the resulting trip assignment by roadway segment.

According to the City of Oakland's Transportation Impact Study Guidelines, the following three intersections were evaluated in the study due to being adjacent to the project site:

1. Martin Luther King Jr. Way/15th Street
2. Jefferson Street/15th Street
3. Jefferson Street/14th Street

Existing Plus Project Intersection Operations

Figure 3 shows traffic volumes under Existing Plus Project conditions, which consists of Existing traffic volumes (shown on **Figure 1**) plus added traffic volumes generated by the project.

Table 7 summarizes the intersection operations results for the Existing No Project and Existing Plus Project conditions. All study intersections would continue to operate at an acceptable LOS B or better during both AM and PM peak hours under Existing Plus Project conditions. The proposed project would not have a noticeable effect at the study intersections under Existing Plus Project conditions.

TABLE 7: EXISTING AND EXISTING PLUS PROJECT INTERSECTION LEVELS OF SERVICE

Intersection	Control[1]	Peak Hour	Existing No Project		Existing Plus Project	
			Delay[2]	LOS	Delay[2]	LOS
1. MLK Jr. Way/15th Street	TWSC	AM PM	1.3 (10.1) 1.0 (10.0)	A (B) A (B)	1.7 (10.3) 1.5 (10.3)	A (B) A (B)
2. Jefferson Street/15th Street	TWSC	AM PM	2.5 (11.2) 2.3 (10.2)	A (B) A (B)	3.1 (11.3) 3.1 (10.3)	A (B) A (B)
3. Jefferson Street/14th Street	Signalized	AM PM	11.8 11.7	B B	11.9 11.7	B B

Notes:
1. Signal = intersection is controlled by a traffic signal; TWSC = intersection is two-way stop controlled
2. For signalized intersections, average intersection delay and LOS based on the 2010 HCM method is shown. For TWSC intersections, average intersection delay and LOS is displayed with the worst turning movement delay and LOS in parenthesis.

Source: Fehr & Peers, 2017.

PROJECT ACCESS AND CIRCULATION

Access and circulation for various travel modes in and around the site are described below.

Automobile Access and Circulation

The project would provide a five-level aboveground parking garage which would be accessed through a driveway on 15th Street, approximately 80 feet west of Jefferson Street. The five-level garage would provide 95 parking spaces. The garage would provide adequate internal circulation for vehicles.

The project driveway would provide adequate sight distance between exiting motorists and vehicles traveling on 15th Street. Adequate sight distance between a motorist and pedestrian is provided when a clear line-of-sight between a motorist ten feet back from the sidewalk and a pedestrian ten feet away on the sidewalk on either side of the driveway . The configuration of the proposed project driveway may not provide adequate sight distance for pedestrians.

The loading berth/driveway, which does not meet Planning Code standards would only accommodate small trucks, is located approximately 50 feet west of Jefferson Street. No turn-around space is provided, requiring drivers to either back in or out of the driveway. The loading driveway would not provide adequate sight distance between the exiting delivery driver and pedestrians on the adjacent sidewalk and vehicles on 15th Street.

The proposed hotel is expected to generate pick-up/drop off trips. There are currently no designated passenger loading spaces along the project frontage.

Recommendation 1: While not required to address a CEQA impact, the following should be considered as part of the final design for the project:

- Ensure that the project driveway would provide adequate sight distance between exiting motorist and pedestrians on the adjacent sidewalk. If adequate sight distance cannot be provided, provide audio/visual warning devices at the driveway
- Ensure that the loading driveway would provide adequate sight distance between exiting trucks and pedestrians, bicyclists, and motorists to the west and east, on the 15th Street frontage
- If the proposed garage is controlled by a gate, ensure that it would provide adequate queueing space for incoming vehicles and that queues would not block the adjacent sidewalk on 15th Street
- Consider designating curb space near the hotel entrance for passenger loading.

Bicycle Access and Bicycle Parking

Oakland Municipal Code requires long-term and short-term bicycle parking for new buildings. Long-term bicycle parking includes lockers or locked enclosures and short-term bicycle parking includes bicycle racks. The Code requires one long-term space and one short-term space for every 20 rentable rooms. Code requires the minimum level of short and long-term bicycle parking, two spaces, for the restaurant component of the project.

Table 8 summarizes the bicycle parking requirement for the project. The project is required by the Oakland Municipal Code chapter 17.117.110 of to provide 16 long-term and 16 short-term parking spaces. Chapter 17.117.070 of the Oakland Municipal Code specifies location and design standards of required bicycle parking. Long-term bicycle parking must be on-site, or within 500-feet of the building entrance, and short-term parking must be within 50-feet of the building entrance. The bicycle parking areas should be well-lit and not impede pedestrian accessibility.

The site plan dated November 17, 2016 shows the proposed location of long-term bicycle parking in a secure bicycle room in the building basement, accessible by elevator or staircase through the lobby. The site plan does not specify the number of spaces available or show the proposed location or design of short-term bicycle parking. The proposed project is surrounded by the following existing and planned bicycle facilities:

TABLE 8: BICYCLE PARKING REQUIREMENTS

Land Use	Size[1]	Long-Term		Short-Term	
		Spaces per Unit[2]	Spaces	Spaces per Unit[2]	Spaces
Hotel	276 RM	1:20 RM	14	1:20 RM	14
Restaurant	2.3 KSF	Min.	2	Min.	2
Total Required Bicycle Spaces			16		16
Total Bicycle Parking Provided			0		0
Bicycle Parking Deficit			**16**		**16**

Notes:
1. RM = Rooms; KSF = 1,000 square feet
2. Based on Oakland Municipal Code Sections 17.117.110

Source: Fehr & Peers, 2017

- Exiting bicycle facilities:
  - Martin Luther King Jr. Way is a Class 3 bicycle route between 2nd Street and San Pablo Avenue.
  - Clay Street is a Class 3 bicycle route between 9th and 14th Streets.

- 17th Street is a Class 2 bicycle route between Martin Luther King Jr. Way and Telegraph Avenue.

- Planned bicycle facilities:
  - The 14th Street Safe Routes in the City Project, currently under design, would install Class 4 cycletrack on 14th Street between Brush and Oak Streets, by eliminating one automobile lane in each direction.
  - The planned Clay Street Bikeway Project would install Class 2 bicycle lanes on Clay Street between 7th and 17th Streets. The project would provide one automobile lane and one buffered bike lane in each direction.
  - The planned Martin Luther King Jr. Way Bikeway Project would install Class 2 bicycle lanes on Martin Luther King Jr. Way between 2nd and 20th Streets by eliminating one automobile lane in each direction.

Pedestrian Access and Circulation

The hotel lobby would be accessible through entrances along Jefferson Street and through the garage on the ground floor. Four elevators and staircase off the lobby would provide access to the 276 hotel rooms. A garage elevator and staircase would provide access to the five-level garage. The proposed 1,369 square-foot commercial space on the south end of the project would be accessible through a separate entrance on 14th Street. The proposed 736 square-foot commercial space on the north end of the project would be accessible through an entrance on 15th Street, as well as through the lobby.

The streets adjacent to the project are described below:

- Jefferson Street currently provides an eight-foot sidewalk along the east side of the project site. A tree and sign posts and parking meters narrow the through passage zone to a minimum of five feet.

- 15th Street currently provides a six-foot sidewalk along the north side of the project site. Sign posts and parking meters narrow the through passage zone to a minimum of four feet.

- 14th Street currently provides a 12-foot sidewalk along the south side of the project site. Trees, sign posts, and parking meters narrow the through passage zone to a minimum of seven feet.

The pedestrian facilities at the study intersections are described below:

- The Jefferson Street/14th Street intersection currently provides diagonal curb ramps on all four corners and marked crosswalks on all four approaches. The intersection provides audible signals for all directions, and no pedestrian countdown signal heads.
- The Jefferson Street/15th Street intersection currently provides diagonal curb ramps on the west corners, and directional curb ramps on the east corners crossing Jefferson Street. Marked crosswalks are provided on all approaches, except the westbound approach. The westbound approach is a driveway with a level sidewalk. The eastbound 15th Street approach is stop-controlled.
- The Martin Luther King Jr. Way/15th Street intersection currently provides diagonal curb ramps on all corners, and high visibility crosswalks across Martin Luther King Jr. Way with advanced yield markings. The eastbound 15th Street approach provides a marked crosswalk and is stop-controlled.

The site plan dated November 17, 2016 shows a 9.5-foot sidewalk, with a minimum five-foot through-passage zone, along 15th Street and a 11.5-foot sidewalk, with a minimum six-foot through-passage zone, along Jefferson Street. No proposed changes are shown along 14th Street. The Oakland Pedestrian Master Plan requires a pedestrian through passage zone of six feet for a collector and five feet for a local street. The proposed sidewalks would meet the Oakland Pedestrian Master Plan sidewalk standards.

Recommendation 2: While not required to address a CEQA impact, the following should be considered as part of the final design for the project:

- Explore the feasibility of installing directional curb ramps at all four corners at the Jefferson Street/14th Street and Martin Luther King Jr. Way/15th Street intersections and the west corners of Jefferson Street/15th Street intersection. Considering that fire hydrants, signal poles, and/or light poles are provided at all the corners, construction of curb extensions (bulbouts) may also be required to relocate to provide directional curb ramps.
- Complete the crosswalk network at the 15th Street/Martin Luther King Jr. Way intersection by adding a marked crosswalk along the east approach.
- Install pedestrian signal heads in both directions of all four pedestrian crossings at the Jefferson Street/14th Street intersection, if feasible without upgrading the entire signal equipment at the intersection.

Transit Access

Transit service providers in the project vicinity include Bay Area Rapid Transit (BART) and AC Transit.

BART provides regional rail service throughout the East Bay and across the Bay. The nearest BART station to project site is the 12th Street BART Station, about 0.4 miles east of the project. The proposed project would not modify access between the project site and the BART Station.

AC Transit is the primary bus service provider in the City of Oakland. AC Transit operates Routes 14 and 29 in the vicinity of the project. These routes have stops near the project site on the near side of 14th Street at Martin Luther King Jr. Way and on the far side of 14th Street at Clay Street. A bus stop sign and bench are provided at all stops, with the exception of the eastbound bus stop at Clay Street where just a bus stop sign is provided. Both stops are about one block (350 feet) from the project site.

No changes to the bus routes operating in the vicinity of the project are planned and access between these bus stops and the proposed project would not modify access between the project site and these bus stops.

Loading Requirements

The City of Oakland Municipal Code, Section 17.116.140B addresses required commercial loading berths for hotels based on building square footage. Therefore, two (2) commercial loading berths are required within the property. The one proposed off-street loading berth provided by the project, however, does not meet Code requirements based on the November 2016 site plan. This plan shows that the loading area does not meet the loading dimensions required by the Code.

AUTOMOBILE PARKING

Although parking is not an environmental impact required for evaluation under CEQA, this section summarizes parking requirements, supply and demand for automobiles. Based on the project site plan dated November 17, 2016, the proposed project would provide 95 parking spaces.

Parking Requirements

The City of Oakland Municipal Code established minimum and maximum parking requirements. **Table 9** presents the off-street automobile parking requirements for the proposed project per

City Code. The Code does not specify parking requirements for hotels. The commercial component of the proposed project would require a minimum of zero and a maximum of one parking space per 300 square feet of ground floor area. . A minimum of zero and maximum of eight parking spaces is required for the commercial uses. The project proposes 95 spaces for both the hotel and restaurant land uses. The proposed parking supply is within the range of City of Oakland Municipal Code requirements.

TABLE 9: AUTOMOBILE PARKING CODE REQUIREMENTS

Land Use	Size[1]	Required Parking Supply		Provided Parking Supply	Within Range?
		Minimum	Maximum		
Hotel[2]	276 RM	None	None	95	Yes
Restaurant[3]	2.3 KSF	0	8		

Notes:

1. RM = Rooms; KSF = 1,000 square feet
2. City of Oakland municipal code does not specific parking requirements for hotel.
3. City of Oakland off-street parking requirement for restaurant uses in the CBD zones is a minimum of zero spaces and a maximum of one space per 300 square feet of ground level and one space per 500 square feet of above ground level floor area (section 17.116.080).

Source: Fehr & Peers, 2017

Parking Demand

This analysis compares proposed parking supply to project parking demand estimated using ITE's *Parking Generation, 4th Edition*. A non-auto adjustment of 43-percent (Oakland City guidelines for mode split adjustment within half a mile from BART) is applied to account for non-auto trips.

Table 10 summarizes parking demand for the project. The parking demand values represent average parking demand. Assuming that parking demand for all project components would peak at the same time and the hotel operates at 100 percent occupancy, the project peak parking demand would be about 155 spaces, resulting in a deficit of 57 spaces. This parking deficit is consistent with City's policies to discourage automobile trips and promote non-automobile modes of transportation in Downtown Oakland.

TABLE 10: PROJECT PARKING SUPPLY AND DEMAND

Land Use	Units[1]	Rate	Weekday Demand
Hotel	276 RM[2]	0.51[3]	141
Restaurant	2.3 KSF	6.04[4]	14
Total Parking Demand			155
Total Proposed Parking Supply			98
Total Parking Deficit			**57**

Notes:

1. RM = Rooms; KSF = 1,000 square feet
2. To remain conservative, 100% occupancy is assumed for the hotel land use
3. Based on ITE *Parking Generation* (4th Edition) land use category 310 (Hotel – weekday, suburban):
   Average Peak Period Parking Demand of 0.89 vehicles per occupied room with Oakland's 43% reduction applied.
4. Based on ITE *Parking Generation* (4th Edition) land use category 932 (High-Turnover (Sit-Down) Restaurant – weekday, suburban):
   Average Peak Period Parking Demand of 10.60 vehicles per KSF with Oakland's 43% reduction applied

Source: Fehr & Peers, 2017

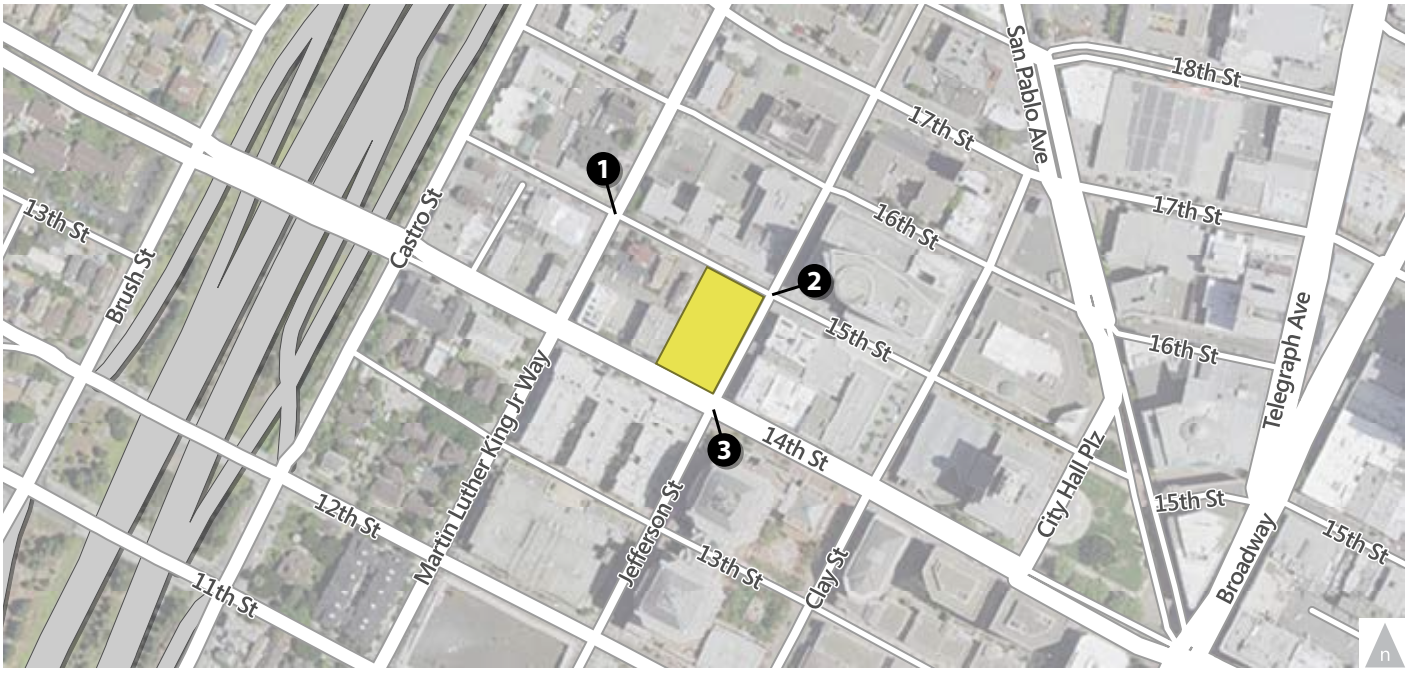
ATTACHMENTS

Figures:

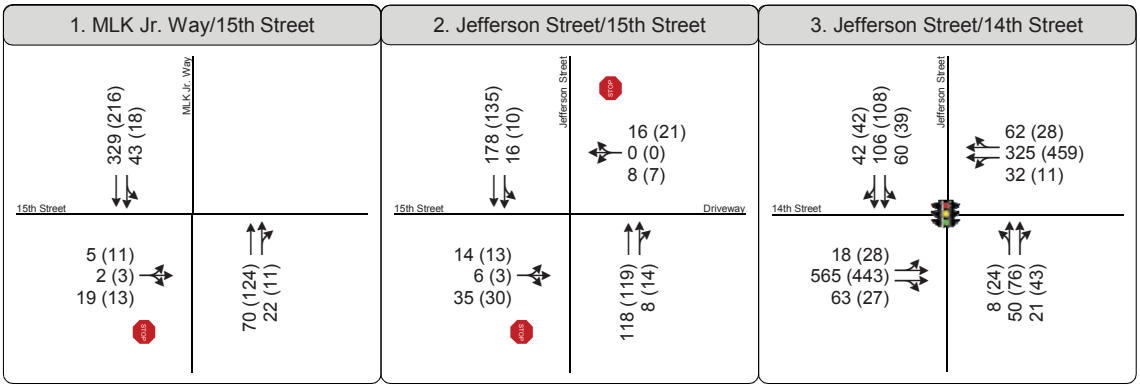
Figure 1	Intersection Configurations and Existing Peak Hour Volumes
Figure 2	Project Trip Distribution
Figure 3	Project Trip Assignment by Turning Movement, Intersection Configurations, and Existing Plus Project Peak Hour Volumes

Appendix:

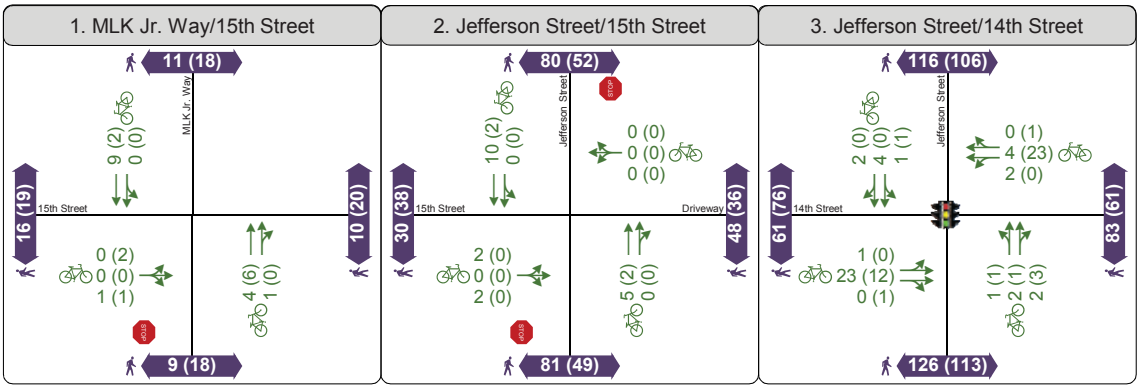
Appendix A	Traffic Counts
Appendix B	LOS Calculations



VEHICULAR MOVEMENT



PEDESTRIAN/BICYCLE



LEGEND

XX (YY) AM (PM) Peak Hour Traffic Volume

x (y) AM (PM) Peak Hour Pedestrian Volumes

x (y) AM (PM) Peak Hour Bicycle Volumes

Traffic Signal

Project Site

Study Intersection

Figure 1

Existing Peak Hour Intersection Traffic, Bicycle and Pedestrian Volumes

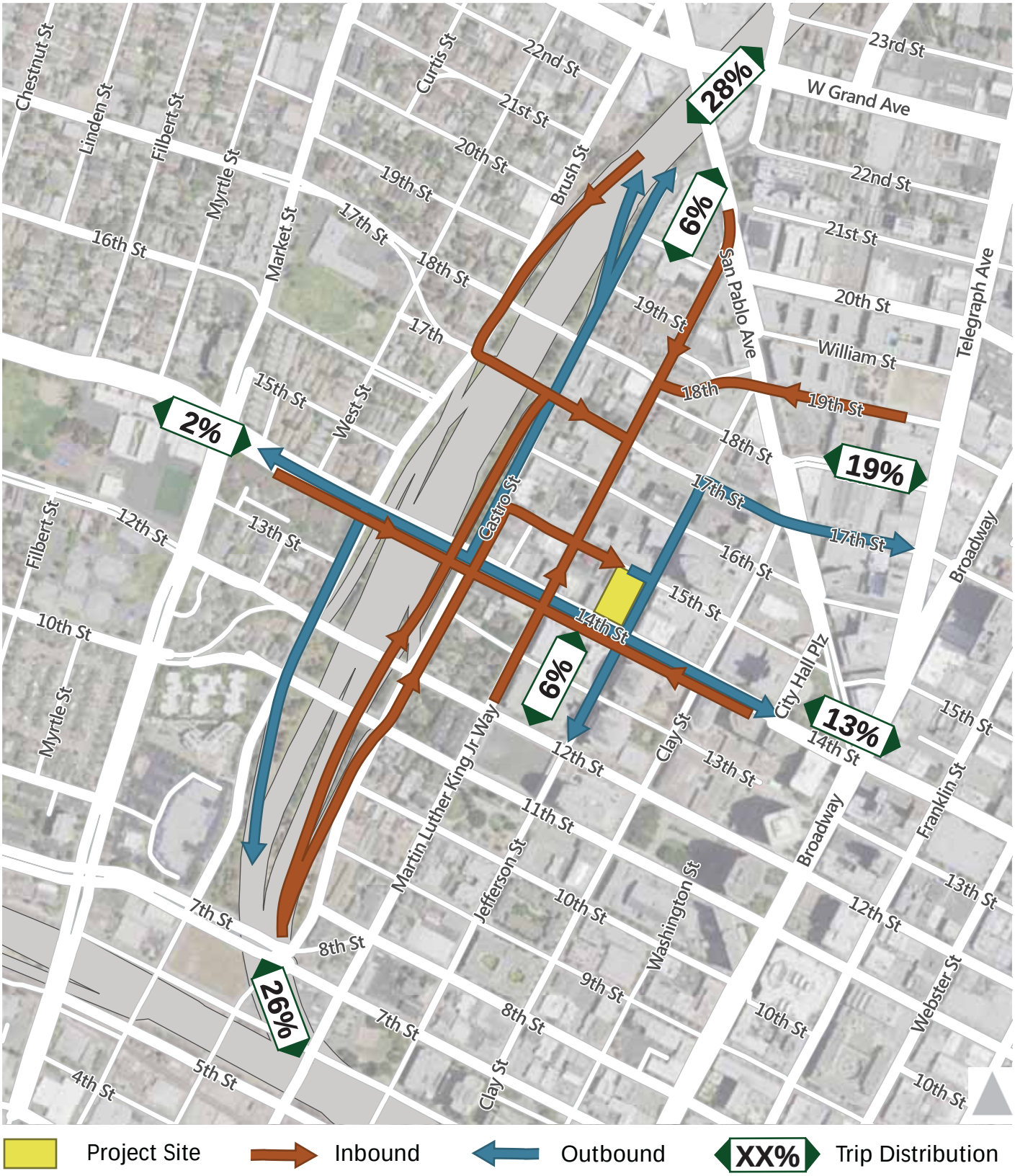
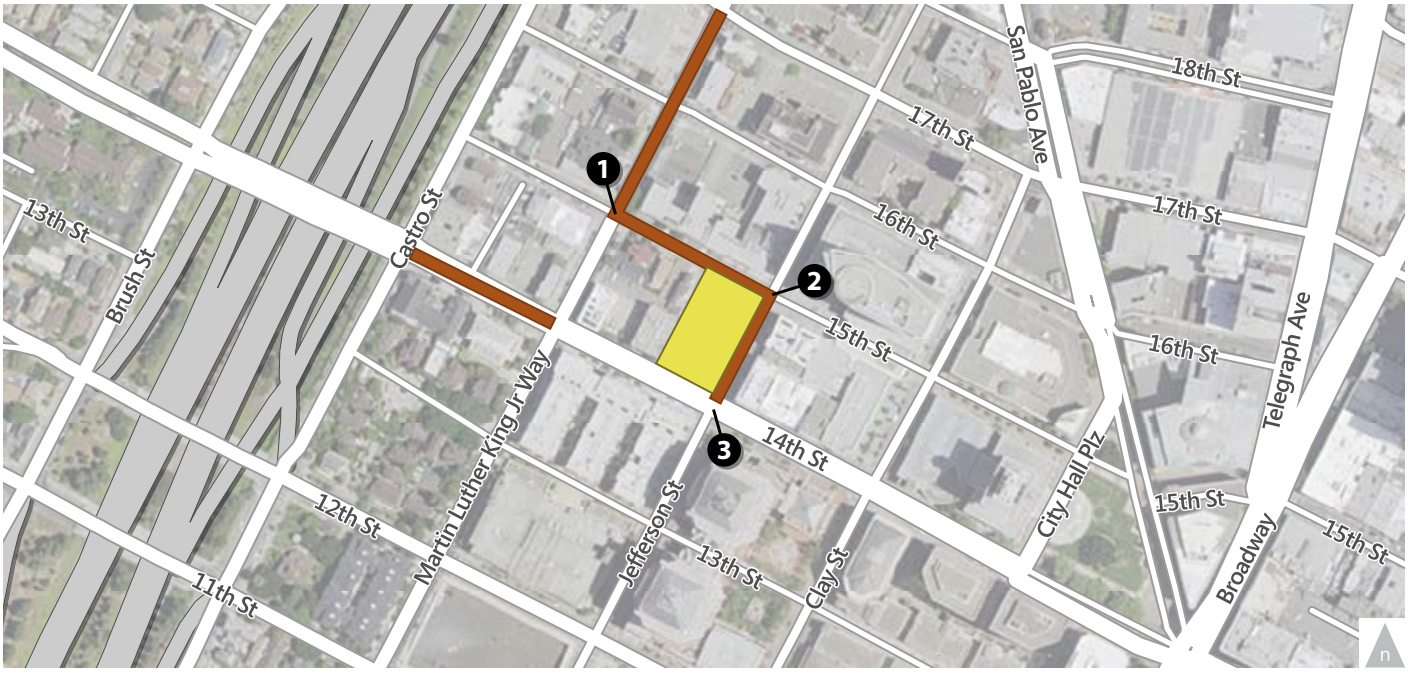
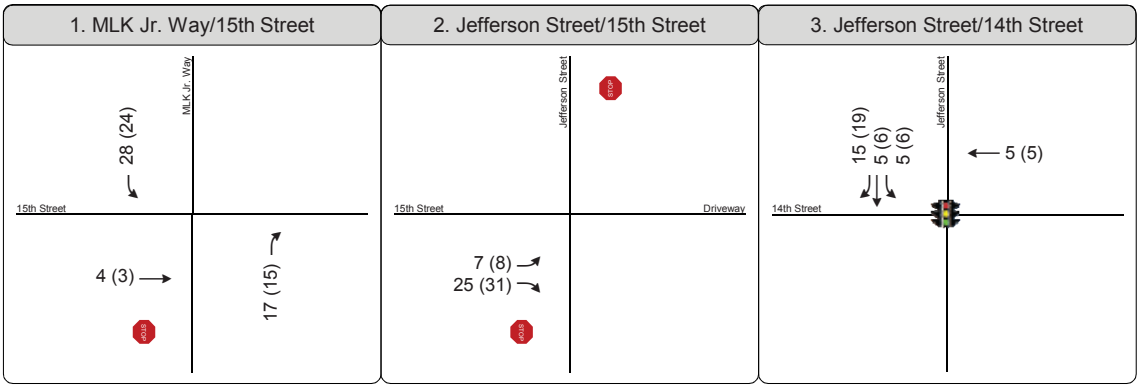


Figure 2

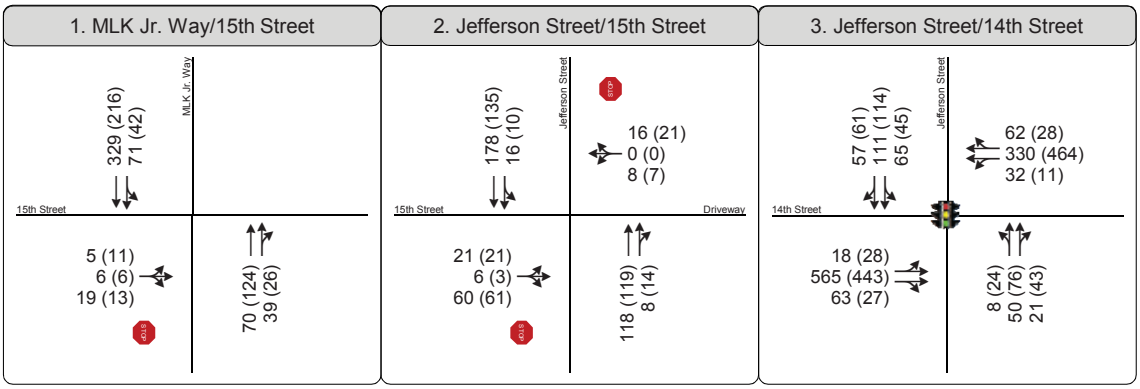
Project Trip Distribution



PEAK HOUR PROJECT TRIP ASSIGNMENT



EXISTING PLUS PROJECT



LEGEND

XX (YY) AM (PM) Peak Hour Traffic Volume — Traffic Signal

Project Site — Between 25-80 Peak Hour Trips — Study Intersection

Figure 3

Project Trip Assignment and Existing Plus Project Peak Hour Intersection Traffic, Bicycle and Pedestrian Volumes

Appendix A

Traffic Counts

National Data and Surveying Services

City of Oakland
All Vehicles & Uturns On Unshifted
Heavy Trucks & Uturns On Bank 1
Peds & Bikes On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 17-7098-001 Martin Luther King Jr. Way & 15th St
Date : 2/15/2017

Unshifted Count = All Vehicles & Uturns

	Martin Luther King Jr. Way Southbound					15th St Westbound					Martin Luther King Jr. Way Northbound					15th St Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
7:00	1	24	0	0	25	0	0	0	0	0	0	4	2	1	7	0	1	1	0	2	34	1
7:15	2	45	0	0	47	0	0	0	0	0	0	9	2	0	11	3	0	6	0	9	67	0
7:30	4	44	0	0	48	0	0	0	0	0	0	13	3	0	16	4	2	4	0	10	74	0
7:45	2	78	0	1	81	0	0	0	0	0	0	22	8	1	31	1	1	8	0	10	122	2
Total	9	191	0	1	201	0	0	0	0	0	0	48	15	2	65	8	4	19	0	31	297	3
8:00	15	77	0	0	92	0	0	0	0	0	0	20	3	0	23	3	1	3	0	7	122	0
8:15	10	77	0	0	87	0	0	0	0	0	0	15	7	2	24	0	0	6	0	6	117	2
8:30	5	89	0	0	94	0	0	0	0	0	0	17	6	0	23	1	1	7	0	9	126	0
8:45	12	86	0	1	99	0	0	0	0	0	0	16	6	0	22	1	0	3	0	4	125	1
Total	42	329	0	1	372	0	0	0	0	0	0	68	22	2	92	5	2	19	0	26	490	3
16:00	6	49	0	0	55	0	0	0	0	0	0	26	1	0	27	0	1	3	0	4	86	0
16:15	4	54	0	0	58	0	0	0	0	0	0	22	5	0	27	4	1	8	0	13	98	0
16:30	6	61	0	0	67	0	0	0	0	0	0	28	3	0	31	2	1	5	0	8	106	0
16:45	5	44	0	0	49	0	0	0	0	0	0	24	2	0	26	3	1	4	0	8	83	0
Total	21	208	0	0	229	0	0	0	0	0	0	100	11	0	111	9	4	20	0	33	373	0
17:00	4	50	0	0	54	0	0	0	0	0	0	34	3	0	37	1	0	3	0	4	95	0
17:15	3	61	0	0	64	0	0	0	0	0	0	38	3	0	41	5	1	1	0	7	112	0
17:30	1	62	0	0	63	0	0	0	0	0	0	30	3	0	33	3	1	4	0	8	104	0
17:45	3	39	0	0	42	0	0	0	0	0	0	21	1	0	22	2	1	0	0	3	67	0
Total	11	212	0	0	223	0	0	0	0	0	0	123	10	0	133	11	3	8	0	22	378	0
Grand Total	83	940	0	2	1025	0	0	0	0	0	0	339	58	4	401	33	13	66	0	112	1538	6
Apprch %	8.1%	91.7%	0.0%	0.2%		0.0%	0.0%	0.0%	0.0%		0.0%	84.5%	14.5%	1.0%		29.5%	11.6%	58.9%	0.0%			
Total %	5.4%	61.1%	0.0%	0.1%	66.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	22.0%	3.8%	0.3%	26.1%	2.1%	0.8%	4.3%	0.0%	7.3%	100.0%	

AM PEAK HOUR	Martin Luther King Jr. Way Southbound					15th St Westbound					Martin Luther King Jr. Way Northbound					15th St Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 08:00 to 09:00																					
Peak Hour For Entire Intersection Begins at 08:00																					
8:00	15	77	0	0	92	0	0	0	0	0	0	20	3	0	23	3	1	3	0	7	122
8:15	10	77	0	0	87	0	0	0	0	0	0	15	7	2	24	0	0	6	0	6	117
8:30	5	89	0	0	94	0	0	0	0	0	0	17	6	0	23	1	1	7	0	9	126
8:45	12	86	0	1	99	0	0	0	0	0	0	16	6	0	22	1	0	3	0	4	125
Total Volume	42	329	0	1	372	0	0	0	0	0	0	68	22	2	92	5	2	19	0	26	490
% App Total	11.3%	88.4%	0.0%	0.3%		0.0%	0.0%	0.0%	0.0%		0.0%	73.9%	23.9%	2.2%		19.2%	7.7%	73.1%	0.0%		
PHF	.700	.924	.000	.250	.939	.000	.000	.000	.000	.000	.000	.850	.786	.250	.958	.417	.500	.679	.000	.722	.972

PM PEAK HOUR	Martin Luther King Jr. Way Southbound					15th St Westbound					Martin Luther King Jr. Way Northbound					15th St Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	6	61	0	0	67	0	0	0	0	0	0	28	3	0	31	2	1	5	0	8	106
16:45	5	44	0	0	49	0	0	0	0	0	0	24	2	0	26	3	1	4	0	8	83
17:00	4	50	0	0	54	0	0	0	0	0	0	34	3	0	37	1	0	3	0	4	95
17:15	3	61	0	0	64	0	0	0	0	0	0	38	3	0	41	5	1	1	0	7	112
Total Volume	18	216	0	0	234	0	0	0	0	0	0	124	11	0	135	11	3	13	0	27	396
% App Total	7.7%	92.3%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	91.9%	8.1%	0.0%		40.7%	11.1%	48.1%	0.0%		
PHF	.750	.885	.000	.000	.873	.000	.000	.000	.000	.000	.000	.816	.917	.000	.823	.550	.750	.650	.000	.844	.884

National Data and Surveying Services

City of Oakland
All Vehicles & Uturns On Unshifted
Heavy Trucks & Uturns On Bank 1
Peds & Bikes On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 17-7098-001 Martin Luther King Jr. Way & 15th St
Date : 2/15/2017

Bank 1 Count = Heavy Trucks & Uturns

	Martin Luther King Jr. Way Southbound					15th St Westbound					Martin Luther King Jr. Way Northbound					15th St Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
7:00	0	1	0	0	1	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	2	0
7:15	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0
7:30	1	0	0	0	1	0	0	0	0	0	0	1	2	0	3	0	0	1	0	1	5	0
7:45	0	3	0	0	3	0	0	0	0	0	0	2	3	0	5	0	0	0	0	0	8	0
Total	1	4	0	0	5	0	0	0	0	0	0	4	6	0	10	0	0	1	0	1	16	0
8:00	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	2	0
8:15	1	1	0	0	2	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	3	0
8:30	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
8:45	0	2	0	0	2	0	0	0	0	0	0	0	3	0	3	0	0	0	0	0	5	0
Total	2	3	0	0	5	0	0	0	0	0	0	1	5	0	6	0	0	0	0	0	11	0
16:00	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	3	0
16:15	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
Total	0	5	0	0	5	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	7	0
17:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0
Grand Total	3	12	0	0	15	0	0	0	0	0	0	7	11	0	18	1	0	1	0	2	35	0
Apprch %	20.0%	80.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	38.9%	61.1%	0.0%		50.0%	0.0%	50.0%	0.0%			
Total %	8.6%	34.3%	0.0%	0.0%	42.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	20.0%	31.4%	0.0%	51.4%	2.9%	0.0%	2.9%	0.0%	5.7%	100.0%	

AM PEAK HOUR	Martin Luther King Jr. Way Southbound					15th St Westbound					Martin Luther King Jr. Way Northbound					15th St Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 08:00 to 09:00																					
Peak Hour For Entire Intersection Begins at 08:00																					
8:00	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	2
8:15	1	1	0	0	2	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	3
8:30	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:45	0	2	0	0	2	0	0	0	0	0	0	0	3	0	3	0	0	0	0	0	5
Total Volume	2	3	0	0	5	0	0	0	0	0	0	1	5	0	6	0	0	0	0	0	11
% App Total	40.0%	60.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	16.7%	83.3%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.500	.375	.000	.000	.625	.000	.000	.000	.000	.000	.000	.250	.417	.417	.500	.000	.000	.000	.000	.000	.550

PM PEAK HOUR	Martin Luther King Jr. Way Southbound					15th St Westbound					Martin Luther King Jr. Way Northbound					15th St Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
17:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
% App Total	0.0%	100.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	100.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.000	.250	.000	.000	.250	.000	.000	.000	.000	.000	.000	.250	.000	.000	.250	.000	.000	.000	.000	.000	.375

National Data and Surveying Services

City of Oakland
All Vehicles & Uturns On Unshifted
Heavy Trucks & Uturns On Bank 1
Peds & Bikes On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 17-7098-001 Martin Luther King Jr. Way & 15th St
Date : 2/15/2017

Bank 2 Count = Peds & Bikes

	Martin Luther King Jr. Way Southbound					15th St Westbound					Martin Luther King Jr. Way Northbound					15th St Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Peds Total
7:00	0	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	1	0	0	1	2	1
7:15	0	0	0	0	0	1	0	0	0	1	0	0	0	3	0	0	0	0	4	0	1	7
7:30	1	2	0	1	3	0	0	0	0	0	0	2	0	1	2	0	0	0	1	0	5	3
7:45	1	3	0	10	4	0	0	1	1	1	0	0	0	1	0	0	0	0	2	0	5	14
Total	2	5	0	11	7	1	0	1	2	2	0	2	1	5	3	0	1	0	7	1	13	25
8:00	0	1	0	3	1	0	0	0	0	0	0	0	1	1	1	0	0	0	2	0	2	6
8:15	0	3	0	2	3	0	0	0	2	0	0	1	0	3	1	0	0	0	4	0	4	11
8:30	0	1	0	2	1	0	0	1	5	1	0	0	0	2	0	0	0	0	6	0	2	15
8:45	0	4	0	4	4	1	0	0	3	1	0	3	0	3	3	0	0	1	4	1	9	14
Total	0	9	0	11	9	1	0	1	10	2	0	4	1	9	5	0	0	1	16	1	17	46
16:00	0	2	0	1	2	1	0	0	2	1	0	1	0	2	1	0	0	0	6	0	4	11
16:15	0	2	0	0	2	0	0	0	6	0	1	0	1	6	2	0	1	1	6	2	6	18
16:30	0	0	0	5	0	0	0	0	9	0	0	2	0	5	2	1	0	0	4	1	3	23
16:45	0	0	1	2	1	0	0	0	6	0	0	0	0	3	0	0	0	0	5	0	1	16
Total	0	4	1	8	5	1	0	0	23	1	1	3	1	16	5	1	1	1	21	3	14	68
17:00	0	1	0	8	1	0	0	1	2	1	1	2	0	9	3	0	0	0	5	0	5	24
17:15	0	1	0	3	1	0	0	0	3	0	0	2	0	1	2	1	0	1	5	2	5	12
17:30	0	2	0	9	2	0	0	0	19	0	0	4	0	3	4	0	0	0	9	0	6	40
17:45	0	1	0	0	1	1	0	0	4	1	0	0	0	3	0	0	0	0	3	0	2	10
Total	0	5	0	20	5	1	0	1	28	2	1	8	0	16	9	1	0	1	22	2	18	86
Grand Total	2	23	1	50	26	4	0	3	63	7	2	17	3	46	22	2	2	3	66	7	62	225
Apprch %	7.7%	88.5%	3.8%			57.1%	0.0%	42.9%			9.1%	77.3%	13.6%			28.6%	28.6%	42.9%				
Total %	3.2%	37.1%	1.6%		41.9%	6.5%	0.0%	4.8%		11.3%	3.2%	27.4%	4.8%		35.5%	3.2%	3.2%	4.8%		11.3%	100.0%	

AM PEAK HOUR	Martin Luther King Jr. Way Southbound					15th St Westbound					Martin Luther King Jr. Way Northbound					15th St Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 08:00 to 09:00																					
Peak Hour For Entire Intersection Begins at 08:00																					
8:00	0	1	0	3	1	0	0	0	0	0	0	0	1	1	1	0	0	0	2	0	2
8:15	0	3	0	2	3	0	0	0	2	0	0	1	0	3	1	0	0	0	4	0	4
8:30	0	1	0	2	1	0	0	1	5	1	0	0	0	2	0	0	0	0	6	0	2
8:45	0	4	0	4	4	1	0	0	3	1	0	3	0	3	3	0	0	1	4	1	9
Total Volume	0	9	0	11	9	1	0	1	10	2	0	4	1	9	5	0	0	1	16	1	17
% App Total	0.0%	100.0%	0.0%			50.0%	0.0%	50.0%			0.0%	80.0%	20.0%			0.0%	0.0%	100.0%			
PHF	.000	.563	.000		.563	.250	.000	.250		.500	.000	.333	.250		.417	.000	.000	.250		.250	.472

PM PEAK HOUR	Martin Luther King Jr. Way Southbound					15th St Westbound					Martin Luther King Jr. Way Northbound					15th St Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	0	0	0	5	0	0	0	0	9	0	0	2	0	5	2	1	0	0	4	1	3
16:45	0	0	1	2	1	0	0	0	6	0	0	0	0	3	0	0	0	0	5	0	1
17:00	0	1	0	8	1	0	0	1	2	1	1	2	0	9	3	0	0	0	5	0	5
17:15	0	1	0	3	1	0	0	0	3	0	0	2	0	1	2	1	0	1	5	2	5
Total Volume	0	2	1	18	3	0	0	1	20	1	1	6	0	18	7	2	0	1	19	3	14
% App Total	0.0%	66.7%	33.3%			0.0%	0.0%	100.0%			14.3%	85.7%	0.0%			66.7%	0.0%	33.3%			
PHF	.000	.500	.250		.750	.000	.000	.250		.250	.250	.750	.000		.583	.500	.000	.250		.375	.700

National Data and Surveying Services

City of Oakland
All Vehicles & Uturns On Unshifted
Heavy Trucks & Uturns On Bank 1
Peds & Bikes On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 17-7098-002 Jefferson St & 15th St
Date : 2/15/2017

Unshifted Count = All Vehicles & Uturns

	Jefferson St Southbound					15th St Westbound					Jefferson St Northbound					15th St Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
7:00	1	16	0	0	17	1	0	1	0	2	0	7	1	0	8	1	1	2	0	4	31	0
7:15	3	18	0	0	21	5	0	1	0	6	0	9	3	0	12	0	1	4	0	5	44	0
7:30	3	22	0	0	25	2	0	4	0	6	0	9	1	2	12	0	0	7	0	7	50	2
7:45	5	41	0	0	46	2	0	1	0	3	0	14	0	1	15	3	1	6	0	10	74	1
Total	12	97	0	0	109	10	0	7	0	17	0	39	5	3	47	4	3	19	0	26	199	3
8:00	4	39	0	0	43	1	0	8	0	9	0	33	3	1	37	3	2	10	0	15	104	1
8:15	3	45	0	1	49	2	0	2	0	4	0	24	0	1	25	5	1	9	0	15	93	2
8:30	4	57	0	0	61	3	0	1	0	4	0	31	2	0	33	2	1	8	0	11	109	0
8:45	4	37	0	0	41	2	0	5	0	7	0	25	3	3	31	4	2	8	0	14	93	3
Total	15	178	0	1	194	8	0	16	0	24	0	113	8	5	126	14	6	35	0	55	399	6
16:00	1	29	0	0	30	1	0	2	0	3	0	31	1	1	33	2	0	3	0	5	71	1
16:15	0	24	0	0	24	1	0	2	0	3	0	28	2	0	30	4	1	6	0	11	68	0
16:30	6	27	0	0	33	1	0	4	0	5	0	31	1	1	33	1	1	5	0	7	78	1
16:45	1	26	0	0	27	0	0	4	0	4	0	29	3	1	33	2	0	6	0	8	72	1
Total	8	106	0	0	114	3	0	12	0	15	0	119	7	3	129	9	2	20	0	31	289	3
17:00	4	45	0	1	50	2	0	4	0	6	0	21	5	0	26	7	1	6	0	14	96	1
17:15	2	27	0	2	31	2	0	8	0	10	0	33	5	2	40	3	2	11	0	16	97	4
17:30	0	37	0	0	37	3	0	5	0	8	0	32	1	1	34	1	0	7	0	8	87	1
17:45	0	29	0	0	29	0	0	1	0	1	0	19	2	2	23	0	1	4	0	5	58	2
Total	6	138	0	3	147	7	0	18	0	25	0	105	13	5	123	11	4	28	0	43	338	8
Grand Total	41	519	0	4	564	28	0	53	0	81	0	376	33	16	425	38	15	102	0	155	1225	20
Apprch %	7.3%	92.0%	0.0%	0.7%		34.6%	0.0%	65.4%	0.0%		0.0%	88.5%	7.8%	3.8%		24.5%	9.7%	65.8%	0.0%			
Total %	3.3%	42.4%	0.0%	0.3%	46.0%	2.3%	0.0%	4.3%	0.0%	6.6%	0.0%	30.7%	2.7%	1.3%	34.7%	3.1%	1.2%	8.3%	0.0%	12.7%	100.0%	

AM PEAK HOUR	Jefferson St Southbound					15th St Westbound					Jefferson St Northbound					15th St Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 08:00 to 09:00																					
Peak Hour For Entire Intersection Begins at 08:00																					
8:00	4	39	0	0	43	1	0	8	0	9	0	33	3	1	37	3	2	10	0	15	104
8:15	3	45	0	1	49	2	0	2	0	4	0	24	0	1	25	5	1	9	0	15	93
8:30	4	57	0	0	61	3	0	1	0	4	0	31	2	0	33	2	1	8	0	11	109
8:45	4	37	0	0	41	2	0	5	0	7	0	25	3	3	31	4	2	8	0	14	93
Total Volume	15	178	0	1	194	8	0	16	0	24	0	113	8	5	126	14	6	35	0	55	399
% App Total	7.7%	91.8%	0.0%	0.5%		33.3%	0.0%	66.7%	0.0%		0.0%	89.7%	6.3%	4.0%		25.5%	10.9%	63.6%	0.0%		
PHF	.938	.781	.000	.250	.795	.667	.000	.500	.000	.667	.000	.856	.667	.417	.851	.700	.750	.875	.000	.917	.915

PM PEAK HOUR	Jefferson St Southbound					15th St Westbound					Jefferson St Northbound					15th St Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	1	26	0	0	27	0	0	4	0	4	0	29	3	1	33	2	0	6	0	8	72
17:00	4	45	0	1	50	2	0	4	0	6	0	21	5	0	26	7	1	6	0	14	96
17:15	2	27	0	2	31	2	0	8	0	10	0	33	5	2	40	3	2	11	0	16	97
17:30	0	37	0	0	37	3	0	5	0	8	0	32	1	1	34	1	0	7	0	8	87
Total Volume	7	135	0	3	145	7	0	21	0	28	0	115	14	4	133	13	3	30	0	46	352
% App Total	4.8%	93.1%	0.0%	2.1%		25.0%	0.0%	75.0%	0.0%		0.0%	86.5%	10.5%	3.0%		28.3%	6.5%	65.2%	0.0%		
PHF	.438	.750	.000	.375	.725	.583	.000	.656	.000	.700	.000	.871	.700	.500	.831	.464	.375	.682	.000	.719	.907

National Data and Surveying Services

City of Oakland
All Vehicles & Uturns On Unshifted
Heavy Trucks & Uturns On Bank 1
Peds & Bikes On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 17-7098-002 Jefferson St & 15th St
Date : 2/15/2017

Bank 1 Count = Heavy Trucks & Uturns

	Jefferson St Southbound					15th St Westbound					Jefferson St Northbound					15th St Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2	0
7:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30	0	2	0	0	2	0	0	0	0	0	0	0	0	2	2	0	0	3	0	3	7	2
7:45	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	2	3	0
Total	0	3	0	0	3	0	0	0	0	0	0	0	0	2	2	1	0	6	0	7	12	2
8:00	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	3	0
8:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0
8:30	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0
8:45	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	3	0	3	4	1
Total	0	1	0	0	1	0	0	0	0	0	0	1	0	1	2	0	0	6	0	6	9	1
16:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0
16:15	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0
Total	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	4	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0
17:30	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3	0
Grand Total	0	7	0	0	7	0	0	0	0	0	0	5	0	3	8	1	0	12	0	13	28	3
Apprch %	0.0%	100.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	62.5%	0.0%	37.5%		7.7%	0.0%	92.3%	0.0%			
Total %	0.0%	25.0%	0.0%	0.0%	25.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	17.9%	0.0%	10.7%	28.6%	3.6%	0.0%	42.9%	0.0%	46.4%	100.0%	

AM PEAK HOUR	Jefferson St Southbound					15th St Westbound					Jefferson St Northbound					15th St Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 08:00 to 09:00																					
Peak Hour For Entire Intersection Begins at 08:00																					
8:00	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	3
8:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
8:30	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
8:45	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	3	0	3	4
Total Volume	0	1	0	0	1	0	0	0	0	0	0	1	0	1	2	0	0	6	0	6	9
% App Total	0.0%	100.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	50.0%	0.0%	50.0%		0.0%	0.0%	100.0%	0.0%		
PHF	.000	.250	.000	.000	.250	.000	.000	.000	.000	.000	.000	.250	.000	.000	.500	.000	.000	.500	.500	.500	.563

PM PEAK HOUR	Jefferson St Southbound					15th St Westbound					Jefferson St Northbound					15th St Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
17:30	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
Total Volume	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	4
% App Total	0.0%	100.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	100.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.000	.250	.000	.000	.250	.000	.000	.000	.000	.000	.000	.750	.000	.000	.750	.000	.000	.000	.000	.000	.500

National Data and Surveying Services

City of Oakland
All Vehicles & Uturns On Unshifted
Heavy Trucks & Uturns On Bank 1
Peds & Bikes On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 17-7098-002 Jefferson St & 15th St
Date : 2/15/2017

Bank 2 Count = Peds & Bikes

	Jefferson St Southbound					15th St Westbound					Jefferson St Northbound					15th St Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Peds Total
7:00	0	1	0	8	1	0	0	0	8	0	0	1	0	8	1	0	0	0	9	0	2	33
7:15	0	0	0	7	0	0	0	0	6	0	0	1	0	3	1	0	0	0	4	0	1	20
7:30	0	1	0	16	1	0	0	0	3	0	0	1	0	6	1	0	0	0	5	0	2	30
7:45	0	1	0	17	1	0	0	0	8	0	1	0	0	7	1	0	0	1	5	1	3	37
Total	0	3	0	48	3	0	0	0	25	0	1	3	0	24	4	0	0	1	23	1	8	120
8:00	0	2	0	29	2	0	0	0	11	0	0	1	0	29	1	1	0	1	12	2	5	81
8:15	0	0	0	15	0	0	0	0	13	0	0	0	0	19	0	0	0	1	9	1	1	56
8:30	0	5	1	17	6	0	0	0	14	0	1	2	0	15	3	0	0	0	5	0	9	51
8:45	0	3	0	19	3	0	0	0	10	0	0	2	0	18	2	1	0	0	4	1	6	51
Total	0	10	1	80	11	0	0	0	48	0	1	5	0	81	6	2	0	2	30	4	21	239
16:00	0	1	0	16	1	0	0	0	10	0	2	0	0	7	2	0	0	0	7	0	3	40
16:15	0	1	0	10	1	0	0	0	10	0	0	3	0	19	3	0	0	1	14	1	5	53
16:30	0	1	1	15	2	0	0	0	22	0	0	0	0	11	0	0	0	0	11	0	2	59
16:45	0	1	0	10	1	0	0	0	6	0	0	1	0	7	1	0	0	0	10	0	2	33
Total	0	4	1	51	5	0	0	0	48	0	2	4	0	44	6	0	0	1	42	1	12	185
17:00	0	0	0	13	0	0	0	0	10	0	1	0	0	20	1	0	0	0	11	0	1	54
17:15	0	1	0	14	1	0	0	0	9	0	0	1	0	11	1	0	0	0	8	0	2	42
17:30	0	0	0	15	0	0	0	0	11	0	0	0	0	11	0	0	0	0	9	0	0	46
17:45	0	1	1	5	2	0	0	0	14	0	0	0	0	9	0	0	0	0	12	0	2	40
Total	0	2	1	47	3	0	0	0	44	0	1	1	0	51	2	0	0	0	40	0	5	182
Grand Total	0	19	3	226	22	0	0	0	165	0	5	13	0	200	18	2	0	4	135	6	46	726
Apprch %	0.0%	86.4%	13.6%			0.0%	0.0%	0.0%			27.8%	72.2%	0.0%			33.3%	0.0%	66.7%				
Total %	0.0%	41.3%	6.5%		47.8%	0.0%	0.0%	0.0%		0.0%	10.9%	28.3%	0.0%		39.1%	4.3%	0.0%	8.7%		13.0%	100.0%	

AM PEAK HOUR	Jefferson St Southbound					15th St Westbound					Jefferson St Northbound					15th St Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 08:00 to 09:00																					
Peak Hour For Entire Intersection Begins at 08:00																					
8:00	0	2	0	29	2	0	0	0	11	0	0	1	0	29	1	1	0	1	12	2	5
8:15	0	0	0	15	0	0	0	0	13	0	0	0	0	19	0	0	0	1	9	1	1
8:30	0	5	1	17	6	0	0	0	14	0	1	2	0	15	3	0	0	0	5	0	9
8:45	0	3	0	19	3	0	0	0	10	0	0	2	0	18	2	1	0	0	4	1	6
Total Volume	0	10	1	80	11	0	0	0	48	0	1	5	0	81	6	2	0	2	30	4	21
% App Total	0.0%	90.9%	9.1%			0.0%	0.0%	0.0%			16.7%	83.3%	0.0%			50.0%	0.0%	50.0%			
PHF	.000	.500	.250		.458	.000	.000	.000		.000	.250	.625	.000		.500	.500	.000	.500		.500	.583

PM PEAK HOUR	Jefferson St Southbound					15th St Westbound					Jefferson St Northbound					15th St Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	0	1	0	10	1	0	0	0	6	0	0	1	0	7	1	0	0	0	10	0	2
17:00	0	0	0	13	0	0	0	0	10	0	1	0	0	20	1	0	0	0	11	0	1
17:15	0	1	0	14	1	0	0	0	9	0	0	1	0	11	1	0	0	0	8	0	2
17:30	0	0	0	15	0	0	0	0	11	0	0	0	0	11	0	0	0	0	9	0	0
Total Volume	0	2	0	52	2	0	0	0	36	0	1	2	0	49	3	0	0	0	38	0	5
% App Total	0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			33.3%	66.7%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.500	.000		.500	.000	.000	.000		.000	.250	.500	.000		.750	.000	.000	.000		.000	.625

National Data and Surveying Services

City of Oakland
All Vehicles & Uturns On Unshifted
Heavy Trucks & Uturns On Bank 1
Peds & Bikes On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 17-7098-003 Jefferson St & 14th St
Date : 2/15/2017

Unshifted Count = All Vehicles & Uturns

	Jefferson St Southbound					14th St Westbound					Jefferson St Northbound					14th St Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
7:00	6	10	4	0	20	4	36	4	0	44	2	4	3	0	9	0	57	13	0	70	143	0
7:15	3	12	6	0	21	3	49	3	0	55	0	7	3	0	10	3	75	14	0	92	178	0
7:30	5	17	10	0	32	7	56	7	0	70	1	6	1	0	8	0	70	9	0	79	189	0
7:45	11	27	9	1	48	9	76	8	0	93	6	9	7	1	23	1	132	15	0	148	312	2
Total	25	66	29	1	121	23	217	22	0	262	9	26	14	1	50	4	334	51	0	389	822	2
8:00	10	23	11	0	44	5	80	13	0	98	2	14	5	0	21	8	127	21	0	156	319	0
8:15	17	26	11	0	54	5	74	18	0	97	2	10	4	0	16	2	141	15	0	158	325	0
8:30	23	29	10	0	62	11	84	17	0	112	0	14	4	0	18	6	166	16	0	188	380	0
8:45	10	28	10	0	48	11	87	14	0	112	4	12	8	0	24	2	131	11	0	144	328	0
Total	60	106	42	0	208	32	325	62	0	419	8	50	21	0	79	18	565	63	0	646	1352	0
16:00	11	21	6	0	38	5	131	13	0	149	5	17	12	0	34	5	86	9	0	100	321	0
16:15	11	17	9	0	37	2	111	8	0	121	7	16	7	1	31	6	78	10	0	94	283	1
16:30	7	17	14	0	38	2	111	11	0	124	4	11	8	0	23	8	95	11	0	114	299	0
16:45	5	19	6	0	30	3	112	9	0	124	8	18	7	0	33	3	95	6	0	104	291	0
Total	34	74	35	0	143	12	465	41	0	518	24	62	34	1	121	22	354	36	0	412	1194	1
17:00	11	38	9	0	58	2	141	7	0	150	4	13	6	0	23	7	104	6	0	117	348	0
17:15	5	26	15	0	46	2	119	9	0	130	7	22	6	0	35	8	113	7	0	128	339	0
17:30	12	30	7	0	49	5	107	4	0	116	6	25	14	0	45	7	111	10	0	128	338	0
17:45	11	14	11	0	36	2	92	8	0	102	7	16	17	0	40	5	115	4	1	125	303	1
Total	39	108	42	0	189	11	459	28	0	498	24	76	43	0	143	27	443	27	1	498	1328	1
Grand Total	158	354	148	1	661	78	1466	153	0	1697	65	214	112	2	393	71	1696	177	1	1945	4696	4
Apprch %	23.9%	53.6%	22.4%	0.2%		4.6%	86.4%	9.0%	0.0%		16.5%	54.5%	28.5%	0.5%		3.7%	87.2%	9.1%	0.1%			
Total %	3.4%	7.5%	3.2%	0.0%	14.1%	1.7%	31.2%	3.3%	0.0%	36.1%	1.4%	4.6%	2.4%	0.0%	8.4%	1.5%	36.1%	3.8%	0.0%	41.4%	100.0%	

AM PEAK HOUR	Jefferson St Southbound					14th St Westbound					Jefferson St Northbound					14th St Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 08:00 to 09:00																					
Peak Hour For Entire Intersection Begins at 08:00																					
8:00	10	23	11	0	44	5	80	13	0	98	2	14	5	0	21	8	127	21	0	156	319
8:15	17	26	11	0	54	5	74	18	0	97	2	10	4	0	16	2	141	15	0	158	325
8:30	23	29	10	0	62	11	84	17	0	112	0	14	4	0	18	6	166	16	0	188	380
8:45	10	28	10	0	48	11	87	14	0	112	4	12	8	0	24	2	131	11	0	144	328
Total Volume	60	106	42	0	208	32	325	62	0	419	8	50	21	0	79	18	565	63	0	646	1352
% App Total	28.8%	51.0%	20.2%	0.0%		7.6%	77.6%	14.8%	0.0%		10.1%	63.3%	26.6%	0.0%		2.8%	87.5%	9.8%	0.0%		
PHF	.652	.914	.955	.000	.839	.727	.934	.861	.000	.935	.500	.893	.656	.000	.823	.563	.851	.750	.000	.859	.889

PM PEAK HOUR	Jefferson St Southbound					14th St Westbound					Jefferson St Northbound					14th St Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	11	38	9	0	58	2	141	7	0	150	4	13	6	0	23	7	104	6	0	117	348
17:15	5	26	15	0	46	2	119	9	0	130	7	22	6	0	35	8	113	7	0	128	339
17:30	12	30	7	0	49	5	107	4	0	116	6	25	14	0	45	7	111	10	0	128	338
17:45	11	14	11	0	36	2	92	8	0	102	7	16	17	0	40	5	115	4	1	125	303
Total Volume	39	108	42	0	189	11	459	28	0	498	24	76	43	0	143	27	443	27	1	498	1328
% App Total	20.6%	57.1%	22.2%	0.0%		2.2%	92.2%	5.6%	0.0%		16.8%	53.1%	30.1%	0.0%		5.4%	89.0%	5.4%	0.2%		
PHF	.813	.711	.700	.000	.815	.550	.814	.778	.000	.830	.857	.760	.632	.000	.794	.844	.963	.675	.250	.973	.954

National Data and Surveying Services

City of Oakland
All Vehicles & Uturns On Unshifted
Heavy Trucks & Uturns On Bank 1
Peds & Bikes On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 17-7098-003 Jefferson St & 14th St
Date : 2/15/2017

Bank 1 Count = Heavy Trucks & Uturns

	Jefferson St Southbound					14th St Westbound					Jefferson St Northbound					14th St Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
7:00	0	0	2	0	2	0	3	0	0	3	0	0	0	0	0	0	2	2	0	4	9	0
7:15	0	0	0	0	0	0	3	0	0	3	0	0	1	0	1	0	4	0	0	4	8	0
7:30	0	1	5	0	6	0	1	1	0	2	0	0	0	0	0	0	2	0	0	2	10	0
7:45	1	0	0	0	1	0	3	0	0	3	0	0	1	0	1	0	2	0	0	2	7	0
Total	1	1	7	0	9	0	10	1	0	11	0	0	2	0	2	0	10	2	0	12	34	0
8:00	0	0	2	0	2	0	5	0	0	5	0	0	0	0	0	0	3	0	0	3	10	0
8:15	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	3	1	0	4	6	0
8:30	0	0	1	0	1	1	3	0	0	4	0	0	1	0	1	1	1	0	0	2	8	0
8:45	1	1	1	0	3	0	3	0	0	3	0	1	0	0	1	0	1	1	0	2	9	0
Total	1	1	6	0	8	1	11	0	0	12	0	1	1	0	2	1	8	2	0	11	33	0
16:00	0	0	0	0	0	0	3	0	0	3	0	1	0	0	1	0	3	0	0	3	7	0
16:15	0	2	0	0	2	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	6	0
16:30	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	3	0
16:45	0	0	0	0	0	0	2	0	0	2	0	1	0	0	1	0	2	0	0	2	5	0
Total	0	2	0	0	2	0	8	0	0	8	0	2	0	0	2	0	9	0	0	9	21	0
17:00	0	0	0	0	0	0	2	0	0	2	0	0	1	0	1	0	1	0	0	1	4	0
17:15	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	0	2	0	0	2	4	0
17:30	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	4	0	0	4	6	0
17:45	1	0	0	0	1	0	3	0	0	3	0	0	0	0	0	0	3	0	0	3	7	0
Total	1	1	0	0	2	0	6	0	0	6	0	2	1	0	3	0	10	0	0	10	21	0
Grand Total	3	5	13	0	21	1	35	1	0	37	0	5	4	0	9	1	37	4	0	42	109	0
Apprch %	14.3%	23.8%	61.9%	0.0%		2.7%	94.6%	2.7%	0.0%		0.0%	55.6%	44.4%	0.0%		2.4%	88.1%	9.5%	0.0%			
Total %	2.8%	4.6%	11.9%	0.0%	19.3%	0.9%	32.1%	0.9%	0.0%	33.9%	0.0%	4.6%	3.7%	0.0%	8.3%	0.9%	33.9%	3.7%	0.0%	38.5%	100.0%	

AM PEAK HOUR	Jefferson St Southbound					14th St Westbound					Jefferson St Northbound					14th St Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 08:00 to 09:00																					
Peak Hour For Entire Intersection Begins at 08:00																					
8:00	0	0	2	0	2	0	5	0	0	5	0	0	0	0	0	0	3	0	0	3	10
8:15	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	3	1	0	4	6
8:30	0	0	1	0	1	1	3	0	0	4	0	0	1	0	1	1	1	0	0	2	8
8:45	1	1	1	0	3	0	3	0	0	3	0	1	0	0	1	0	1	1	0	2	9
Total Volume	1	1	6	0	8	1	11	0	0	12	0	1	1	0	2	1	8	2	0	11	33
% App Total	12.5%	12.5%	75.0%	0.0%		8.3%	91.7%	0.0%	0.0%		0.0%	50.0%	50.0%	0.0%		9.1%	72.7%	18.2%	0.0%		
PHF	.250	.250	.750	.750	.667	.250	.550	.000	.000	.600	.000	.250	.250	.250	.500	.250	.667	.500	.500	.688	.825

PM PEAK HOUR	Jefferson St Southbound					14th St Westbound					Jefferson St Northbound					14th St Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	0	0	0	0	0	0	2	0	0	2	0	0	1	0	1	0	1	0	0	1	4
17:15	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	0	2	0	0	2	4
17:30	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	4	0	0	4	6
17:45	1	0	0	0	1	0	3	0	0	3	0	0	0	0	0	0	3	0	0	3	7
Total Volume	1	1	0	0	2	0	6	0	0	6	0	2	1	0	3	0	10	0	0	10	21
% App Total	50.0%	50.0%	0.0%	0.0%		0.0%	100.0%	0.0%	0.0%		0.0%	66.7%	33.3%	0.0%		0.0%	100.0%	0.0%	0.0%		
PHF	.250	.250	.000	.000	.500	.000	.500	.000	.000	.500	.000	.500	.250	.250	.750	.000	.625	.000	.000	.625	.750

National Data and Surveying Services

City of Oakland
All Vehicles & Uturns On Unshifted
Heavy Trucks & Uturns On Bank 1
Peds & Bikes On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 17-7098-003 Jefferson St & 14th St
Date : 2/15/2017

Bank 2 Count = Peds & Bikes

	Jefferson St Southbound					14th St Westbound					Jefferson St Northbound					14th St Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Peds Total
7:00	0	0	2	7	2	0	1	0	7	1	0	0	0	13	0	2	3	0	7	5	8	34
7:15	0	0	0	10	0	0	3	0	8	3	0	1	1	18	2	0	4	0	11	4	9	47
7:30	0	2	0	14	2	0	2	0	10	2	0	1	0	7	1	0	2	0	8	2	7	39
7:45	2	1	0	17	3	1	3	1	18	5	1	0	0	25	1	0	4	0	12	4	13	72
Total	2	3	2	48	7	1	9	1	43	11	1	2	1	63	4	2	13	0	38	15	37	192
8:00	1	0	0	27	1	0	2	0	23	2	1	0	0	35	1	1	4	0	16	5	9	101
8:15	0	0	0	28	0	0	0	0	21	0	0	1	0	34	1	0	4	0	13	4	5	96
8:30	0	2	0	34	2	0	2	0	23	2	0	0	2	33	2	0	8	0	22	8	14	112
8:45	0	2	2	27	4	2	0	0	16	2	0	1	0	24	1	0	7	0	10	7	14	77
Total	1	4	2	116	7	2	4	0	83	6	1	2	2	126	5	1	23	0	61	24	42	386
16:00	0	0	1	25	1	0	1	0	23	1	0	0	0	27	0	0	1	0	16	1	3	91
16:15	0	1	0	20	1	0	7	0	13	7	0	2	0	27	2	0	1	0	11	1	11	71
16:30	0	0	0	31	0	0	4	1	17	5	0	0	0	39	0	0	4	0	19	4	9	106
16:45	0	2	0	38	2	0	2	0	11	2	1	0	0	22	1	0	6	0	9	6	11	80
Total	0	3	1	114	4	0	14	1	64	15	1	2	0	115	3	0	12	0	55	12	34	348
17:00	0	0	0	20	0	0	6	1	24	7	0	0	2	38	2	0	2	0	23	2	11	105
17:15	0	0	0	28	0	0	4	0	12	4	0	0	0	42	0	0	2	0	13	2	6	95
17:30	0	0	0	35	0	0	9	0	11	9	1	0	1	18	2	0	4	1	24	5	16	88
17:45	1	0	0	23	1	0	4	0	14	4	0	1	0	15	1	0	4	0	16	4	10	68
Total	1	0	0	106	1	0	23	1	61	24	1	1	3	113	5	0	12	1	76	13	43	356
Grand Total	4	10	5	384	19	3	50	3	251	56	4	7	6	417	17	3	60	1	230	64	156	1282
Apprch %	21.1%	52.6%	26.3%			5.4%	89.3%	5.4%			23.5%	41.2%	35.3%			4.7%	93.8%	1.6%				
Total %	2.6%	6.4%	3.2%		12.2%	1.9%	32.1%	1.9%		35.9%	2.6%	4.5%	3.8%		10.9%	1.9%	38.5%	0.6%		41.0%	100.0%	

AM PEAK HOUR	Jefferson St Southbound					14th St Westbound					Jefferson St Northbound					14th St Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 08:00 to 09:00																					
Peak Hour For Entire Intersection Begins at 08:00																					
8:00	1	0	0	27	1	0	2	0	23	2	1	0	0	35	1	1	4	0	16	5	9
8:15	0	0	0	28	0	0	0	0	21	0	0	1	0	34	1	0	4	0	13	4	5
8:30	0	2	0	34	2	0	2	0	23	2	0	0	2	33	2	0	8	0	22	8	14
8:45	0	2	2	27	4	2	0	0	16	2	0	1	0	24	1	0	7	0	10	7	14
Total Volume	1	4	2	116	7	2	4	0	83	6	1	2	2	126	5	1	23	0	61	24	42
% App Total	14.3%	57.1%	28.6%			33.3%	66.7%	0.0%			20.0%	40.0%	40.0%			4.2%	95.8%	0.0%			
PHF	.250	.500	.250		.438	.250	.500	.000		.750	.250	.500	.250		.625	.250	.719	.000		.750	.750

PM PEAK HOUR	Jefferson St Southbound					14th St Westbound					Jefferson St Northbound					14th St Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	0	0	0	20	0	0	6	1	24	7	0	0	2	38	2	0	2	0	23	2	11
17:15	0	0	0	28	0	0	4	0	12	4	0	0	0	42	0	0	2	0	13	2	6
17:30	0	0	0	35	0	0	9	0	11	9	1	0	1	18	2	0	4	1	24	5	16
17:45	1	0	0	23	1	0	4	0	14	4	0	1	0	15	1	0	4	0	16	4	10
Total Volume	1	0	0	106	1	0	23	1	61	24	1	1	3	113	5	0	12	1	76	13	43
% App Total	100.0%	0.0%	0.0%			0.0%	95.8%	4.2%			20.0%	20.0%	60.0%			0.0%	92.3%	7.7%			
PHF	.250	.000	.000		.250	.000	.639	.250		.667	.250	.250	.375		.625	.000	.750	.250		.650	.672

Appendix B

LOS Calculations

FEHR PEERS

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	2	19	0	0	0	0	70	22	43	329	0
Future Vol, veh/h	5	2	19	0	0	0	0	70	22	43	329	0
Conflicting Peds, #/hr	11	0	9	9	0	11	16	0	10	10	0	16
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	2	19	0	0	0	0	70	22	43	329	0

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	461	517	174	-	0	0	102	0	0
Stage 1	415	415	-	-	-	-	-	-	-
Stage 2	46	102	-	-	-	-	-	-	-
Critical Hdwy	6.84	6.54	6.94	-	-	-	4.14	-	-
Critical Hdwy Stg 1	5.84	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.84	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	-	-	-	2.22	-	-
Pot Cap-1 Maneuver	529	461	839	0	-	-	1488	-	0
Stage 1	635	591	-	0	-	-	-	-	0
Stage 2	971	810	-	0	-	-	-	-	0
Platoon blocked, %					-	-		-	
Mov Cap-1 Maneuver	510	0	832	-	-	-	1472	-	-
Mov Cap-2 Maneuver	510	0	-	-	-	-	-	-	-
Stage 1	612	0	-	-	-	-	-	-	-
Stage 2	971	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.1	0	1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	SBL	SBT
Capacity (veh/h)	-	-	735	1472	-
HCM Lane V/C Ratio	-	-	0.035	0.029	-
HCM Control Delay (s)	-	-	10.1	7.5	0.1
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	14	6	35	8	0	16	0	118	8	16	178	0
Future Vol, veh/h	14	6	35	8	0	16	0	118	8	16	178	0
Conflicting Peds, #/hr	80	0	81	81	0	80	30	0	48	48	0	30
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	14	6	35	8	0	16	0	118	8	16	178	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	349	384	170	375	380	191	-	0	0	174	0	0
Stage 1	210	210	-	170	170	-	-	-	-	-	-	-
Stage 2	139	174	-	205	210	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	-	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	-	-	-	2.22	-	-
Pot Cap-1 Maneuver	581	548	844	557	551	818	0	-	-	1400	-	0
Stage 1	773	727	-	815	757	-	0	-	-	-	-	0
Stage 2	850	754	-	778	727	-	0	-	-	-	-	0
Platoon blocked, %								-	-		-	
Mov Cap-1 Maneuver	519	516	779	459	518	721	-	-	-	1293	-	-
Mov Cap-2 Maneuver	519	516	-	459	518	-	-	-	-	-	-	-
Stage 1	773	717	-	815	722	-	-	-	-	-	-	-
Stage 2	768	720	-	670	717	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11	11.2	0	0.6
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	658	606	1293	-
HCM Lane V/C Ratio	-	-	0.084	0.04	0.012	-
HCM Control Delay (s)	-	-	11	11.2	7.8	0
HCM Lane LOS	-	-	B	B	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0.1	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	565	63	32	325	62	8	50	21	60	106	42
Future Volume (veh/h)	18	565	63	32	325	62	8	50	21	60	106	42
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97		0.91	0.98		0.92	0.94		0.91	0.93		0.91
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1710	1676	1710	1710	1676	1710	1710	1676	1710	1710	1676	1710
Adj Flow Rate, veh/h	18	565	51	32	325	42	8	50	7	60	106	14
Adj No. of Lanes	0	2	0	0	2	0	0	2	0	0	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	72	1488	132	142	1287	164	146	785	108	335	575	79
Arrive On Green	0.53	0.53	0.53	0.53	0.53	0.53	0.33	0.33	0.33	0.33	0.33	0.33
Sat Flow, veh/h	34	2816	249	156	2435	311	251	2389	327	766	1751	240
Grp Volume(v), veh/h	337	0	297	205	0	194	34	0	31	95	0	85
Grp Sat Flow(s),veh/h/ln	1646	0	1452	1465	0	1437	1536	0	1431	1301	0	1456
Q Serve(g_s), s	0.0	0.0	8.5	0.0	0.0	5.2	0.0	0.0	1.0	2.2	0.0	2.9
Cycle Q Clear(g_c), s	8.3	0.0	8.5	4.6	0.0	5.2	1.0	0.0	1.0	3.4	0.0	2.9
Prop In Lane	0.05		0.17	0.16		0.22	0.23		0.23	0.63		0.17
Lane Grp Cap(c), veh/h	924	0	768	834	0	760	568	0	470	511	0	478
V/C Ratio(X)	0.36	0.00	0.39	0.25	0.00	0.26	0.06	0.00	0.07	0.19	0.00	0.18
Avail Cap(c_a), veh/h	924	0	768	834	0	760	568	0	470	511	0	478
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	9.7	0.0	9.8	8.9	0.0	9.0	16.1	0.0	16.1	16.8	0.0	16.8
Incr Delay (d2), s/veh	1.1	0.0	1.5	0.7	0.0	0.8	0.2	0.0	0.3	0.8	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	0.0	3.7	2.3	0.0	2.2	0.5	0.0	0.4	1.4	0.0	1.3
LnGrp Delay(d),s/veh	10.8	0.0	11.3	9.6	0.0	9.8	16.3	0.0	16.4	17.6	0.0	17.6
LnGrp LOS	B		B	A		A	B		B	B		B
Approach Vol, veh/h		634			399			65			180	
Approach Delay, s/veh		11.0			9.7			16.3			17.6	
Approach LOS		B			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		28.0		42.0		28.0		42.0
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		23.0		37.0		23.0		37.0
Max Q Clear Time (g_c+I1), s		3.0		10.5		5.4		7.2
Green Ext Time (p_c), s		0.9		5.0		0.9		5.1

Intersection Summary	
HCM 2010 Ctrl Delay	11.8
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	3	13	0	0	0	0	124	11	18	216	0
Future Vol, veh/h	11	3	13	0	0	0	0	124	11	18	216	0
Conflicting Peds, #/hr	18	0	18	18	0	18	19	0	20	20	0	19
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	11	3	13	0	0	0	0	124	11	18	216	0

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	332	407	126	-	0	0	155	0	0
Stage 1	252	252	-	-	-	-	-	-	-
Stage 2	80	155	-	-	-	-	-	-	-
Critical Hdwy	6.82	6.52	6.92	-	-	-	4.12	-	-
Critical Hdwy Stg 1	5.82	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.82	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.51	4.01	3.31	-	-	-	2.21	-	-
Pot Cap-1 Maneuver	640	534	904	0	-	-	1430	-	0
Stage 1	770	700	-	0	-	-	-	-	0
Stage 2	937	771	-	0	-	-	-	-	0
Platoon blocked, %					-	-		-	
Mov Cap-1 Maneuver	630	0	889	-	-	-	1405	-	-
Mov Cap-2 Maneuver	630	0	-	-	-	-	-	-	-
Stage 1	758	0	-	-	-	-	-	-	-
Stage 2	937	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10	0	0.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	SBL	SBT
Capacity (veh/h)	-	-	748	1405	-
HCM Lane V/C Ratio	-	-	0.036	0.013	-
HCM Control Delay (s)	-	-	10	7.6	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	13	3	30	7	0	21	0	119	14	10	135	0
Future Vol, veh/h	13	3	30	7	0	21	0	119	14	10	135	0
Conflicting Peds, #/hr	52	0	49	49	0	52	38	0	36	36	0	38
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	13	3	30	7	0	21	0	119	14	10	135	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	267	324	117	300	317	155	-	0	0	169	0	0
Stage 1	155	155	-	162	162	-	-	-	-	-	-	-
Stage 2	112	169	-	138	155	-	-	-	-	-	-	-
Critical Hdwy	7.52	6.52	6.92	7.52	6.52	6.92	-	-	-	4.12	-	-
Critical Hdwy Stg 1	6.52	5.52	-	6.52	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.52	5.52	-	6.52	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.51	4.01	3.31	3.51	4.01	3.31	-	-	-	2.21	-	-
Pot Cap-1 Maneuver	667	595	916	632	600	866	0	-	-	1413	-	0
Stage 1	835	771	-	827	765	-	0	-	-	-	-	0
Stage 2	884	760	-	854	771	-	0	-	-	-	-	0
Platoon blocked, %								-	-		-	
Mov Cap-1 Maneuver	613	570	873	556	575	795	-	-	-	1343	-	-
Mov Cap-2 Maneuver	613	570	-	556	575	-	-	-	-	-	-	-
Stage 1	835	765	-	827	739	-	-	-	-	-	-	-
Stage 2	818	734	-	777	765	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.1	10.2	0	0.5
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	756	718	1343	-
HCM Lane V/C Ratio	-	-	0.061	0.039	0.007	-
HCM Control Delay (s)	-	-	10.1	10.2	7.7	0
HCM Lane LOS	-	-	B	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	443	27	11	459	28	24	76	43	39	108	42
Future Volume (veh/h)	28	443	27	11	459	28	24	76	43	39	108	42
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97		0.91	0.97		0.91	0.95		0.93	0.95		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1710	1676	1710	1710	1676	1710	1710	1676	1710	1710	1676	1710
Adj Flow Rate, veh/h	28	443	20	11	459	21	24	76	16	39	108	15
Adj No. of Lanes	0	2	0	0	2	0	0	2	0	0	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	108	1332	59	72	1393	63	253	718	153	290	737	105
Arrive On Green	0.47	0.47	0.47	0.47	0.47	0.47	0.37	0.37	0.37	0.37	0.37	0.37
Sat Flow, veh/h	88	2855	126	21	2985	134	461	1959	416	552	2009	285
Grp Volume(v), veh/h	255	0	236	259	0	232	62	0	54	86	0	76
Grp Sat Flow(s),veh/h/ln	1580	0	1489	1654	0	1486	1423	0	1413	1394	0	1453
Q Serve(g_s), s	0.0	0.0	6.0	0.0	0.0	5.9	0.0	0.0	1.5	0.0	0.0	2.1
Cycle Q Clear(g_c), s	5.7	0.0	6.0	5.8	0.0	5.9	1.5	0.0	1.5	2.0	0.0	2.1
Prop In Lane	0.11		0.08	0.04		0.09	0.39		0.29	0.46		0.20
Lane Grp Cap(c), veh/h	804	0	695	835	0	693	605	0	518	598	0	533
V/C Ratio(X)	0.32	0.00	0.34	0.31	0.00	0.34	0.10	0.00	0.10	0.14	0.00	0.14
Avail Cap(c_a), veh/h	804	0	695	835	0	693	605	0	518	598	0	533
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	10.1	0.0	10.1	10.1	0.0	10.1	12.5	0.0	12.5	12.7	0.0	12.7
Incr Delay (d2), s/veh	1.0	0.0	1.3	1.0	0.0	1.3	0.3	0.0	0.4	0.5	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	0.0	2.7	2.9	0.0	2.6	0.7	0.0	0.6	1.0	0.0	0.9
LnGrp Delay(d),s/veh	11.1	0.0	11.5	11.1	0.0	11.4	12.8	0.0	12.9	13.2	0.0	13.3
LnGrp LOS	B		B	B		B	B		B	B		B
Approach Vol, veh/h		491			491			116			162	
Approach Delay, s/veh		11.3			11.2			12.9			13.2	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		27.0		33.0		27.0		33.0
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		22.0		28.0		22.0		28.0
Max Q Clear Time (g_c+I1), s		3.5		8.0		4.1		7.9
Green Ext Time (p_c), s		1.0		4.3		1.0		4.3

Intersection Summary	
HCM 2010 Ctrl Delay	11.7
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	6	19	0	0	0	0	70	39	71	329	0
Future Vol, veh/h	5	6	19	0	0	0	0	70	39	71	329	0
Conflicting Peds, #/hr	11	0	9	9	0	11	16	0	10	10	0	16
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	6	19	0	0	0	0	70	39	71	329	0

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	517	590	174	-	0	0	119	0	0
Stage 1	471	471	-	-	-	-	-	-	-
Stage 2	46	119	-	-	-	-	-	-	-
Critical Hdwy	6.84	6.54	6.94	-	-	-	4.14	-	-
Critical Hdwy Stg 1	5.84	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.84	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	-	-	-	2.22	-	-
Pot Cap-1 Maneuver	488	419	839	0	-	-	1467	-	0
Stage 1	594	558	-	0	-	-	-	-	0
Stage 2	971	796	-	0	-	-	-	-	0
Platoon blocked, %					-	-		-	
Mov Cap-1 Maneuver	459	0	832	-	-	-	1452	-	-
Mov Cap-2 Maneuver	459	0	-	-	-	-	-	-	-
Stage 1	558	0	-	-	-	-	-	-	-
Stage 2	971	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.3	0	1.5
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	SBL	SBT
Capacity (veh/h)	-	-	712	1452	-
HCM Lane V/C Ratio	-	-	0.042	0.049	-
HCM Control Delay (s)	-	-	10.3	7.6	0.2
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.2	-

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	21	6	60	8	0	16	0	118	8	16	178	0
Future Vol, veh/h	21	6	60	8	0	16	0	118	8	16	178	0
Conflicting Peds, #/hr	80	0	81	81	0	80	30	0	48	48	0	30
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	21	6	60	8	0	16	0	118	8	16	178	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	349	384	170	375	380	191	-	0	0	174	0	0
Stage 1	210	210	-	170	170	-	-	-	-	-	-	-
Stage 2	139	174	-	205	210	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	-	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	-	-	-	2.22	-	-
Pot Cap-1 Maneuver	581	548	844	557	551	818	0	-	-	1400	-	0
Stage 1	773	727	-	815	757	-	0	-	-	-	-	0
Stage 2	850	754	-	778	727	-	0	-	-	-	-	0
Platoon blocked, %								-	-		-	
Mov Cap-1 Maneuver	519	516	779	444	518	721	-	-	-	1293	-	-
Mov Cap-2 Maneuver	519	516	-	444	518	-	-	-	-	-	-	-
Stage 1	773	717	-	815	722	-	-	-	-	-	-	-
Stage 2	768	720	-	648	717	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.1	11.3	0	0.6
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	674	597	1293	-
HCM Lane V/C Ratio	-	-	0.129	0.04	0.012	-
HCM Control Delay (s)	-	-	11.1	11.3	7.8	0
HCM Lane LOS	-	-	B	B	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0.1	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	565	63	32	330	62	8	50	21	65	111	57
Future Volume (veh/h)	18	565	63	32	330	62	8	50	21	65	111	57
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97		0.91	0.98		0.92	0.94		0.91	0.93		0.91
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1710	1676	1710	1710	1676	1710	1710	1676	1710	1710	1676	1710
Adj Flow Rate, veh/h	18	565	51	32	330	42	8	50	7	65	111	19
Adj No. of Lanes	0	2	0	0	2	0	0	2	0	0	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	72	1488	132	140	1293	162	146	784	108	335	551	98
Arrive On Green	0.53	0.53	0.53	0.53	0.53	0.53	0.33	0.33	0.33	0.33	0.33	0.33
Sat Flow, veh/h	34	2815	249	153	2446	307	250	2387	327	766	1677	298
Grp Volume(v), veh/h	337	0	297	207	0	197	34	0	31	103	0	92
Grp Sat Flow(s),veh/h/ln	1646	0	1452	1468	0	1438	1533	0	1431	1301	0	1439
Q Serve(g_s), s	0.0	0.0	8.5	0.0	0.0	5.2	0.0	0.0	1.0	2.5	0.0	3.2
Cycle Q Clear(g_c), s	8.3	0.0	8.5	4.7	0.0	5.2	1.0	0.0	1.0	3.7	0.0	3.2
Prop In Lane	0.05		0.17	0.15		0.21	0.23		0.23	0.63		0.21
Lane Grp Cap(c), veh/h	924	0	768	835	0	760	567	0	470	511	0	473
V/C Ratio(X)	0.36	0.00	0.39	0.25	0.00	0.26	0.06	0.00	0.07	0.20	0.00	0.19
Avail Cap(c_a), veh/h	924	0	768	835	0	760	567	0	470	511	0	473
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	9.7	0.0	9.8	8.9	0.0	9.0	16.1	0.0	16.1	16.9	0.0	16.9
Incr Delay (d2), s/veh	1.1	0.0	1.5	0.7	0.0	0.8	0.2	0.0	0.3	0.9	0.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	0.0	3.7	2.3	0.0	2.2	0.5	0.0	0.4	1.6	0.0	1.4
LnGrp Delay(d),s/veh	10.8	0.0	11.3	9.6	0.0	9.8	16.3	0.0	16.4	17.8	0.0	17.8
LnGrp LOS	B		B	A		A	B		B	B		B
Approach Vol, veh/h		634			404			65			195	
Approach Delay, s/veh		11.0			9.7			16.3			17.8	
Approach LOS		B			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		28.0		42.0		28.0		42.0
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		23.0		37.0		23.0		37.0
Max Q Clear Time (g_c+I1), s		3.0		10.5		5.7		7.2
Green Ext Time (p_c), s		1.0		5.0		0.9		5.1

Intersection Summary	
HCM 2010 Ctrl Delay	11.9
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	6	13	0	0	0	0	124	26	42	216	0
Future Vol, veh/h	11	6	13	0	0	0	0	124	26	42	216	0
Conflicting Peds, #/hr	18	0	18	18	0	18	19	0	20	20	0	19
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	11	6	13	0	0	0	0	124	26	42	216	0

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	380	470	126	-	0	0	170	0	0
Stage 1	300	300	-	-	-	-	-	-	-
Stage 2	80	170	-	-	-	-	-	-	-
Critical Hdwy	6.82	6.52	6.92	-	-	-	4.12	-	-
Critical Hdwy Stg 1	5.82	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.82	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.51	4.01	3.31	-	-	-	2.21	-	-
Pot Cap-1 Maneuver	597	492	904	0	-	-	1412	-	0
Stage 1	728	667	-	0	-	-	-	-	0
Stage 2	937	759	-	0	-	-	-	-	0
Platoon blocked, %					-	-		-	
Mov Cap-1 Maneuver	577	0	889	-	-	-	1388	-	-
Mov Cap-2 Maneuver	577	0	-	-	-	-	-	-	-
Stage 1	703	0	-	-	-	-	-	-	-
Stage 2	937	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.3	0	1.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	SBL	SBT
Capacity (veh/h)	-	-	712	1388	-
HCM Lane V/C Ratio	-	-	0.042	0.03	-
HCM Control Delay (s)	-	-	10.3	7.7	0.1
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	21	3	61	7	0	21	0	119	14	10	135	0
Future Vol, veh/h	21	3	61	7	0	21	0	119	14	10	135	0
Conflicting Peds, #/hr	52	0	49	49	0	52	38	0	36	36	0	38
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	21	3	61	7	0	21	0	119	14	10	135	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	267	324	117	300	317	155	-	0	0	169	0	0
Stage 1	155	155	-	162	162	-	-	-	-	-	-	-
Stage 2	112	169	-	138	155	-	-	-	-	-	-	-
Critical Hdwy	7.52	6.52	6.92	7.52	6.52	6.92	-	-	-	4.12	-	-
Critical Hdwy Stg 1	6.52	5.52	-	6.52	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.52	5.52	-	6.52	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.51	4.01	3.31	3.51	4.01	3.31	-	-	-	2.21	-	-
Pot Cap-1 Maneuver	667	595	916	632	600	866	0	-	-	1413	-	0
Stage 1	835	771	-	827	765	-	0	-	-	-	-	0
Stage 2	884	760	-	854	771	-	0	-	-	-	-	0
Platoon blocked, %								-	-		-	
Mov Cap-1 Maneuver	613	570	873	536	575	795	-	-	-	1343	-	-
Mov Cap-2 Maneuver	613	570	-	536	575	-	-	-	-	-	-	-
Stage 1	835	765	-	827	739	-	-	-	-	-	-	-
Stage 2	818	734	-	748	765	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.2	10.3	0	0.5
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	777	709	1343	-
HCM Lane V/C Ratio	-	-	0.109	0.039	0.007	-
HCM Control Delay (s)	-	-	10.2	10.3	7.7	0
HCM Lane LOS	-	-	B	B	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0.1	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	443	27	11	464	28	24	76	43	45	114	61
Future Volume (veh/h)	28	443	27	11	464	28	24	76	43	45	114	61
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97		0.91	0.97		0.91	0.95		0.93	0.95		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1710	1676	1710	1710	1676	1710	1710	1676	1710	1710	1676	1710
Adj Flow Rate, veh/h	28	443	20	11	464	21	24	76	16	45	114	22
Adj No. of Lanes	0	2	0	0	2	0	0	2	0	0	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	108	1332	59	72	1394	62	252	717	152	297	688	135
Arrive On Green	0.47	0.47	0.47	0.47	0.47	0.47	0.37	0.37	0.37	0.37	0.37	0.37
Sat Flow, veh/h	88	2854	126	20	2987	133	459	1955	416	570	1877	369
Grp Volume(v), veh/h	255	0	236	261	0	235	62	0	54	96	0	85
Grp Sat Flow(s),veh/h/ln	1579	0	1489	1655	0	1486	1416	0	1413	1384	0	1432
Q Serve(g_s), s	0.0	0.0	6.0	0.0	0.0	6.0	0.0	0.0	1.5	0.1	0.0	2.4
Cycle Q Clear(g_c), s	5.7	0.0	6.0	5.9	0.0	6.0	1.4	0.0	1.5	2.3	0.0	2.4
Prop In Lane	0.11		0.08	0.04		0.09	0.39		0.29	0.47		0.26
Lane Grp Cap(c), veh/h	803	0	695	835	0	694	603	0	518	596	0	525
V/C Ratio(X)	0.32	0.00	0.34	0.31	0.00	0.34	0.10	0.00	0.10	0.16	0.00	0.16
Avail Cap(c_a), veh/h	803	0	695	835	0	694	603	0	518	596	0	525
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	10.1	0.0	10.1	10.1	0.0	10.1	12.5	0.0	12.5	12.8	0.0	12.8
Incr Delay (d2), s/veh	1.0	0.0	1.3	1.0	0.0	1.3	0.3	0.0	0.4	0.6	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	0.0	2.7	2.9	0.0	2.7	0.7	0.0	0.6	1.2	0.0	1.0
LnGrp Delay(d),s/veh	11.1	0.0	11.5	11.1	0.0	11.5	12.8	0.0	12.9	13.3	0.0	13.5
LnGrp LOS	B		B	B		B	B		B	B		B
Approach Vol, veh/h		491			496			116			181	
Approach Delay, s/veh		11.3			11.3			12.9			13.4	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		27.0		33.0		27.0		33.0
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		22.0		28.0		22.0		28.0
Max Q Clear Time (g_c+I1), s		3.5		8.0		4.4		8.0
Green Ext Time (p_c), s		1.1		4.3		1.1		4.3

Intersection Summary	
HCM 2010 Ctrl Delay	11.7
HCM 2010 LOS	B

ATTACHMENT E: Air Quality Assessment

1431 JEFFERSON STREET HOTEL PROJECT AIR QUALITY ASSESSMENT

Oakland, California

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Introduction

The purpose of this report is to address air quality and greenhouse gas (GHG) impacts associated with the proposed hotel development at 1431 Jefferson Street in Oakland. The project site is currently developed with a surface parking lot and a 1-story commercial building. The project proposes to demolish the existing structures and develop a 18-story, 276-room Marriott Hotel consisting of 143 studio and 1-bedroom units for extended stay guests and 133 guestrooms for shorter-term guests. An associated 5-story parking structure, providing 98 parking spaces would be developed for the hotel occupants. In addition to the hotel, 2,105 square feet (sf) of retail space has been proposed as a part of the project.

Air pollutant and GHG emissions associated with construction and operation of the project were modeled. In addition, the potential construction health risk impact to nearby sensitive receptors and the impact of existing toxic air contaminant (TAC) sources affecting the proposed residences were evaluated. This analysis addresses those issues following the guidance provided by the Bay Area Air Quality Management District (BAAQMD) and addresses the City of Oakland Standard Conditions of Approval for air quality and GHG.

Setting

The project is located in western Alameda County, which is in the San Francisco Bay Area Air Basin. Ambient air quality standards have been established at both the State and federal level. The Bay Area meets all ambient air quality standards with the exception of ground-level ozone, respirable particulate matter (PM_{10}), and fine particulate matter ($PM_{2.5}$).

Air Pollutants of Concern

High ozone levels are caused by the cumulative emissions of reactive organic gases (ROG) and nitrogen oxides (NOx). These precursor pollutants react under certain meteorological conditions to form high ozone levels. Controlling the emissions of these precursor pollutants is the focus of the Bay Area's attempts to reduce ozone levels. The highest ozone levels in the Bay Area occur in the eastern and southern inland valleys that are downwind of air pollutant sources. High ozone levels aggravate respiratory and cardiovascular diseases, reduced lung function, and increase coughing and chest discomfort.

Particulate matter is another problematic air pollutant of the Bay Area. Particulate matter is assessed and measured in terms of respirable particulate matter or particles that have a diameter of 10 micrometers or less (PM_{10}) and fine particulate matter where particles have a diameter of 2.5 micrometers or less ($PM_{2.5}$). Elevated concentrations of PM_{10} and $PM_{2.5}$ are the result of both region-wide (or cumulative) emissions and localized emissions. High particulate matter levels aggravate respiratory and cardiovascular diseases, reduce lung function, increase mortality (e.g., lung cancer), and result in reduced lung function growth in children.

Toxic Air Contaminants

Toxic air contaminants (TAC) are a broad class of compounds known to cause morbidity or mortality (usually because they cause cancer) and include, but are not limited to, the criteria air pollutants. TACs are found in ambient air, especially in urban areas, and are caused by industry, agriculture, fuel combustion, and commercial operations (e.g., dry cleaners). TACs are typically found in low concentrations, even near their source (e.g., diesel particulate matter [DPM] near a freeway). Because chronic exposure can result in adverse health effects, TACs are regulated at the regional, State, and federal level.

Diesel exhaust is the predominant TAC in urban air and is estimated to represent about three-quarters of the cancer risk from TACs (based on the Bay Area average). According to the California Air Resources Board (CARB), diesel exhaust is a complex mixture of gases, vapors, and fine particles. This complexity makes the evaluation of health effects of diesel exhaust a complex scientific issue. Some of the chemicals in diesel exhaust, such as benzene and formaldehyde, have been previously identified as TACs by the CARB, and are listed as carcinogens either under the State's Proposition 65 or under the Federal Hazardous Air Pollutants programs.

CARB has adopted and implemented a number of regulations for stationary and mobile sources to reduce emissions of DPM. Several of these regulatory programs affect medium and heavy duty diesel trucks that represent the bulk of DPM emissions from California highways. These regulations include the solid waste collection vehicle (SWCV) rule, in-use public and utility fleets, and the heavy-duty diesel truck and bus regulations. In 2008, CARB approved a new regulation to reduce emissions of DPM and nitrogen oxides from existing on-road heavy-duty diesel fueled vehicles.[1] The regulation requires affected vehicles to meet specific performance requirements between 2014 and 2023, with all affected diesel vehicles required to have 2010 model-year engines or equivalent by 2023. These requirements are phased in over the compliance period and depend on the model year of the vehicle.

The BAAQMD is the regional agency tasked with managing air quality in the region. At the State level, the CARB (a part of the California Environmental Protection Agency [EPA]) oversees regional air district activities and regulates air quality at the State level. The BAAQMD has recently published California Environmental Quality Act (CEQA) Air Quality Guidelines that are used in this assessment to evaluate air quality impacts of projects.[2] *Attachment 1* includes detailed community risk modeling methodology.

Sensitive Receptors

There are groups of people more affected by air pollution than others. CARB has identified the following persons who are most likely to be affected by air pollution: children under 16, the elderly over 65, athletes, and people with cardiovascular and chronic respiratory diseases. These groups are classified as sensitive receptors. Locations that may contain a high concentration of

[1] Available online: http://www.arb.ca.gov/msprog/onrdiesel/onrdiesel.htm. Accessed: November 21, 2014.
[2] Bay Area Air Quality Management District. 2011. BAAQMD CEQA Air Quality Guidelines. May.

these sensitive population groups include residential areas, hospitals, daycare facilities, elder care facilities, elementary schools, and parks. For cancer risk assessments, children are the most sensitive receptors, since they are more susceptible to cancer causing TACs. Residential locations are assumed to include infants and small children. The closest sensitive receptor to the project site includes the single family residences to the west and apartments to the east of the project site.[3]

Greenhouse Gases

Gases that trap heat in the atmosphere, GHGs, regulate the earth's temperature. This phenomenon, known as the greenhouse effect, is responsible for maintaining a habitable climate. The most common GHGs are carbon dioxide (CO_2) and water vapor but there are also several others, most importantly methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). These are released into the earth's atmosphere through a variety of natural processes and human activities. Sources of GHGs are generally as follows:

- CO_2 and N_2O are byproducts of fossil fuel combustion.
- N_2O is associated with agricultural operations such as fertilization of crops.
- CH_4 is commonly created by off-gassing from agricultural practices (e.g., keeping livestock) and landfill operations.
- Chlorofluorocarbons (CFCs) were widely used as refrigerants, propellants, and cleaning solvents but their production has been stopped by international treaty.
- HFCs are now used as a substitute for CFCs in refrigeration and cooling.
- PFCs and sulfur hexafluoride emissions are commonly created by industries such as aluminum production and semi-conductor manufacturing.

Each GHG has its own potency and effect upon the earth's energy balance. This is expressed in terms of a global warming potential (GWP), with CO_2 being assigned a value of 1 and sulfur hexafluoride being several orders of magnitude stronger with a GWP of 23,900. In GHG emission inventories, the weight of each gas is multiplied by its GWP and is measured in units of CO_2 equivalents (CO_2e).

An expanding body of scientific research supports the theory that global warming is currently affecting changes in weather patterns, average sea level, ocean acidification, chemical reaction rates, and precipitation rates, and that it will increasingly do so in the future. The climate and several naturally occurring resources within California could be adversely affected by the global warming trend. Increased precipitation and sea level rise could increase coastal flooding, saltwater intrusion, and degradation of wetlands. Mass migration and/or loss of plant and animal species could also occur. Potential effects of global climate change that could adversely affect human health include more extreme heat waves and heat-related stress; an increase in climate-sensitive diseases; more frequent and intense natural disasters such as flooding, hurricanes and drought; and increased levels of air pollution.

[3] The Savoy hotel is being redeveloped into affordable apartment consisting of 100 studios

Significance Thresholds

In June 2010, BAAQMD adopted thresholds of significance to assist in the review of projects under CEQA. These Thresholds were designed to establish the level at which BAAQMD believed air pollution emissions would cause significant environmental impacts under CEQA and were posted on BAAQMD's website and included in the Air District's updated CEQA Guidelines (updated May 2011). The significance thresholds identified by BAAQMD and used in this analysis are summarized in Table 1.

The BAAQMD's adoption of significance thresholds contained in the 2011 CEQA Air Quality Guidelines was called into question by an order issued March 5, 2012, in California Building Industry Association (CBIA) v. BAAQMD (Alameda Superior Court Case No. RGI0548693). The order requires the BAAQMD to set aside its approval of the thresholds until it has conducted environmental review under CEQA. The ruling made in the case concerned the environmental impacts of adopting the thresholds and how the thresholds would indirectly affect land use development patterns. In August 2013, the Appellate Court struck down the lower court's order to set aside the thresholds (Cal. Court of Appeal, First Appellate District, Case Nos. A135335 & A136212). CBIA sought review by the California Supreme Court on three issues, including the appellate court's decision to uphold the BAAQMD's adoption of the thresholds, and the Court granted review on just one: Under what circumstances, if any, does CEQA require an analysis of how existing environmental conditions will impact future residents or users of a proposed project? In December 2015, the Supreme Court determined that an analysis of the impacts of the environment on a project – known as "CEQA-in-reverse" – is only required under two limited circumstances: (1) when a statute provides an express legislative directive to consider such impacts; and (2) when a proposed project risks exacerbating environmental hazards or conditions that already exist (Cal. Supreme Court Case No. S213478). The Supreme Court reversed the Court of Appeal's decision and remanded the matter back to the appellate court to reconsider the case in light of the Supreme Court's ruling. Because the Supreme Court's holding concerns the effects of the environment on a project (as contrasted to the effects of a proposed project on the environment), and not the science behind the thresholds, the significance thresholds contained in the 2011 CEQA Air Quality Guidelines are applied to this project.

The City's thresholds of significance pertaining to greenhouse gas/global climate change are generally based on the thresholds adopted by BAAQMD in June 2010. Pursuant to CEQA, lead agencies must apply appropriate thresholds based on substantial evidence in the record. The City's thresholds rely upon the technical and scientific basis for BAAQMD's 2010 thresholds. Use of the City's thresholds is consistent with and authorized by CEQA Guidelines section 15064. The City's thresholds have not been challenged and remain in effect.

Table 1. Air Quality Significance Thresholds

Pollutant	Construction Thresholds	Operational Thresholds	
	Average Daily Emissions (lbs./day)	Average Daily Emissions (lbs./day)	Annual Average Emissions (tons/year)
Criteria Air Pollutants			
ROG	54	54	10
NO_x	54	54	10
PM_{10}	82 (Exhaust)	82	15
$PM_{2.5}$	54 (Exhaust)	54	10
CO	Not Applicable	9.0 ppm (8-hour average) or 20.0 ppm (1-hour average)	
Fugitive Dust	Construction Dust Ordinance or other Best Management Practices	Not Applicable	
Health Risks and Hazards for Single Sources			
Excess Cancer Risk	>10 per one million		
Hazard Index	>1.0		
Incremental annual $PM_{2.5}$	>0.3 µg/m^3		
Health Risks and Hazards for Combined Sources (Cumulative from all sources within 1,000 foot zone of influence)			
Excess Cancer Risk	>100 per one million		
Hazard Index	>10.0		
Annual Average $PM_{2.5}$	>0.8 µg/m^3		
Greenhouse Gas Emissions			
GHG Annual Emissions	Compliance with a Qualified GHG Reduction Strategy OR 1,100 metric tons or 4.6 metric tons per capita		

Note: ROG = reactive organic gases, NOx = nitrogen oxides, PM_{10} = course particulate matter or particulates with an aerodynamic diameter of 10 micrometers (µm) or less, $PM_{2.5}$ = fine particulate matter or particulates with an aerodynamic diameter of 2.5µm or less; and GHG = greenhouse gas.

City of Oakland- Standard Conditions of Approval for Air Quality

The City of Oakland's Uniformly Applied Development Standards, adopted as Standard Conditions of Approval (SCAs), were originally adopted by the City in 2008 (Ordinance No. 12899 C.M.S. pursuant to Public Resources Code section 21083.3) and have been incrementally updated over time. The SCAs incorporate development policies and standards from various adopted plans, policies, and ordinances, which have been found to substantially mitigate environmental effects. SCAs that apply to this project are as follows:

SCA 19: Construction-Related Air Pollution (Dust and Equipment Emissions)

The Project applicant shall implement all of the following applicable air pollution control measures during construction of the Project:

BASIC CONTROLS

a. Water all exposed surfaces of active construction areas at least twice daily. Watering should be sufficient to prevent airborne dust from leaving the site. Increased watering frequency may be necessary whenever wind speeds exceed 15 miles per hour. Reclaimed water should be used whenever feasible.
b. Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least two feet of freeboard (i.e., the minimum required space between the top of the load and the top of the trailer).
c. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
d. Pave all roadways, driveways, sidewalks, etc. within one month of site grading or as soon as feasible. In addition, building pads should be laid within one month of grading or as soon as feasible unless seeding or soil binders are used.
e. Enclose, cover, water twice daily, or apply (non-toxic) soil stabilizers to exposed stockpiles (dirt, sand, etc.).
f. Limit vehicle speeds on unpaved roads to 15 miles per hour.
g. Idling times on all diesel-fueled commercial vehicles over 10,000 lbs. shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to five minutes (as required by the California airborne toxics control measure Title 13, Section 2485, of the California Code of Regulations). Clear signage to this effect shall be provided for construction workers at all access points.
h. Idling times on all diesel-fueled off-road vehicles over 25 horsepower shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to five minutes and fleet operators must develop a written policy as required by Title 23, Section 2449, of the California Code of Regulations ("California Air Resources Board Off-Road Diesel Regulations").
i. All construction equipment shall be maintained and properly tuned in accordance with the manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.
j. Portable equipment shall be powered by electricity if available. If electricity is not available, propane or natural gas shall be used if feasible. Diesel engines shall only be used if electricity is not available and it is not feasible to use propane or natural gas.

Since the project involves demolition, implementation of Enhanced Controls would also be necessary. These controls include:

k. All exposed surfaces shall be watered at a frequency adequate to maintain minimum soil moisture of 12 percent. Moisture content can be verified by lab samples or moisture probe.

l. All excavation, grading, and demolition activities shall be suspended when average wind speeds exceed 20 mph.

m. Install sandbags or other erosion control measures to prevent silt runoff to public roadways.

n. Hydroseed or apply (non-toxic) soil stabilizers to inactive construction areas (previously graded areas inactive for one month or more).

o. Designate a person or persons to monitor the dust control program and to order increased watering, as necessary, to prevent transport of dust offsite. Their duties shall include holidays and weekend periods when work may not be in progress.

p. Install appropriate wind breaks (e.g., trees, fences) on the windward side(s) of actively disturbed areas of the construction site to minimize wind blown dust. Wind breaks must have a maximum 50 percent air porosity.

q. Vegetative ground cover (e.g., fast-germinating native grass seed) shall be planted in disturbed areas as soon as possible and watered appropriately until vegetation is established.

r. Activities such as excavation, grading, and other ground-disturbing construction activities shall be phased to minimize the amount of disturbed surface area at any one time.

s. All trucks and equipment, including tires, shall be washed off prior to leaving the site.

t. Site accesses to a distance of 100 feet from the paved road shall be treated with a 6 to 12 inch compacted layer of wood chips, mulch, or gravel.

u. All equipment to be used on the construction site and subject to the requirements of Title 13, Section 2449, of the California Code of Regulations ("California Air Resources Board Off-Road Diesel Regulations") must meet emissions and performance requirements one year in advance of any fleet deadlines. Upon request by the City, the project applicant shall provide written documentation that fleet requirements have been met.

v. Use low VOC (i.e., ROG) coatings beyond the local requirements (i.e., BAAQMD Regulation 8, Rule 3: Architectural Coatings).

w. All construction equipment, diesel trucks, and generators shall be equipped with Best Available Control Technology for emission reductions of NOx and PM.

x. Off-road heavy diesel engines shall meet the California Air Resources Board's most recent certification standard.

y. Post a publicly-visible large on-site sign that includes the contact name and phone number for the project complaint manager responsible for responding to dust complaints and the telephone numbers of the City's Code Enforcement unit and the Bay Area Air Quality Management District. When contacted, the project complaint manager shall respond and take corrective action within 48 hours.

SCA 21: Stationary Sources of Air Pollution (Toxic Air Contaminants)

The Project applicant shall incorporate appropriate measures into the project design in order to reduce the potential health risk due to on-site stationary sources of toxic air contaminants.

SCA – 38: Greenhouse Gas (GHG) Reduction Plan

The following condition, which requires a GHG Reduction Plan, applies under any of the following scenarios for projects that result in a net increase in greenhouse gas (GHG) emissions:

a. Scenario A: Projects which (a) involve a land use development (i.e., a project that does not require a permit from the Bay Area Air Quality Management District [BAAQMD] to operate), (b) exceed the GHG emissions screening criteria contained in the BAAQMD CEQA Guidelines, and (c) after a GHG analysis is prepared would produce total GHG emissions of more than 1,100 metric tons of CO2e annually and more than 4.6 metric tons of CO2e per service population annually (with "service population" defined as the total number of employees and residents of the project).
b. Scenario B: Projects which (a) involve a land use development, (b) exceed the GHG emissions screening criteria contained in the BAAQMD CEQA Guidelines, (c) after a GHG analysis is prepared would exceed at least one of the BAAQMD Thresholds of Significance (more than 1,100 metric tons of CO2e annually OR more than 4.6 metric tons of CO2e per service population annually), and (d) are considered to be "Very Large Projects."
c. Scenario C: Projects which (a) involve a stationary source of GHG (i.e., a project that requires a permit from BAAQMD to operate) and (b) after a GHG analysis is prepared would produce total GHG emissions of more than 10,000 metric tons of CO2e annually.

Project Air Quality Impacts

> **Impact:** Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable State or federal ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)? ***Less than significant***

The Bay Area is considered a non-attainment area for ground-level ozone and $PM_{2.5}$ under both the Federal Clean Air Act and the California Clean Air Act. The area is also considered non-attainment for PM_{10} under the California Clean Air Act, but not the federal act. The area has attained both State and federal ambient air quality standards for carbon monoxide. As part of an effort to attain and maintain ambient air quality standards for ozone and PM_{10}, the BAAQMD has established thresholds of significance for these air pollutants and their precursors. These thresholds are for ozone precursor pollutants (ROG and NOx), PM_{10}, and $PM_{2.5}$ and apply to both construction period and operational period impacts.

The California Emissions Estimator Model (CalEEMod) Version 2016.3.1 was used to estimate emissions from construction and operation of the site assuming full build-out of the project. The project land use types and size, and anticipated construction schedule were input to CalEEMod.

Construction period emissions

CalEEMod provides emission estimates for both on-site and off-site construction activities. On-site activities are primarily made up of construction equipment emissions, while off-site activity includes worker, hauling, and vendor traffic. A construction build-out scenario was used in the modeling that was based on the equipment list and schedule information provided by the project applicant. The proposed project land uses were input into CalEEMod, which included: 276 rooms entered as "Hotel", 95 spaces entered as "Enclosed Parking with Elevator,", and 1,698 sf entered as "Strip Mall" on a 0.4-acre site.

Approximately 5,681 cubic yards (cy) of soil export is anticipated during grading and was entered into the model. Demolition of 5,120 sf of buildings and 298 tons of pavement is anticipated and was entered into the model. Temporary line power is planned on-site and, therefore, no diesel-powered generators were assumed to be used. Electric cranes would be used and the forklifts would be driven by liquid propane. An estimated 918 cement truck round-trips are expected during the building construction phase and were entered into the model. The modeling assumed 16 cy/truck to calculate the number of trips during grading.

The construction schedule assumes that the project would be built out over a period of approximately 24 months beginning in October 2017, or an estimated 520 construction workdays (assuming an average of 260 construction days per year). Average daily emissions were computed by dividing the total construction emissions by the number of construction days. Table 2 shows average daily construction emissions of ROG, NO_X, PM_{10} exhaust, and $PM_{2.5}$ exhaust during construction of the project. As indicated in Table 2, predicted the construction period emissions would not exceed the BAAQMD significance thresholds.

Construction activities, particularly during site preparation and grading, would temporarily generate fugitive dust in the form of PM_{10} and $PM_{2.5}$. Sources of fugitive dust would include disturbed soils at the construction site and trucks carrying uncovered loads of soils. Unless properly controlled, vehicles leaving the site would deposit mud on local streets, which could be an additional source of airborne dust after it dries. The BAAQMD CEQA Air Quality Guidelines and City consider these impacts to be less than significant if best management practices are implemented to reduce these emissions. *City Standard Conditional of Approval (SCA) A* would ensure that these impacts are less than significant.

Table 2. Construction Period Emissions

Scenario	ROG	NOx	PM_{10} Exhaust	$PM_{2.5}$ Exhaust
Total construction emissions (tons)	0.97 tons	1.74 tons	0.02 tons	0.02 tons
Average daily emissions (pounds)[1]	3.7 lbs.	6.7 lbs.	0.08 lbs.	0.08 lbs.
BAAQMD Thresholds (pounds per day)	*54* lbs.	*54* lbs.	*82* lbs.	*54* lbs.
Exceed Threshold?	**No**	**No**	**No**	**No**
Notes: [1]Assumes 520 workdays.				

Operational Period Emissions

Operational air emissions from the project would be generated primarily from autos driven by future hotel occupants and employees. Evaporative emissions from architectural coatings and maintenance products (classified as consumer products) are typical emissions from these types of uses. CalEEMod was used to predict emissions from operation of the proposed project assuming full build-out.

Land Uses

The project land uses were input to CalEEMod, as described above. An additional CalEEMod run was set up to compute the emissions from the existing land use. The land use entered was 5,000 sf as "Convenience Market (24 Hour)".

Model Year

Emissions associated with vehicle travel depend on the year of analysis because emission control technology requirements are phased-in over time. Therefore, the earlier the year analyzed in the model, the higher the emission rates utilized by CalEEMod. The earliest full year the build-out project could possibly be constructed and begin operating would be 2019. Emissions associated with build-out later than 2019 would be lower.

Trip Generation Rates

CalEEMod allows the user to enter specific vehicle trip generation rates, which were input to the model using the daily trip generation rate provided in the project traffic report. These included the reductions for nearby transit. The default trip lengths and trip types specified by CalEEMod were used.

Energy

CalEEMod defaults for energy use were used, which are assumed to include 2013 Title 24 Building Standards.

Other Inputs

Default model assumptions for emissions associated with solid waste generation and water/wastewater use were applied to the project.

Project Generator

The only source of stationary air pollutants identified with build-out of the project is assumed to be an emergency back-up generator. The project proposes the inclusion of a 900 HP (~670 KW) generator. It is assumed for this assessment that the generator would be driven by a diesel-fueled engine.

The emergency back-up generator would be used for backup power in emergency conditions. The generator would be operated for testing and maintenance purposes, with a maximum of 50 hours each per year of non-emergency operation under normal conditions allowed by BAAQMD. During testing periods the engine would typically be run for less than one hour. The engine would be required to meet CARB and U.S. EPA emission standards and consume commercially available California low-sulfur diesel fuel. The generator emissions were modeled using CalEEMod.

Total Project Emissions

Table 3 reports the predicted emission in terms of annual emissions in tons and average daily operational emissions, assuming 365 days of operation per year. As shown in Table 3, average daily and annual emissions of ROG, NOx, PM_{10}, or $PM_{2.5}$ emissions associated with operation would not exceed the BAAQMD significance thresholds.

Table 3. Operational Emissions

Scenario	ROG	NOx	PM_{10}	$PM_{2.5}$
Project Annual Operational Emissions	1.21 tons	3.23 tons	1.05 tons	0.31 tons
Existing Emissions	0.17 tons	0.76 tons	0.16 tons	0.05 tons
Net Project Emissions	1.04 tons	2.47 tons	0.89 tons	0.26 tons
BAAQMD Thresholds (tons /year)	*10 tons*	*10 tons*	*15 tons*	*10 tons*
Exceed Threshold?	***No***	***No***	**No**	**No**
Average Daily Net Project Operational Emissions (pounds)[1]	5.7 lbs.	13.5 lbs.	4.9 lbs.	1.4 lbs.
BAAQMD Thresholds (pounds/day)	*54* lbs.	*54* lbs.	*82* lbs.	*54* lbs.
Exceed Threshold?	**No**	**No**	**No**	**No**

[1] Assumes 365-day operation.

Impact: Violate any air quality standard or contribute substantially to an existing or projected air quality violation? ***Less-than-significant.***

As discussed above, the project would have emissions less than the significance thresholds adopted by BAAQMD for evaluating impacts related to ozone and particulate matter. Therefore, the project would not contribute substantially to existing or projected violations of those standards. Carbon monoxide emissions from traffic generated by the project would be the pollutant of greatest concern at the local level. Congested intersections with a large volume of traffic have the greatest potential to cause high-localized concentrations of carbon monoxide. Air pollutant monitoring data indicate that carbon monoxide levels have been at healthy levels (i.e., below State and federal standards) in the Bay Area since the early 1990s. As a result, the region has been designated as attainment for the carbon monoxide standard. The highest measured level over any 8-hour averaging period in the Bay Area during the last 3 years is less than 3.0 ppm, compared to the ambient air quality standard of 9.0 ppm. The project would generate a relatively small amount of new traffic. Based on the Traffic Impact Study, the project would add approximately 1.510 daily trips and would not affect high-volume intersections that

have the potential to result in exceedances of an ambient air quality standard for carbon monoxide[4].. BAAQMD screening guidance indicates that the project would have a less than significant impact with respect to carbon monoxide levels if project traffic projections indicate traffic levels would not increase at any affected intersection to more than 44,000 vehicles per hour.[5] Because cumulative traffic volumes at all intersections affected by the project would have less than 44,000 vehicles per hour, the project will have a *less-than significant* effect with respect to carbon monoxide.

Impact: Expose sensitive receptors to substantial pollutant concentrations? ***Less than significant with implementation of SCA-19.***

Project impacts related to increased community risk can occur either by introducing a new sensitive receptor, such as a residential use, in proximity to an existing source of TACs or by introducing a new source of TACs with the potential to adversely affect existing sensitive receptors in the project vicinity. The BAAQMD recommends using a 1,000-foot screening radius around a project site for purposes of identifying community health risk from siting a new sensitive receptor or a new source of TACs. It is anticipated that the project would include an emergency back-up generator that is powered by diesel fuel. This generator would only be operated for testing and emergency purposes. Construction activity would generate dust and equipment exhaust on a temporary basis that could affect nearby sensitive receptors.

Project Construction Activity

Construction activities, particularly during site preparation and grading would temporarily generate fugitive dust in the form of respirable particulate matter (PM_{10}) and $PM_{2.5}$. Sources of fugitive dust would include disturbed soils at the construction site and trucks carrying uncovered loads of soils. Unless properly controlled, vehicles leaving the site would deposit mud on local streets, which could be an additional source of airborne dust after it dries. The BAAQMD CEQA Air Quality Guidelines consider these impacts to be less than significant if best management practices are employed to reduce these emissions. City-required Standard Conditions of Approval (Basic Controls) (#19) would serve as best management practices.

Construction equipment and associated heavy-duty truck traffic generates diesel exhaust, which is a known TAC. These exhaust air pollutant emissions would not be considered to contribute substantially to existing or projected air quality violations. Construction exhaust emissions may still pose community risks for sensitive receptors such as nearby residents. The primary community risk impact issues associated with construction emissions are cancer risk and exposure to $PM_{2.5}$. Diesel exhaust poses both a potential health and nuisance impact to nearby receptors. A community risk assessment of the project construction activities was conducted that evaluated potential health effects of sensitive receptors at these nearby residences from construction emissions of DPM and $PM_{2.5}$.[6] The closest sensitive receptors to the project site

[4] Fehr & Peers. 2017. Memorandum to Nathanial Taylor (Lamphier Gregory) - 1431 Jefferson Street – Transportation Impact Study. March 13.

[5] For a land-use project type, the BAAQMD CEQA Air Quality Guidelines state that a proposed project would result in a less than significant impact to localized carbon monoxide concentrations if the project would not increase traffic at affected intersections to more than 44,000 vehicles per hour.

[6] DPM is identified by California as a toxic air contaminant due to the potential to cause cancer.

include the single family houses to the west, and apartments to the east and south of the project site.

On-Site Construction TAC Emissions

SCA-19, Part w, requires construction equipment to be equipped with Best Available Control Technology for emissions reductions of NOx and particulate matter. This is interpreted as requiring equipment that meets U.S. EPA Tier 4 standards. As a result, implementation of SCA-19, would reduce on-site diesel exhaust emissions by over 80 percent.

Construction period emissions were computed using CalEEMod along with projected construction activity, as described above. The CalEEMod model provided total annual PM_{10} exhaust emissions (assumed to be DPM) for the off road construction equipment used for construction of the project and for the exhaust emissions from on-road vehicles (haul trucks, vendor trucks, and worker vehicles) of 0.0024 tons over the construction period. A trip length of one-half mile was used to represent vehicle travel while at or near the construction site. For modeling purposes, it was assumed that these emissions from on-road vehicles would occur at the construction site. Fugitive dust $PM_{2.5}$ emissions were also computed and included in this analysis. The model estimates emissions of 0.005 tons of fugitive $PM_{2.5}$ over the construction period.

Dispersion Modeling

The U.S. EPA AERMOD dispersion model was used to predict concentrations of DPM and $PM_{2.5}$ concentrations at sensitive receptors (residences) in the vicinity of the project construction area. The AERMOD dispersion model is a BAAQMD-recommended model for use in modeling analysis of these types of emission activities for CEQA projects.[7] For each phase of construction the AERMOD modeling utilized two area sources to represent the on-site construction emissions, one for exhaust emissions and one for fugitive dust emissions. To represent the construction equipment exhaust emissions, an emission release height of 6 meters (19.7 feet) was used for the area source. The elevated source height reflects the height of the equipment exhaust pipes plus an additional distance for the height of the exhaust plume above the exhaust pipes to account for plume rise of the exhaust gases. For modeling fugitive $PM_{2.5}$ emissions, a near-ground level release height of 2 meters (6.6 feet) was used for the area source. Emissions from the construction equipment and on-road vehicle travel were distributed throughout the modeled area sources. Construction emissions were modeled as occurring daily between 7 a.m. to 4 p.m., when the majority of construction activity would occur.

The modeling used a 5-year meteorological data set (2009-2013) from the Metro Oakland International Airport prepared for use with the AERMOD model by the CARB. Annual DPM and $PM_{2.5}$ concentrations from construction activities during the 2017 - 2019 period were calculated using the model. DPM and $PM_{2.5}$ concentrations were calculated at nearby sensitive receptor locations. Receptor heights of 1.5 meters (4.9 feet) and 4.5 meters (14.7 feet) were

[7] Bay Area Air Quality Management District (BAAQMD), 2012, *Recommended Methods for Screening and Modeling Local Risks and Hazards, Version 3.0.* May.

used to represent the breathing heights of residents on the first and second floor level of the apartments, respectively.

The maximum-modeled DPM concentration occurred at the first floor level of the apartment building to the east of the project site. The maximum modeled $PM_{2.5}$ concentration occurred at the same location and has been identified in Figure 1. Using the maximum annual modeled DPM concentrations, the maximum increased cancer risks were calculated. DPM concentrations and cancer risks were also computed at the residential apartments to the southeast of the project site. *Attachment 3* to this report includes the emission calculations used for the construction area source modeling and the cancer risk calculations.

Cancer Risks

Results of this assessment indicate that the maximum residential excess cancer risk would be 3.5 in one million, assuming infant exposure. The maximum-modeled annual $PM_{2.5}$ concentration, which is based on combined exhaust and fugitive dust emissions, was 0.02 $\mu g/m^3$ at residential maximally exposed individual (MEI) and would not exceed the significance threshold of $0.3\mu g/m^3$. The maximum modeled annual residential DPM concentration (i.e., from construction exhaust) was less than 0.01 $\mu g/m^3$. The maximum computed HI based on this DPM concentration is less than 0.01, which is much lower than the BAAQMD significance criterion of a HI greater than 1.0.

Cumulative Construction Risk Assessment

Community health risk assessments typically look at all substantial sources of TACs that can affect sensitive receptors that are located within 1,000 feet of a project site. These sources include freeways or highways, busy surface streets and stationary sources identified by BAAQMD. Traffic on high volume roadways is a source of TAC emissions that may adversely affect sensitive receptors in close proximity to the roadway. For local roadways, BAAQMD considers roadways with traffic volumes of over 10,000 vehicles per day to have a potentially significant impact on a proposed project. A review of the project area identified several substantial sources of mobile TAC emissions including Interstate 980 and 14th street. A review of BAAQMD's Google Earth map tool used to identify stationary sources revealed several sources with the potential to affect the project site. As mentioned above, the project would also include a backup generator. Community risk impacts from these sources upon the construction MEI are reported in Table 4 and Table 5 report the impacts at the operational (Generator) MEI.

Highway: Interstate 980 (John B. Williams Freeway)

BAAQMD provides a Highway Screening Analysis Google Earth Map tool to identify estimated risk and hazard impacts from highways throughout the Bay Area. Cumulative risk, hazard and PM2.5 impacts at various distances from the highway are estimated for different segments of the highways. The tool uses the average annual daily traffic (AADT) count, fleet mix and other modeling parameters specific to that segment of the highway. Impacts from Link 904 (6ft elevation) I-980, which is about 950 feet west of the project, were identified using this tool. The

cancer risk was found to be 6.4 at the construction MEI. The $PM_{2.5}$ concentration was found to be <0.01 $\mu g/m^3$and the hazard index was found to be <0.01.

Local Roadways – 14th Street

For local roadways, BAAQMD has provided the *Roadway Screening Analysis Calculator* to assess whether roadways with traffic volumes of over 10,000 vehicles per day may have a potentially significant effect on a proposed project. Two adjustments were made to the cancer risk predictions made by this calculator: (1) adjustment for latest vehicle emissions rates and (2) adjustment of cancer risk to reflect new OEHHA guidance (see *Attachment 1*).

The calculator uses EMFAC2011 emission rates for the year 2014. Overall, emission rates will decrease by the time the project built. The project is not likely to be occupied prior to at least 2019. In addition, a new version of the emissions factor model, EMFAC2014 is available. This version predicts lower emission rates. An adjustment factor of 0.5 was developed by comparing emission rates of total organic gases (TOG) for running exhaust and running losses developed using EMFAC2011 for year 2014 and those from EMFAC2014 for year 2018.
The predicted cancer risk was then adjusted using a factor of 1.3744 to account for new OEHHA guidance. This factor was provided by BAAQMD for use with their CEQA screening tools that are used to predict cancer risk.[8]

[8] Correspondence with Alison Kirk, BAAQMD, November 23, 2015.

Figure 1. Project Construction Site and Locations of Off-Site Sensitive Receptors and Maximum TAC and $PM_{2.5}$ Impacts

The Average Daily Traffic (ADT) on 14th street was estimated to be 10,470 based on the project traffic report peak hour traffic volumes for the 14th street segment adjacent to the project and assuming that ADT is approximately ten times peak hour volumes.[9] Using the BAAQMD *Roadway Screening Analysis Calculator* for Alameda County for east-west directional roadways and at a distance of approximately 165 feet north of the roadway, estimated cancer risk from 14th street at the location of maximum impact would be 2.6 per million and $PM_{2.5}$ concentration would be 0.07 $\mu g/m^3$, which would not exceed BAAQMD significance thresholds. Chronic or acute HI for the roadway would be below 0.03.

Off-Site Stationary Sources

Permitted stationary sources of air pollution near the project site were identified using BAAQMD's *Stationary Source Risk & Hazard Analysis Tool*. This mapping tool uses Google Earth and identified the location of several stationary sources and their estimated risk and hazard impacts. The 2011 screening values obtained from the Google Earth tool were adjusted using the OEHHA adjustment factor of 1.3744.[10] Sources with screening risk of zero are not included below.

- Plant 14301, which is a generator located at 1605 Martin Luther King Way operated by City of Oakland, Environmental Services Division is about 660 feet northwest of the construction MEI. At BAAQMD's direction, risk and $PM_{2.5}$ concentrations from the facility were adjusted based on BAAQMD's *Distance Adjustment Multiplier Tool for Internal Combustion Engines*. According to the BAAQMD screening data (and adjusted for the 660-foot distance and 2015 OEHHA methodology), this facility would result in an adjusted adult cancer risk of 6.9 per million, HI of 0.002, and less than 0.002 $\mu g/m^3$ $PM_{2.5}$ concentration, all of which would be below BAAQMD thresholds of significance.
- Plant 14354, which is a generator located at 555 12th Street operated by Shorenstein Realty Services is about 890 feet south of the construction MEI. The risk and $PM_{2.5}$ concentration from the facility were adjusted using the *Distance Adjustment Multiplier Tool for Internal Combustion Engines and* OEHHA adjustment factor. Having adjusted for an approximate distance of 890 feet, the cancer risk was found to be 4.9 in a million, less than 0.002 HI and <0.01 $\mu g/m^3$ $PM_{2.5}$ concentration.
- Plant 16838, which is a generator located at 1300 Clay Street operated by Shorenstein Realty Services LP, is about 460 feet southeast of the project site. The risk and $PM_{2.5}$ concentration from the facility were adjusted using the *Distance Adjustment Multiplier Tool for Internal Combustion Engines and* OEHHA adjustment factor. Having adjusted for an approximate distance of 460 feet, the cancer risk was found to be 4.0 in a million, approximately zero HI and less than 0.01 $\mu g/m^3$ $PM_{2.5}$ concentration.
- Plant 16749, which is located at 1301 Clay Street operated by General Services Administration-East Bay, is about 265 feet south of the construction MEI. This facility

[9] The ADT was estimated for both project alternatives and the higher ones have been reported here.
[10] Email Correspondence with Alison Kirk, November 15th, 2016.

operates two diesel powered emergency standby generators and three fire tube boilers. Emission information for these sources of TAC emissions was obtained from BAAQMD. The BAAQMD Beta Calculation 1.3 was used to compute risks and $PM_{2.5}$ concentration. Having adjusted for an approximate distance of 265 feet, the cancer risk was found to be 4.0 in a million, approximately zero HI and less than 0.01 $\mu g/m^3$ $PM_{2.5}$ concentration.

- Plant 19281, which is located at 1515 Clay Street operated by State of California, is about 120 feet north of the construction MEI. This facility operates one diesel powered emergency generator, two diesel fueled fire pump engines and two boilers. Emission information for these sources of TAC emissions was obtained from BAAQMD. The BAAQMD Beta Calculation 1.3 was used to compute risks and $PM_{2.5}$ concentration. Having adjusted for an approximate distance of 265 feet, the cancer risk was found to be 34.4 in a million, less than 0.01 HI and 0.03 $\mu g/m^3$ $PM_{2.5}$ concentration

- Plant 14423, which is a generator located at 475 14th Street operated by Oakland 14th Street, is about 775 feet southeast of the project site. The risk and $PM_{2.5}$ concentration from the facility were adjusted using the *Distance Adjustment Multiplier Tool for Internal Combustion Engines and* OEHHA adjustment factor. Having adjusted for an approximate distance of 775 feet, the cancer risk was found to be 4.0 in a million, approximately zero HI and less than 0.01 $\mu g/m^3$ $PM_{2.5}$ concentration.

- Plant 16835, which is a generator located at 505 14th Street operated by Shorenstein Realty Services LP, is about 600 feet southeast of the project site. The risk and $PM_{2.5}$ concentration from the facility were adjusted using the *Distance Adjustment Multiplier Tool for Internal Combustion Engines and* OEHHA adjustment factor. Having adjusted for an approximate distance of 600 feet, the cancer risk was found to be 4.0 in a million, approximately zero HI and less than 0.11 $\mu g/m^3$ $PM_{2.5}$ concentration.

- Plant 16271 is located at 1515 Clay Street operated by D G Cogen Partners, LLC, is about 250 feet north of the project site. This facility operates three Hess Microgen internal combustion engines. The stationary source screening tool showed zero cancer risks and zero HI associated with this plant. Emission information for this plant was obtained from BAAQMD. The BAAQMD Beta Calculation 1.3 was used to compute $PM_{2.5}$ concentration. Having adjusted for an approximate distance of 250 feet, the $PM_{2.5}$ concentration at the concentration at the construction MEI was found to be 0.03 $\mu g/m^3$.

- Plant 16837 (now 22841) is a standby diesel generator operated by STG City Square LLC and is located in the parking garage at 525 14th street, which is about 365 feet east of the construction MEI. Emission information for the generator of was obtained from BAAQMD. The BAAQMD Beta Calculation 1.3 was used to compute risks and $PM_{2.5}$ concentration. Having adjusted for an approximate distance of 365 feet, the cancer risk was found to be 0.02 in a million, approximately zero HI and less than 0.01 $\mu g/m^3$ $PM_{2.5}$ concentration

Table 4. Impact of Combined Sources at the Construction MEI

Source	Maximum Cancer Risk (per million)	Maximum Annual $PM_{2.5}$ Concentration ($\mu g/m^3$)	Maximum Hazard Index
Project Construction + Generator Operation Controlled (SCA-19)	3.5	0.03	<0.01
I-980, Highway (BAAQMD Highway Screening Analysis Tool)	6.4	<0.01	<0.01
14th Street (BAAQMD Roadway Screening Calculator)	2.6	<0.07	<0.03
Plant 14301, City of Oakland, Generator (*2011 Screening Values*, 2015 *OEHHA adjustment factor*, BAAQMD distance multiplier) at ~660 feet	6.9	0.0	~0
Plant 14354, Shorenstein Realty Services, Generator (*2011 Screening Values*, 2015 *OEHHA adjustment factor*, BAAQMD distance multiplier) at ~890 feet	4.9	<0.01	~0
Plant 16838, Shorenstein Realty Services LP, Generator (*2011 Screening Values*, 2015 *OEHHA adjustment factor* , BAAQMD distance multiplier r) at ~460 feet	4.0	<0.01	~0
Plant 16749, General Services Administration, Generator (*BAAQMD provided emission information*, 2015 *OEHHA adjustment factor* , Beta Calculator 1.3, BAAQMD distance multiplier) at~265 feet	4.6	<0.03	<0.01
Plant 19281, State of California, Generator (*BAAQMD provided emission information*, 2015 *OEHHA adjustment factor* , Beta Calculator 1.3, BAAQMD distance multiplier)at~250 feet	15.0	0.03	<0.01
Plant 14423, Oakland 14th Street, Generator (*2011 Screening Values*, 2015 *OEHHA adjustment factor* , BAAQMD distance multiplier) at ~775 feet	6.0	0.0	~0
Plant 16835, Shorenstein Realty Services LP, Generator (*2011 Screening Values*, 2015 *OEHHA adjustment factor* , BAAQMD distance multiplier) at ~140 feet	1.1	~0	~0
Plant 16271, D G Cogen Partners, Generator (*2011 Screening Values*, 2015 *OEHHA adjustment factor* , BAAQMD distance multiplier) at ~250 feet	0.0	0.11	0.0
Plant 16837 (now #22841) ,Shorenstein Realty Services LP, Generator (*BAAQMD provided emission summary*, Beta Calculator 1.*3*, BAAQMD distance multiplier) at~365 feet	0.02	~0	<0.01
Cumulative Total **Controlled**	55.1	<0.30	<0.09
BAAQMD Threshold – Cumulative Sources	***>100***	***>0.8***	***>10.0***
Significant?	***No***	***No***	***No***

Project Emergency Generator Testing and Maintenance

As previously described one emergency back-up generator driven by diesel-fueled engine would be associated with the project. The generator will be operated for testing and maintenance purposes, with a maximum of 50 hours per year of non-emergency operation under normal conditions. During testing periods the engine would typically be run for less than one hour under light engine loads. The engine would be required to meet U.S. EPA emission standards and consume commercially available California low sulfur diesel fuel. The project generator is subject to the City's SCA 21.

The generator would also require permits from the BAAQMD, since it would be equipped with engines larger than 50 hp. As part of the BAAQMD permit requirements, an assessment that shows less-than-significant health risks from diesel particulate matter exposure would be required. The risk assessment, prepared by BAAQMD, would have to show that cancer risks are less than 10 per million and that the project includes Best Available Toxics Control Technology, which would set limits for diesel particulate matter emissions. Sources of air pollutant emissions complying with all applicable BAAQMD regulations generally will not be considered to have a significant air quality community risk impact.

To obtain an estimate of potential cancer risks from the proposed generator the AERMOD dispersion model was used to estimate the maximum annual DPM concentration at off-site sensitive receptor locations (residences), as shown in Figure 1. Building downwash effects of the proposed building on the generator exhaust plume were included in the modeling. Generator exhaust DPM and $PM_{2.5}$ emissions were calculated based on manufacturer emission factors and assuming 50 hours per year of operation. The exhaust stack from the generator engine was assumed to be located at the roof level and discharge horizontally through a 3-inch diameter stack. The model used an exhaust flow rate of 0.44 lb/year and an exhaust temperature of 656 degree Fahrenheit (from BAAQMD inventory data).

The maximum modeled DPM concentration occurred at a receptor adjacent to the construction MEI and was found to be $0.0031 \mu g/m^3$ (see *Figure 2*). Based on the maximum DPM concentration the maximum off-site residential cancer risk would be 2.3 in one million. The maximum on-site residential HI would be less than 0.001.

Increased cancer risks, $PM_{2.5}$ concentrations, and HIs at all sensitive receptors from operation of the project emergency generator would all be well below BAAQMD significance thresholds. Generator modeling information and risk calculations are included in *Attachment 5.* This assessment demonstrates that the proposed generator, as a stationary source, does not exceed acceptable health risk levels and therefore fulfills requirements of the City's SCA 21.

Table 5. Impact of Combined Sources at the Generator MEI

Source	Maximum Cancer Risk (per million)	Maximum Annual $PM_{2.5}$ Concentration ($\mu g/m^3$)	Maximum Hazard Index
Project Generator (Testing and Maintenance only)	2.3	<0.01	<0.01
I-980, Highway (BAAQMD Highway Screening Analysis Tool)	6.4	<0.01	<0.01
14th Street (BAAQMD Roadway Screening Calculator)	2.6	<0.07	<0.03
Plant 14301, City of Oakland, Generator (*2011 Screening Values*, 2015 *OEHHA adjustment factor*, BAAQMD distance multiplier) at ~660 feet	6.9	0.0	~0
Plant 14354, Shorenstein Realty Services, Generator (*2011 Screening Values*, 2015 *OEHHA adjustment factor*, BAAQMD distance multiplier) at ~890 feet	4.9	<0.01	~0
Plant 16838, Shorenstein Realty Services LP, Generator (*2011 Screening Values*, 2015 *OEHHA adjustment factor* , BAAQMD distance multiplier) at ~460 feet	4.0	<0.01	~0
Plant 16749, General Services Administration, Generator (*2011 Screening Values*, 2015 *OEHHA adjustment factor* , Beta Calculator v1.3) at~265 feet	4.6	<0.03	<0.01
Plant 19281, General Services Administration, Generator (*BAAQMD provided emission information* , Beta Calculator v1.3) at~250 feet	15.0	0.03	<0.01
Plant 14423, Oakland 14th Street, Generator (*2011 Screening Values*, 2015 *OEHHA adjustment factor* , BAAQMD distance multiplier) at ~775 feet	6.0	0.0	~0
Plant 16835, Shorenstein Realty Services LP, Generator (*2011 Screening Values*, 2015 *OEHHA adjustment factor* , BAAQMD distance multiplier) at ~140 feet	1.1	~0	~0
Plant 16271, D G Cogen Partners, Generator (*2011 Screening Values*, 2015 *OEHHA adjustment factor* , BAAQMD distance multiplier) at ~250 feet	0.0	0.11	0.0
Plant 16837 Shorenstein Realty Services LP, Generator (*2011 Screening Values*, 2015 *OEHHA adjustment factor* , BAAQMD distance multiplier) at~365 feet	0.02	~0	<0.01
Cumulative Total Controlled	53.8	<0.28	<0.08
BAAQMD Threshold – Cumulative Sources	***>100***	***>0.8***	***>10.0***
Significant?	***No***	***No***	***No***

Figure 2. Project Construction Site and Locations of Off-Site Sensitive Receptors and locations of construction and generator MEI

Impact: Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment? ***Less than significant.***

GHG emissions associated with development of the proposed project would occur over the short-term from construction activities, consisting primarily of emissions from equipment exhaust and worker and vendor trips. There would also be long-term operational emissions associated with vehicular traffic within the project vicinity, energy and water usage, and solid waste disposal. Emissions for the proposed project are discussed below and were analyzed using the methodology recommended in the BAAQMD CEQA Air Quality Guidelines.

<u>CalEEMod Modeling</u>

CalEEMod was used to estimate GHG emissions from operation of the site assuming full build-out of the project. The project land use types and size and other project-specific information were input to the model, as described above. CalEEMod provides emissions for transportation, areas sources, electricity consumption, natural gas combustion, electricity usage associated with water usage and wastewater discharge, and solid waste land filling and transport.

One adjustment was made to CalEEMod for GHG modeling. The model has a default rate of 641.3 pounds of CO_2 per megawatt of electricity produced, which is based on PG&E's 2008 emissions rate. The Pacific Gas & Electric's rate was updated to be the most recent rate reported by PG&E for 2014, which is 429.6 pounds of CO_2e per megawatt of electricity produced.[11]

Occupancy

The annual GHG emissions would be affected by the occupancy of the hotel. The number of future occupants is estimated at 166 assuming that the hotel operates at 60 percent occupancy[12]. Operational mobile, water usage and solid waste generation emissions were reduced to adjust for annual occupancy. Approximately 62 percent of the mobile trips are made by customers, so mobile emissions were reduced by 25 percent to account for annual occupancy. This similar reduction was applied to energy usage and solid waste generation.

Construction Emissions

GHG emissions associated with construction were computed to be 488 MT of CO_2e for the total construction period. These are the emissions from on-site operation of construction equipment, vendor and hauling truck trips, and worker trips. While BAAQMD has not proposed a threshold of significance for construction-related GHG emissions, the City of Oakland's adopted thresholds specify that the project's expected GHG emissions during construction should be annualized over a period of 40 years and then added to the expected emissions during operation for comparison to the operational threshold. A 40-year period is used because 40 years is considered the average life expectancy of a building before it is remodeled with considerations for increased energy efficiency. The project's construction emissions are included in the operational emissions below. Best management practices assumed to be incorporated into construction of the proposed project include, but are not limited to: using local building materials of at least 10 percent and recycling or reusing at least 50 percent of construction waste or demolition materials.

Operational Emissions

The CalEEMod model, along with the project vehicle trip generation rates, was used to predict daily emissions associated with operation of the fully-developed site under the proposed project. In 2019, as shown in Table 6, annual net emissions resulting from operation of the proposed

[11] See Climate Registry most current version of default emissions factors: http://www.theclimateregistry.org/tools-resources/reporting-protocols/general-reporting-protocol. Accessed: May 11, 2016

[12] The hotel consist of 276 rooms.

project are predicted to be 641 MT of CO_2e, which would be less than the BAAQMD significance threshold of 1,100 MT of CO_2e/ year. The project would include an emergency generator that would be subject to BAAQMD's stationary source threshold of 10,000 MT/year. The emissions from the project generator would be well below that threshold.

Table 6. Annual Project GHG Emissions (CO_2e) in Metric Tons

Source Category	Proposed Project 2019[1]	Existing
Construction (amortized over 40 years)	12	-
Area	~0	0
Energy Consumption	269	12
Mobile	588	241
Solid Waste Generation	35	8
Water Usage	11	1
Total	**915**	**262**
Net Project Emissions	**653** MT of CO_2e/year	
BAAQMD Threshold	***1,100* MT of CO_2e/year**	
Stationary Equipment	10	
BAAQMD Threshold	***10,000* MT of CO_2e/year**	
Significant?	***No***	

1 Assumes 60 percent occupancy; emissions were reduced by 25 percent.

Impact : Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases? ***Less than significant.***

AB 32, the Global Warming Solutions Act of 2006, codifies the State of California's GHG emissions target by directing CARB to reduce the state's global warming emissions to 1990 levels by 2020. AB 32 was signed and passed into law by Governor Schwarzenegger on September 27, 2006. Since that time, CARB, CEC, the California Public Utilities Commission (CPUC), and the Building Standards Commission have all been developing regulations that will help meet the goals of AB 32 and Executive Order S-3-05.

A Scoping Plan for AB 32 was adopted by CARB in December 2008. It contains the State of California's main strategies to reduce GHGs from BAU emissions projected in 2020 back down to 1990 levels. BAU is the projected emissions in 2020, including increases in emissions caused by growth, without any GHG reduction measures. The Scoping Plan has a range of GHG reduction actions, including direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, and market-based mechanisms such as a cap-and-trade system. It required CARB and other state agencies to develop and adopt regulations and other initiatives reducing GHGs by 2012.

As directed by AB 32, CARB has also approved a statewide GHG emissions limit. On December 6, 2007, CARB staff resolved an amount of 427 MMT of CO_2e as the total statewide GHG 1990 emissions level and 2020 emissions limit. The limit is a cumulative statewide limit, not a sector-

or facility-specific limit. CARB updated the future 2020 BAU annual emissions forecast, in light of the economic downturn, to 545 MMT of CO_2e. Two GHG emissions reduction measures currently enacted that were not previously included in the 2008 Scoping Plan baseline inventory were included, further reducing the baseline inventory to 507 MMT of CO_2e. Thus, an estimated reduction of 80 MMT of CO_2e is necessary to reduce statewide emissions to meet the AB 32 target by 2020.

The proposed project would not conflict or otherwise interfere with the statewide GHG reduction measures identified in CARB's Scoping Plan. The project would comply with requirements of the Green Building Code, the City of Oakland's Energy and Climate Action Plan, as well as the City's SCA 38 (Greenhouse Gas Reduction Plan). For example, proposed buildings would be constructed in conformance with CALGreen and the Title 24 Building Code, which requires high-efficiency water fixtures and water-efficient irrigation systems. The project is required to meet the City's Standard Conditions of Approval for GHG.

Supporting Documents

Attachment 1: Health Risk Evaluation Methodology
Attachment 2: CalEEMod Output Files- Construction Criteria Emissions and Operational Emissions
Attachment 3: Construction Information, CalEEMod TAC Output File, Health Risk Calculations
Attachment 4: Stationary Source Information and Roadway Risk Calculations
Attachment 5: Generator Risk Modeling

Attachment 1: Health Risk Calculation Methodology

A health risk assessment (HRA) for exposure to Toxic Air Contaminates (TACs) requires the application of a risk characterization model to the results from the air dispersion model to estimate potential health risk at each sensitive receptor location. The State of California Office of Environmental Health Hazard Assessment (OEHHA) and California Air Resources Board (CARB) develop recommended methods for conducting health risk assessments. The most recent OEHHA risk assessment guidelines were published in February of 2015.[13] These guidelines incorporate substantial changes designed to provide for enhanced protection of children, as required by State law, compared to previous published risk assessment guidelines. CARB has provided additional guidance on implementing OEHHA's recommended methods.[14] This HRA used the recent 2015 OEHHA risk assessment guidelines and CARB guidance. While the OEHHA guidelines use substantially more conservative assumptions than the current Bay Area Air Quality Management District (BAAQMD) guidelines, BAAQMD has not formally adopted recommended procedures for applying the newest OEHHA guidelines. BAAQMD is in the process of developing new guidance and has developed proposed HRA Guidelines as part of the proposed amendments to Regulation 2, Rule 5: New Source Review of Toxic Air Contaminants.[15] Exposure parameters from the OEHHA guidelines and newly proposed BAAQMD HRA Guidelines were used in this evaluation.

Cancer Risk

Potential increased cancer risk from inhalation of TACs are calculated based on the TAC concentration over the period of exposure, inhalation dose, the TAC cancer potency factor, and an age sensitivity factor to reflect the greater sensitivity of infants and children to cancer causing TACs. The inhalation dose depends on a person's breathing rate, exposure time and frequency of exposure, and the exposure duration. These parameters vary depending on the age, or age range, of the persons being exposed and whether the exposure is considered to occur at a residential location or other sensitive receptor location.

The current OEHHA guidance recommends that cancer risk be calculated by age groups to account for different breathing rates and sensitivity to TACs. Specifically, they recommend evaluating risks for the third trimester of pregnancy to age zero, ages zero to less than two (infant exposure), ages two to less than 16 (child exposure), and ages 16 to 70 (adult exposure). Age sensitivity factors (ASFs) associated with the different types of exposure are an ASF of 10 for the third trimester and infant exposures, an ASF of 3 for a child exposure, and an ASF of 1 for an adult exposure. Also associated with each exposure type are different breathing rates, expressed as liters per kilogram of body weight per day (L/kg-day). As recommended by the BAAQMD, 95th percentile breathing rates are used for the third trimester and infant exposures, and 80th

[13] OEHHA, 2015. *Air Toxics Hot Spots Program Risk Assessment Guidelines, The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments*. Office of Environmental Health Hazard Assessment. February.
[14] CARB, 2015. *Risk Management Guidance for Stationary Sources of Air Toxics*. July 23.
[15] BAAQMD, 2016. *Workshop Report. Proposed Amendments to Air District Regulation 2, Rule 5: New Source Review of Toxic Air Contaminants. Appendix C. Proposed Air District HRA Guidelines*. January 2016.

percentile breathing rates for child and adult exposures. Additionally, CARB and the BAAQMD recommend the use of a residential exposure duration of 30 years for sources with long-term emissions (e.g., roadways).

Under previous OEHHA and BAAQMD HRA guidance, residential receptors are assumed to be at their home 24 hours a day, or 100 percent of the time. In the 2015 Risk Assessment Guidance, OEHHA includes adjustments to exposure duration to account for the fraction of time at home (FAH), which can be less than 100 percent of the time, based on updated population and activity statistics. The FAH factors are age-specific and are: 0.85 for third trimester of pregnancy to less than 2 years old, 0.72 for ages 2 to less than 16 years, and 0.73 for ages 16 to 70 years. BAAQMD recommends using these FAH factors for residential exposures.

Functionally, cancer risk is calculated using the following parameters and formulas:

Cancer Risk (per million) = $CPF \times Inhalation\ Dose \times ASF \times ED/AT \times FAH \times 10^{6}$

Where:

CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = $C_{air} \times DBR \times A \times (EF/365) \times 10^{-6}$

Where:

C_{air} = concentration in air ($\mu g/m^3$)
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

The health risk parameters used in this evaluation are summarized as follows:

Parameter	*Exposure Type* →	Infant		Child	Adult
	Age Range →	3rd Trimester	0<2	2 < 16	16 - 30
DPM Cancer Potency Factor $(mg/kg\text{-}day)^{-1}$		1.10E+00	1.10E+00	1.10E+00	1.10E+00
Daily Breathing Rate (L/kg-day)*		361	1,090	572	261
Inhalation Absorption Factor		1	1	1	1
Averaging Time (years)		70	70	70	70
Exposure Duration (years)		0.25	2	14	14
Exposure Frequency (days/year)		350	350	350	350
Age Sensitivity Factor		10	10	3	1
Fraction of Time at Home		0.85-1.0	0.72-1.0	0.72-1.0	0.73

* 95th percentile breathing rates for 3rd trimester and infants and 80th percentile for children and adults

Non-Cancer Hazards

Potential non-cancer health hazards from TAC exposure are expressed in terms of a hazard index (HI), which is the ratio of the TAC concentration to a reference exposure level (REL). OEHHA has defined acceptable concentration levels for contaminants that pose non-cancer health hazards. TAC concentrations below the REL are not expected to cause adverse health impacts, even for sensitive individuals. The total HI is calculated as the sum of the HIs for each TAC evaluated and the total HI is compared to the BAAQMD significance thresholds to determine whether a significant non-cancer health impact from a project would occur.

Typically, for residential projects located near roadways with substantial TAC emissions, the primary TAC of concern with non-cancer health effects is diesel particulate matter (DPM). For DPM, the chronic inhalation REL is 5 micrograms per cubic meter ($\mu g/m^3$).

Annual $PM_{2.5}$ Concentrations

While not a TAC, fine particulate matter ($PM_{2.5}$) has been identified by the BAAQMD as a pollutant with potential non-cancer health effects that should be included when evaluating potential community health impacts under the California Environmental Quality Act (CEQA). The thresholds of significance for $PM_{2.5}$ (project level and cumulative) are in terms of an increase in the annual average concentration. When considering $PM_{2.5}$ impacts, the contribution from all sources of $PM_{2.5}$ emissions should be included. For projects with potential impacts from nearby local roadways, the $PM_{2.5}$ impacts should include those from vehicle exhaust emissions, $PM_{2.5}$ generated from vehicle tire and brake wear, and fugitive emissions from re-suspended dust on the roads.

Attachment 2: CalEEMod Output Files- Construction Criteria Emissions and Operational Emissions

1431 Jefferson Street, Construction Criteria Pollutants Emissions

Alameda County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Enclosed Parking with Elevator	95.00	Space	0.00	36,000.00	0
Hotel	276.00	Room	0.40	151,218.00	0
Strip Mall	1.66	1000sqft	0.00	1,658.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	63
Climate Zone	5			**Operational Year**	2019
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	429.6	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Revised CO2 Emission Intensity

Land Use - From the recent construction information spreadsheet

Construction Phase - Using applicant provided construction schedule

Off-road Equipment -

Off-road Equipment - Applicant provided construction schedule

Off-road Equipment - Applicant provided construction information

Off-road Equipment - From applicant provided construction information

Off-road Equipment - Applicant provided construction information

Off-road Equipment - Assuming 0.5 hours of paving work for 1 day.

Off-road Equipment - Applicant provided construction information

Off-road Equipment - Applicant provided construction information

Trips and VMT - Demolition Trips= 23+(298/20*2)~54
Reduced Trip Lengths for comuunity risk assessment
Demolition - 5150 sf of building demolished
Pavejment demolition included under paving trips

Grading - 5681 cy of soil exported

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	15
tblConstructionPhase	NumDays	5.00	276.00
tblConstructionPhase	NumDays	100.00	484.00
tblConstructionPhase	NumDays	10.00	12.00
tblConstructionPhase	NumDays	2.00	35.00
tblConstructionPhase	NumDays	5.00	6.00
tblConstructionPhase	NumDays	1.00	11.00
tblGrading	MaterialExported	0.00	5,681.00
tblLandUse	BuildingSpaceSquareFeet	38,000.00	36,000.00
tblLandUse	BuildingSpaceSquareFeet	400,752.00	151,218.00
tblLandUse	BuildingSpaceSquareFeet	1,660.00	1,658.00
tblLandUse	LandUseSquareFeet	38,000.00	36,000.00
tblLandUse	LandUseSquareFeet	400,752.00	151,218.00
tblLandUse	LandUseSquareFeet	1,660.00	1,658.00
tblLandUse	LotAcreage	0.86	0.00
tblLandUse	LotAcreage	9.20	0.40
tblLandUse	LotAcreage	0.04	0.00
tblOffRoadEquipment	HorsePower	89.00	62.00
tblOffRoadEquipment	LoadFactor	0.20	0.31
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	14.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Demolition
tblOffRoadEquipment	PhaseName		Grading
tblOffRoadEquipment	PhaseName		Architectural Coating
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	PhaseName		Site Preparation
tblOffRoadEquipment	PhaseName		Trenching
tblOffRoadEquipment	UsageHours	7.00	0.50
tblOffRoadEquipment	UsageHours	7.00	0.50
tblOffRoadEquipment	UsageHours	1.00	2.70
tblOffRoadEquipment	UsageHours	7.00	0.50
tblProjectCharacteristics	CO2IntensityFactor	641.35	429.6
tblProjectCharacteristics	OperationalYear	2018	2019
tblTripsAndVMT	HaulingTripNumber	23.00	54.00

tblTripsAndVMT	HaulingTripNumber	0.00	1,836.00

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					
2017	0.0284	0.3870	0.1904	7.0000e-004	0.0424	0.0110	0.0535	0.0143	0.0102	0.0245	0.0000	66.3378	66.3378	8.0300e-003	0.0000	66.5386
2018	0.5887	0.7814	0.5690	2.5600e-003	0.1331	7.5300e-003	0.1406	0.0360	7.2800e-003	0.0433	0.0000	239.6440	239.6440	0.0121	0.0000	239.9474
2019	0.3485	0.5719	0.3908	1.9400e-003	0.1037	5.0100e-003	0.1087	0.0280	4.8400e-003	0.0328	0.0000	181.2125	181.2125	8.7800e-003	0.0000	181.4321
Maximum	**0.5887**	**0.7814**	**0.5690**	**2.5600e-003**	**0.1331**	**0.0110**	**0.1406**	**0.0360**	**0.0102**	**0.0433**	**0.0000**	**239.6440**	**239.6440**	**0.0121**	**0.0000**	**239.9474**

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					
2017	0.0284	0.3870	0.1904	7.0000e-004	0.0343	0.0110	0.0453	8.8000e-003	0.0102	0.0190	0.0000	66.3378	66.3378	8.0300e-003	0.0000	66.5386
2018	0.5887	0.7814	0.5690	2.5600e-003	0.1331	7.5300e-003	0.1406	0.0360	7.2800e-003	0.0433	0.0000	239.6440	239.6440	0.0121	0.0000	239.9474
2019	0.3485	0.5719	0.3908	1.9400e-003	0.1037	5.0100e-003	0.1087	0.0280	4.8400e-003	0.0328	0.0000	181.2125	181.2125	8.7800e-003	0.0000	181.4320
Maximum	**0.5887**	**0.7814**	**0.5690**	**2.5600e-003**	**0.1331**	**0.0110**	**0.1406**	**0.0360**	**0.0102**	**0.0433**	**0.0000**	**239.6440**	**239.6440**	**0.0121**	**0.0000**	**239.9474**

	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	2.93	0.00	2.70	6.97	0.00	5.42	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	10-4-2017	1-3-2018	0.4188	0.4188
2	1-4-2018	4-3-2018	0.2107	0.2107
3	4-4-2018	7-3-2018	0.3439	0.3439
4	7-4-2018	10-3-2018	0.4058	0.4058
5	10-4-2018	1-3-2019	0.4130	0.4130
6	1-4-2019	4-3-2019	0.3894	0.3894
7	4-4-2019	7-3-2019	0.2976	0.2976
8	7-4-2019	9-30-2019	0.1916	0.1916
		Highest	0.4188	0.4188

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	10/4/2017	10/19/2017	5	12	
2	Site Preparation	Site Preparation	10/20/2017	11/3/2017	5	11	
3	Grading	Grading	10/21/2017	12/8/2017	5	35	
4	Trenching	Trenching	10/21/2017	11/3/2017	5	10	
5	Building Construction	Building Construction	12/4/2017	10/10/2019	5	484	
6	Architectural Coating	Architectural Coating	5/1/2018	5/21/2019	5	276	
7	Paving	Paving	10/29/2018	11/5/2018	5	6	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 229,314; Non-Residential Outdoor: 76,438; Striped Parking Area:

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	0	8.00	81	0.73
Demolition	Excavators	1	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	2.70	247	0.40
Demolition	Tractors/Loaders/Backhoes	0	6.00	97	0.37
Site Preparation	Graders	0	8.00	187	0.41
Site Preparation	Rubber Tired Dozers	1	2.90	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Grading	Concrete/Industrial Saws	0	8.00	81	0.73
Grading	Excavators	1	8.00	158	0.38
Grading	Rubber Tired Dozers	0	1.00	247	0.40
Grading	Tractors/Loaders/Backhoes	0	6.00	97	0.37
Trenching	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	0	6.00	78	0.48
Architectural Coating	Forklifts	14	0.00	62	0.31
Paving	Cement and Mortar Mixers	0	6.00	9	0.56
Paving	Pavers	1	0.50	130	0.42
Paving	Rollers	1	0.50	80	0.38
Paving	Tractors/Loaders/Backhoes	1	0.50	97	0.37
Building Construction	Cranes	0	4.00	231	0.29
Building Construction	Forklifts	0	6.00	89	0.20
Building Construction	Pumps	1	0.50	84	0.74
Building Construction	Tractors/Loaders/Backhoes	0	8.00	97	0.37

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	3	8.00	0.00	54.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	1	3.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

Grading	1	3.00	0.00	710.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Trenching	1	3.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	14	16.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	3	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	1	79.00	31.00	1,836.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2017

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					2.5300e-003	0.0000	2.5300e-003	3.8000e-004	0.0000	3.8000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.1100e-003	0.0776	0.0388	7.0000e-005		3.8100e-003	3.8100e-003		3.5000e-003	3.5000e-003	0.0000	6.0844	6.0844	1.8600e-003	0.0000	6.1310
Total	**7.1100e-003**	**0.0776**	**0.0388**	**7.0000e-005**	**2.5300e-003**	**3.8100e-003**	**6.3400e-003**	**3.8000e-004**	**3.5000e-003**	**3.8800e-003**	**0.0000**	**6.0844**	**6.0844**	**1.8600e-003**	**0.0000**	**6.1310**

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	3.0000e-004	9.5300e-003	1.5800e-003	2.0000e-005	4.6000e-004	5.0000e-005	5.1000e-004	1.3000e-004	5.0000e-005	1.7000e-004	0.0000	2.1267	2.1267	1.2000e-004	0.0000	2.1297
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	2.3000e-004	1.8000e-004	1.8000e-003	0.0000	3.8000e-004	0.0000	3.8000e-004	1.0000e-004	0.0000	1.0000e-004	0.0000	0.3686	0.3686	1.0000e-005	0.0000	0.3689
Total	**5.3000e-004**	**9.7100e-003**	**3.3800e-003**	**2.0000e-005**	**8.4000e-004**	**5.0000e-005**	**8.9000e-004**	**2.3000e-004**	**5.0000e-005**	**2.7000e-004**	**0.0000**	**2.4953**	**2.4953**	**1.3000e-004**	**0.0000**	**2.4985**

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					1.1400e-003	0.0000	1.1400e-003	9.0000e-005	0.0000	9.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.1100e-003	0.0776	0.0388	7.0000e-005		3.8100e-003	3.8100e-003		3.5000e-003	3.5000e-003	0.0000	6.0844	6.0844	1.8600e-003	0.0000	6.1310
Total	**7.1100e-003**	**0.0776**	**0.0388**	**7.0000e-005**	**1.1400e-003**	**3.8100e-003**	**4.9500e-003**	**9.0000e-005**	**3.5000e-003**	**3.5900e-003**	**0.0000**	**6.0844**	**6.0844**	**1.8600e-003**	**0.0000**	**6.1310**

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	3.0000e-004	9.5300e-003	1.5800e-003	2.0000e-005	4.6000e-004	5.0000e-005	5.1000e-004	1.3000e-004	5.0000e-005	1.7000e-004	0.0000	2.1267	2.1267	1.2000e-004	0.0000	2.1297
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	2.3000e-004	1.8000e-004	1.8000e-003	0.0000	3.8000e-004	0.0000	3.8000e-004	1.0000e-004	0.0000	1.0000e-004	0.0000	0.3686	0.3686	1.0000e-005	0.0000	0.3689
Total	**5.3000e-004**	**9.7100e-003**	**3.3800e-003**	**2.0000e-005**	**8.4000e-004**	**5.0000e-005**	**8.9000e-004**	**2.3000e-004**	**5.0000e-005**	**2.7000e-004**	**0.0000**	**2.4953**	**2.4953**	**1.3000e-004**	**0.0000**	**2.4985**

3.3 Site Preparation - 2017

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					0.0120	0.0000	0.0120	6.6000e-003	0.0000	6.6000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.4500e-003	0.0267	9.2200e-003	2.0000e-005		1.3000e-003	1.3000e-003		1.2000e-003	1.2000e-003	0.0000	1.5807	1.5807	4.8000e-004	0.0000	1.5929
Total	**2.4500e-003**	**0.0267**	**9.2200e-003**	**2.0000e-005**	**0.0120**	**1.3000e-003**	**0.0133**	**6.6000e-003**	**1.2000e-003**	**7.8000e-003**	**0.0000**	**1.5807**	**1.5807**	**4.8000e-004**	**0.0000**	**1.5929**

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	8.0000e-005	6.0000e-005	6.2000e-004	0.0000	1.3000e-004	0.0000	1.3000e-004	3.0000e-005	0.0000	4.0000e-005	0.0000	0.1267	0.1267	0.0000	0.0000	0.1268
Total	**8.0000e-005**	**6.0000e-005**	**6.2000e-004**	**0.0000**	**1.3000e-004**	**0.0000**	**1.3000e-004**	**3.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**0.1267**	**0.1267**	**0.0000**	**0.0000**	**0.1268**

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					5.4000e-003	0.0000	5.4000e-003	1.4800e-003	0.0000	1.4800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.4500e-003	0.0267	9.2200e-003	2.0000e-005		1.3000e-003	1.3000e-003		1.2000e-003	1.2000e-003	0.0000	1.5807	1.5807	4.8000e-004	0.0000	1.5928
Total	**2.4500e-003**	**0.0267**	**9.2200e-003**	**2.0000e-005**	**5.4000e-003**	**1.3000e-003**	**6.7000e-003**	**1.4800e-003**	**1.2000e-003**	**2.6800e-003**	**0.0000**	**1.5807**	**1.5807**	**4.8000e-004**	**0.0000**	**1.5928**

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	8.0000e-005	6.0000e-005	6.2000e-004	0.0000	1.3000e-004	0.0000	1.3000e-004	3.0000e-005	0.0000	4.0000e-005	0.0000	0.1267	0.1267	0.0000	0.0000	0.1268
Total	**8.0000e-005**	**6.0000e-005**	**6.2000e-004**	**0.0000**	**1.3000e-004**	**0.0000**	**1.3000e-004**	**3.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**0.1267**	**0.1267**	**0.0000**	**0.0000**	**0.1268**

3.4 Grading - 2017

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					3.2000e-004	0.0000	3.2000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Off-Road	6.1800e-003	0.0686	0.0584	9.0000e-005		3.3700e-003	3.3700e-003		3.1000e-003	3.1000e-003	0.0000	8.3808	8.3808	2.5700e-003	0.0000	8.4450
Total	**6.1800e-003**	**0.0686**	**0.0584**	**9.0000e-005**	**3.2000e-004**	**3.3700e-003**	**3.6900e-003**	**5.0000e-005**	**3.1000e-003**	**3.1500e-003**	**0.0000**	**8.3808**	**8.3808**	**2.5700e-003**	**0.0000**	**8.4450**

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	3.8900e-003	0.1253	0.0207	2.9000e-004	6.0100e-003	6.6000e-004	6.6700e-003	1.6500e-003	6.3000e-004	2.2900e-003	0.0000	27.9625	27.9625	1.5400e-003	0.0000	28.0010
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	2.5000e-004	2.0000e-004	1.9700e-003	0.0000	4.2000e-004	0.0000	4.2000e-004	1.1000e-004	0.0000	1.1000e-004	0.0000	0.4031	0.4031	1.0000e-005	0.0000	0.4035
Total	**4.1400e-003**	**0.1255**	**0.0227**	**2.9000e-004**	**6.4300e-003**	**6.6000e-004**	**7.0900e-003**	**1.7600e-003**	**6.3000e-004**	**2.4000e-003**	**0.0000**	**28.3656**	**28.3656**	**1.5500e-003**	**0.0000**	**28.4044**

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					1.4000e-004	0.0000	1.4000e-004	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.1800e-003	0.0686	0.0584	9.0000e-005		3.3700e-003	3.3700e-003		3.1000e-003	3.1000e-003	0.0000	8.3808	8.3808	2.5700e-003	0.0000	8.4449
Total	**6.1800e-003**	**0.0686**	**0.0584**	**9.0000e-005**	**1.4000e-004**	**3.3700e-003**	**3.5100e-003**	**1.0000e-005**	**3.1000e-003**	**3.1100e-003**	**0.0000**	**8.3808**	**8.3808**	**2.5700e-003**	**0.0000**	**8.4449**

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	3.8900e-003	0.1253	0.0207	2.9000e-004	6.0100e-003	6.6000e-004	6.6700e-003	1.6500e-003	6.3000e-004	2.2900e-003	0.0000	27.9625	27.9625	1.5400e-003	0.0000	28.0010
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	2.5000e-004	2.0000e-004	1.9700e-003	0.0000	4.2000e-004	0.0000	4.2000e-004	1.1000e-004	0.0000	1.1000e-004	0.0000	0.4031	0.4031	1.0000e-005	0.0000	0.4035
Total	**4.1400e-003**	**0.1255**	**0.0227**	**2.9000e-004**	**6.4300e-003**	**6.6000e-004**	**7.0900e-003**	**1.7600e-003**	**6.3000e-004**	**2.4000e-003**	**0.0000**	**28.3656**	**28.3656**	**1.5500e-003**	**0.0000**	**28.4044**

3.5 Trenching - 2017

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	1.5800e-003	0.0152	0.0120	2.0000e-005		1.1400e-003	1.1400e-003		1.0500e-003	1.0500e-003	0.0000	1.4436	1.4436	4.4000e-004	0.0000	1.4547
Total	**1.5800e-003**	**0.0152**	**0.0120**	**2.0000e-005**		**1.1400e-003**	**1.1400e-003**		**1.0500e-003**	**1.0500e-003**	**0.0000**	**1.4436**	**1.4436**	**4.4000e-004**	**0.0000**	**1.4547**

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	7.0000e-005	6.0000e-005	5.6000e-004	0.0000	1.2000e-004	0.0000	1.2000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1152	0.1152	0.0000	0.0000	0.1153
Total	**7.0000e-005**	**6.0000e-005**	**5.6000e-004**	**0.0000**	**1.2000e-004**	**0.0000**	**1.2000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.1152**	**0.1152**	**0.0000**	**0.0000**	**0.1153**

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	1.5800e-003	0.0152	0.0120	2.0000e-005		1.1400e-003	1.1400e-003		1.0500e-003	1.0500e-003	0.0000	1.4436	1.4436	4.4000e-004	0.0000	1.4547
Total	**1.5800e-003**	**0.0152**	**0.0120**	**2.0000e-005**		**1.1400e-003**	**1.1400e-003**		**1.0500e-003**	**1.0500e-003**	**0.0000**	**1.4436**	**1.4436**	**4.4000e-004**	**0.0000**	**1.4547**

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	7.0000e-005	6.0000e-005	5.6000e-004	0.0000	1.2000e-004	0.0000	1.2000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1152	0.1152	0.0000	0.0000	0.1153
Total	**7.0000e-005**	**6.0000e-005**	**5.6000e-004**	**0.0000**	**1.2000e-004**	**0.0000**	**1.2000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.1152**	**0.1152**	**0.0000**	**0.0000**	**0.1153**

3.6 Building Construction - 2017

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	3.7000e-004	2.8300e-003	2.3900e-003	0.0000		2.0000e-004	2.0000e-004		2.0000e-004	2.0000e-004	0.0000	0.3533	0.3533	3.0000e-005	0.0000	0.3540
Total	**3.7000e-004**	**2.8300e-003**	**2.3900e-003**	**0.0000**		**2.0000e-004**	**2.0000e-004**		**2.0000e-004**	**2.0000e-004**	**0.0000**	**0.3533**	**0.3533**	**3.0000e-005**	**0.0000**	**0.3540**

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	4.2000e-004	0.0134	2.2100e-003	3.0000e-005	0.0118	7.0000e-005	0.0119	2.9100e-003	7.0000e-005	2.9800e-003	0.0000	2.9880	2.9880	1.6000e-004	0.0000	2.9921
Vendor	1.7600e-003	0.0445	0.0106	9.0000e-005	2.0400e-003	3.8000e-004	2.4100e-003	5.9000e-004	3.6000e-004	9.5000e-004	0.0000	8.3386	8.3386	5.7000e-004	0.0000	8.3529
Worker	3.7300e-003	2.9900e-003	0.0296	7.0000e-005	6.2500e-003	5.0000e-005	6.2900e-003	1.6600e-003	4.0000e-005	1.7100e-003	0.0000	6.0658	6.0658	2.1000e-004	0.0000	6.0711
Total	**5.9100e-003**	**0.0609**	**0.0424**	**1.9000e-004**	**0.0201**	**5.0000e-004**	**0.0206**	**5.1600e-003**	**4.7000e-004**	**5.6400e-003**	**0.0000**	**17.3923**	**17.3923**	**9.4000e-004**	**0.0000**	**17.4161**

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	3.7000e-004	2.8300e-003	2.3900e-003	0.0000		2.0000e-004	2.0000e-004		2.0000e-004	2.0000e-004	0.0000	0.3533	0.3533	3.0000e-005	0.0000	0.3540
Total	**3.7000e-004**	**2.8300e-003**	**2.3900e-003**	**0.0000**		**2.0000e-004**	**2.0000e-004**		**2.0000e-004**	**2.0000e-004**	**0.0000**	**0.3533**	**0.3533**	**3.0000e-005**	**0.0000**	**0.3540**

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	4.2000e-004	0.0134	2.2100e-003	3.0000e-005	0.0118	7.0000e-005	0.0119	2.9100e-003	7.0000e-005	2.9800e-003	0.0000	2.9880	2.9880	1.6000e-004	0.0000	2.9921
Vendor	1.7600e-003	0.0445	0.0106	9.0000e-005	2.0400e-003	3.8000e-004	2.4100e-003	5.9000e-004	3.6000e-004	9.5000e-004	0.0000	8.3386	8.3386	5.7000e-004	0.0000	8.3529
Worker	3.7300e-003	2.9900e-003	0.0296	7.0000e-005	6.2500e-003	5.0000e-005	6.2900e-003	1.6600e-003	4.0000e-005	1.7100e-003	0.0000	6.0658	6.0658	2.1000e-004	0.0000	6.0711
Total	**5.9100e-003**	**0.0609**	**0.0424**	**1.9000e-004**	**0.0201**	**5.0000e-004**	**0.0206**	**5.1600e-003**	**4.7000e-004**	**5.6400e-003**	**0.0000**	**17.3923**	**17.3923**	**9.4000e-004**	**0.0000**	**17.4161**

3.6 Building Construction - 2018

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	4.3400e-003	0.0341	0.0310	5.0000e-005		2.2500e-003	2.2500e-003		2.2500e-003	2.2500e-003	0.0000	4.6100	4.6100	3.5000e-004	0.0000	4.6187

Total	**4.3400e-003**	**0.0341**	**0.0310**	**5.0000e-005**		**2.2500e-003**	**2.2500e-003**		**2.2500e-003**	**2.2500e-003**	**0.0000**	**4.6100**	**4.6100**	**3.5000e-004**	**0.0000**	**4.6187**

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	4.7100e-003	0.1618	0.0268	4.0000e-004	0.0137	6.1000e-004	0.0144	3.6200e-003	5.8000e-004	4.2000e-003	0.0000	38.6895	38.6895	2.0400e-003	0.0000	38.7405
Vendor	0.0201	0.5453	0.1245	1.1300e-003	0.0266	3.8900e-003	0.0305	7.6900e-003	3.7200e-003	0.0114	0.0000	108.5004	108.5004	6.9400e-003	0.0000	108.6740
Worker	0.0432	0.0339	0.3385	8.5000e-004	0.0815	5.9000e-004	0.0821	0.0217	5.5000e-004	0.0222	0.0000	77.0262	77.0262	2.4200e-003	0.0000	77.0866
Total	**0.0680**	**0.7410**	**0.4898**	**2.3800e-003**	**0.1218**	**5.0900e-003**	**0.1269**	**0.0330**	**4.8500e-003**	**0.0378**	**0.0000**	**224.2162**	**224.2162**	**0.0114**	**0.0000**	**224.5011**

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	4.3400e-003	0.0341	0.0310	5.0000e-005		2.2500e-003	2.2500e-003		2.2500e-003	2.2500e-003	0.0000	4.6100	4.6100	3.5000e-004	0.0000	4.6187
Total	**4.3400e-003**	**0.0341**	**0.0310**	**5.0000e-005**		**2.2500e-003**	**2.2500e-003**		**2.2500e-003**	**2.2500e-003**	**0.0000**	**4.6100**	**4.6100**	**3.5000e-004**	**0.0000**	**4.6187**

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	4.7100e-003	0.1618	0.0268	4.0000e-004	0.0137	6.1000e-004	0.0144	3.6200e-003	5.8000e-004	4.2000e-003	0.0000	38.6895	38.6895	2.0400e-003	0.0000	38.7405
Vendor	0.0201	0.5453	0.1245	1.1300e-003	0.0266	3.8900e-003	0.0305	7.6900e-003	3.7200e-003	0.0114	0.0000	108.5004	108.5004	6.9400e-003	0.0000	108.6740
Worker	0.0432	0.0339	0.3385	8.5000e-004	0.0815	5.9000e-004	0.0821	0.0217	5.5000e-004	0.0222	0.0000	77.0262	77.0262	2.4200e-003	0.0000	77.0866
Total	**0.0680**	**0.7410**	**0.4898**	**2.3800e-003**	**0.1218**	**5.0900e-003**	**0.1269**	**0.0330**	**4.8500e-003**	**0.0378**	**0.0000**	**224.2162**	**224.2162**	**0.0114**	**0.0000**	**224.5011**

3.6 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	2.9800e-003	0.0243	0.0240	4.0000e-005		1.5100e-003	1.5100e-003		1.5100e-003	1.5100e-003	0.0000	3.5855	3.5855	2.4000e-004	0.0000	3.5915
Total	**2.9800e-003**	**0.0243**	**0.0240**	**4.0000e-005**		**1.5100e-003**	**1.5100e-003**		**1.5100e-003**	**1.5100e-003**	**0.0000**	**3.5855**	**3.5855**	**2.4000e-004**	**0.0000**	**3.5915**

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	3.5100e-003	0.1197	0.0204	3.1000e-004	0.0133	4.3000e-004	0.0137	3.4500e-003	4.1000e-004	3.8600e-003	0.0000	29.7942	29.7942	1.5500e-003	0.0000	29.8330
Vendor	0.0142	0.4024	0.0890	8.8000e-004	0.0207	2.5700e-003	0.0232	5.9800e-003	2.4600e-003	8.4400e-003	0.0000	83.8149	83.8149	5.1600e-003	0.0000	83.9440
Worker	0.0304	0.0232	0.2339	6.4000e-004	0.0634	4.5000e-004	0.0639	0.0169	4.2000e-004	0.0173	0.0000	58.1575	58.1575	1.6600e-003	0.0000	58.1990
Total	**0.0480**	**0.5452**	**0.3433**	**1.8300e-003**	**0.0973**	**3.4500e-003**	**0.1008**	**0.0263**	**3.2900e-003**	**0.0296**	**0.0000**	**171.7666**	**171.7666**	**8.3700e-003**	**0.0000**	**171.9760**

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	2.9800e-003	0.0243	0.0240	4.0000e-005		1.5100e-003	1.5100e-003		1.5100e-003	1.5100e-003	0.0000	3.5855	3.5855	2.4000e-004	0.0000	3.5915
Total	**2.9800e-003**	**0.0243**	**0.0240**	**4.0000e-005**		**1.5100e-003**	**1.5100e-003**		**1.5100e-003**	**1.5100e-003**	**0.0000**	**3.5855**	**3.5855**	**2.4000e-004**	**0.0000**	**3.5915**

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	3.5100e-003	0.1197	0.0204	3.1000e-004	0.0133	4.3000e-004	0.0137	3.4500e-003	4.1000e-004	3.8600e-003	0.0000	29.7942	29.7942	1.5500e-003	0.0000	29.8330
Vendor	0.0142	0.4024	0.0890	8.8000e-004	0.0207	2.5700e-003	0.0232	5.9800e-003	2.4600e-003	8.4400e-003	0.0000	83.8149	83.8149	5.1600e-003	0.0000	83.9440
Worker	0.0304	0.0232	0.2339	6.4000e-004	0.0634	4.5000e-004	0.0639	0.0169	4.2000e-004	0.0173	0.0000	58.1575	58.1575	1.6600e-003	0.0000	58.1990
Total	**0.0480**	**0.5452**	**0.3433**	**1.8300e-003**	**0.0973**	**3.4500e-003**	**0.1008**	**0.0263**	**3.2900e-003**	**0.0296**	**0.0000**	**171.7666**	**171.7666**	**8.3700e-003**	**0.0000**	**171.9760**

3.7 Architectural Coating - 2018

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	0.5102					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	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
Total	**0.5102**	**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**

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	5.8700e-003	4.6100e-003	0.0460	1.2000e-004	0.0111	8.0000e-005	0.0112	2.9400e-003	7.0000e-005	3.0200e-003	0.0000	10.4599	10.4599	3.3000e-004	0.0000	10.4681
Total	**5.8700e-003**	**4.6100e-003**	**0.0460**	**1.2000e-004**	**0.0111**	**8.0000e-005**	**0.0112**	**2.9400e-003**	**7.0000e-005**	**3.0200e-003**	**0.0000**	**10.4599**	**10.4599**	**3.3000e-004**	**0.0000**	**10.4681**

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	0.5102					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	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
Total	**0.5102**	**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**

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	5.8700e-003	4.6100e-003	0.0460	1.2000e-004	0.0111	8.0000e-005	0.0112	2.9400e-003	7.0000e-005	3.0200e-003	0.0000	10.4599	10.4599	3.3000e-004	0.0000	10.4681
Total	**5.8700e-003**	**4.6100e-003**	**0.0460**	**1.2000e-004**	**0.0111**	**8.0000e-005**	**0.0112**	**2.9400e-003**	**7.0000e-005**	**3.0200e-003**	**0.0000**	**10.4599**	**10.4599**	**3.3000e-004**	**0.0000**	**10.4681**

3.7 Architectural Coating - 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					
Archit. Coating	0.2945					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Off-Road	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
Total	**0.2945**	**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**

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	3.0600e-003	2.3300e-003	0.0236	6.0000e-005	6.3900e-003	5.0000e-005	6.4300e-003	1.7000e-003	4.0000e-005	1.7400e-003	0.0000	5.8604	5.8604	1.7000e-004	0.0000	5.8645
Total	**3.0600e-003**	**2.3300e-003**	**0.0236**	**6.0000e-005**	**6.3900e-003**	**5.0000e-005**	**6.4300e-003**	**1.7000e-003**	**4.0000e-005**	**1.7400e-003**	**0.0000**	**5.8604**	**5.8604**	**1.7000e-004**	**0.0000**	**5.8645**

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	0.2945					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	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
Total	**0.2945**	**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**

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	3.0600e-003	2.3300e-003	0.0236	6.0000e-005	6.3900e-003	5.0000e-005	6.4300e-003	1.7000e-003	4.0000e-005	1.7400e-003	0.0000	5.8604	5.8604	1.7000e-004	0.0000	5.8645
Total	**3.0600e-003**	**2.3300e-003**	**0.0236**	**6.0000e-005**	**6.3900e-003**	**5.0000e-005**	**6.4300e-003**	**1.7000e-003**	**4.0000e-005**	**1.7400e-003**	**0.0000**	**5.8604**	**5.8604**	**1.7000e-004**	**0.0000**	**5.8645**

3.8 Paving - 2018

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	1.6000e-004	1.6400e-003	1.3500e-003	0.0000		1.0000e-004	1.0000e-004		9.0000e-005	9.0000e-005	0.0000	0.1786	0.1786	6.0000e-005	0.0000	0.1800
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.6000e-004**	**1.6400e-003**	**1.3500e-003**	**0.0000**		**1.0000e-004**	**1.0000e-004**		**9.0000e-005**	**9.0000e-005**	**0.0000**	**0.1786**	**0.1786**	**6.0000e-005**	**0.0000**	**0.1800**

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	1.0000e-004	8.0000e-005	7.9000e-004	0.0000	1.9000e-004	0.0000	1.9000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1793	0.1793	1.0000e-005	0.0000	0.1795
Total	**1.0000e-004**	**8.0000e-005**	**7.9000e-004**	**0.0000**	**1.9000e-004**	**0.0000**	**1.9000e-004**	**5.0000e-005**	**0.0000**	**5.0000e-005**	**0.0000**	**0.1793**	**0.1793**	**1.0000e-005**	**0.0000**	**0.1795**

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	1.6000e-004	1.6400e-003	1.3500e-003	0.0000		1.0000e-004	1.0000e-004		9.0000e-005	9.0000e-005	0.0000	0.1786	0.1786	6.0000e-005	0.0000	0.1800
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.6000e-004**	**1.6400e-003**	**1.3500e-003**	**0.0000**		**1.0000e-004**	**1.0000e-004**		**9.0000e-005**	**9.0000e-005**	**0.0000**	**0.1786**	**0.1786**	**6.0000e-005**	**0.0000**	**0.1800**

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	1.0000e-004	8.0000e-005	7.9000e-004	0.0000	1.9000e-004	0.0000	1.9000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1793	0.1793	1.0000e-005	0.0000	0.1795
Total	**1.0000e-004**	**8.0000e-005**	**7.9000e-004**	**0.0000**	**1.9000e-004**	**0.0000**	**1.9000e-004**	**5.0000e-005**	**0.0000**	**5.0000e-005**	**0.0000**	**0.1793**	**0.1793**	**1.0000e-005**	**0.0000**	**0.1795**

1431 Jefferson Street,Operational

Alameda County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Enclosed Parking with Elevator	95.00	Space	0.00	36,000.00	0
Hotel	276.00	Room	0.40	151,218.00	0
Strip Mall	1.66	1000sqft	0.00	1,658.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	63
Climate Zone	5			**Operational Year**	2019
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	429.6	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Revised CO2 emission intensity

Land Use - Land Use Sizes from the construction information spreadsheet

Construction Phase - Only operational emissions modeled

Off-road Equipment - Only operational emissions modeled

Off-road Equipment - Only operational emission modeled

Trips and VMT - no construction emissions

Grading -

Vehicle Trips - 1431 Jefferson Street TIS draft memorandum

Energy Use - Default values used

Stationary Sources - Emergency Generators and Fire Pumps - ~ 900 HP generator proposed

Table Name	Column Name	Default Value	New Value
tblGrading	AcresOfGrading	0.00	0.50
tblLandUse	BuildingSpaceSquareFeet	38,000.00	36,000.00
tblLandUse	BuildingSpaceSquareFeet	400,752.00	151,218.00
tblLandUse	BuildingSpaceSquareFeet	1,660.00	1,658.00
tblLandUse	LandUseSquareFeet	38,000.00	36,000.00
tblLandUse	LandUseSquareFeet	400,752.00	151,218.00
tblLandUse	LandUseSquareFeet	1,660.00	1,658.00
tblLandUse	LotAcreage	0.86	0.00
tblLandUse	LotAcreage	9.20	0.40
tblLandUse	LotAcreage	0.04	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	429.6
tblProjectCharacteristics	OperationalYear	2018	2019
tblStationaryGeneratorsPumpsUse	HorsePowerValue	600.00	900.00
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	50.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	1.00
tblVehicleTrips	ST_TR	8.19	4.76
tblVehicleTrips	ST_TR	42.04	114.42
tblVehicleTrips	SU_TR	5.95	3.46
tblVehicleTrips	SU_TR	20.43	55.61
tblVehicleTrips	WD_TR	8.17	4.75
tblVehicleTrips	WD_TR	44.32	120.63

2.0 Emissions Summary

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	0.6802	3.0000e-005	3.4600e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	6.6600e-003	6.6600e-003	2.0000e-005	0.0000	7.1100e-003
Energy	0.0299	0.2721	0.2286	1.6300e-003		0.0207	0.0207		0.0207	0.0207	0.0000	593.0291	593.0291	0.0257	9.5800e-003	596.5256
Mobile	0.4635	2.7933	4.7230	0.0142	1.0016	0.0198	1.0214	0.2693	0.0187	0.2880	0.0000	1,305.3336	1,305.3336	0.0682	0.0000	1,307.0372
Stationary	0.0369	0.1651	0.0942	1.8000e-004		5.4300e-003	5.4300e-003		5.4300e-003	5.4300e-003	0.0000	17.1359	17.1359	2.4000e-003	0.0000	17.1959
Waste						0.0000	0.0000		0.0000	0.0000	31.0272	0.0000	31.0272	1.8337	0.0000	76.8685
Water						0.0000	0.0000		0.0000	0.0000	2.2602	8.0937	10.3539	0.2327	5.5900e-003	17.8383
Total	**1.2106**	**3.2306**	**5.0492**	**0.0160**	**1.0016**	**0.0459**	**1.0475**	**0.2693**	**0.0449**	**0.3141**	**33.2874**	**1,923.5989**	**1,956.8863**	**2.1626**	**0.0152**	**2,015.4726**

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	0.6802	3.0000e-005	3.4600e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	6.6600e-003	6.6600e-003	2.0000e-005	0.0000	7.1100e-003
Energy	0.0299	0.2721	0.2286	1.6300e-003		0.0207	0.0207		0.0207	0.0207	0.0000	593.0291	593.0291	0.0257	9.5800e-003	596.5256
Mobile	0.4635	2.7933	4.7230	0.0142	1.0016	0.0198	1.0214	0.2693	0.0187	0.2880	0.0000	1,305.3336	1,305.3336	0.0682	0.0000	1,307.0372
Stationary	0.0369	0.1651	0.0942	1.8000e-004		5.4300e-003	5.4300e-003		5.4300e-003	5.4300e-003	0.0000	17.1359	17.1359	2.4000e-003	0.0000	17.1959
Waste						0.0000	0.0000		0.0000	0.0000	31.0272	0.0000	31.0272	1.8337	0.0000	76.8685

Water						0.0000	0.0000		0.0000	0.0000	2.2602	8.0937	10.3539	0.2327	5.5900e-003	17.8383
Total	**1.2106**	**3.2306**	**5.0492**	**0.0160**	**1.0016**	**0.0459**	**1.0475**	**0.2693**	**0.0449**	**0.3141**	**33.2874**	**1,923.5989**	**1,956.8863**	**2.1626**	**0.0152**	**2,015.4726**

	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**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	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	0.4635	2.7933	4.7230	0.0142	1.0016	0.0198	1.0214	0.2693	0.0187	0.2880	0.0000	1,305.3336	1,305.3336	0.0682	0.0000	1,307.0372
Unmitigated	0.4635	2.7933	4.7230	0.0142	1.0016	0.0198	1.0214	0.2693	0.0187	0.2880	0.0000	1,305.3336	1,305.3336	0.0682	0.0000	1,307.0372

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Enclosed Parking with Elevator	0.00	0.00	0.00		
Hotel	1,311.00	1,313.76	954.96	2,394,922	2,394,922
Strip Mall	200.25	189.94	92.31	282,371	282,371
Total	1,511.25	1,503.70	1,047.27	2,677,294	2,677,294

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-	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Enclosed Parking with Elevator	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Hotel	9.50	7.30	7.30	19.40	61.60	19.00	58	38	4
Strip Mall	9.50	7.30	7.30	16.60	64.40	19.00	45	40	15

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Enclosed Parking with Elevator	0.556416	0.041967	0.190895	0.111485	0.018156	0.005234	0.022193	0.041963	0.002079	0.002948	0.005586	0.000300	0.000779
Hotel	0.556416	0.041967	0.190895	0.111485	0.018156	0.005234	0.022193	0.041963	0.002079	0.002948	0.005586	0.000300	0.000779
Strip Mall	0.556416	0.041967	0.190895	0.111485	0.018156	0.005234	0.022193	0.041963	0.002079	0.002948	0.005586	0.000300	0.000779

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	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	296.7899	296.7899	0.0200	4.1500e-003	298.5260
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	296.7899	296.7899	0.0200	4.1500e-003	298.5260
NaturalGas Mitigated	0.0299	0.2721	0.2286	1.6300e-003		0.0207	0.0207		0.0207	0.0207	0.0000	296.2391	296.2391	5.6800e-003	5.4300e-003	297.9995
NaturalGas Unmitigated	0.0299	0.2721	0.2286	1.6300e-003		0.0207	0.0207		0.0207	0.0207	0.0000	296.2391	296.2391	5.6800e-003	5.4300e-003	297.9995

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					
Enclosed Parking with Elevator	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
Hotel	5.54365e+006	0.0299	0.2718	0.2283	1.6300e-003		0.0207	0.0207		0.0207	0.0207	0.0000	295.8304	295.8304	5.6700e-003	5.4200e-003	297.5884
Strip Mall	7659.96	4.0000e-005	3.8000e-004	3.2000e-004	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.4088	0.4088	1.0000e-005	1.0000e-005	0.4112
Total		**0.0299**	**0.2721**	**0.2286**	**1.6300e-003**		**0.0207**	**0.0207**		**0.0207**	**0.0207**	**0.0000**	**296.2391**	**296.2391**	**5.6800e-003**	**5.4300e-003**	**297.9995**

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					
Enclosed Parking with Elevator	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
Hotel	5.54365e+006	0.0299	0.2718	0.2283	1.6300e-003		0.0207	0.0207		0.0207	0.0207	0.0000	295.8304	295.8304	5.6700e-003	5.4200e-003	297.5884
Strip Mall	7659.96	4.0000e-005	3.8000e-004	3.2000e-004	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.4088	0.4088	1.0000e-005	1.0000e-005	0.4112
Total		**0.0299**	**0.2721**	**0.2286**	**1.6300e-003**		**0.0207**	**0.0207**		**0.0207**	**0.0207**	**0.0000**	**296.2391**	**296.2391**	**5.6800e-003**	**5.4300e-003**	**297.9995**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e

Land Use	kWh/yr	MT/yr			
Enclosed Parking with Elevator	242640	47.2816	3.1900e-003	6.6000e-004	47.5582
Hotel	1.26267e+006	246.0481	0.0166	3.4400e-003	247.4874
Strip Mall	17757.2	3.4602	2.3000e-004	5.0000e-005	3.4805
Total		**296.7899**	**0.0200**	**4.1500e-003**	**298.5260**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Enclosed Parking with Elevator	242640	47.2816	3.1900e-003	6.6000e-004	47.5582
Hotel	1.26267e+006	246.0481	0.0166	3.4400e-003	247.4874
Strip Mall	17757.2	3.4602	2.3000e-004	5.0000e-005	3.4805
Total		**296.7899**	**0.0200**	**4.1500e-003**	**298.5260**

6.0 Area Detail

6.1 Mitigation Measures Area

	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	0.6802	3.0000e-005	3.4600e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	6.6600e-003	6.6600e-003	2.0000e-005	0.0000	7.1100e-003
Unmitigated	0.6802	3.0000e-005	3.4600e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	6.6600e-003	6.6600e-003	2.0000e-005	0.0000	7.1100e-003

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	0.0805					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.5994					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	3.3000e-004	3.0000e-005	3.4600e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	6.6600e-003	6.6600e-003	2.0000e-005	0.0000	7.1100e-003
Total	**0.6802**	**3.0000e-005**	**3.4600e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**6.6600e-003**	**6.6600e-003**	**2.0000e-005**	**0.0000**	**7.1100e-003**

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	0.0805					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.5994					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	3.3000e-004	3.0000e-005	3.4600e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	6.6600e-003	6.6600e-003	2.0000e-005	0.0000	7.1100e-003

Total	**0.6802**	**3.0000e-005**	**3.4600e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**6.6600e-003**	**6.6600e-003**	**2.0000e-005**	**0.0000**	**7.1100e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	10.3539	0.2327	5.5900e-003	17.8383
Unmitigated	10.3539	0.2327	5.5900e-003	17.8383

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Hotel	7.00123 / 0.777914	10.1339	0.2287	5.5000e-003	17.4888
Strip Mall	0.12296 / 0.0753628	0.2201	4.0200e-003	1.0000e-004	0.3495
Total		**10.3539**	**0.2327**	**5.6000e-003**	**17.8383**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Hotel	7.00123 / 0.777914	10.1339	0.2287	5.5000e-003	17.4888
Strip Mall	0.12296 / 0.0753628	0.2201	4.0200e-003	1.0000e-004	0.3495
Total		**10.3539**	**0.2327**	**5.6000e-003**	**17.8383**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	31.0272	1.8337	0.0000	76.8685
Unmitigated	31.0272	1.8337	0.0000	76.8685

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Hotel	151.11	30.6740	1.8128	0.0000	75.9935
Strip Mall	1.74	0.3532	0.0209	0.0000	0.8751
Total		**31.0272**	**1.8337**	**0.0000**	**76.8685**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Hotel	151.11	30.6740	1.8128	0.0000	75.9935
Strip Mall	1.74	0.3532	0.0209	0.0000	0.8751
Total		**31.0272**	**1.8337**	**0.0000**	**76.8685**

10.1 Stationary Sources

Unmitigated/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

Equipment Type	tons/yr										MT/yr					
Emergency Generator - Diesel (750 - 9999 HP)	0.0369	0.1651	0.0942	1.8000e-004		5.4300e-003	5.4300e-003		5.4300e-003	5.4300e-003	0.0000	17.1359	17.1359	2.4000e-003	0.0000	17.1959
Total	**0.0369**	**0.1651**	**0.0942**	**1.8000e-004**		**5.4300e-003**	**5.4300e-003**		**5.4300e-003**	**5.4300e-003**	**0.0000**	**17.1359**	**17.1359**	**2.4000e-003**	**0.0000**	**17.1959**

1431 Jefferson Street, Existing

Alameda County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Convenience Market (24 Hour)	5.00	1000sqft	0.40	5,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	63
Climate Zone	5			**Operational Year**	2019
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	429.6	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Revised CO2 Emission intensity

Land Use - From the draft traffic memorandum

Construction Phase -

Off-road Equipment - Only operational emissions modeled

Trips and VMT - Only operational emission modeled

Vehicle Trips - Trip rates from Jefferson street TIA

Energy Use - Default values

Table Name	Column Name	Default Value	New Value
tblLandUse	LotAcreage	0.11	0.40

tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblProjectCharacteristics	CO2IntensityFactor	641.35	429.6
tblProjectCharacteristics	OperationalYear	2018	2019
tblTripsAndVMT	WorkerTripNumber	5.00	0.00
tblVehicleTrips	ST_TR	863.10	126.31
tblVehicleTrips	SU_TR	758.45	110.99
tblVehicleTrips	WD_TR	737.99	108.00

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	tons/yr										MT/yr					
Area	0.0221	0.0000	5.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.0000e-005	9.0000e-005	0.0000	0.0000	1.0000e-004
Energy	1.2000e-004	1.1300e-003	9.5000e-004	1.0000e-005		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005	0.0000	11.6676	11.6676	7.3000e-004	1.7000e-004	11.7360
Mobile	0.1452	0.7636	1.1094	2.6100e-003	0.1582	3.6100e-003	0.1618	0.0425	3.4100e-003	0.0459	0.0000	240.4886	240.4886	0.0183	0.0000	240.9463
Waste						0.0000	0.0000		0.0000	0.0000	3.0510	0.0000	3.0510	0.1803	0.0000	7.5586
Water						0.0000	0.0000		0.0000	0.0000	0.1175	0.5453	0.6628	0.0121	2.9000e-004	1.0526
Total	**0.1674**	**0.7647**	**1.1104**	**2.6200e-003**	**0.1582**	**3.7000e-003**	**0.1619**	**0.0425**	**3.5000e-003**	**0.0460**	**3.1685**	**252.7017**	**255.8701**	**0.2115**	**4.6000e-004**	**261.2937**

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	0.0221	0.0000	5.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.0000e-005	9.0000e-005	0.0000	0.0000	1.0000e-004
Energy	1.2000e-004	1.1300e-003	9.5000e-004	1.0000e-005		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005	0.0000	11.6676	11.6676	7.3000e-004	1.7000e-004	11.7360
Mobile	0.1452	0.7636	1.1094	2.6100e-003	0.1582	3.6100e-003	0.1618	0.0425	3.4100e-003	0.0459	0.0000	240.4886	240.4886	0.0183	0.0000	240.9463
Waste						0.0000	0.0000		0.0000	0.0000	3.0510	0.0000	3.0510	0.1803	0.0000	7.5586
Water						0.0000	0.0000		0.0000	0.0000	0.1175	0.5453	0.6628	0.0121	2.9000e-004	1.0526
Total	**0.1674**	**0.7647**	**1.1104**	**2.6200e-003**	**0.1582**	**3.7000e-003**	**0.1619**	**0.0425**	**3.5000e-003**	**0.0460**	**3.1685**	**252.7017**	**255.8701**	**0.2115**	**4.6000e-004**	**261.2937**

	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**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	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	0.1452	0.7636	1.1094	2.6100e-003	0.1582	3.6100e-003	0.1618	0.0425	3.4100e-003	0.0459	0.0000	240.4886	240.4886	0.0183	0.0000	240.9463
Unmitigated	0.1452	0.7636	1.1094	2.6100e-003	0.1582	3.6100e-003	0.1618	0.0425	3.4100e-003	0.0459	0.0000	240.4886	240.4886	0.0183	0.0000	240.9463

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT

Convenience Market (24 Hour)	540.00	631.55	554.95	422,838	422,838
Total	540.00	631.55	554.95	422,838	422,838

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-	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Convenience Market (24 Hour)	9.50	7.30	7.30	0.90	80.10	19.00	24	15	61

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Convenience Market (24 Hour)	0.556416	0.041967	0.190895	0.111485	0.018156	0.005234	0.022193	0.041963	0.002079	0.002948	0.005586	0.000300	0.000779

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	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	10.4349	10.4349	7.0000e-004	1.5000e-004	10.4960
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	10.4349	10.4349	7.0000e-004	1.5000e-004	10.4960
NaturalGas Mitigated	1.2000e-004	1.1300e-003	9.5000e-004	1.0000e-005		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005	0.0000	1.2327	1.2327	2.0000e-005	2.0000e-005	1.2400
NaturalGas Unmitigated	1.2000e-004	1.1300e-003	9.5000e-004	1.0000e-005		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005	0.0000	1.2327	1.2327	2.0000e-005	2.0000e-005	1.2400

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					
Convenience Market (24 Hour)	23100	1.2000e-004	1.1300e-003	9.5000e-004	1.0000e-005		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005	0.0000	1.2327	1.2327	2.0000e-005	2.0000e-005	1.2400
Total		**1.2000e-004**	**1.1300e-003**	**9.5000e-004**	**1.0000e-005**		**9.0000e-005**	**9.0000e-005**		**9.0000e-005**	**9.0000e-005**	**0.0000**	**1.2327**	**1.2327**	**2.0000e-005**	**2.0000e-005**	**1.2400**

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					
Convenience Market (24 Hour)	23100	1.2000e-004	1.1300e-003	9.5000e-004	1.0000e-005		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005	0.0000	1.2327	1.2327	2.0000e-005	2.0000e-005	1.2400
Total		**1.2000e-004**	**1.1300e-003**	**9.5000e-004**	**1.0000e-005**		**9.0000e-005**	**9.0000e-005**		**9.0000e-005**	**9.0000e-005**	**0.0000**	**1.2327**	**1.2327**	**2.0000e-005**	**2.0000e-005**	**1.2400**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Convenience Market (24 Hour)	53550	10.4349	7.0000e-004	1.5000e-004	10.4960

Total		**10.4349**	**7.0000e-004**	**1.5000e-004**	**10.4960**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Convenience Market (24 Hour)	53550	10.4349	7.0000e-004	1.5000e-004	10.4960
Total		**10.4349**	**7.0000e-004**	**1.5000e-004**	**10.4960**

6.0 Area Detail

6.1 Mitigation Measures Area

	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	0.0221	0.0000	5.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.0000e-005	9.0000e-005	0.0000	0.0000	1.0000e-004
Unmitigated	0.0221	0.0000	5.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.0000e-005	9.0000e-005	0.0000	0.0000	1.0000e-004

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	2.6100e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0195					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	5.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.0000e-005	9.0000e-005	0.0000	0.0000	1.0000e-004
Total	**0.0221**	**0.0000**	**5.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**9.0000e-005**	**9.0000e-005**	**0.0000**	**0.0000**	**1.0000e-004**

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	2.6100e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0195					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	5.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.0000e-005	9.0000e-005	0.0000	0.0000	1.0000e-004
Total	**0.0221**	**0.0000**	**5.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**9.0000e-005**	**9.0000e-005**	**0.0000**	**0.0000**	**1.0000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.6628	0.0121	2.9000e-004	1.0526
Unmitigated	0.6628	0.0121	2.9000e-004	1.0526

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Convenience Market (24 Hour)	0.370363 / 0.226996	0.6628	0.0121	2.9000e-004	1.0526
Total		**0.6628**	**0.0121**	**2.9000e-004**	**1.0526**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			

Convenience Market (24 Hour)	0.370363 / 0.226996	0.6628	0.0121	2.9000e-004	1.0526
Total		**0.6628**	**0.0121**	**2.9000e-004**	**1.0526**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	3.0510	0.1803	0.0000	7.5586
Unmitigated	3.0510	0.1803	0.0000	7.5586

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Convenience Market (24 Hour)	15.03	3.0510	0.1803	0.0000	7.5586
Total		**3.0510**	**0.1803**	**0.0000**	**7.5586**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Convenience Market (24 Hour)	15.03	3.0510	0.1803	0.0000	7.5586
Total		**3.0510**	**0.1803**	**0.0000**	**7.5586**

Attachment 3: Construction Schedule, TAC Emissions and Health Risk Calculations

Project Name: 1431 Jefferson Oakland Hotel

Complete ALL Portions in Yellow

See Equipment Type TAB for type, horsepower and load factor

	Project Size	**0**	**Dwelling Units**	**0.4**	**total project acres disturbed**			
		140813	**s.f. residential**					
		1658	**s.f. retail**					
		4261	**s.f. office/commercial**					Excavators
		6144	**s.f. other, specify:**	**accessory/utilities**				
		36000	**s.f. parking garage**	**95**	**spaces**			
		0	**s.f. parking lot**	**0**	**spaces**			
	Construction Hours	**7**	**am to**	**4**	**pm**			

Qty	Description	HP	Load Factor	Hours/day	Total Work Days	Avg. Hours per day	Annual Hours	Comments
	Demolition	**Start Date:**	**10/4/2017**	**Total phase:**	**12**			**Overall Import/Export Volumes**
		End Date:	**10/20/2017**					
1								**Demolition Volume**
1	Excavators	162	0.38	8	12	8	96	Square footage of buildings to be demolished
2	Rubber-Tired Dozers	255	0.4	8	4	2.6666667	64	(*or* total tons to be hauled)
						0	0	**5150** square feet *or*
								460 Hauling volume (tons)
	Site Preperation	**Start Date:**	**10/21/2017**	**Total phase:**	**11**			Any pavement demolished and hauled? 298 **tons**
		End Date:	**12/1/2017**					
1	Excavators	162	0.38	0	0	0	0	
1	Rubber Tired Dozers	255	0.4	8	4	2.9090909	32	
	Tractors/Loaders/Backhoes	97	0.37			0	0	
	Grading / Excavation	**Start Date:**	**10/21/2017**	**Total phase:**	**35**			
		End Date:	**12/1/2017**					**Soil Hauling Volume**
`				0	0	0	#VALUE!	Export volume = **5681** cubic yards
5	dump tgrucks	81	0.73	8	5	8	200	
1	Excavators	162	0.38	8	35	8	280	Import volume = **zero** cubic yards?
1				0		0	0	
2				0		0	0	
	Other Equipment?							
	Trenching	**Start Date:**	**10/21/2017**	**Total phase:**	**10**			
		End Date:	**11/3/2017**					
1	Tractor/Loader/Backhoe	97	0.37	8	10	8	80	
1	Excavators	162	0.38	0		0		
	Other Equipment?							
	Building - Exterior	**Start Date:**	**12/4/2017**	**Total phase:**	**484**			**Cement Trucks 918 Total Round-Trips (9 trucks per pour day = 34 rt per pour day)**
		End Date:	**11/12/2018**					
1	Cranes	226	0.29	8	299	4.9421488	2392	Electric (Y/N) Yes
2	Forklifts	89	0.2	8	352	5.8181818	5632	Liquid Propane (LPG)? (Y/N) Yes
1	Manlift	84	0.74	8	484	8	3872	Electric (Y/N) Yes
1	Concrete pump			8	27	0.446281	216	
9	concrete trucks			8	27	0.446281	1944	
	Other Equipment?					0		
	Building - Interior/Architectural Coating	**Start Date:**	**5/1/2018**	**Total phase:**	**276**			
		End Date:	**11/12/2018**					
1	Air Compressors	78	0.48	8		0	0	
14	scissor lift	62	0.31	8	276	8	30912	electric or propane
	Other Equipment?							
	Paving	**Start Date:**	**10/29/2018**	**Total phase:**	**6**			
		Start Date:	**11/9/2018**					
4		9	0.56	0	0	0	0	
1	Pavers	125	0.42			0	0	**small amount of AC patch work at curb and gutter**
	Paving Equipment	130	0.36			0	0	
1	Rollers	80	0.38	o				
1	Tractors/Loaders/Backhoes	97	0.37	o	o			
	Other Equipment?							

Equipment types listed in "Equipment Types" worksheet tab.
Equipment listed in this sheet is to provide an example of inputs
It is assumed that water trucks would be used during grading
Add or subtract phases and equipment, as appropriate
Modify horepower or load factor, as appropriate

1431 Jefferson Street, TAC

Alameda County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Enclosed Parking with Elevator	95.00	Space	0.00	36,000.00	0
Hotel	276.00	Room	0.40	151,218.00	0
Strip Mall	1.66	1000sqft	0.00	1,658.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	63
Climate Zone	5			**Operational Year**	2019
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	429.6	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Revised CO2 Emission Intensity

Land Use - From the recent construction information spreadsheet

Construction Phase - Using Default Construction Schedule

Off-road Equipment -

Off-road Equipment - Applicant provided construction schedule

Off-road Equipment - Applicant provided construction information

Off-road Equipment - From applicant provided construction information

Off-road Equipment - Applicant provided construction information

Off-road Equipment - Assuming 4 hours of paving work for 1 day.

Off-road Equipment - Applicant provided construction information

Off-road Equipment - Applicant provided construction information

Trips and VMT - Demolition Trips= 23+(298/20*2)~54
Reduced Trip Lengths for comuunity risk assessment

Demolition - 5150 sf of building demolished
Pavejment demolition included under paving trips

Grading - 5681 cy of soil exported

Vehicle Trips -

Energy Use - Default values used

Construction Off-road Equipment Mitigation - SCA Basic Controls and Tier 2 Mitigation with DPF Level 3

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	15
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2

tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstructionPhase	NumDays	5.00	276.00
tblConstructionPhase	NumDays	100.00	484.00
tblConstructionPhase	NumDays	10.00	12.00
tblConstructionPhase	NumDays	2.00	35.00
tblConstructionPhase	NumDays	5.00	6.00
tblConstructionPhase	NumDays	1.00	11.00
tblGrading	MaterialExported	0.00	5,681.00
tblLandUse	BuildingSpaceSquareFeet	38,000.00	36,000.00
tblLandUse	BuildingSpaceSquareFeet	400,752.00	151,218.00
tblLandUse	BuildingSpaceSquareFeet	1,660.00	1,658.00
tblLandUse	LandUseSquareFeet	38,000.00	36,000.00
tblLandUse	LandUseSquareFeet	400,752.00	151,218.00
tblLandUse	LandUseSquareFeet	1,660.00	1,658.00
tblLandUse	LotAcreage	0.86	0.00
tblLandUse	LotAcreage	9.20	0.40
tblLandUse	LotAcreage	0.04	0.00
tblOffRoadEquipment	HorsePower	89.00	62.00
tblOffRoadEquipment	LoadFactor	0.20	0.31
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Demolition
tblOffRoadEquipment	PhaseName		Grading
tblOffRoadEquipment	PhaseName		Architectural Coating
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	PhaseName		Site Preparation
tblOffRoadEquipment	PhaseName		Trenching
tblOffRoadEquipment	UsageHours	7.00	0.50
tblOffRoadEquipment	UsageHours	7.00	0.50
tblOffRoadEquipment	UsageHours	1.00	2.70
tblOffRoadEquipment	UsageHours	7.00	0.50
tblProjectCharacteristics	CO2IntensityFactor	641.35	429.6
tblProjectCharacteristics	OperationalYear	2018	2019
tblTripsAndVMT	HaulingTripLength	20.00	0.50
tblTripsAndVMT	HaulingTripLength	20.00	0.50
tblTripsAndVMT	HaulingTripLength	20.00	0.50
tblTripsAndVMT	HaulingTripLength	20.00	0.50
tblTripsAndVMT	HaulingTripLength	20.00	0.50
tblTripsAndVMT	HaulingTripLength	20.00	0.50
tblTripsAndVMT	HaulingTripLength	20.00	0.50
tblTripsAndVMT	HaulingTripNumber	23.00	54.00
tblTripsAndVMT	HaulingTripNumber	0.00	1,836.00
tblTripsAndVMT	VendorTripLength	7.30	0.50

tblTripsAndVMT	VendorTripLength	7.30	0.50
tblTripsAndVMT	VendorTripLength	7.30	0.50
tblTripsAndVMT	VendorTripLength	7.30	0.50
tblTripsAndVMT	VendorTripLength	7.30	0.50
tblTripsAndVMT	VendorTripLength	7.30	0.50
tblTripsAndVMT	VendorTripLength	7.30	0.50
tblTripsAndVMT	WorkerTripLength	10.80	0.50
tblTripsAndVMT	WorkerTripLength	10.80	0.50
tblTripsAndVMT	WorkerTripLength	10.80	0.50
tblTripsAndVMT	WorkerTripLength	10.80	0.50
tblTripsAndVMT	WorkerTripLength	10.80	0.50
tblTripsAndVMT	WorkerTripLength	10.80	0.50
tblTripsAndVMT	WorkerTripLength	10.80	0.50

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					
2017	0.0209	0.2613	0.1414	2.7000e-004	0.0158	9.9500e-003	0.0258	7.2900e-003	9.1700e-003	0.0165	0.0000	25.5621	25.5621	6.9800e-003	0.0000	25.7367
2018	0.5396	0.3870	0.2018	4.9000e-004	6.6800e-003	3.0000e-003	9.6700e-003	1.8500e-003	2.9600e-003	4.8000e-003	0.0000	45.8011	45.8011	7.4500e-003	0.0000	45.9872
2019	0.3147	0.2899	0.1405	3.7000e-004	5.1500e-003	1.9500e-003	7.0900e-003	1.4200e-003	1.9200e-003	3.3500e-003	0.0000	35.1298	35.1298	5.4200e-003	0.0000	35.2654
Maximum	**0.5396**	**0.3870**	**0.2018**	**4.9000e-004**	**0.0158**	**9.9500e-003**	**0.0258**	**7.2900e-003**	**9.1700e-003**	**0.0165**	**0.0000**	**45.8011**	**45.8011**	**7.4500e-003**	**0.0000**	**45.9872**

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					
2017	0.0100	0.2362	0.1543	2.7000e-004	7.6500e-003	8.5000e-004	8.5000e-003	1.8400e-003	8.5000e-004	2.6900e-003	0.0000	25.5621	25.5621	6.9800e-003	0.0000	25.7367
2018	0.5373	0.3956	0.2040	4.9000e-004	6.6800e-003	9.1000e-004	7.5900e-003	1.8500e-003	8.8000e-004	2.7200e-003	0.0000	45.8011	45.8011	7.4500e-003	0.0000	45.9872
2019	0.3133	0.2986	0.1422	3.7000e-004	5.1500e-003	6.4000e-004	5.7800e-003	1.4200e-003	6.2000e-004	2.0400e-003	0.0000	35.1298	35.1298	5.4200e-003	0.0000	35.2654
Maximum	**0.5373**	**0.3956**	**0.2040**	**4.9000e-004**	**7.6500e-003**	**9.1000e-004**	**8.5000e-003**	**1.8500e-003**	**8.8000e-004**	**2.7200e-003**	**0.0000**	**45.8011**	**45.8011**	**7.4500e-003**	**0.0000**	**45.9872**

	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	**1.66**	**0.84**	**-3.49**	**0.00**	**29.55**	**83.89**	**48.58**	**51.61**	**83.27**	**69.73**	**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	**10-4-2017**	**1-3-2018**	0.2793	0.2451
2	**1-4-2018**	**4-3-2018**	0.1003	0.1018
3	**4-4-2018**	**7-3-2018**	0.2381	0.2396
4	**7-4-2018**	**10-3-2018**	0.2978	0.2993
5	**10-4-2018**	**1-3-2019**	0.2967	0.2983
6	**1-4-2019**	**4-3-2019**	0.2850	0.2873
7	**4-4-2019**	**7-3-2019**	0.2007	0.2031
8	**7-4-2019**	**9-30-2019**	0.0980	0.1003
		Highest	0.2978	0.2993

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	10/4/2017	10/19/2017	5	12	
2	Site Preparation	Site Preparation	10/20/2017	11/3/2017	5	11	
3	Grading	Grading	10/21/2017	12/8/2017	5	35	
4	Trenching	Trenching	10/21/2017	11/3/2017	5	10	
5	Building Construction	Building Construction	12/4/2017	10/10/2019	5	484	
6	Architectural Coating	Architectural Coating	5/1/2018	5/21/2019	5	276	
7	Paving	Paving	10/29/2018	11/5/2018	5	6	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 229,314; Non-Residential Outdoor: 76,438; Striped Parking Area:

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	0	8.00	81	0.73
Demolition	Excavators	1	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	2.70	247	0.40
Demolition	Tractors/Loaders/Backhoes	0	6.00	97	0.37
Site Preparation	Graders	0	8.00	187	0.41
Site Preparation	Rubber Tired Dozers	1	2.90	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Grading	Concrete/Industrial Saws	0	8.00	81	0.73
Grading	Excavators	1	8.00	158	0.38
Grading	Rubber Tired Dozers	0	1.00	247	0.40
Grading	Tractors/Loaders/Backhoes	0	6.00	97	0.37
Trenching	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction	Cranes	0	4.00	231	0.29
Building Construction	Forklifts	0	6.00	89	0.20
Building Construction	Pumps	1	0.50	84	0.74

Building Construction	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Architectural Coating	Air Compressors	0	6.00	78	0.48
Architectural Coating	Forklifts	0	8.00	62	0.31
Paving	Cement and Mortar Mixers	0	6.00	9	0.56
Paving	Pavers	1	0.50	130	0.42
Paving	Rollers	1	0.50	80	0.38
Paving	Tractors/Loaders/Backhoes	1	0.50	97	0.37

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	3	8.00	0.00	54.00	0.50	0.50	0.50	LD_Mix	HDT_Mix	HHDT
Site Preparation	1	3.00	0.00	0.00	0.50	0.50	0.50	LD_Mix	HDT_Mix	HHDT
Grading	1	3.00	0.00	710.00	0.50	0.50	0.50	LD_Mix	HDT_Mix	HHDT
Trenching	1	3.00	0.00	0.00	0.50	0.50	0.50	LD_Mix	HDT_Mix	HHDT
Building Construction	1	79.00	31.00	1,836.00	0.50	0.50	0.50	LD_Mix	HDT_Mix	HHDT
Architectural Coating	0	16.00	0.00	0.00	0.50	0.50	0.50	LD_Mix	HDT_Mix	HHDT
Paving	3	8.00	0.00	0.00	0.50	0.50	0.50	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Use DPF for Construction Equipment

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Demolition - 2017

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					2.5300e-003	0.0000	2.5300e-003	3.8000e-004	0.0000	3.8000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.1100e-003	0.0776	0.0388	7.0000e-005		3.8100e-003	3.8100e-003		3.5000e-003	3.5000e-003	0.0000	6.0844	6.0844	1.8600e-003	0.0000	6.1310
Total	**7.1100e-003**	**0.0776**	**0.0388**	**7.0000e-005**	**2.5300e-003**	**3.8100e-003**	**6.3400e-003**	**3.8000e-004**	**3.5000e-003**	**3.8800e-003**	**0.0000**	**6.0844**	**6.0844**	**1.8600e-003**	**0.0000**	**6.1310**

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	7.0000e-005	3.0200e-003	4.2000e-004	0.0000	1.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	1.0000e-005	0.0000	0.3241	0.3241	7.0000e-005	0.0000	0.3259
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	7.0000e-005	3.0000e-005	4.3000e-004	0.0000	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	1.0000e-005	0.0000	0.0272	0.0272	0.0000	0.0000	0.0273
Total	**1.4000e-004**	**3.0500e-003**	**8.5000e-004**	**0.0000**	**3.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**	**0.0000**	**0.3513**	**0.3513**	**7.0000e-005**	**0.0000**	**0.3531**

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					1.1400e-003	0.0000	1.1400e-003	9.0000e-005	0.0000	9.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.0500e-003	0.0558	0.0419	7.0000e-005		2.2000e-004	2.2000e-004		2.2000e-004	2.2000e-004	0.0000	6.0844	6.0844	1.8600e-003	0.0000	6.1310
Total	**2.0500e-003**	**0.0558**	**0.0419**	**7.0000e-005**	**1.1400e-003**	**2.2000e-004**	**1.3600e-003**	**9.0000e-005**	**2.2000e-004**	**3.1000e-004**	**0.0000**	**6.0844**	**6.0844**	**1.8600e-003**	**0.0000**	**6.1310**

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	7.0000e-005	3.0200e-003	4.2000e-004	0.0000	1.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	1.0000e-005	0.0000	0.3241	0.3241	7.0000e-005	0.0000	0.3259
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	7.0000e-005	3.0000e-005	4.3000e-004	0.0000	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	1.0000e-005	0.0000	0.0272	0.0272	0.0000	0.0000	0.0273
Total	**1.4000e-004**	**3.0500e-003**	**8.5000e-004**	**0.0000**	**3.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**	**0.0000**	**0.3513**	**0.3513**	**7.0000e-005**	**0.0000**	**0.3531**

3.3 Site Preparation - 2017

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					0.0120	0.0000	0.0120	6.6000e-003	0.0000	6.6000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.4500e-003	0.0267	9.2200e-003	2.0000e-005		1.3000e-003	1.3000e-003		1.2000e-003	1.2000e-003	0.0000	1.5807	1.5807	4.8000e-004	0.0000	1.5929
Total	**2.4500e-003**	**0.0267**	**9.2200e-003**	**2.0000e-005**	**0.0120**	**1.3000e-003**	**0.0133**	**6.6000e-003**	**1.2000e-003**	**7.8000e-003**	**0.0000**	**1.5807**	**1.5807**	**4.8000e-004**	**0.0000**	**1.5929**

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	2.0000e-005	1.0000e-005	1.5000e-004	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	9.3600e-003	9.3600e-003	0.0000	0.0000	9.3800e-003
Total	**2.0000e-005**	**1.0000e-005**	**1.5000e-004**	**0.0000**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**9.3600e-003**	**9.3600e-003**	**0.0000**	**0.0000**	**9.3800e-003**

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					5.4000e-003	0.0000	5.4000e-003	1.4800e-003	0.0000	1.4800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.2000e-004	0.0144	9.0300e-003	2.0000e-005		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	1.5807	1.5807	4.8000e-004	0.0000	1.5928
Total	**4.2000e-004**	**0.0144**	**9.0300e-003**	**2.0000e-005**	**5.4000e-003**	**5.0000e-005**	**5.4500e-003**	**1.4800e-003**	**5.0000e-005**	**1.5300e-003**	**0.0000**	**1.5807**	**1.5807**	**4.8000e-004**	**0.0000**	**1.5928**

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	2.0000e-005	1.0000e-005	1.5000e-004	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	9.3600e-003	9.3600e-003	0.0000	0.0000	9.3800e-003
Total	**2.0000e-005**	**1.0000e-005**	**1.5000e-004**	**0.0000**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**9.3600e-003**	**9.3600e-003**	**0.0000**	**0.0000**	**9.3800e-003**

3.4 Grading - 2017

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					3.2000e-004	0.0000	3.2000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.1800e-003	0.0686	0.0584	9.0000e-005		3.3700e-003	3.3700e-003		3.1000e-003	3.1000e-003	0.0000	8.3808	8.3808	2.5700e-003	0.0000	8.4450
Total	**6.1800e-003**	**0.0686**	**0.0584**	**9.0000e-005**	**3.2000e-004**	**3.3700e-003**	**3.6900e-003**	**5.0000e-005**	**3.1000e-003**	**3.1500e-003**	**0.0000**	**8.3808**	**8.3808**	**2.5700e-003**	**0.0000**	**8.4450**

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	9.2000e-004	0.0397	5.5000e-003	4.0000e-005	1.6000e-004	6.0000e-005	2.1000e-004	4.0000e-005	5.0000e-005	1.0000e-004	0.0000	4.2610	4.2610	9.3000e-004	0.0000	4.2843
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	8.0000e-005	4.0000e-005	4.7000e-004	0.0000	2.0000e-005	0.0000	2.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0298	0.0298	0.0000	0.0000	0.0299

Total	**1.0000e-003**	**0.0397**	**5.9700e-003**	**4.0000e-005**	**1.8000e-004**	**6.0000e-005**	**2.3000e-004**	**5.0000e-005**	**5.0000e-005**	**1.1000e-004**	**0.0000**	**4.2908**	**4.2908**	**9.3000e-004**	**0.0000**	**4.3142**

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					1.4000e-004	0.0000	1.4000e-004	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.5200e-003	0.0773	0.0686	9.0000e-005		3.6000e-004	3.6000e-004		3.6000e-004	3.6000e-004	0.0000	8.3808	8.3808	2.5700e-003	0.0000	8.4449
Total	**3.5200e-003**	**0.0773**	**0.0686**	**9.0000e-005**	**1.4000e-004**	**3.6000e-004**	**5.0000e-004**	**1.0000e-005**	**3.6000e-004**	**3.7000e-004**	**0.0000**	**8.3808**	**8.3808**	**2.5700e-003**	**0.0000**	**8.4449**

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	9.2000e-004	0.0397	5.5000e-003	4.0000e-005	1.6000e-004	6.0000e-005	2.1000e-004	4.0000e-005	5.0000e-005	1.0000e-004	0.0000	4.2610	4.2610	9.3000e-004	0.0000	4.2843
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	8.0000e-005	4.0000e-005	4.7000e-004	0.0000	2.0000e-005	0.0000	2.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0298	0.0298	0.0000	0.0000	0.0299
Total	**1.0000e-003**	**0.0397**	**5.9700e-003**	**4.0000e-005**	**1.8000e-004**	**6.0000e-005**	**2.3000e-004**	**5.0000e-005**	**5.0000e-005**	**1.1000e-004**	**0.0000**	**4.2908**	**4.2908**	**9.3000e-004**	**0.0000**	**4.3142**

3.5 Trenching - 2017

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	1.5800e-003	0.0152	0.0120	2.0000e-005		1.1400e-003	1.1400e-003		1.0500e-003	1.0500e-003	0.0000	1.4436	1.4436	4.4000e-004	0.0000	1.4547
Total	**1.5800e-003**	**0.0152**	**0.0120**	**2.0000e-005**		**1.1400e-003**	**1.1400e-003**		**1.0500e-003**	**1.0500e-003**	**0.0000**	**1.4436**	**1.4436**	**4.4000e-004**	**0.0000**	**1.4547**

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	2.0000e-005	1.0000e-005	1.4000e-004	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	8.5100e-003	8.5100e-003	0.0000	0.0000	8.5300e-003
Total	**2.0000e-005**	**1.0000e-005**	**1.4000e-004**	**0.0000**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**8.5100e-003**	**8.5100e-003**	**0.0000**	**0.0000**	**8.5300e-003**

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	7.3000e-004	0.0150	0.0117	2.0000e-005		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005	0.0000	1.4436	1.4436	4.4000e-004	0.0000	1.4547
Total	**7.3000e-004**	**0.0150**	**0.0117**	**2.0000e-005**		**9.0000e-005**	**9.0000e-005**		**9.0000e-005**	**9.0000e-005**	**0.0000**	**1.4436**	**1.4436**	**4.4000e-004**	**0.0000**	**1.4547**

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	2.0000e-005	1.0000e-005	1.4000e-004	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	8.5100e-003	8.5100e-003	0.0000	0.0000	8.5300e-003
Total	**2.0000e-005**	**1.0000e-005**	**1.4000e-004**	**0.0000**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**8.5100e-003**	**8.5100e-003**	**0.0000**	**0.0000**	**8.5300e-003**

3.6 Building Construction - 2017

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	3.7000e-004	2.8300e-003	2.3900e-003	0.0000		2.0000e-004	2.0000e-004		2.0000e-004	2.0000e-004	0.0000	0.3533	0.3533	3.0000e-005	0.0000	0.3540
Total	**3.7000e-004**	**2.8300e-003**	**2.3900e-003**	**0.0000**		**2.0000e-004**	**2.0000e-004**		**2.0000e-004**	**2.0000e-004**	**0.0000**	**0.3533**	**0.3533**	**3.0000e-005**	**0.0000**	**0.3540**

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	1.0000e-004	4.2400e-003	5.9000e-004	0.0000	3.0000e-004	1.0000e-005	3.0000e-004	7.0000e-005	1.0000e-005	8.0000e-005	0.0000	0.4553	0.4553	1.0000e-004	0.0000	0.4578
Vendor	6.8000e-004	0.0228	5.8200e-003	2.0000e-005	1.5000e-004	5.0000e-005	2.0000e-004	4.0000e-005	5.0000e-005	9.0000e-005	0.0000	2.1559	2.1559	4.4000e-004	0.0000	2.1670
Worker	1.1900e-003	5.5000e-004	7.1200e-003	1.0000e-005	3.0000e-004	1.0000e-005	3.0000e-004	8.0000e-005	1.0000e-005	9.0000e-005	0.0000	0.4482	0.4482	4.0000e-005	0.0000	0.4491
Total	**1.9700e-003**	**0.0276**	**0.0135**	**3.0000e-005**	**7.5000e-004**	**7.0000e-005**	**8.0000e-004**	**1.9000e-004**	**7.0000e-005**	**2.6000e-004**	**0.0000**	**3.0594**	**3.0594**	**5.8000e-004**	**0.0000**	**3.0739**

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	1.6000e-004	3.2500e-003	2.5400e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.3533	0.3533	3.0000e-005	0.0000	0.3540
Total	**1.6000e-004**	**3.2500e-003**	**2.5400e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.3533**	**0.3533**	**3.0000e-005**	**0.0000**	**0.3540**

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	1.0000e-004	4.2400e-003	5.9000e-004	0.0000	3.0000e-004	1.0000e-005	3.0000e-004	7.0000e-005	1.0000e-005	8.0000e-005	0.0000	0.4553	0.4553	1.0000e-004	0.0000	0.4578
Vendor	6.8000e-004	0.0228	5.8200e-003	2.0000e-005	1.5000e-004	5.0000e-005	2.0000e-004	4.0000e-005	5.0000e-005	9.0000e-005	0.0000	2.1559	2.1559	4.4000e-004	0.0000	2.1670
Worker	1.1900e-003	5.5000e-004	7.1200e-003	1.0000e-005	3.0000e-004	1.0000e-005	3.0000e-004	8.0000e-005	1.0000e-005	9.0000e-005	0.0000	0.4482	0.4482	4.0000e-005	0.0000	0.4491
Total	**1.9700e-003**	**0.0276**	**0.0135**	**3.0000e-005**	**7.5000e-004**	**7.0000e-005**	**8.0000e-004**	**1.9000e-004**	**7.0000e-005**	**2.6000e-004**	**0.0000**	**3.0594**	**3.0594**	**5.8000e-004**	**0.0000**	**3.0739**

3.6 Building Construction - 2018

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	4.3400e-003	0.0341	0.0310	5.0000e-005		2.2500e-003	2.2500e-003		2.2500e-003	2.2500e-003	0.0000	4.6100	4.6100	3.5000e-004	0.0000	4.6187
Total	**4.3400e-003**	**0.0341**	**0.0310**	**5.0000e-005**		**2.2500e-003**	**2.2500e-003**		**2.2500e-003**	**2.2500e-003**	**0.0000**	**4.6100**	**4.6100**	**3.5000e-004**	**0.0000**	**4.6187**

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	1.1600e-003	0.0538	7.0800e-003	6.0000e-005	3.5000e-004	5.0000e-005	4.1000e-004	9.0000e-005	5.0000e-005	1.5000e-004	0.0000	6.0327	6.0327	1.2000e-003	0.0000	6.0628
Vendor	7.9400e-003	0.2904	0.0689	3.0000e-004	1.9200e-003	4.8000e-004	2.4000e-003	5.7000e-004	4.6000e-004	1.0300e-003	0.0000	28.4935	28.4935	5.3400e-003	0.0000	28.6271
Worker	0.0139	6.2200e-003	0.0821	6.0000e-005	3.8700e-003	9.0000e-005	3.9600e-003	1.0400e-003	9.0000e-005	1.1300e-003	0.0000	5.6991	5.6991	4.4000e-004	0.0000	5.7100

Total	**0.0230**	**0.3504**	**0.1581**	**4.2000e-004**	**6.1400e-003**	**6.2000e-004**	**6.7700e-003**	**1.7000e-003**	**6.0000e-004**	**2.3100e-003**	**0.0000**	**40.2253**	**40.2253**	**6.9800e-003**	**0.0000**	**40.3999**

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	2.0600e-003	0.0425	0.0331	5.0000e-005		2.6000e-004	2.6000e-004		2.6000e-004	2.6000e-004	0.0000	4.6100	4.6100	3.5000e-004	0.0000	4.6187
Total	**2.0600e-003**	**0.0425**	**0.0331**	**5.0000e-005**		**2.6000e-004**	**2.6000e-004**		**2.6000e-004**	**2.6000e-004**	**0.0000**	**4.6100**	**4.6100**	**3.5000e-004**	**0.0000**	**4.6187**

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	1.1600e-003	0.0538	7.0800e-003	6.0000e-005	3.5000e-004	5.0000e-005	4.1000e-004	9.0000e-005	5.0000e-005	1.5000e-004	0.0000	6.0327	6.0327	1.2000e-003	0.0000	6.0628
Vendor	7.9400e-003	0.2904	0.0689	3.0000e-004	1.9200e-003	4.8000e-004	2.4000e-003	5.7000e-004	4.6000e-004	1.0300e-003	0.0000	28.4935	28.4935	5.3400e-003	0.0000	28.6271
Worker	0.0139	6.2200e-003	0.0821	6.0000e-005	3.8700e-003	9.0000e-005	3.9600e-003	1.0400e-003	9.0000e-005	1.1300e-003	0.0000	5.6991	5.6991	4.4000e-004	0.0000	5.7100
Total	**0.0230**	**0.3504**	**0.1581**	**4.2000e-004**	**6.1400e-003**	**6.2000e-004**	**6.7700e-003**	**1.7000e-003**	**6.0000e-004**	**2.3100e-003**	**0.0000**	**40.2253**	**40.2253**	**6.9800e-003**	**0.0000**	**40.3999**

3.6 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	2.9800e-003	0.0243	0.0240	4.0000e-005		1.5100e-003	1.5100e-003		1.5100e-003	1.5100e-003	0.0000	3.5855	3.5855	2.4000e-004	0.0000	3.5915
Total	**2.9800e-003**	**0.0243**	**0.0240**	**4.0000e-005**		**1.5100e-003**	**1.5100e-003**		**1.5100e-003**	**1.5100e-003**	**0.0000**	**3.5855**	**3.5855**	**2.4000e-004**	**0.0000**	**3.5915**

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	8.5000e-004	0.0406	5.1700e-003	5.0000e-005	3.4000e-004	4.0000e-005	3.8000e-004	9.0000e-005	4.0000e-005	1.2000e-004	0.0000	4.6840	4.6840	9.0000e-004	0.0000	4.7063
Vendor	5.6600e-003	0.2203	0.0490	2.3000e-004	1.4900e-003	3.2000e-004	1.8200e-003	4.4000e-004	3.1000e-004	7.5000e-004	0.0000	22.1167	22.1167	3.9600e-003	0.0000	22.2158
Worker	9.7600e-003	4.2200e-003	0.0567	5.0000e-005	3.0100e-003	7.0000e-005	3.0800e-003	8.1000e-004	6.0000e-005	8.8000e-004	0.0000	4.3094	4.3094	3.0000e-004	0.0000	4.3168
Total	**0.0163**	**0.2652**	**0.1108**	**3.3000e-004**	**4.8400e-003**	**4.3000e-004**	**5.2800e-003**	**1.3400e-003**	**4.1000e-004**	**1.7500e-003**	**0.0000**	**31.1100**	**31.1100**	**5.1600e-003**	**0.0000**	**31.2389**

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	1.6000e-003	0.0330	0.0257	4.0000e-005		2.0000e-004	2.0000e-004		2.0000e-004	2.0000e-004	0.0000	3.5855	3.5855	2.4000e-004	0.0000	3.5915
Total	**1.6000e-003**	**0.0330**	**0.0257**	**4.0000e-005**		**2.0000e-004**	**2.0000e-004**		**2.0000e-004**	**2.0000e-004**	**0.0000**	**3.5855**	**3.5855**	**2.4000e-004**	**0.0000**	**3.5915**

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	8.5000e-004	0.0406	5.1700e-003	5.0000e-005	3.4000e-004	4.0000e-005	3.8000e-004	9.0000e-005	4.0000e-005	1.2000e-004	0.0000	4.6840	4.6840	9.0000e-004	0.0000	4.7063
Vendor	5.6600e-003	0.2203	0.0490	2.3000e-004	1.4900e-003	3.2000e-004	1.8200e-003	4.4000e-004	3.1000e-004	7.5000e-004	0.0000	22.1167	22.1167	3.9600e-003	0.0000	22.2158
Worker	9.7600e-003	4.2200e-003	0.0567	5.0000e-005	3.0100e-003	7.0000e-005	3.0800e-003	8.1000e-004	6.0000e-005	8.8000e-004	0.0000	4.3094	4.3094	3.0000e-004	0.0000	4.3168
Total	**0.0163**	**0.2652**	**0.1108**	**3.3000e-004**	**4.8400e-003**	**4.3000e-004**	**5.2800e-003**	**1.3400e-003**	**4.1000e-004**	**1.7500e-003**	**0.0000**	**31.1100**	**31.1100**	**5.1600e-003**	**0.0000**	**31.2389**

3.7 Architectural Coating - 2018

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	0.5102					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	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
Total	**0.5102**	**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**

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	1.8900e-003	8.4000e-004	0.0111	1.0000e-005	5.3000e-004	1.0000e-005	5.4000e-004	1.4000e-004	1.0000e-005	1.5000e-004	0.0000	0.7739	0.7739	6.0000e-005	0.0000	0.7754
Total	**1.8900e-003**	**8.4000e-004**	**0.0111**	**1.0000e-005**	**5.3000e-004**	**1.0000e-005**	**5.4000e-004**	**1.4000e-004**	**1.0000e-005**	**1.5000e-004**	**0.0000**	**0.7739**	**0.7739**	**6.0000e-005**	**0.0000**	**0.7754**

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	0.5102					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	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
Total	**0.5102**	**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**

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	1.8900e-003	8.4000e-004	0.0111	1.0000e-005	5.3000e-004	1.0000e-005	5.4000e-004	1.4000e-004	1.0000e-005	1.5000e-004	0.0000	0.7739	0.7739	6.0000e-005	0.0000	0.7754
Total	**1.8900e-003**	**8.4000e-004**	**0.0111**	**1.0000e-005**	**5.3000e-004**	**1.0000e-005**	**5.4000e-004**	**1.4000e-004**	**1.0000e-005**	**1.5000e-004**	**0.0000**	**0.7739**	**0.7739**	**6.0000e-005**	**0.0000**	**0.7754**

3.7 Architectural Coating - 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					
Archit. Coating	0.2945					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	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
Total	**0.2945**	**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**

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	9.8000e-004	4.2000e-004	5.7100e-003	0.0000	3.0000e-004	1.0000e-005	3.1000e-004	8.0000e-005	1.0000e-005	9.0000e-005	0.0000	0.4342	0.4342	3.0000e-005	0.0000	0.4350

Total	**9.8000e-004**	**4.2000e-004**	**5.7100e-003**	**0.0000**	**3.0000e-004**	**1.0000e-005**	**3.1000e-004**	**8.0000e-005**	**1.0000e-005**	**9.0000e-005**	**0.0000**	**0.4342**	**0.4342**	**3.0000e-005**	**0.0000**	**0.4350**

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	0.2945					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	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
Total	**0.2945**	**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**

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	9.8000e-004	4.2000e-004	5.7100e-003	0.0000	3.0000e-004	1.0000e-005	3.1000e-004	8.0000e-005	1.0000e-005	9.0000e-005	0.0000	0.4342	0.4342	3.0000e-005	0.0000	0.4350
Total	**9.8000e-004**	**4.2000e-004**	**5.7100e-003**	**0.0000**	**3.0000e-004**	**1.0000e-005**	**3.1000e-004**	**8.0000e-005**	**1.0000e-005**	**9.0000e-005**	**0.0000**	**0.4342**	**0.4342**	**3.0000e-005**	**0.0000**	**0.4350**

3.8 Paving - 2018

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	1.6000e-004	1.6400e-003	1.3500e-003	0.0000		1.0000e-004	1.0000e-004		9.0000e-005	9.0000e-005	0.0000	0.1786	0.1786	6.0000e-005	0.0000	0.1800
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.6000e-004**	**1.6400e-003**	**1.3500e-003**	**0.0000**		**1.0000e-004**	**1.0000e-004**		**9.0000e-005**	**9.0000e-005**	**0.0000**	**0.1786**	**0.1786**	**6.0000e-005**	**0.0000**	**0.1800**

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	3.0000e-005	1.0000e-005	1.9000e-004	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0133	0.0133	0.0000	0.0000	0.0133
Total	**3.0000e-005**	**1.0000e-005**	**1.9000e-004**	**0.0000**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0133**	**0.0133**	**0.0000**	**0.0000**	**0.0133**

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	8.0000e-005	1.7900e-003	1.4800e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	0.1786	0.1786	6.0000e-005	0.0000	0.1800
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**8.0000e-005**	**1.7900e-003**	**1.4800e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**0.1786**	**0.1786**	**6.0000e-005**	**0.0000**	**0.1800**

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	3.0000e-005	1.0000e-005	1.9000e-004	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0133	0.0133	0.0000	0.0000	0.0133
Total	**3.0000e-005**	**1.0000e-005**	**1.9000e-004**	**0.0000**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0133**	**0.0133**	**0.0000**	**0.0000**	**0.0133**

1431 Jefferson Street, Oakland, CA

Without SCA recommended control measures

DPM Emissions and Modeling Emission Rates

Emissions Model Year	Activity	DPM (ton/year)	Area Source	DPM Emissions (lb/yr)	DPM Emissions (lb/hr)	DPM Emissions (g/s)	Modeled Area (m^2)	DPM Emission Rate ($g/s/m^2$)
2017	Construction	0.0100	DPM	19.9	0.00606	7.63E-04	1,610	4.74E-07
2018	Construction	0.0030	DPM	6.0	0.00183	2.30E-04	1,610	1.43E-07
2019	Construction	0.0020	DPM	3.9	0.00119	1.50E-04	1,610	9.29E-08
Total		***0.0149***		***29.8***	***0.0091***	***0.0011***		

Operation Hours

hr/day =	9	(7am - 4pm)
days/yr =	365	
hours/year =	3285	

PM2.5 Fugitive Dust Emissions for Modeling

Construction Year	Activity	Area Source	PM2.5 Emissions (ton/year)	PM2.5 Emissions (lb/yr)	PM2.5 Emissions (lb/hr)	PM2.5 Emissions (g/s)	Modeled Area (m^2)	PM2.5 Emission Rate $g/s/m^2$
2017	Construction	FUG	0.0073	14.6	0.00444	5.59E-04	1,610	3.47E-07
2018	Construction	FUG	0.0019	3.7	0.00113	1.42E-04	1,610	8.82E-08
2019	Construction	FUG	0.0014	2.8	0.00086	1.09E-04	1,610	6.77E-08
Total			***0.0106***	***21.1***	***0.0064***	***0.0008***		

Operation Hours

hr/day =	9	(7am - 4pm)
days/yr =	365	
hours/year =	3285	

With SCA recommended control measures

DPM Emissions and Modeling Emission Rates

Emissions Model Year	Activity	DPM (ton/year)	Area Source	DPM Emissions (lb/yr)	DPM Emissions (lb/hr)	DPM Emissions (g/s)	Modeled Area (m^2)	DPM Emission Rate ($g/s/m^2$)
2017	Construction	0.0009	DPM	1.7	0.00052	6.52E-05	1,610	4.05E-08
2018	Construction	0.0009	DPM	1.8	0.00055	6.98E-05	1,610	4.34E-08
2019	Construction	0.0006	DPM	1.3	0.00039	4.91E-05	1,610	3.05E-08
Total		***0.0024***		***4.8***	***0.0015***	***0.0002***		

Operation Hours

hr/day =	9	(7am - 4pm)
days/yr =	365	
hours/year =	3285	

PM2.5 Fugitive Dust Emissions for Modeling

Construction Year	Activity	Area Source	PM2.5 Emissions (ton/year)	PM2.5 Emissions (lb/yr)	PM2.5 Emissions (lb/hr)	PM2.5 Emissions (g/s)	Modeled Area (m^2)	PM2.5 Emission Rate $g/s/m^2$
2017	Construction	FUG	0.0018	3.7	0.00112	1.41E-04	1,610	8.77E-08
2018	Construction	FUG	0.0019	3.7	0.00113	1.42E-04	1,610	8.82E-08
2019	Construction	FUG	0.0014	2.8	0.00086	1.09E-04	1,610	6.77E-08
Total			***0.0051***	***10.2***	***0.0031***	***0.0004***		

Operation Hours

hr/day =	9	(7am - 4pm)
days/yr =	365	
hours/year =	3285	

Reduction factor	DPM	Fugitive Dust
2017	1.0000	0.747599451
2018	0.6966667	0
2019	0.6717949	0
Average Reduction	0.7895	0.747599451

1431 Jefferson Street,Oakland, CA
Maximum DPM Cancer Risk Calculations From Construction
Impacts at Off-Site Receptors-1.5 meter

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air ($\mu g/m^3$)
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

Values

	Infant/Child				Adult
Age -->	**3rd Trimester**	**0 - 2**	**2 - 9**	**2 - 16**	**16 - 30**
Parameter					
ASF =	10	10	3	3	1
CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00	1.10E+00
DBR* =	361	1090	631	572	261
A =	1	1	1	1	1
EF =	350	350	350	350	350
AT =	70	70	70	70	70
FAH =	0.85	0.85	0.72	0.72	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Construction Cancer Risk by Year - Maximum Impact Receptor Location

			Infant/Child - Exposure Information				Adult - Exposure Information				
			DPM Conc (ug/m3)		Age	Infant/Child	Modeled		Age	Adult	
Exposure	**Exposure**				**Sensitivity**	**Cancer**	**DPM Conc (ug/m3)**		**Sensitivity**	**Cancer**	
Year	**Duration (years)**	**Age**	**Year**	**Annual**	**Factor**	**Risk (per million)**	**Year**	**Annual**	**Factor**	**Risk (per million)**	**Fugitive PM2.5**
0	0.25	-0.25 - 0*	2017	0.0084	10	0.10	2017	0.0084	-	-	
1	1	0 - 1	2017	0.0084	10	1.17	2017	0.0084	1	0.02	0.0256
2	1	1 - 2	2018	0.0090	10	1.25	2018	0.0090	1	0.03	0.0258
3	1	2 - 3	2019	0.0068	3	0.13	2019	0.0068	1	0.02	0.0198
4	1	3 - 4		0.0031	3	0.06	2020	0.0031	1	0.01	
5	1	4 - 5		0.0031	3	0.06	2021	0.0031	1	0.01	
6	1	5 - 6		0.0031	3	0.06	2022	0.0031	1	0.01	
7	1	6 - 7		0.0031	3	0.06	2023	0.0031	1	0.01	
8	1	7 - 8		0.0031	3	0.06	2024	0.0031	1	0.01	
9	1	8 - 9		0.0031	3	0.06	2025	0.0031	1	0.01	
10	1	9 - 10		0.0031	3	0.06	2026	0.0031	1	0.01	
11	1	10 - 11		0.0031	3	0.06	2027	0.0031	1	0.01	
12	1	11 - 12		0.0031	3	0.06	2028	0.0031	1	0.01	
13	1	12 - 13		0.0031	3	0.06	2029	0.0031	1	0.01	
14	1	13 - 14		0.0031	3	0.06	2030	0.0031	1	0.01	
15	1	14 - 15		0.0031	3	0.06	2031	0.0031	1	0.01	
16	1	15 - 16		0.0031	3	0.06	2032	0.0031	1	0.01	
17	1	16-17		0.0031	1	0.01	2033	0.0031	1	0.01	
18	1	17-18		0.0031	1	0.01	2034	0.0031	1	0.01	
19	1	18-19		0.0031	1	0.01	2035	0.0031	1	0.01	
20	1	19-20		0.0031	1	0.01	2036	0.0031	1	0.01	
21	1	20-21		0.0031	1	0.01	2037	0.0031	1	0.01	
22	1	21-22		0.0031	1	0.01	2038	0.0031	1	0.01	
23	1	22-23		0.0031	1	0.01	2039	0.0031	1	0.01	
24	1	23-24		0.0031	1	0.01	2040	0.0031	1	0.01	
25	1	24-25		0.0031	1	0.01	2041	0.0031	1	0.01	
26	1	25-26		0.0031	1	0.01	2042	0.0031	1	0.01	
27	1	26-27		0.0031	1	0.01	2043	0.0031	1	0.01	
28	1	27-28		0.0031	1	0.01	2044	0.0031	1	0.01	
29	1	28-29		0.0031	1	0.01	2045	0.0031	1	0.01	
30	1	29-30		0.0031	1	0.01	2046	0.0031	1	0.01	

1431 Jefferson Street, Oakland, CA - Health Impact Summary

Maximum Impacts at Construction MEI Location

Emissions Year	Maximum Concentrations: Exhaust PM10/DPM ($\mu g/m^3$)	Maximum Concentrations: Fugitive PM2.5 ($\mu g/m^3$)	Cancer Risk (per million): Child	Cancer Risk (per million): Adult	Hazard Index (-)	Maximum Annual PM2.5 Concentration ($\mu g/m^3$)
2017	0.0084	0.0256	1.3	0.02	0.002	0.03
2018	0.0084	0.0258	1.3	0.03	0.002	0.03
2019	0.0090	0.0198	1.25	0.02	0.002	0.03
2020	0.0068		0.1	0.01	0.001	
2021	0.0031		0.06	0.01	0.001	
2022	0.0031		0.1	0.01	0.001	
2023	0.0031		0.06	0.01	0.001	
2024	0.0031		0.1	0.01	0.001	
2025	0.0031		0.06	0.01	0.001	
2026	0.0031		0.1	0.01	0.001	
2027	0.0031		0.06	0.01	0.001	
2028	0.0031		0.1	0.01	0.001	
2029	0.0031		0.06	0.01	0.001	
2030	0.0031		0.1	0.01	0.001	
2031	0.0031		0.06	0.01	0.001	
2032	0.0031		0.1	0.01	0.001	
2033	0.0031		0.06	0.01	0.001	
2034	0.0031		0.0	0.01	0.001	
2035	0.0031		0.01	0.01	0.001	
2036	0.0031		0.0	0.01	0.001	
2037	0.0031		0.01	0.01	0.001	
2038	0.0031		0.0	0.01	0.001	
2039	0.0031		0.01	0.01	0.001	
2040	0.0031		0.0	0.01	0.001	
2041	0.0031		0.01	0.01	0.001	
2042	0.0031		0.0	0.01	0.001	
2043	0.0031		0.01	0.01	0.001	
2044	0.0031		0.0	0.01	0.001	
2045	0.0031		0.01	0.01	0.001	
2046	0.0031		0.0	0.01	0.001	
Total			**4.7**	**0.31**		
Maximum	**0.0090**	**0.0258**			**0.002**	**0.03**

Attachment 4: Stationary Source Information and Roadway Risk Calculations

Bay Area Air Quality Management District

Risk & Hazard Stationary Source Inquiry Form

This form is required when users request stationary source data from BAAQMD. This form is to be used with the BAAQMD's Google Earth stationary source screening tables.

For guidance on conducting a risk & hazard screening, including for roadways & freeways, refer to the District's Risk & Hazard Analysis flow chart.

Table A: Requestor Contact Information	
Contact Name:	James Reyff
Affiliation:	Illingworth & Rodkin, Inc.
Phone:	707-794-0400
Email:	jreyff@illingworthrodkin.com
Date of Request	12/19/2016
Project Name:	Oakland Marriott
Address:	1431 Jefferson Street
City:	Oakland
County:	Alameda
Type (residential, commercial, mixed use, industrial, etc.):	Recreational- Hotel
Project size (# of units, or building square feet):	0.3 acres
Comments:	

For Air District assistance, the following steps must be completed:

Complete all the contact and project information requested in Table A. Incomplete forms will not be processed. Please include a project site map.

Download and install the free program Google Earth, http://www.google.com/earth/download/ge/, and then download the county specific Google Earth stationary source application files from the District's website, http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Tools-and-Methodology.aspx. The small points on the map represent stationary sources permitted by the District (Map A on right). These permitted sources include diesel back-up generators, gas stations, dry cleaners, boilers, printers, auto spray booths, etc. Click on a point to view the source's Information Table, including the name, location, and preliminary estimated cancer risk, hazard index, and PM2.5 concentration.

Find the project site in Google Earth by inputting the site's address in the Google Earth search box.

Using the Google Earth ruler function, measure the distance in feet between the project's fenceline and the stationary source's fenceline for all the sources that are within 1,000 feet of the project's fenceline. Verify that the location of the source on the map matches with the source's address in the Information Table, by using the Google Earth address search box to confirm that the source is within 1,000 feet of the project. Please report any mapping errors to the District (District contact information in Step 9).

If the stationary source is within 1,000 feet of the project's fenceline and the stationary source's information table does not list the cancer risk, hazard index, and PM2.5 concentration, and instead says to "Contact District Staff", list the stationary source information in Table B Section 1 below.

Note that a small percentage of the stationary sources have Health Risk Screening Assessment (HRSA) data INSTEAD of screening level data. These sources will be noted by an asterisk next to the Plant Name (Map B on right). If HRSA values are presented, these values have already been modeled and cannot be adjusted further.

Email this completed form to District staff (Step 9). District staff will provide the most recent risk, hazard, and PM2.5 data that are available for the source(s). If this information or data are not available, source emissions data will be provided. Staff will respond to inquiries within three weeks.

Note that a public records request received for the same stationary source information will cancel the processing of your SSIF request.

Submit forms, maps, and questions to Alison Kirk at 415-749-5169, or akirk@baaqmd.gov .

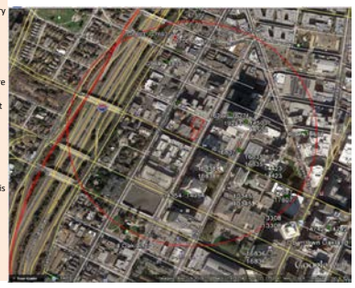


Table B: Stationary Sources within 1,000 feet of Receptor that say "Contact District Staff"

Table B Section 1: Requestor fills out these columns based on Google Earth data				Table B Section 2: BAAQMD returns form with additional information in these columns as needed								
Distance from Receptor (feet)	**Plant # or Gas Dispensary #**	**Facility Name**	**Street Address**	**2011 Screening Level Cancer Risk (1)**	**2011 Screening Level Hazard Index (1)**	**2011 Screening Level PM2.5 (1)**	**2014 Screening Level Cancer Risk (1)**	**2014 Screening Level Hazard Index (1)**	**2014 Screening Level PM2.5 (1)**	**Distance to Threshold Cancer Risk**	**Multiplier**	**Distance Adjusted PM2.5 Level**
465	G9646	City of Oakland, Fire Station	1605 Martin Luther King Way	na	na	na	#VALUE!	#VALUE!	#VALUE!			
465	14301	City of Oakland, Environmental Sciences Division	1605 Martin Luther King Way	62.8	0.022	0.015	86.31	0.030	0.021			
750	14354	Shorenstein Realty Services	555 12th Street	79.43	0.028	0.141	109.17	0.038	0.194			
530	16838	Shorenstein Realty Services L P	1300 Clay Street	20.84	0.007	0.037	28.64	0.010	0.051			
220	16749	General Services Administration-East Bay	1301 Clay Street	177.43	0.064	0.710	243.86	0.088	0.976			
200	10345	Best Instrument Repair Company	564 14th Street	0	0.000	0.000	0.00	0.000	0.000			
670	16837	Shorenstein Realty Services L P	525 14th Street, Parking Garage	82.73	0.029	0.019	113.70	0.040	0.026			
875	16713	Alameda County Employees Retirement Association (Generator)	475 14th Street	0	0.000	0.000	0.00	0.000	0.000			
875	14423	Oakland 14th Street (Generator)	475 14th Street	69.9	0.025	0.016	96.07	0.034	0.022			
675	16835	Shorenstein Realty Services L P	505 14th Street	9.25	0.003	0.002	12.71	0.004	0.003			
375	16271	D G Cogen Partners, LLC	1515 clay street	0	0.000	1.190	0.00	0.000	1.636			
375	19281	State of California (Generator)	1515 clay street	27.54	0.010	0.271	37.85	0.014	0.372			
825	G7693	Chevron SS#9-4800	1700 Castro Street	18.758	0.022	na	25.78	0.030	#VALUE!			

Plant# 16271 808 Renewable Energy
1515 Clay Street
Oakland, CA 94612

[C]urrent, [A]rchive, or [F]uture? c
[P]lant, [S]ource, [A]bate. device, or [E]mis. Point? p

CURRENT Sources:

1 Hess Microgen Internal Combustion Engine
Reciprocating engine, 282 hp, Hess Microgen, 671.3 cu in, Co-generation
C72AF189 /,A1,

2 Hess Microgen Internal Combustion Engine
Reciprocating engine, 282 hp, Hess Microgen, 671.3 cu in, Co-generation
C72AF189 /,A2,

3 Hess Microgen Internal Combustion Engine
Reciprocating engine, 282 hp, Hess Microgen, 671.3 cu in, Co-generation
C72AF189 /,A3,

CURRENT Abatement Devices:

1 ****abate. dev. name not found****
Non-Selective Catalytic Reduction (NSCR)
train: ,S1,/,P1,

2 ****abate. dev. name not found****
Non-Selective Catalytic Reduction (NSCR)
train: ,S2,/,P2,

3 ****abate. dev. name not found****
Non-Selective Catalytic Reduction (NSCR)
train: ,S3,/,P3,

BAY AREA AIR QUALITY MANAGEMENT DISTRICT Printed: MAR 14, 2017
DETAIL POLLUTANTS - ABATED
MOST RECENT P/O APPROVED (2014)

808 Renewable Energy (P# 16271)

S# SOURCE NAME / MATERIAL	SOURCE CODE / THROUGHPUT	DATE	POLLUTANT	CODE	LBS/DAY
1 Hess Microgen Internal Combustion Engine	C72AF189				
			Organics (other, including	990	6.08E-01
			Particulates (part not spe	1990	6.37E-02
			Nitrous Oxide (N2O)	2030	1.14E-04
			Nitrogen Oxides (part not	2990	3.04E-01
			Sulfur Dioxide (SO2)	3990	1.87E-03
			Carbon Monoxide (CO) pollu	4990	5.06E-01
			Carbon Dioxide, non-biogen	6960	4.04E+02
			Methane (CH4)	6970	2.05E+00
2 Hess Microgen Internal Combustion Engine	C72AF189				
			Organics (other, including	990	1.39E+00
			Particulates (part not spe	1990	1.45E-01
			Nitrous Oxide (N2O)	2030	2.60E-04
			Nitrogen Oxides (part not	2990	6.94E-01
			Sulfur Dioxide (SO2)	3990	4.26E-03
			Carbon Monoxide (CO) pollu	4990	1.15E+00
			Carbon Dioxide, non-biogen	6960	9.22E+02
			Methane (CH4)	6970	4.67E+00
3 Hess Microgen Internal Combustion Engine	C72AF189				
				0	0.00E+00

PLANT TOTAL:

lbs/day	Pollutant
1.33E+03	Carbon Dioxide, non-biogenic CO2 (6960)
1.66E+00	Carbon Monoxide (CO) pollutant (4990)
6.71E+00	Methane (CH4) (6970)
9.98E-01	Nitrogen Oxides (part not spec elsewhere) (2990)
3.73E-04	Nitrous Oxide (N2O) (2030)
1.99E+00	Organics (other, including CH4) (990)
2.09E-01	Particulates (part not spec elsewhere) (1990)
6.12E-03	Sulfur Dioxide (SO2) (3990)

Plant# 16749 General Services Administration-East Bay Office
1301 Clay Street
Oakland, CA 94612

[C]urrent, [A]rchive, or [F]uture? c
[P]lant, [S]ource, [A]bate. device, or [E]mis. Point? p

CURRENT Sources:

1 Cooling Tower [exempt]
MISC> Cooling, tower, Water, 8800 thou gallons/hr max, 5 days/wk
G7104415 no train

2 Emergency Standby Generator
Standby Diesel engine, 1763.6 hp, Caterpillar S/N 24Z04075, 2600 cu in
C22BG098 /,P1,

3 Emergency Standby Generator
Standby Diesel engine, 1582.3 hp, Caterpillar S/N 24Z04053, .478 cu in
C22BG098 /,P2,

4 Cleaver Brooks Fire Tube Boiler #1
Boiler for Space Heat only, 12500K BTU/hr max, Natural gas, 6 days/wk
C1340189 no train

5 .leaver Brooks Fire Tube Boiler #2 (Large)
Boiler for Space Heat only, 12500K BTU/hr max, Natural gas, 6 days/wk
C1340189 no train

6 Cleaver Brooks Fire Tube Boiler #3 (Small)
Boiler for Space Heat only, 3350K BTU/hr max, Diesel fuel, Natural gas
C1350098 no train
C1350189 no train

No CURRENT Abatement Devices

CURRENT Emission Points:

1 train: ,S2,/
2 train: ,S3,/

BAY AREA AIR QUALITY MANAGEMENT DISTRICT Printed: JAN 31, 2017
DETAIL POLLUTANTS - ABATED
MOST RECENT P/O APPROVED (2016)

General Services Administration-East Bay Office (P# 16749)

S# SOURCE NAME / MATERIAL / SOURCE CODE	THROUGHPUT	DATE	POLLUTANT	CODE	LBS/DAY
2 Emergency Standby Generator					
C22BG098					
			Benzene	41	5.76E-04
			Formaldehyde	124	4.76E-05
			Organics (other, including	990	2.78E-02
			Arsenic (all)	1030	5.01E-07
			Beryllium (all) pollutant	1040	2.94E-07
			Cadmium	1070	1.25E-06
			Chromium (hexavalent)	1095	2.59E-08
			Lead (all) pollutant	1140	1.06E-06
			Manganese	1160	1.67E-06
			Nickel pollutant	1180	2.03E-05
			Mercury (all) pollutant	1190	3.54E-07
			Diesel Engine Exhaust Part	1350	5.53E-03
			PAH's (non-speciated)	1840	2.64E-06
			Nitrous Oxide (N2O)	2030	1.54E-04
			Nitrogen Oxides (part not	2990	4.05E-01
			Sulfur Dioxide (SO2)	3990	1.88E-04
			Carbon Monoxide (CO) pollu	4990	8.82E-02
			Carbon Dioxide, non-biogen	6960	1.93E+01
			Methane (CH4)	6970	7.71E-04
3 Emergency Standby Generator					
C22BG098					
			Benzene	41	5.95E-04
			Formaldehyde	124	4.92E-05
			Organics (other, including	990	2.87E-02
			Arsenic (all)	1030	5.18E-07
			Beryllium (all) pollutant	1040	3.04E-07
			Cadmium	1070	1.29E-06
			Chromium (hexavalent)	1095	2.68E-08
			Lead (all) pollutant	1140	1.10E-06
			Manganese	1160	1.72E-06
			Nickel pollutant	1180	2.09E-05
			Mercury (all) pollutant	1190	3.66E-07
			Diesel Engine Exhaust Part	1350	5.71E-03
			PAH's (non-speciated)	1840	2.73E-06
			Nitrous Oxide (N2O)	2030	1.59E-04
			Nitrogen Oxides (part not	2990	4.19E-01
			Sulfur Dioxide (SO2)	3990	1.94E-04
			Carbon Monoxide (CO) pollu	4990	9.11E-02
			Carbon Dioxide, non-biogen	6960	1.99E+01
			Methane (CH4)	6970	7.96E-04
4 Cleaver Brooks Fire Tube Boiler #1					
C1340189					
			Benzene	41	1.47E-05
			Formaldehyde	124	5.25E-04
			Toluene	293	2.38E-05
			Organics (other, including	990	4.00E-02
			Particulates (part not spe	1990	2.10E-02
			Nitrous Oxide (N2O)	2030	1.62E-03
			Nitrogen Oxides (part not	2990	9.79E-01
			Sulfur Dioxide (SO2)	3990	3.97E-03
			Carbon Monoxide (CO) pollu	4990	2.45E-01
			Carbon Dioxide, non-biogen	6960	8.57E+02
			Methane (CH4)	6970	1.33E-02
5 .leaver Brooks Fire Tube Boiler #2 (Large)					
C1340189					
			Benzene	41	3.77E-05
			Formaldehyde	124	1.35E-03
			Toluene	293	6.11E-05
			Organics (other, including	990	1.03E-01
			Particulates (part not spe	1990	5.39E-02
			Nitrous Oxide (N2O)	2030	4.15E-03
			Nitrogen Oxides (part not	2990	2.51E+00
			Sulfur Dioxide (SO2)	3990	1.02E-02
			Carbon Monoxide (CO) pollu	4990	6.29E-01
			Carbon Dioxide, non-biogen	6960	2.20E+03
			Methane (CH4)	6970	3.41E-02
6 Cleaver Brooks Fire Tube Boiler #3 (Small)					
C1350098					
				0	0.00E+00

C1350189

Benzene	41	5.49E-05
Formaldehyde	124	1.96E-03
Toluene	293	8.88E-05
Organics (other, including	990	2.07E-01
Particulates (part not spe	1990	2.61E-01
Nitrous Oxide (N2O)	2030	6.03E-03
Nitrogen Oxides (part not	2990	2.61E+00
Sulfur Dioxide (SO2)	3990	1.48E-02
Carbon Monoxide (CO) pollu	4990	4.44E-01
Carbon Dioxide, non-biogen	6960	3.20E+03
Methane (CH4)	6970	4.96E-02

PLANT TOTAL:

lbs/day	Pollutant
1.02E-06	Arsenic (all) (1030)
1.28E-03	Benzene (41)
5.97E-07	Beryllium (all) pollutant (1040)
2.55E-06	Cadmium (1070)
6.30E+03	Carbon Dioxide, non-biogenic CO2 (6960)
1.50E+00	Carbon Monoxide (CO) pollutant (4990)
5.27E-08	Chromium (hexavalent) (1095)
1.12E-02	Diesel Engine Exhaust Particulate Matter (1350)
3.93E-03	Formaldehyde (124)
2.16E-06	Lead (all) pollutant (1140)
3.39E-06	Manganese (1160)
7.20E-07	Mercury (all) pollutant (1190)
9.86E-02	Methane (CH4) (6970)
4.12E-05	Nickel pollutant (1180)
6.93E+00	Nitrogen Oxides (part not spec elsewhere) (2990)
1.21E-02	Nitrous Oxide (N2O) (2030)
4.06E-01	Organics (other, including CH4) (990)
5.38E-06	PAH's (non-speciated) (1840)
3.36E-01	Particulates (part not spec elsewhere) (1990)
2.94E-02	Sulfur Dioxide (SO2) (3990)
1.74E-04	Toluene (293)

Plant# 19281 State of California
1515 Clay St, Elihu Harris Bldg
Oakland, CA 94612

[C]urrent, [A]rchive, or [F]uture? c
[P]lant, [S]ource, [A]bate. device, or [E]mis. Point? p

CURRENT Sources:

1 Emergency Diesel Generator (1st Floor Generator Rm)
Standby Diesel engine, 2876 hp, Caterpillar S/N 6HN00152, 4210 cu in
C22BH098 /,P1,

2 Diesel Fire Pump Engine #1 (Basement Level 1)
Standby Diesel engine, 240 hp, Cummins S/N 45547996, 505 cu in
C24AH098 /,P2,

3 Diesel Fire Pump Engine #2 (Basement Level 1)
Standby Diesel engine, 240 hp, Cummins S/N 45549389, 505 cu in
C24AH098 /,P3,

4 Boiler #1 (Boiler Rm, 23rd Floor) [registered]
Boiler for Space Heat only, 8500K BTU/hr max, Natural gas, 5 days/wk
C1350189 no train

5 Boiler #2 (Boiler Rm, 23rd Floor) [registered]
Boiler for Space Heat only, 8500K BTU/hr max, Natural gas, 5 days/wk
C1350189 no train

No CURRENT Abatement Devices

CURRENT Emission Points:

1 train: ,S1,/
2 train: ,S2,/
3 train: ,S3,/

BAY AREA AIR QUALITY MANAGEMENT DISTRICT Printed: JAN 31, 2017
DETAIL POLLUTANTS - ABATED
MOST RECENT P/O APPROVED (2017)

State of California (P# 19281)

S# SOURCE NAME
MATERIAL SOURCE CODE
THROUGHPUT DATE POLLUTANT CODE LBS/DAY

1 Emergency Diesel Generator
C22BH098
Organics (other, including 990 1.01E-01
Arsenic (all) 1030 2.56E-06
Beryllium (all) pollutant 1040 1.50E-06
Cadmium 1070 6.39E-06
Chromium (hexavalent) 1095 1.32E-07
Lead (all) pollutant 1140 5.42E-06
Manganese 1160 8.50E-06
Nickel pollutant 1180 1.03E-04
Mercury (all) pollutant 1190 1.81E-06
Diesel Engine Exhaust Part 1350 3.08E-02
PAH's (non-speciated) 1840 1.35E-05
Nitrous Oxide (N2O) 2030 7.86E-04
Nitrogen Oxides (part not 2990 2.30E+00
Sulfur Dioxide (SO2) 3990 9.58E-04
Carbon Monoxide (CO) pollu 4990 5.55E-01
Carbon Dioxide, non-biogen 6960 9.83E+01
Methane (CH4) 6970 3.93E-03

2 Diesel Fire Pump Engine #1
C24AH098
Benzene 41 3.81E-04
Formaldehyde 124 3.11E-05
Organics (other, including 990 1.95E-02
Arsenic (all) 1030 3.27E-07
Beryllium (all) pollutant 1040 1.92E-07
Cadmium 1070 8.18E-07
Chromium (hexavalent) 1095 1.69E-08
Lead (all) pollutant 1140 6.94E-07
Manganese 1160 1.09E-06
Nickel pollutant 1180 1.32E-05
Mercury (all) pollutant 1190 2.31E-07
Diesel Engine Exhaust Part 1350 2.98E-03
PAH's (non-speciated) 1840 1.73E-06
Nitrous Oxide (N2O) 2030 1.01E-04
Nitrogen Oxides (part not 2990 1.37E-01
Sulfur Dioxide (SO2) 3990 1.23E-04
Carbon Monoxide (CO) pollu 4990 1.69E-01
Carbon Dioxide, non-biogen 6960 1.26E+01
Methane (CH4) 6970 5.03E-04

3 Diesel Fire Pump Engine #2
C24AH098
Benzene 41 3.81E-04
Formaldehyde 124 3.11E-05
Organics (other, including 990 1.95E-02
Arsenic (all) 1030 3.27E-07
Beryllium (all) pollutant 1040 1.92E-07
Cadmium 1070 8.18E-07
Chromium (hexavalent) 1095 1.69E-08
Lead (all) pollutant 1140 6.94E-07
Manganese 1160 1.09E-06
Nickel pollutant 1180 1.32E-05
Mercury (all) pollutant 1190 2.31E-07
Diesel Engine Exhaust Part 1350 2.98E-03
PAH's (non-speciated) 1840 1.73E-06
Nitrous Oxide (N2O) 2030 1.01E-04
Nitrogen Oxides (part not 2990 1.37E-01
Sulfur Dioxide (SO2) 3990 1.23E-04
Carbon Monoxide (CO) pollu 4990 1.69E-01
Carbon Dioxide, non-biogen 6960 1.26E+01
Methane (CH4) 6970 5.03E-04

4 Boiler #1
C1350189
Benzene 41 1.78E-05
Formaldehyde 124 6.36E-04
Toluene 293 2.88E-05
Organics (other, including 990 6.71E-02
Particulates (part not spe 1990 8.48E-02
Nitrous Oxide (N2O) 2030 1.96E-03
Nitrogen Oxides (part not 2990 8.48E-01
Sulfur Dioxide (SO2) 3990 4.82E-03

Carbon Monoxide (CO) pollu 4990 1.44E-01
Carbon Dioxide, non-biogen 6960 1.04E+03
Methane (CH4) 6970 1.61E-02

5 Boiler #2

C1350189

Benzene 41 1.78E-05
Formaldehyde 124 6.36E-04
Toluene 293 2.88E-05
Organics (other, including 990 6.71E-02
Particulates (part not spe 1990 8.48E-02
Nitrous Oxide (N2O) 2030 1.96E-03
Nitrogen Oxides (part not 2990 8.48E-01
Sulfur Dioxide (SO2) 3990 4.82E-03
Carbon Monoxide (CO) pollu 4990 1.44E-01
Carbon Dioxide, non-biogen 6960 1.04E+03
Methane (CH4) 6970 1.61E-02

PLANT TOTAL:

lbs/day	Pollutant
3.21E-06	Arsenic (all) (1030)
7.97E-04	Benzene (41)
1.88E-06	Beryllium (all) pollutant (1040)
8.02E-06	Cadmium (1070)
2.20E+03	Carbon Dioxide, non-biogenic CO2 (6960)
1.18E+00	Carbon Monoxide (CO) pollutant (4990)
1.66E-07	Chromium (hexavalent) (1095)
3.68E-02	Diesel Engine Exhaust Particulate Matter (1350)
1.33E-03	Formaldehyde (124)
6.81E-06	Lead (all) pollutant (1140)
1.07E-05	Manganese (1160)
2.27E-06	Mercury (all) pollutant (1190)
3.71E-02	Methane (CH4) (6970)
1.30E-04	Nickel pollutant (1180)
4.27E+00	Nitrogen Oxides (part not spec elsewhere) (2990)
4.90E-03	Nitrous Oxide (N2O) (2030)
2.75E-01	Organics (other, including CH4) (990)
1.69E-05	PAH's (non-speciated) (1840)
1.70E-01	Particulates (part not spec elsewhere) (1990)
1.08E-02	Sulfur Dioxide (SO2) (3990)
5.76E-05	Toluene (293)

Plant# 22841 STG City Square LLC
525 14th St, Parking Garage
Oakland, CA 94612

[C]urrent, [A]rchive, or [F]uture? c
[P]lant, [S]ource, [A]bate. device, or [E]mis. Point? p

CURRENT Sources:

7 525 14th St. Oakland, CA 94607 Emergency Generator (Garage)
Standby Diesel engine, 371 hp, Detroit Diesel S/N 616A75-6991N1
C22AH098 /,P1,

No CURRENT Abatement Devices

CURRENT Emission Points:

1 train: ,S7,/

S# SOURCE NAME (from 20618 - previous number for plant)
MATERIAL SOURCE CODE
THROUGHPUT DATE POLLUTANT CODE LBS/DAY

---

7 525 14th St. Oakland, CA 94607 Emergency Generator (Garage)
C22AH098

Benzene	41	7.30E-06
Formaldehyde	124	6.04E-07
Organics (other, including	990	3.52E-04
Arsenic (all)	1030	6.36E-09
Beryllium (all) pollutant	1040	3.73E-09
Cadmium	1070	1.59E-08
Chromium (hexavalent)	1095	3.29E-10
Lead (all) pollutant	1140	1.35E-08
Manganese	1160	2.12E-08
Nickel pollutant	1180	2.57E-07
Mercury (all) pollutant	1190	4.49E-09
Diesel Engine Exhaust Part	1350	7.01E-05
PAH's (non-speciated)	1840	3.35E-08
Nitrous Oxide (N2O)	2030	1.96E-06
Nitrogen Oxides (part not	2990	5.14E-03
Sulfur Dioxide (SO2)	3990	2.38E-06
Carbon Monoxide (CO) pollu	4990	1.12E-03
Carbon Dioxide, non-biogen	6960	2.44E-01
Methane (CH4)	6970	9.78E-06

Attachment 5: Generator Risk Modeling

Project Generator
Risk at location of Construstcion MEI

Cancer Risk Calculation Method

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air ($\mu g/m^3$)
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
10^{-6} = Conversion factor

Values

Cancer Potency Factors $(mg/kg\text{-}day)^{-1}$

TAC	CPF
DPM	1.10E+00

	Infant/Child			Adult
Age -->	**3rd Trimester**	**0 - <2**	**2 - <16**	**16 - 30**
Parameter				
ASF	10	10	3	1
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
ED =	0.25	2	14	14
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

MEI Cancer Risk From: Project Generator
Constaruction MEI Receptor Location (1.5 meters height)

Exposure Duration (years)	Age	Age Sensitivity Factor	DPM Annual Conc (ug/m3)	DPM Cancer Risk (per million)
0.25	-0.25 - 0*	10	0.0031	0.04
2	1 - 2	10	0.0031	1.01
14	3 - 16	3	0.0031	1.11
14	17 - 30	1	0.0031	0.12
Total Increased Cancer Risk				**2.3**

* Third trimester of pregnancy

Project Generator

DPM Emission Rates			
	Annual	DPM Emissions	
	Operation	Daily*	Annual
Source Type	**(hr)**	**(lb/day)**	**(lb/yr)**
Generator	50	0.0298	10.86

* From CalEEMod

Modeling Information	
Model:	AERMOD
Source	Diesel Engine
Source Type	Point
Distance to Residences (ft)	various - minimum distance to generator = 180 feet
Meteorological Data	2009-2013 CARB Metro Oakland Airport Data
Point Source Stack Parameters	
Generator engine size (hp)	898
Stack Height (ft)	6
Stack Diameter** (ft)	0.25
Stack Exit Velocity** (ft/sec)	164
Exhaust Temperature** (F)	656
Annual Emission Rate (lb/year)	10.86
Hourly Emission Rate (lb/hr)	1.24E-03

** BAAQMD default generator parameters

ATTACHMENT F: Historic Resource Evaluation

historic resource evaluation
1431 jefferson street, oakland, ca

completed for:
lamphier gregory

june 23, 2017

submitted by:

architecture + history, llc
san francisco, ca
415 760 4318
bridget@architecture-history.com www.architecture-history.com

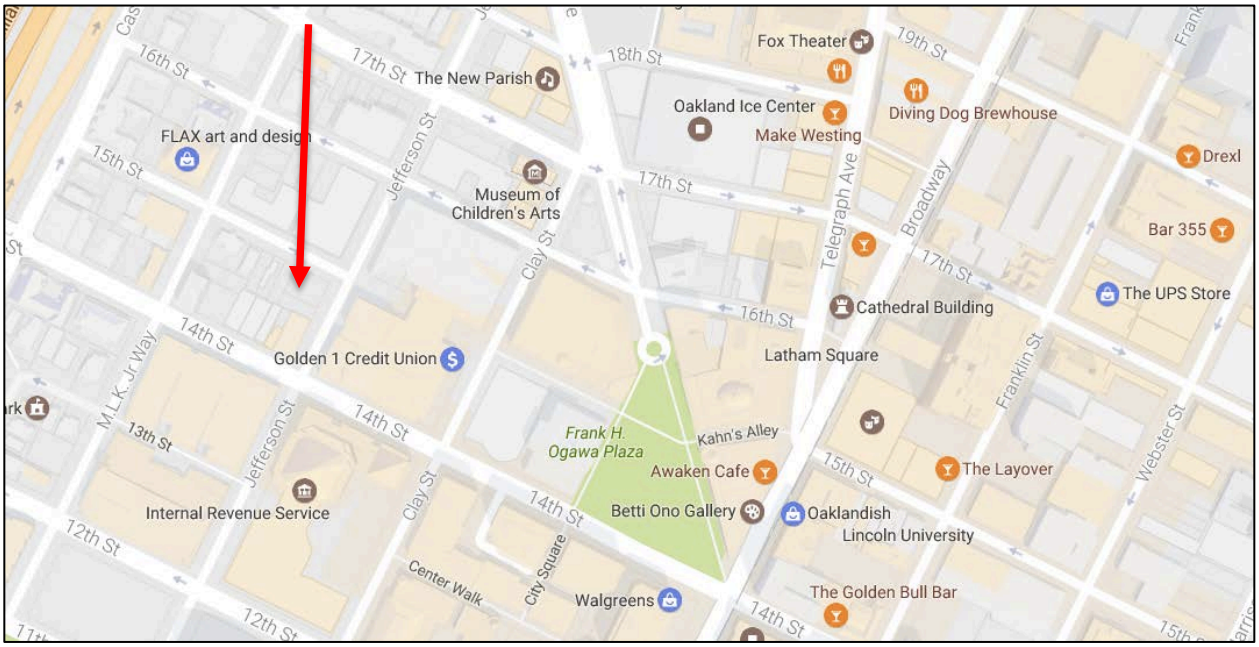
I. Introduction

This Historic Resource Evaluation was prepared by architecture + history, llc (**a** + **h**) for Lamphier Gregory for the hotel project proposed at 1431 Jefferson Street in Oakland, California (APNs 033-071-016,017, 018 and 019). Bridget Maley, Principal at **a** + **h**, meets *the Secretary of the Interior's Professional Qualification Standards in History and Architectural History*. Architectural Historian Shayne Watson of Watson Heritage Consulting contributed to the report as well. The parcels sit on the west side of Jefferson between 14th and 15th Streets in downtown Oakland. The purpose of this analysis is to assess if there will be any project impacts to historic resources under the California Environmental Quality Act (CEQA).

The City of Oakland's *Thresholds of Significance Guidelines* state that an historical resource under CEQA is a resource that meets any of the following criteria:

> 1) A resource listed in, or determined to be eligible for listing in, the California Register of Historical Resources;
> 2) A resource included in Oakland's Local Register of historical resources, unless the preponderance of evidence demonstrates that it is not historically or culturally significant;
> 3) A resource identified as significant (e.g., rated 1-5) in a historical resource survey recorded on Department of Parks and Recreation Form 523, unless the preponderance of evidence demonstrates that it is not historically or culturally significant;
> 4) Meets the criteria for listing on the California Register of Historical Resources; or
> 5) A resource that is determined by the Oakland City Council to be historically or culturally significant even though it does not meet the other four criteria listed above.

The subject site includes four parcels, three of which are unoccupied and currently serve as surface parking and a fourth parcel which contains a one-story masonry building, 600 14th Street. These parcels are situated adjacent to a number of previously identified historic resources, including the three Victorian houses that comprise the 15th and Grove House Group, an Area of Primary Importance as identified by the Oakland Cultural Heritage Survey (OCHS).



The project site is located at the southwest corner of Jefferson and 15th Streets in Downtown Oakland, California. The red arrow points to the site, which is a vacant lot.

II. Project Description

The proposed project would consist of a 276-room Marriott Hotel, located at 1431 Jefferson Street. The project would merge four parcels (APNs 033-071-016,017, 018 and 0190 to accommodate the new construction. The 17,637 square foot (0.4-acre) site consists of the southwest corner of 15th Street, the western frontage along Jefferson Street and the northwest corner of 14th Street (the "Project"). Existing uses on the site include a surface parking lot (at the southwest corner of 15th and Jefferson Streets) and a 1-story commercial building which occupies the balance of the Jefferson Street frontage and wraps around the corner of 14th Street. The existing building would be demolished and the site cleared to make way for the proposed hotel.

The hotel would provide two different types of guest accommodations, reflecting two different hotel marketing concepts: the lower 9 guestroom floors would have 143 studio and 1-bedroom "Residence Inn" type rooms, designed for extended stay guests; the upper 7 floors provide a total of 133 "AC" type guestrooms which are higher amenity room designs intended for shorter-term business clients. The ground floor would have different entries on Jefferson Street leading to different registration desks and lobby areas for the two different types of hotel guestrooms; the lobby for the "AC" portion would include a lounge and bar. All guests would share in the adjacent 5-level parking structure, fronting on 15th Street and providing 98 stalls. Two separate retail spaces, totaling 2105 square feet would occupy the ground floor corner at Jefferson and 14th Streets. The building would have 18 floors (including ground-floor), rising to a height of approximately 189 feet +/- (18 occupied floors). Building square footage is approximately 213,000 square feet, reflecting a floor area ratio (FAR) of 10.0.

At both the 14th and 15th and Jefferson corners, the hotel would rise to only 10 stories, rising to 19 stories mid-block along Jefferson. Along 15th Street the hotel will be ten stories at the corner, stepping down to five stories adjacent to the historic Victorian-era 15th and Grove Housing Group.

III. CEQA and Historic Resources

When a proposed project may cause a "substantial adverse change" in the significance of an historical resource, the California Environmental Quality Act (CEQA) requires the permitting agency to carefully consider the possible impacts before proceeding (Public Resources Code Section 21084.1). CEQA equates substantial adverse change in the significance of a historical resource with a significant effect on the environment (Section 21084.1). CEQA explicitly prohibits the use of a categorical exemption for projects that may cause such a change in an historical resource (Section 21084).[1] "Substantial adverse change" in the significance of a historical resource is defined as "physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired." Further, that the significance of an historical resource is "materially impaired" when a project:

- demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for inclusion in the California Register of Historical Resources; or

- demolishes or materially alters in an adverse manner those physical characteristics that account for its inclusion in a local register of historical resources…or its identification in an historical resources survey…unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant; or

- demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its eligibility for inclusion in the California Register of Historical Resources as determined by a lead agency for purposes of CEQA. (Guidelines Section 15064.5(b)).

IV. Methodology

a + h conducted a site visit to the parcel and surrounding area in November 2016. The neighboring buildings were photographed and common architectural features and elements of the area were identified. A thorough review of the documentation on the surrounding historic resources was undertaken to understand the history and context of the immediate urban environment.

Historic Sanborn Fire Insurance Maps for the area were located to gain a sense of how the area has developed historically. OCHS survey forms were reviewed for the individual historic resources and areas of Primary and Secondary significance that surround the site. Additional research on the development of downtown Oakland was conducted at the Oakland Public Library (History Room), the San Francisco Public Library, the Mechanic's Institute Library, and online at the City of Oakland's website and with other repositories of information. Also reviewed were relevant City of Oakland Planning Department plans, policies and documents. A list of sources is provided in the Bibliography at the conclusion of this report.

V. Summary of Oakland's Downtown Development

The project site is within lands that once were part of the Rancho San Antonio granted to Luis Maria Peralta for his service to the Spanish government.[2] The over 40,000-acre rancho included the present-day cities of Oakland, Berkeley, Alameda, and parts of San Leandro and Piedmont. Peralta's grant was confirmed after Mexico gained independence from Spain in 1822, and the United States honored the land title when California entered the Union in 1848. Soon after, squatters had begun to use portions of Peralta's undeveloped lands. The Gold Rush and subsequent statehood brought miners, businessmen, lumbermen and other speculators to Northern California. Early settlers to the area that became Oakland include Edson Adams, Andrew Moon, and Horace Carpentier, who set up camp on what had been Peralta lands. These trailblazers soon realized the area's potential and engaged Jules Kellsersberger, a Swiss immigrant and former military engineer, to lay out a city, which was officially incorporated as Oakland in 1852.

Originally, Oakland encompassed the area roughly bordered by the estuary, Market Street, 14th Street and the Lake Merritt Channel. Broadway served as the "Main Street," for the growing town. Early residents, numbering under one hundred, lived near the foot of Broadway close to the estuary. Development began moving toward the Oakland hills and ultimately eastward to what would become East Oakland.

A detail from the 1888 Woodward & Gamble Map of Oakland showing the area of downtown Oakland. (Source: David Rumsey Maps)

Oakland's size and population began to expand in 1869, when the city became the terminus of the Central Pacific Railroad. With an accessible harbor, Oakland was strategically located and easily accessible to inland agricultural products. A period of rapid population expansion and physical growth followed, including the establishment of civic and commercial buildings and improved infrastructure. By the turn of the twentieth century, Oakland was beginning to attract businesses and residents away from the more populous San Francisco. Then, the 1906 earthquake and devastating San Francisco fire resulted in refugees from the burned out city across the bay pouring into East Bay towns. By 1910, Oakland had population of 150,000, more than double the 67,000 individuals counted in 1900.

Residential and commercial development in Oakland increased during the 1910s to further accommodate displaced San Francisco residents. A number of moderately priced hotels were constructed in downtown Oakland from 1910 and 1915 to house travelers coming to the Panama Pacific International Exposition (PPIE) hosted by San Francisco. This includes the Hotel Harrison, directly across the street from the project site, and a number of other hotels in the vicinity. Also during this period, older neighborhoods became more densely populated as new apartment buildings were constructed, shopping districts expanded, hotels for visitors to the increasingly popular city were developed, and new commercial centers began to take shape along busier thoroughfares. The post-earthquake development boom defined much of downtown Oakland, with a number of landmark skyscrapers and commercial buildings constructed during this era, including the Hotel Oakland, just across the street from the project site.

World War I also increased the number of industrial establishments in both downtown and along the waterfront, which in turn contributed to increased residential construction in areas made more easily accessible by the increased popularity and use of the automobile. Downtown Oakland saw a great number of buildings constructed during the 1920s including many structures in the blocks that surround the project site, such as the several of the older hotel buildings in the immediate blocks.

The Great Depression of the 1930s followed the post-World War I prosperity of the 1920s. Like most of the country, Oakland fell into a period of financial instability in the 1930s, with little to no building occurring, especially downtown. Then with the preparations for and outset of World War II, Oakland entered an era of intense industrial, commercial and economic development. From 1940 to 1945, Oakland's population increased by one third and by 1950, the population was nearly 385,000. The Port of Oakland became a major staging area for war operations in the Pacific and a center of wartime production of goods and materials. The economic impact of World War II on Oakland, and indeed the entire Bay Area, was significant, with effects felt in almost every sector and by the increasingly diverse communities represented in Oakland. Post War commercial building in downtown Oakland was fairly steady from the late 1940s into the early 1960s.

Between 1950 and 1980, Oakland's population steadily decreased, though it again rose in the 1980s. Shifts in the economy and changes in manufacturing methods left many empty warehouses and office buildings along Oakland's waterfront and in the downtown area. In the late 1980s and 1990s, many of these buildings were reclaimed for office and residential uses.

VI. Description & Chronology of Subject Property

The project site (1431 Jefferson Street) is located on Jefferson Street between 14th and 15th Streets in downtown Oakland. It consists of a series of parcels. First, parcels (APNs 033-071-016, 017 and 018) all of which include surface parking with a small cashier's booth located near 15th and Jefferson. Second, the parcel that holds 600 14th Street, has a one-story commercial building (APN 033-071-019).

The block on which the project site is located (bounded by Jefferson Street at the east, 15th Street at the north, Martin Luther King Jr. Way at the west, and 14th Street at the south), as well as the blocks across the street, are developed with a mix of commercial and residential buildings, both older and newer construction, ranging from one to seven stories in height.

A review of Sanborn Fire Insurance Company maps from 1889, 1912, 1935, and 1951 provided an overviw of the historical development of the subject block and facing blocks including:

- Jefferson, 1400 block, west and east
- 15th Street, 500 block, south and north
- 14th Street, 400 block, north
- Martin Luther King Jr. Way (formerly Grove Street), 1400 block, east

1889 Sanborn Map
In 1889, these four blocks of downtown Oakland were developed mostly with one- and two-story single-family residences, with larger residences facing Grove Street (now Martin Luther King Jr. Way). The few exceptions were a nursery and florist at the northeast corner of Jefferson and 14th Streets; as well as Chinese and Japanese mission schools and a Chinese "wash house" at the north side of 15th Street near Jefferson.[3]

1912 Sanborn Map
With a few exceptions, many of the residences on these blocks survived the 1906 earthquake and were extant at the time of the 1912 Sanborn Map. The most substantive change from 1889 occurred on the north side of 14th Street where commecial buildings replaced residences on the south side of the block. Among those businesses were a photographer and wallpaper and plaiting shops. Other changes included the introduction of multi-family residential flats and the loss of the Chinese and Japanese mission schools on 15th Street; those were replaced by new residential buildings and a printing shop.[4]

1935 Sanborn Map
Between 1912 to 1935 the area progressed from predominantly single-family residences to a wide aray of commerical and residentail building sizes and uses. The residences that had been present near the southwest corner of 15th and Jefferson disappeared and this large parcel was used as a surface parking lot, a use that has continued to the present time. Two dwellings remained along Jefferson and there was a one-story commercial building at the corner of 14th and Jefferson (not

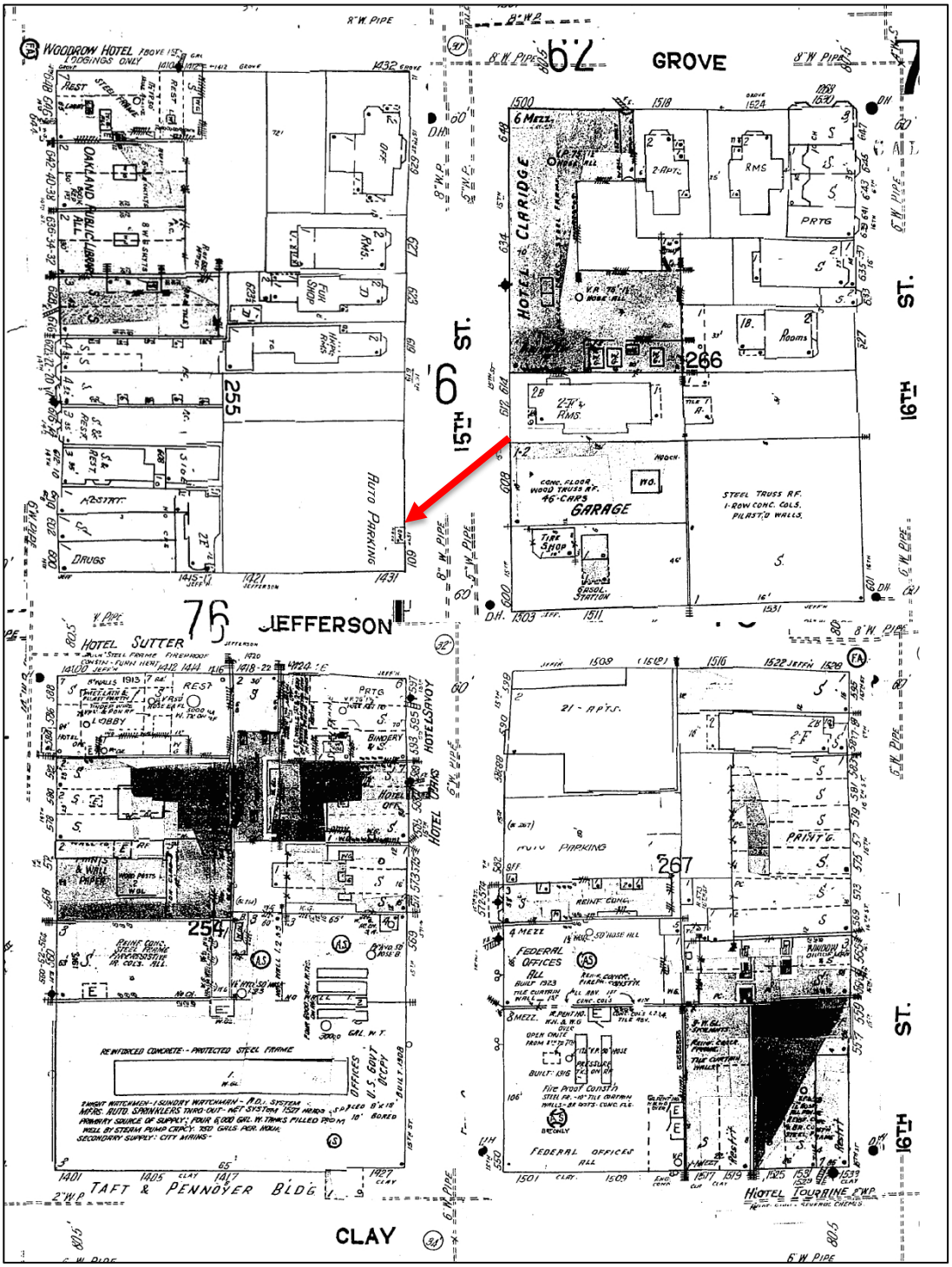
the present structure). Three large hotels were built as part of a pattern of hotels introduced in downtown Oakland in the 1910s and 20s: the Hotel Sutter (584 14th Street), the Hotel Savoy (1424-1430 Jefferson Street), and the Hotel Alamo/Hotel Woodrow (644-648 14th Street). The Salvation Army Evangeline Home for Girls was located at 634 15th Street. Other changes included the introduction or replacement of small-scale commercial buildings on 14th and 15th Streets.[5]

1951 Sanborn Map

Between 1935 and 1951, these four blocks remained mostly unchanged as far as building stock. Some of the residences on the south side of 15th Street (the 15th and Grove House Group) changed uses from single-family residential to offices (1432 Martin Luther King Jr. Way), a rooming house (527 15th Street), a fur shop (523 15th Street), and housekeeping rooms (519 15th Street). Another notable change in use is that the Oakland Public Library took over two buildings on the north side of 14th Street (632-642).[6]

2016

Since the 1951 Sanborn Map, these four blocks been substantially changed. One of the four remaining residences on the 500 block of 15th Street disappeared, leaving only three (one of the residences was moved prior 1951). The buildings at 632-642 14th Street, previously occupied by the Oakland Public Library, are also no longer present. The building at 624-628 14th Street was replaced with a new building at an unknown date. Three storefronts at 600-604 14th Street were demolished and replaced the building currently on the project site in 1982. On the north side of 15th Street, a two-story residence, 46-car garage, and a gas station at the corner of Jefferson were demolished or destroyed. Those buildings were replaced with the Jane Condominiums (1511 Jefferson Street) in 2006.[7]



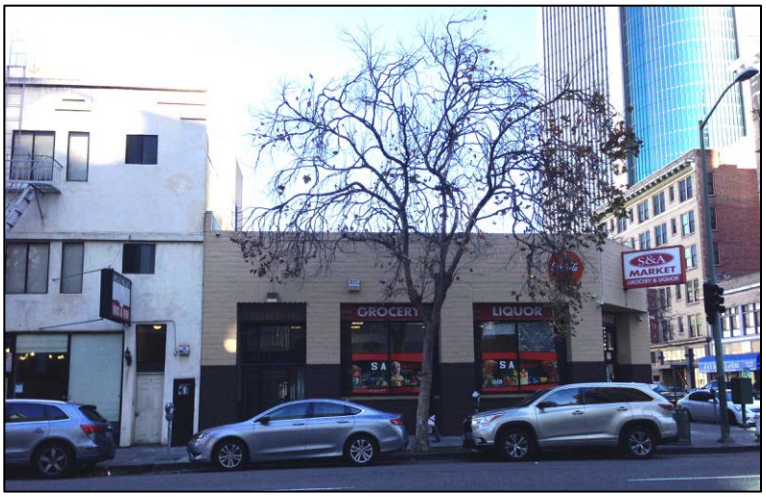
The 1951 Sanborn Map of the area near the project site. The southwest corner of 15th and Jefferson is marked with a red arrow.

VII. Buildings on and Immediately Surrounding the Site

The project site consists of surface parking on parcels 033-071-016, 017 and 018 and the building at 600 14th Street on parcel 033-071-019. The proposed site is opposite the Ronald V. Dellums Federal Building Complex situated on the block bounded by Jefferson, 14th, Clay and 12th Streets. Completed in 1993 and designed by KMD Architects with David Hobstetter architects, this large complex harkens back to Oakland's significant Art Deco landmarks.[8]

600 14th Street

According to OCHS, the commercial building at 600 14th Street was completed in 1982. It is currently used as a market. The 1951 Sanborn Map illustrates a one-story building with a different footprint and no canted corner present on the site. In 1951, immediately to the north there was a two-story, two-flat residential building that faced Jefferson Street. Both of these structures have been demolished.



600 14th Street, 14th Street (south) elevation.

The building is situated on the northwest corner of 14th and Jefferson Streets. It has three visible facades the south, north and east; the west façade is concealed by the adjacent structure. It is a one-story, masonary building rectangular in plan with a clipped corner entry. The long side of building faces Jefferson Street and the structure has a flat roof. The exterior walls are brick and devoid of ornament, except for two, round Coca-Cola signs on either side of the canted entry. The 14th Street elevation has two square-shaped storefront windows with soldier brick headers and sills. There is a second entry door, which is slightly recessed, at the far west side of the 14th Street elevation. This entry has a a metal gate flush with the façade. At the Jefferson Street elevation, there are three square-shaped storefront windows with soldier brick headers and sills at the south end, near the canted entry. At the north end there is a pedesrian door with a louverd vent above and a metal, roll-down vehicular door.

The current OCHS Rating is F3, indicating it was less than 45 years old when originally surveyed. The building is not located within a historic district or an Area of Primary Importance. This structure is only 34 years old, it is a small-scale, simple masonry structure with no visible ornament or unusual architectural features, and it does not appear to have been constructed by a master designer or architect, nor is there any indication that any important historical events have taken place within the building or that is is associated with any important individuals in Oakland, California or American history. The building is not eligible for the California Register of Historical Resources under any of the four criteria of evaluation.

600 14th Street, Jefferson Street (east) and north side elevations.

Buildings immediately adjacent to the project site or within view of the project site are described below. The project site is adjacent to the 15th and Grove House Group Area of Primary Importance (identified by OCHS in January 1985). This group consists of the following three Victorian-era houses: 619 15th Street, 627 15th Street, and 1400-1442 Martin Luther King Way (formerly Grove Street). OCHS described the 15th and Grove House Group as:

> significant as the surviving remnant of a larger cluster of 19th-century wood-frame houses, as variations on the theme of Italianate style, as construction in a single four-year period, and as a capsule representation of Oakland's early middle-class history: the home of a printer, a charity kindergarten leader and an 1850 pioneer merchant turned farmer turned capitalist. Isolated by their unsympathetic surroundings, the three houses appear eligible as a group for listing on the National Register of Historic Places.[9]

619 15th Street

The John and Isabella Butler House at 619 15th Street was completed in 1876-77. It is two stories in height and irregular in plan. Exterior walls are sheathed in horizontal wood siding. The architect and builder are unknown. The original owner was Isabella Butler, likely the wife of John S. Butler.[10] Isabella Butler also owned another house on the same block (demolished). John Butler was a partner at Butler & Bowman, a printing firm, as well as the proprietor of Butler's printing shop at 461 9th Street, publisher of the original *Oakland Tribune* in 1874.[11] The building appears to currently be used as a residence.

619 15th Street, the north and east facades.

The OCHS Rating is C1+ (Secondary importance, superior or visually important example). The building is listed in the local register and is a Heritage Property (Isabella Butler House). The building owner has a Mills Act contract with City of Oakland. The building is located within an Area of Primary Importance (15th and Grove House Group).

627 15th Street

The residential building at 627 15th Street was completed in 1876. It is two stories in height and rectangular in plan. Exterior walls are sheathed in horizontal wood siding. The architect and builder are unknown, but the Oakland Cultural Heritage Survey suggests that the building was constructed by developer Andrew J. Snyder.[12] The original owner and occupant was Margaret McDaniels/McDanel.

627 15th Street, the north and east facades.

The OCHS Rating is B-1+ (Major importance, especially fine architectural example, major historical importance). The building is listed in the local register. The building is located within an Area of Primary Importance (15th and Grove House Group).

1400-1432 Martin Luther King, Jr. Way (formerly Grove Street)

1400-1432 Martin Luther King, Jr. Way (formerly Grove Street)

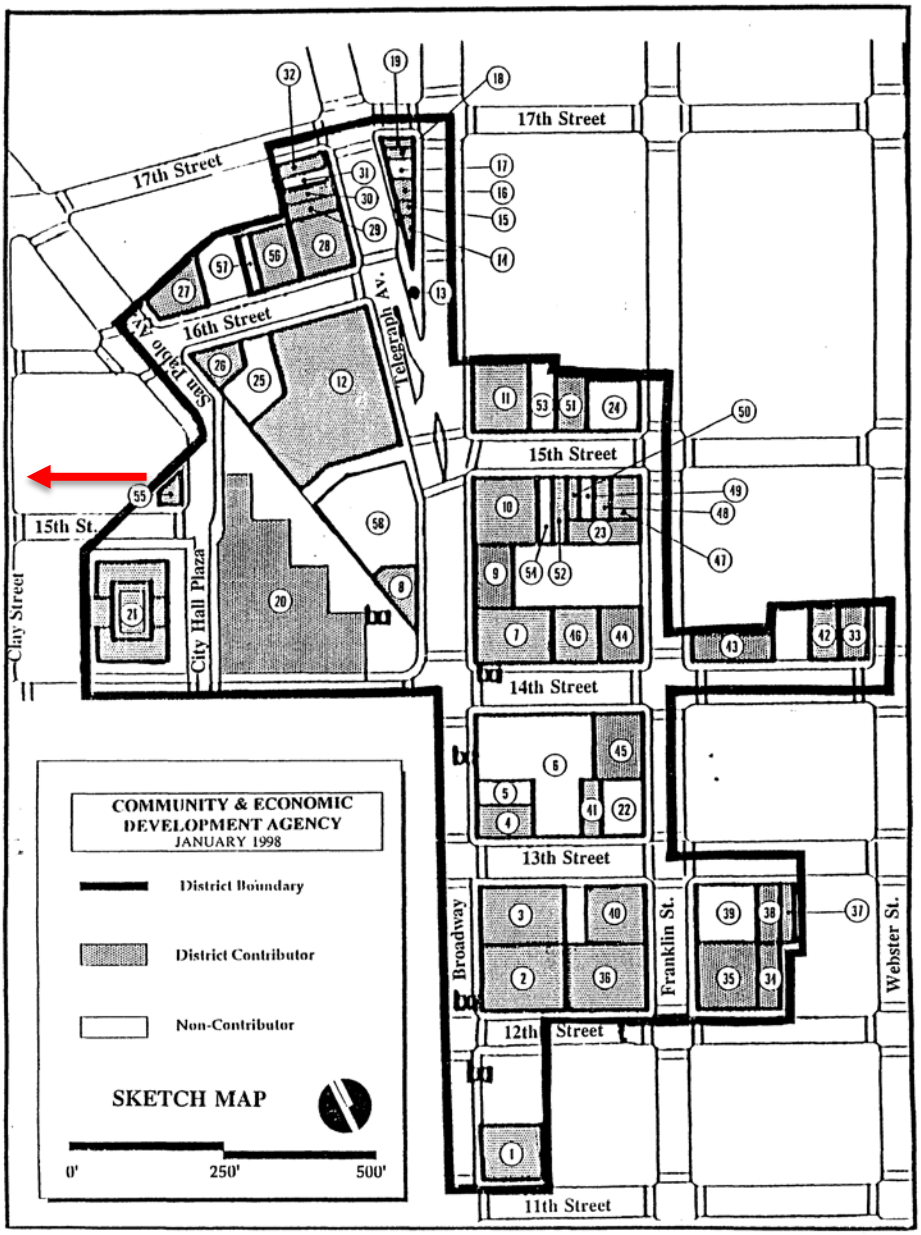
The residential building at 1400-1432 Martin Luther King Way was completed in 1879-80. It is two stories in height and cruciform in plan. Exterior walls are sheathed in horizontal wood siding. The architect and builder are unknown. One of the first owners was Ledyard Frink, who lived in the house from at least 1880 through 1899.[13] Frink was a farmer, merchant, and capitalist. The Oakland Cultural Heritage Survey writes: "As a successful man on the point of retirement, Frink had his house, which is the most pretentious of the three [in the 15th and Grove House Group], built to face Grove Street, an orientation whose social or other significance is hard to grasp in the absence of the remainder of the original neighborhood."[14]

The OCHS Rating is C1+ (Secondary importance, superior or visually important example). The building is listed in the local register. The building is located within an Area of Primary Importance (15th and Grove House Group).

Oakland Downtown National Register Historic District

The project site is one block to the west of the western boundry (Clay Streeet) of the Oakland Downtown National Register Historic District (listed July 1, 1998).[15]

Project Site is west of district boundary



The above map is from the 1998 Downtown Oakland National Register Historic District nomination form on file at OCHS.

The Downtown Fringe Area of Primary Importance (API) consists of buildings within the block bounded by Jefferson, 14th, Clay and 15th Streets. 15th Street. This is also the gateway to the Elihu M. Harris State Office Building, which was completed in 1998. "This sleek building occupies parts of two city blocks. It wraps around the historic 1913-1914 Oaks and Touraine hotels, and its vast indoor-outdoor atrium is part of a pedestrian segment of 15ht Street through Frank Ogawa Plaza and Kahn's Alley."[16] The three buildings on the east side of Jefferson between 14th and 15th Street face the project site and are included in this API. These previously identified historic resources are described below.

584-588 14th Street

The Hotel Sutter at 584-588 14th Street

The Hotel Sutter at 584 14th Street was completed in 1913-14 (City of Oakland buildng permit number 32590.) It sits across Jefferson Street from the project site. The building is seven stories in height and rectangular in plan. Exterior walls are brick with terra cotta ornamentation. The architect was Clay N. Burrell; the builder was Morris & Muller, with terra cotta by the Gladding McBean company. Burrell designed many well-designed east bay hotels, including the nearby Hotel Alamo/Hotel Woodrow at 644-648 14th Street. According to the Oakland Cultural Heritage Survey, the Hotel Sutter is a "very good example of a Beaux Arts derivative-Renaissance revival hotel building."[17]

The OCHS Rating is B-b+1+ (Major importance, especially fine architectural example, major historical importance; potentially B+, National Register). The building has been determined eligible for the National Register as a contributor to the Downtown district. It is listed in the local register and is located within an Area of Primary Importance (Downtown [fringe]).

1418-1422 Jefferson Street

1418-1422 Jefferson Street, the former Hotel Savoy cafeteria and restaurant.

The former Hotel Savoy cafeteria and restaurant at 1418-1422 Jefferson Street was completed in 1912. It is two stories in height and rectangular in plan. Exterior walls are brick and glass. The architect is unknown; the builder (and original owner) is Surety Mortgage & Building Co. Surety Mortgage was also the builder for the Hotel Savoy next door (1424-1430 Jefferson).[18]
The OCHS Rating is C1+ (Secondary importance, superior or visually important example). The building is located within an Area of Primary Importance (Downtown [fringe]).

1424-1430 Jefferson Street / 593-597 15th Street

1424-1430 Jefferson Street, the former Hotel Savoy/Hotel Dragon.

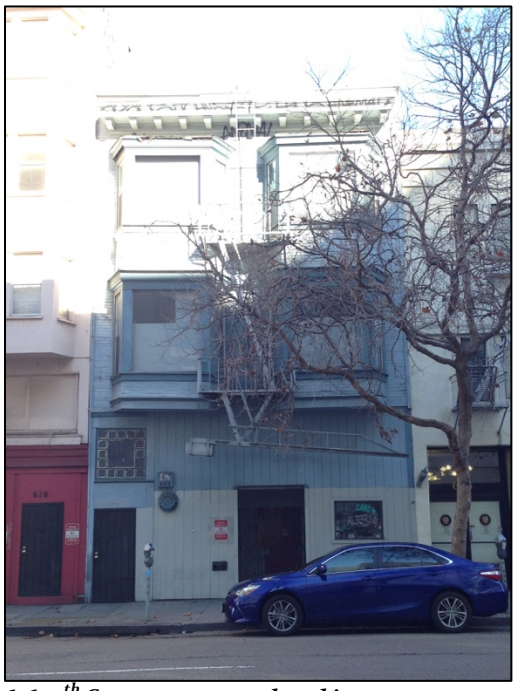
The former Hotel Savoy/Hotel Dragon at 1424-1430 Jefferson Street was completed in 1912-13. It is six stories in height and rectangular in plan. Exterior walls are brick and terra cotta. The architect and builder is Remy J. Pavert. The original owner was Surety Mortgage & Building Company. Surety was a development company owned by Robert O. Hobson from Colorado and Nevada.[19] The OCHS Rating is C1+ (Secondary importance, superior or visually important example). The building is located within an Area of Primary Importance (Downtown [fringe]).

610-614 14th Street

The Time Building at 610-614 14th Street was completed c. 1870, but was extensively remodeled in 1948 and appears to have been subsequently altered further at the storefront level It is three stories in height and rectangular in plan. Exterior walls are stucco over wood frame. The architect and builder are unknown. The OCHS Rating is *3 (Less than 45 years old or modernized). The building is not located within a historic district or an Area of Primary Importance.[20]

Above: Current view of 610-614 14th Street.
Below: A 1977 photograph of the building by Richard Nagler (from OCHS files).

616 14th Street



616 14th Street was completed in 1920.

The commercial building at 616 14th Street was completed in 1920. This wood-frame building is three stories in height and rectangular in plan. Exterior walls are sheathed in horizontal wood siding. The architect and builder are unknown. The OCHS Rating is Dc3 (Minor importance, representative example. The property is considered a Potential Designated Historic Property because of its higher contingency rating of "c"). The building is not located within a historic district or an Area of Primary Importance.[21]

618-622 14th Street

The mixed-use building at 622 14th Street was completed in 1907.[22] The building is four stories in height and rectangular in plan. Exterior walls are stucco and horizontal wood siding. The building's original owner was J.P. Maxwell. The architect is A.W. Smith; the builder is J.B. Sprague. The OCHS Rating is Dc3 (Minor importance, representative example. The property is considered a Potential Designated Historic Property because of its higher contingency rating of "c"). The building is not located within a historic district or an Area of Primary Importance.

Above: Current view of 618-622 14th Street.
Below: A December 8, 1907 image published in the Oakland Tribune (from OCHS files)

624-628 14th Street

624-628 14th Street

The commercial building at 624-628 14th Street consists of recent construction. It does not have an OCHS Rating. The building is not located within a historic district or an Area of Primary Importance.[23]

644-648 14th Street

644-648 14th Street, the former Hotel Alamo/Hotel Woodrow

The former Hotel Alamo/Hotel Woodrow at 644-648 14th Street was completed in 1912 (City of Oakland Building Permit number 27981). It is seven stories in height and rectangular in plan. Exterior walls are brick. According to the Oakland Cultural Heritage Survey, the architect and builder were the same as those involved in the Hotel Sutter: Clay N. Burrell, architect and developer, with Morris & Muller builders (H.C. Morris and F.A. Muller). The survey form for this hotel state: The Hotel Sutter is a "very good example of a Beaux Arts derivative hotel building…It is part of a ring of early-1910s hotels on the edge of downtown Oakland."[24] The OCHS Rating is Cb+3 (Secondary importance, superior or visually important example). The building is not located within a historic district or an Area of Primary Importance.

Polk's City Directory Adverstisement from 1925 (from OCHS files).

634-646 15th Street

634-646 15th Street, constructed 1930.

The former Salvation Army Evangeline Home for Girls/Hotel Claridge at 634-646 15th Street was completed in 1930. It is six stories in height and an irregular C-shape in plan. This steel-frame and reinforced-concrete building has exterior walls surfaced in stucco. The architect is Douglas Dacre Stone; the builder is Jacobs & Pattiani. The building was commissioned for the Salvation Army and originally used as a residence for working girls who boarded in the building for $8 a week.

The Oakland Cultural Heritage Survey writes: "This was an especially important social service during the Depression.... These residences were built in a variety of cities, this being the fourth on the Pacific Coast, following San Francisco, Los Angeles, and Seattle."[25]

The OCHS Rating is B+a3 (Major importance, especially fine architectural example, major historical importance). The building is listed in the local register. The building is not located within a historic district or an Area of Primary Importance.

1511 Jefferson Street

1511 Jefferson Street, constructed 2006.

The Jade Condominiums at 1511 Jefferson Street was completed in 2006. The architect is HDO Architects; the builder is unknown. The building has not been surveyed as it is only 10 years old. It is not located within a historic district or an Area of Primary Importance.

VIII. Evaluation Criteria and Evaluation of Significance

Under the California Environmental Quality Act (CEQA) resources that meet the criteria of the California Register of Historical Resources are considered historical resources for the purposes of CEQA. Determinations of historical significance require that several factors are considered including: the property's history (both construction and use); the history and context of the surrounding community; an association with important persons or uses; the number of resources associated with the property; the potential for the resources to be the work of a master architect, builder, craftsman, landscape gardener, or artist; the historical, architectural or landscape influences that have shaped the property's design and its pattern of use; and alterations that have taken place, and lastly how these changes may have affected the property's historical integrity.

These issues must be explored thoroughly before a final determination of significance can be established. To be eligible for the California Register historic resources must possess both historic significance and retain historic integrity. The following are the four significance criteria of the California Register. Upon review of the criteria, if historic significance is identified, then an integrity analysis is conducted. To be eligible for the California Register, an historical resource must be significant at the local, state, or national level under at least one of the following criteria.

Criterion 1: Event or Patterns of Events
It is associated with events or patterns of events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States.

Criterion 2: Important Person(s)
It is associated with the lives of persons important to local, California, or national history.

Criterion 3: Design/Construction
It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master, or possesses high artistic values.

Criterion 4: Information Potential
It has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California or the nation.

Oakland Cultural Heritage Survey Previous Evaluation and Current Assessment

The small market building at 600 14th Street does not meet any of the four criteria of evaluation of the California Register of Historical Resources and is not considered a significant historic resource under CEQA. The adjacent buildings previously surveyed and evaluated by the Oakland Cultural Heritage Survey would be considered historic resources under CEQA. None of these resources have been so altered or impaired that they would no longer meet the criteria for the local register.

IX. Assessment of Potential Project Impacts to Historic Resources

Section 15065 of the CEQA Guidelines mandates a finding of significance if a project would eliminate important examples of the major periods of California history or pre-history. The proposed project would not involve demolition, destruction, relocation or alteration of any known historic resources. The proposed site includes a vacant lot utilized for surface parking and a building constructed in 1982 that does not meet the definition of an historic resource under CEQA. The project would not materially impair any historic resources on the project site. Further, it would not materially impair any of the adjacent historic resources, either within the same block or in adjacent blocks. While the proposed hotel would have a larger footprint and be taller than the smaller-scale houses in the Grove House Group, the proposed height of the building is allowed in the current zoning of the site. The proposed hotel has several setbacks at both the corners and near the Grove House Group that will assist in diminishing the overall scale and massing of the proposed structure. The proposed project would not materially impair the significance of those historic resources surrounding the site. Lastly, the project site is not within the boundaries of any designated or potential historic districts.

a + h has reviewed the Shadow Study completed by RWDI in May 2017. Upon review of the shadow analysis it appears that the only historic resource that would be affected by new shadows cast by the proposed project would be the Victorian-era house at 619 15th Street. The diagrams in the RWDI Shadow Study show that new shadows would fall over this building at the four critical dates studied (i.e., March 21, June 21, September 21 and December 21) beginning at noon and, except for the winter solstice (December 21), throughout most of the afternoon hours. Based on this finding, some degree of new shadow from the proposed hotel project would occur on nearly every day during the year, but for differing durations of the afternoon hours. Additionally, the nearby proposed project at 632 14th Street (considered in the cumulative shadow impact analysis) would cast new shadow on the Victorian era house at 627 15th Street on June 21 at 6pm.

Upon review of the Shadow Study, there are no direct impacts to historic resources and the shadows that would be cast as a result of the proposed project would not result in "substantial adverse change" in the significance of any of the nearby historic resources.

X. Assessment of Possible Cumulative Impacts to Historic Resources

Given that the City of Oakland has well-established Standard Conditions of Approval for archaeological resources discovered during construction and for construction vibration as it might impact adjacent historic resources, these will be implemented if and when necessary further eliminating any potential impacts to historic resources. With regard to vibration, special attention should be paid to the historic resources within the immediate project block including the 15th and Grove House Group.

Taking into account the information above and the fact that the project does not materially impair historic resources, the project will not contribute to cumulative impacts to historic resources.

XI. Conclusion

The CEQA Public Resources Code §21084.1 provides that any project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment. Public Resources Code §5020.1(q) defines "substantial adverse change" as demolition, destruction, relocation, or alteration such that the significance of the historical resource would be impaired. According to Public Resources Code §5024.1, an historical resource is a resource that is listed in, or determined to be eligible for listing in the California Register of Historical Resources; included in a local register of historical resources; or is identified as significant in a historic resource survey if that survey meets specified criteria.

According to CEQA Guidelines §15064.5(a)(3), a lead agency can find a resource has been determined to be significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California, provided that the determination is supported by substantial evidence in light of the whole record. The building at 600 14th Street does not qualify as an historical resource under the criteria of the California Register of Historical Resources and is therefore not considered an historical resource under CEQA.

The proposed project for 1431 Jefferson Street in Downtown Oakland would not result in "substantial adverse change" in the significance of any known historic resources. Since the proposed project builds out a vacant lot and the one building that will be demolished does not meet the California Register of Historical Resources, the project would not result in the demolition, destruction, or alteration of any known historic resources. Further, the construction of the proposed new building near designated historic resources would not impair either individually significant or historic district contributors such that the significance of these resources would be materially impaired. While the proposed project would include new construction located adjacent to individually significant historic resources and near, but not within the boundaries of historic districts, it would not result in the removal of any character-defining features of the nearby historic districts. While the new construction is larger in scale than the buildings in the surrounding area, its use of varying heights and setbacks assists in diminishing the scale and massing of the proposed project.

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XIII. Endnotes

[1] CEQA statutory exemptions and streamlining provisions such as an Addendum may also be precluded where demolition, as that term is defined by the Secretary of Interior Standards and implemented by the City of Oakland, of a historic resource occurs.

[2] Summary of Downtown Oakland Development summarized from Beth Bagwell, *Oakland: The Story of a City*, 1982; David Weber, *Oakland Hub of the West*, 1981; Lois Rather, *Oakland's Image: A History of Oakland, California*, 1972. Marilynn S. Johnson, *The Second Gold Rush: Oakland and the East Bay in World War II*, 1993.

[3] 1889 Sanborn Fire Insurance Company Map.

[4] 1912 Sanborn Fire Insurance Company Map.

[5] 1935 Sanborn Fire Insurance Company Map.

[6] 1951 Sanborn Fire Insurance Company Map.

[7] Field observations November 2016.

[8] Susan Dinkelspiel Cerny. An Architectural Guidebook to San Francisco and the Bay Area, 2007, 246.

[9] Oakland Cultural Heritage Survey, DPR 523 D forms, January 31, 1985, 15th and Grove House Group.

[10] Ibid.

[11] Ibid.

[12] Ibid.

[13] Ibid.

[14] Ibid.

[15] National Register of Historic Places. Downtown Oakland Historic District. 1998.

[16] Susan Dinkelspiel Cerny. An Architectural Guidebook to San Francisco and the Bay Area, 2007, 246.

[17] Oakland Cultural Heritage Survey, DPR 523 A/B forms, updated September 30, 1994.

[18] Oakland Cultural Heritage Survey, DPR 523 A/B forms May 31, 1984.

[19] Oakland Cultural Heritage Survey, DPR 523 A/B forms May 31, 1984.

[20] Oakland Cultural Heritage Survey Files.

[21] Ibid.

[22] Ibid.

[23] Ibid.

[24] Oakland Cultural Heritage Survey, DPR 523 A/B forms, updated September 30, 1994.

[25] Oakland Cultural Heritage Survey, DPR 523 A/B forms March 31, 1982.

ATTACHMENT G: Shadow Study

REPORT

1431 JEFFERSON

OAKLAND, CA

SHADOW STUDY

PROJECT #: 1603552

MAY 23, 2017

SUBMITTED TO

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1. INTRODUCTION

Rowan Williams Davies & Irwin Inc. (RWDI) was retained by Lamphier-Gregory to assess the shadow impacts of the proposed 1431 Jefferson project in Oakland, CA. The objectives of this study were to illustrate the shadow patterns for various times and dates and to determine the potential exposure to sunlight and shadow on and around the study site.

This study involved the use of a three-dimensional (3D) computer model of the project for the following site configurations:

Existing (Baseline): Existing site and surroundings;
Project: Proposed project and existing surroundings; and,
Cumulative: Proposed project and cumulative surroundings.

The 3D model was used to produce renderings of the shadows that account for the impact of the specific geometry of the proposed building and the influence of the surrounding buildings. The following report provides a discussion of the methodology and graphic results of the study.

Image 1 – Rendering of the Proposed Project (Aerial View from the West)

2. SITE & BUILDING INFORMATION

The proposed building will be in the Downtown neighborhood of Oakland, CA, at the east end of the block bordered by Jefferson Street on the east, 14th Street on the south, M.L.K. Jr Way on the west and 15th Street on the north. The building will be 19 stories tall (approximately 187 feet in height). Image 1 shows a rendering and Image 2 shows an aerial view of the existing site and its immediate surroundings. Elevations of the building are shown in Image 3. Currently the site is occupied by a one-story commercial building and a parking lot, surrounded predominantly by fairly low buildings up to six stories in height. Several tall buildings of the order of 20 stories in height exist to the northeast, east and south. We understand that a project that has been approved by the City of Oakland Planning Department will be added at 632 14th Street in the future; this building has been considered as part of the cumulative surroundings.

Image 2 – Aerial View of the Site and Surroundings (Credit: Google™ Earth)

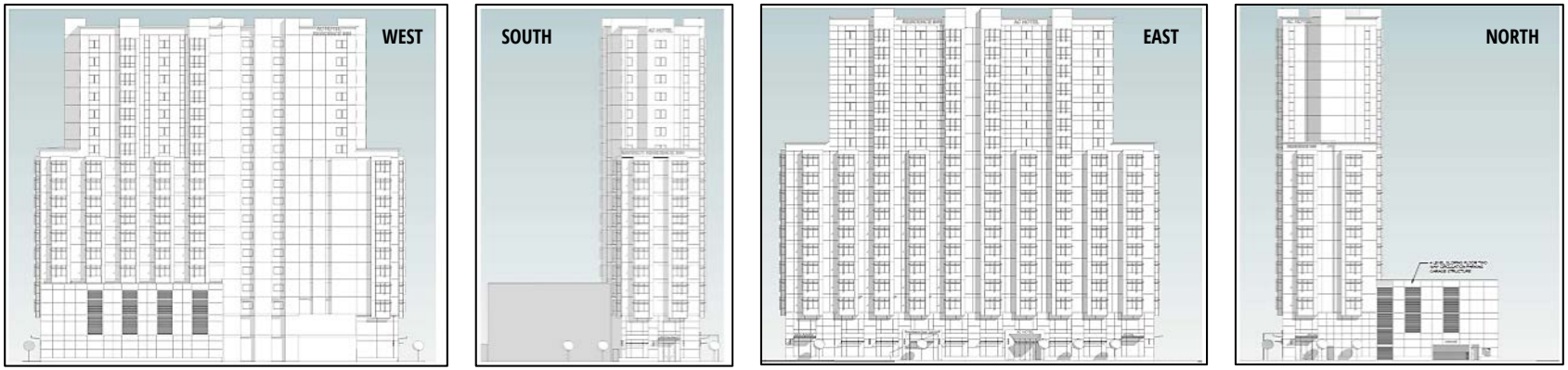


Image 3 – Exterior Elevations of the Proposed Building

3. CITY OF OAKLAND CEQA THRESHOLDS OF SIGNIFICANCE GUIDELINES (OCTOBER 28, 2013)

The City of Oakland considers a project to have a significant shadow impact if the project would:

- Cast shadow that substantially impairs the function of a building using passive solar heat collection, solar collectors for hot water heating, or photovoltaic (PV) solar collectors;
- Cast shadow that substantially impairs the beneficial use of any public or quasi-public park, lawn, garden, or open space;
- Cast shadow on an historic resource, as defined by CEQA Guidelines section 15064.5(a),6 such that the shadow would materially impair the resource's historic significance by materially altering those physical characteristics of the resource that convey its historical significance and that justify its inclusion on or eligibility for listing in the National Register of Historic Places, California Register of Historical Resources, Local Register of historical resources, or a historical resource survey form (DPR Form 523) with a rating of 1-5;

Known areas of interest in the vicinity of the proposed project include the following, indicated in Image 4:

1. The roof of the building at 619 15th Street housing PV solar collectors;
2. Preservation Park and historic buildings in the park; and,
3. Ronald V. Dellums Federal Building Plaza

Image 4 – Location of Key Areas of Interest for Significant Impact Assessment (Credit: Google Earth™)

4. METHODOLOGY

A 3D model of the proposed development and the surroundings was created by RWDI in accordance with architectural drawings of the proposed project received from Lamphier-Gregory on February 7, 2017, and information on the existing and cumulative surroundings obtained from various external sources including Google Earth™ and the official websites of ArcGIS[1] and the City of Oakland[2] regarding the surrounding buildings. The model was used to produce a set of computer generated shadow diagrams for the building with the appropriate settings to simulate the solar angles for Oakland. The simulations assume bright sunlight from sunrise to sunset, in order to clearly show the shadow patterns created.

The diagrams exhibit the simulated shadow conditions which are anticipated to occur in the vicinity of the study site. **Areas of shade caused by the proposed building and cumulative building, which are not already shaded under the existing condition, have been identified as "net new shadows".**

Table 1 identifies the dates and times shadow conditions were simulated. The times listed are either Pacific Standard Time (PST) or Pacific Daylight Saving Time (PDT), whichever is in effect on the dates specified. The approximate sunrise and sunset times for the four times of the year studied are included in Table 2 as they may be of interest when assessing the shadow conditions.

Table 1 – Dates and Times Simulated
(City of Oakland CEQA Thresholds of Significance Guidelines October 28, 2013)

Date	Time
March 21st (PDT)	9:00am, 12:00 noon, 3:00pm
June 21st (PDT)	9:00am, 12:00 noon, 3:00pm, 6:00pm
September 21st (PDT)	9:00am, 12:00 noon, 3:00pm
December 21st (PST)	9:00am, 12:00 noon, 3:00pm

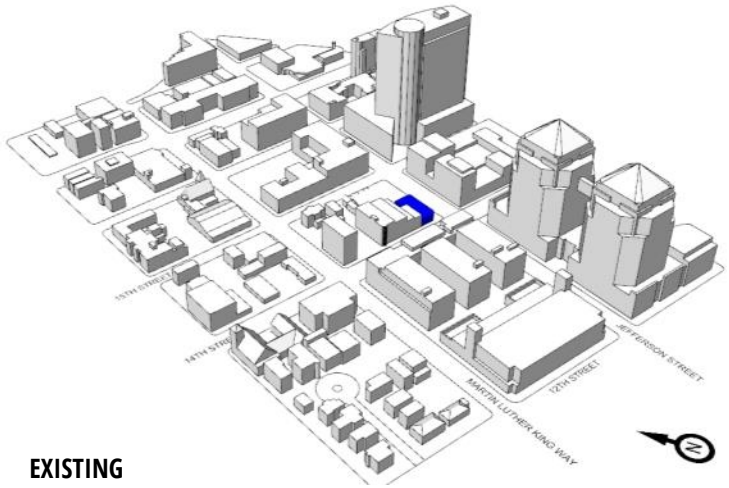
Table 2 – Sunrise and Sunset Times for 2017 [3]

Date	Sunrise Time	Sunset Time
March 21st (PDT)	7:11am	7:22pm
June 21st (PDT)	5:47am	8:34pm
September 21st (PDT)	6:56am	7:07pm
December 21st (PST)	7:21am	4:54pm

1. http://www.arcgis.com/home/webmap/viewer.html?webmap=19084f90a4cd4fc5a71b9bad0f694c2a&extent=-122.3732,37.7371,-122.0865,37.8616 – Last accessed on March 5, 2017
2. http://www2.oaklandnet.com/oakca1/groups/ceda/documents/form/oak058486.pdf – Last accessed on March 5, 2017
3. https://www.timeanddate.com/sun/usa/oakland – Last accessed on March 5, 2017

5. SIMULATION RESULTS

3D Computer Model



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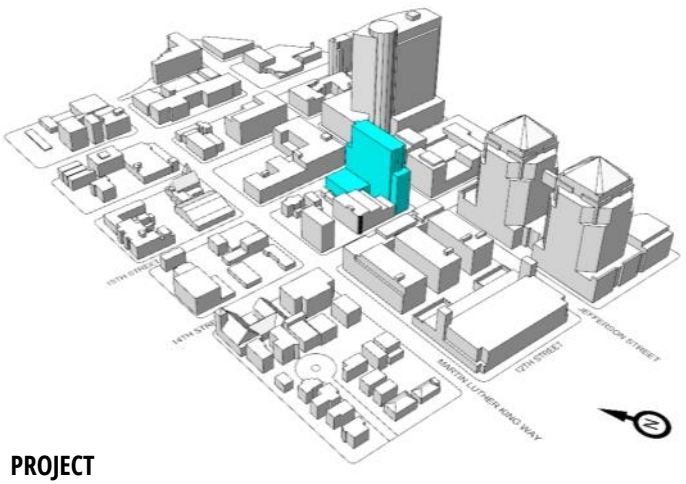
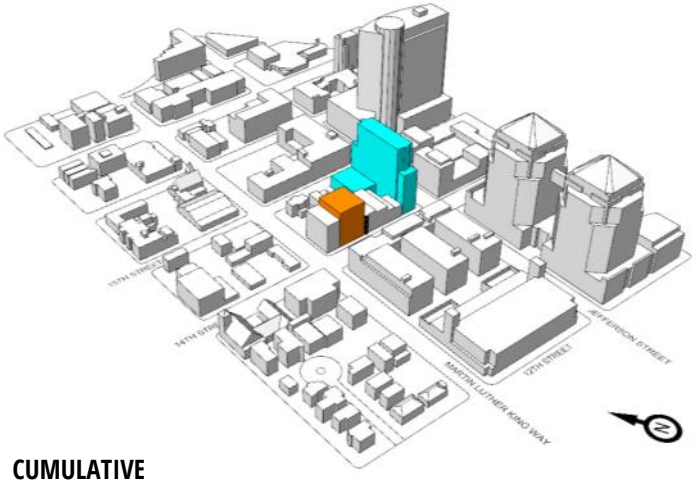


PROJECT

LEGEND

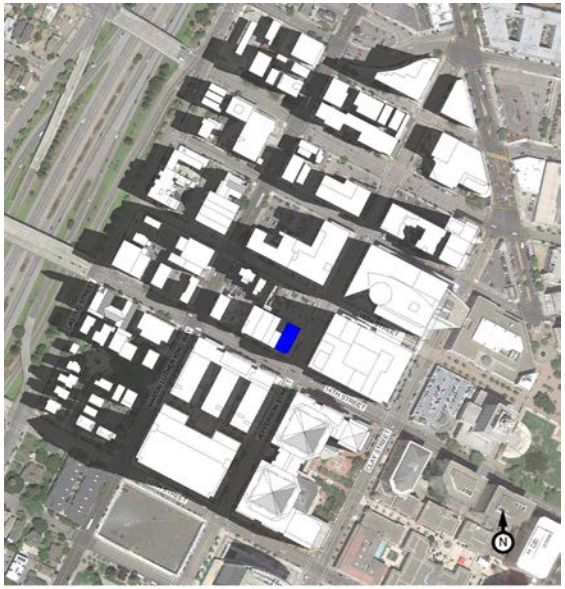
- Existing building on-site
- Proposed project
- Cumulative / Future building
- Net new shadow



CUMULATIVE

5. SIMULATION RESULTS

March 21st (PDT) 9:00 AM



EXISTING

PROJECT

CUMULATIVE

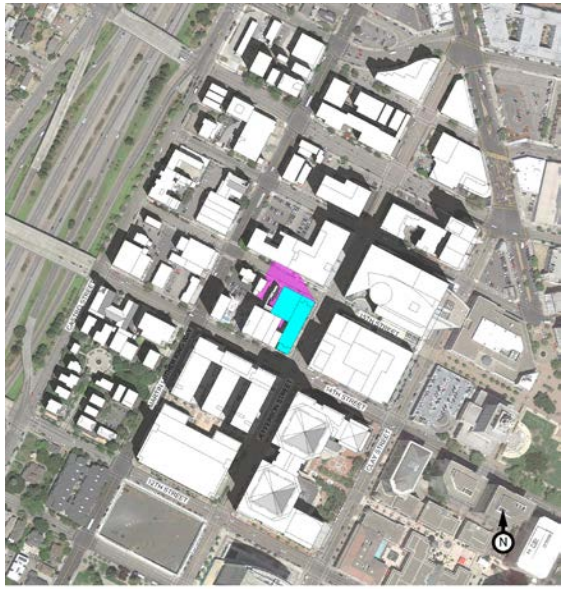
LEGEND

- Existing building on-site
- Proposed project
- Cumulative / Future building
- Net new shadow

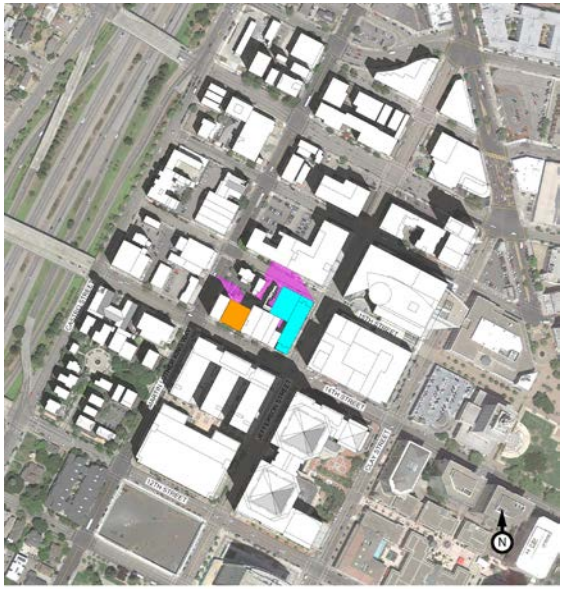
5. SIMULATION RESULTS

March 21st (PDT) 12:00 NOON

EXISTING



PROJECT



CUMULATIVE

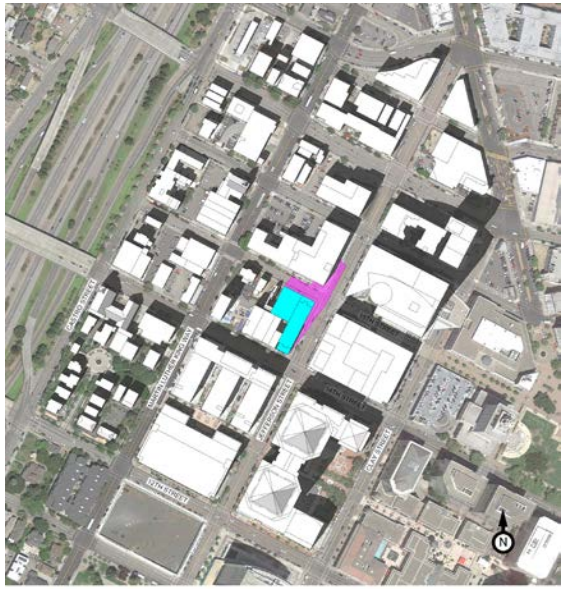
LEGEND

- Existing building on-site
- Proposed project
- Cumulative / Future building
- Net new shadow

5. SIMULATION RESULTS

March 21st (PDT) 3:00 PM

EXISTING



PROJECT

CUMULATIVE

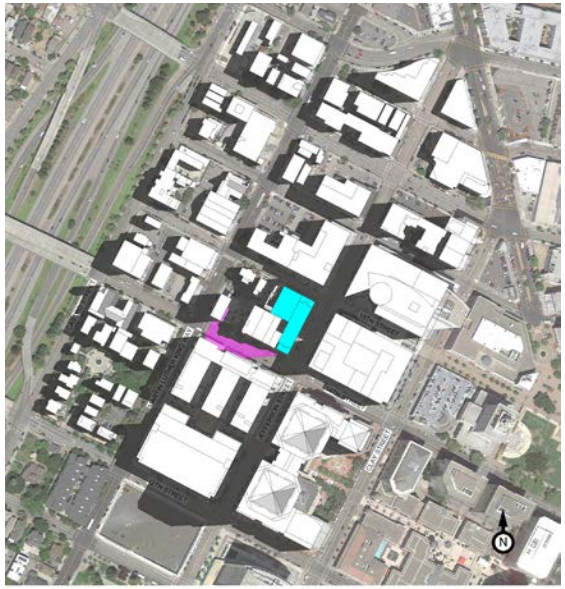
LEGEND

- Existing building on-site
- Proposed project
- Cumulative / Future building
- Net new shadow

5. SIMULATION RESULTS

June 21st (PDT) 9:00 AM

EXISTING



PROJECT

CUMULATIVE

LEGEND

- Existing building on-site
- Proposed project
- Cumulative / Future building
- Net new shadow

5. SIMULATION RESULTS

June 21st (PDT) 12:00 NOON

EXISTING

PROJECT

CUMULATIVE

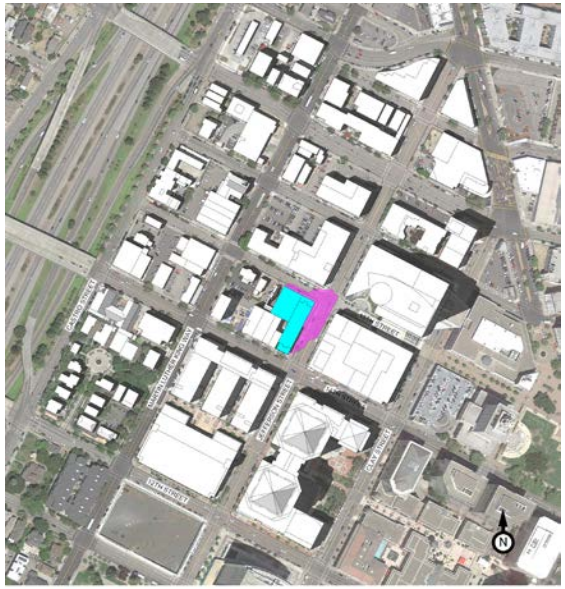
LEGEND

- Existing building on-site
- Proposed project
- Cumulative / Future building
- Net new shadow

5. SIMULATION RESULTS

June 21st (PDT) 3:00 PM

EXISTING



PROJECT

CUMULATIVE

LEGEND

- Existing building on-site
- Proposed project
- Cumulative / Future building
- Net new shadow

5. SIMULATION RESULTS

June 21st (PDT) 6:00 PM

EXISTING

PROJECT

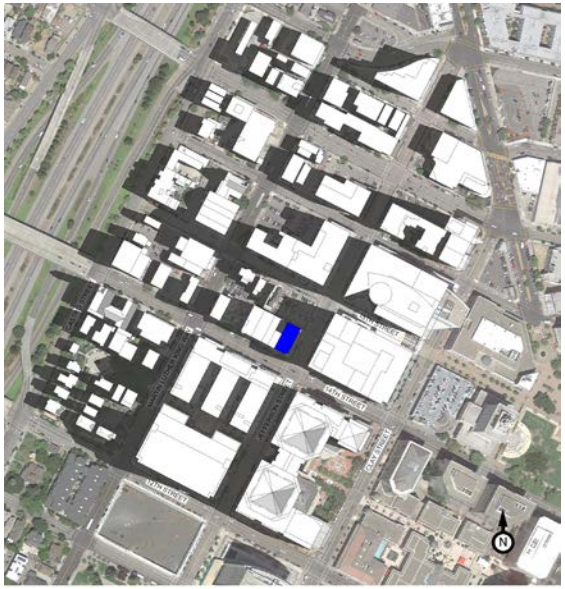
CUMULATIVE

LEGEND

- Existing building on-site
- Proposed project
- Cumulative / Future building
- Net new shadow

5. SIMULATION RESULTS

September 21st (PDT) 9:00 AM



EXISTING

PROJECT

CUMULATIVE

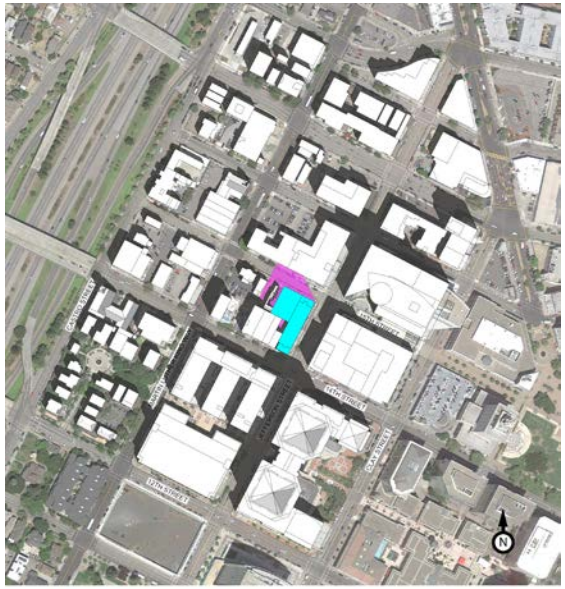
LEGEND

- Existing building on-site
- Proposed project
- Cumulative / Future building
- Net new shadow

5. SIMULATION RESULTS

September 21st (PDT) 12:00 NOON

EXISTING



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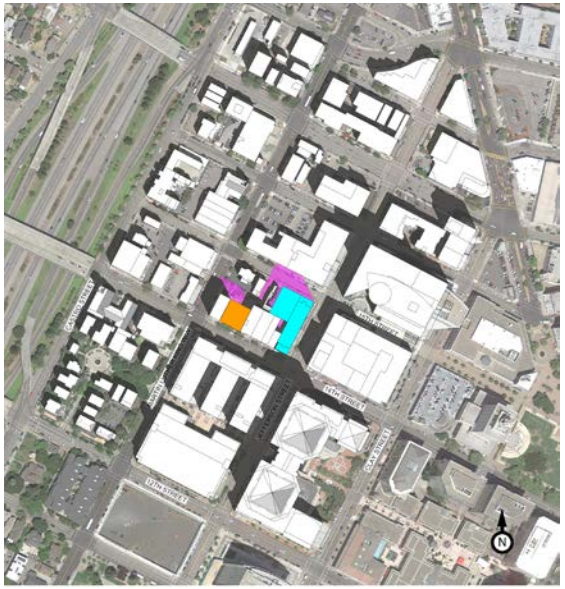


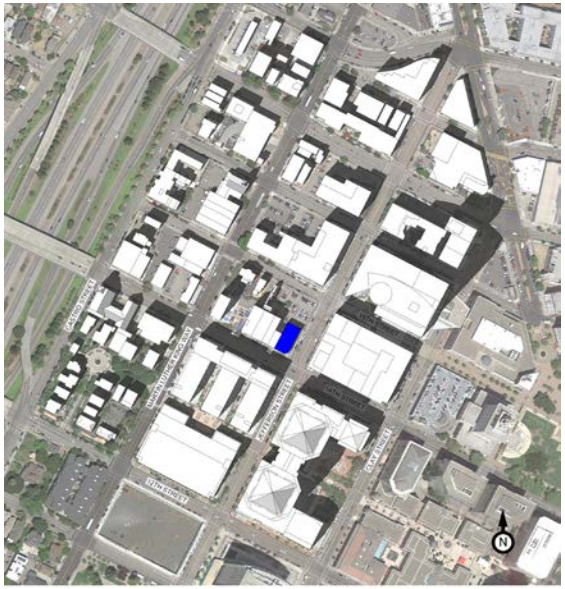
CUMULATIVE

LEGEND

- Existing building on-site
- Proposed project
- Cumulative / Future building
- Net new shadow

5. SIMULATION RESULTS

September 21st (PDT) 3:00 PM



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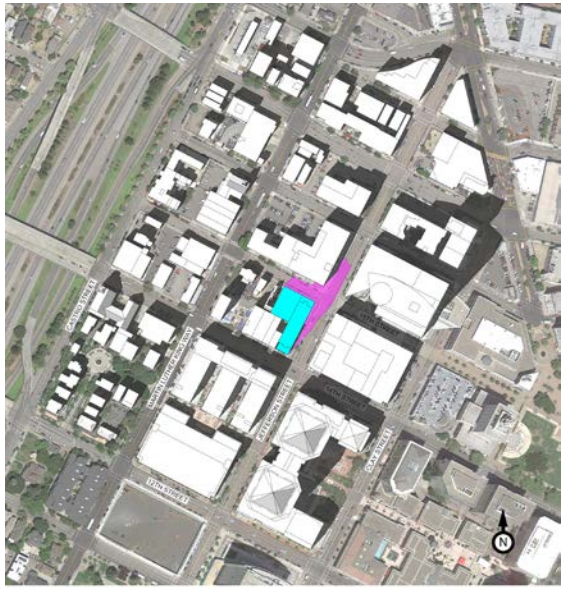

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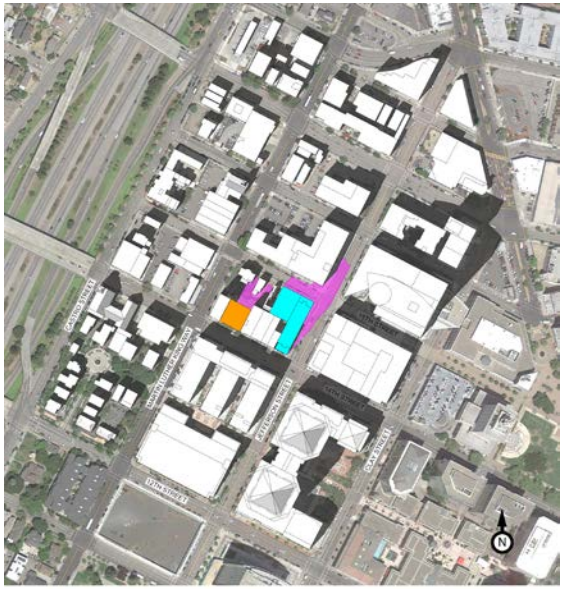


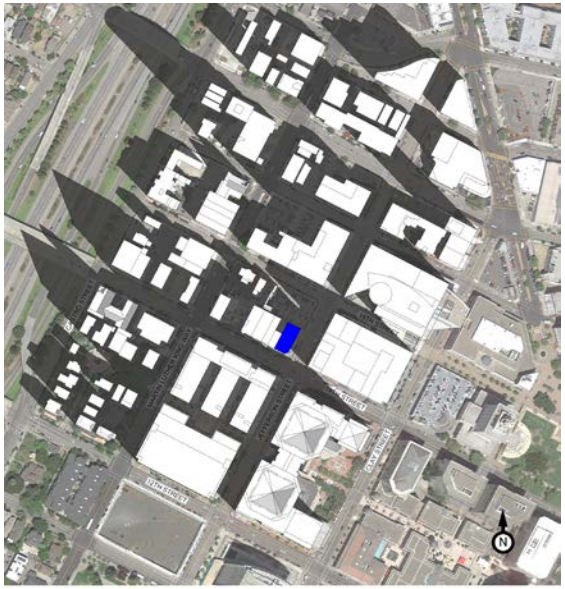
CUMULATIVE

LEGEND

- Existing building on-site
- Proposed project
- Cumulative / Future building
- Net new shadow

5. SIMULATION RESULTS

December 21st (PST) 9:00 AM



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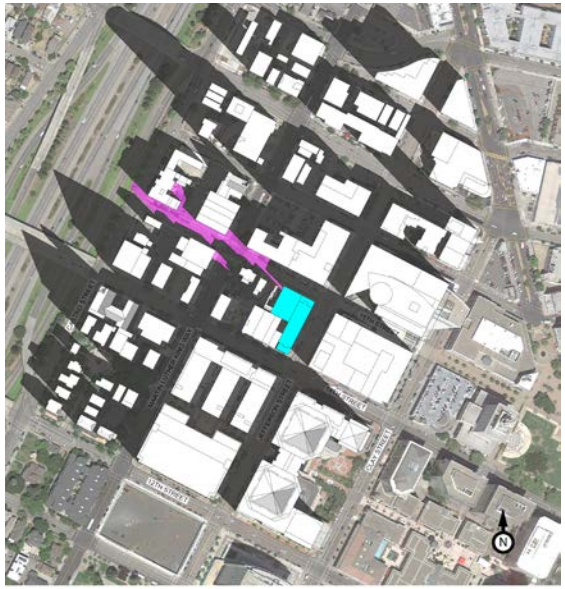
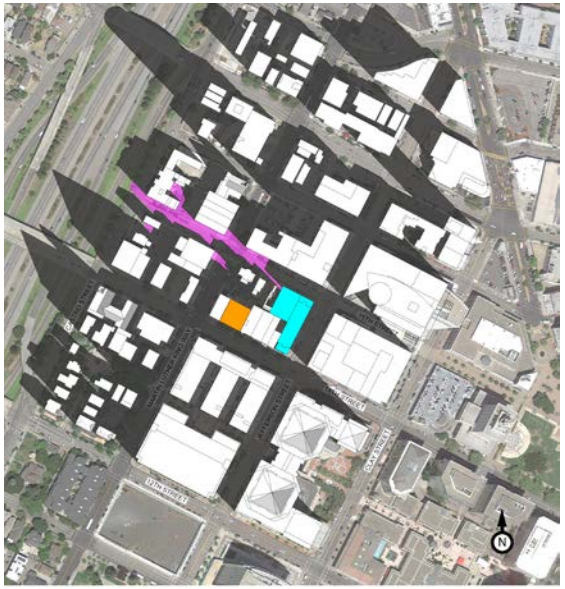


PROJECT



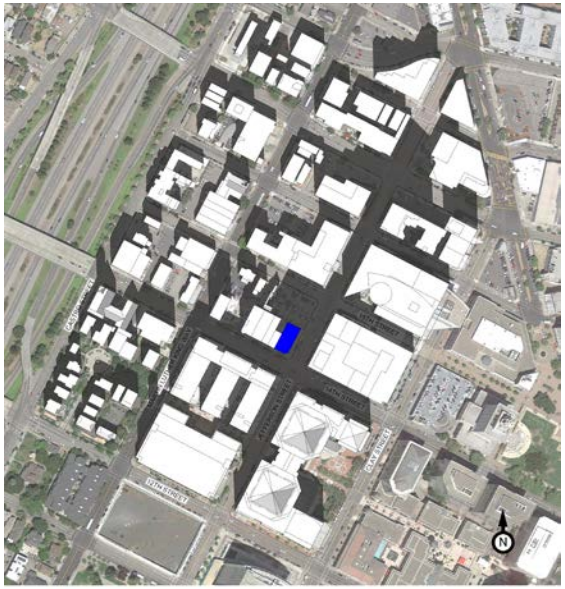
CUMULATIVE

LEGEND

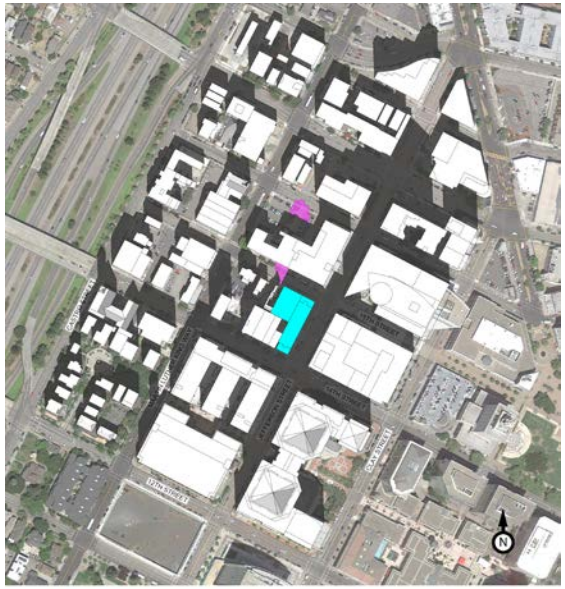
- Existing building on-site
- Proposed project
- Cumulative / Future building
- Net new shadow

5. SIMULATION RESULTS

December 21st (PST) 12:00 NOON



EXISTING



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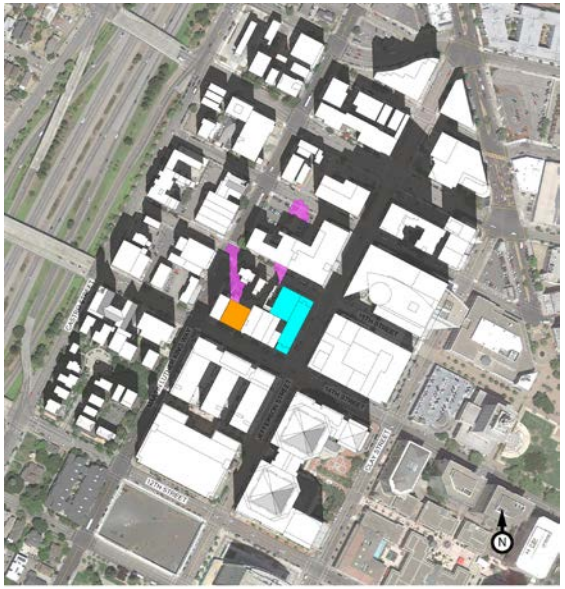


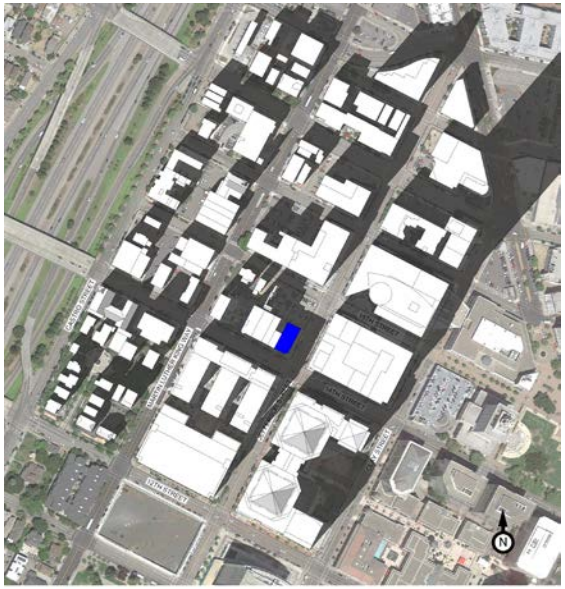
CUMULATIVE

LEGEND

- Existing building on-site
- Proposed project
- Cumulative / Future building
- Net new shadow

5. SIMULATION RESULTS

December 21st (PST) 3:00 PM



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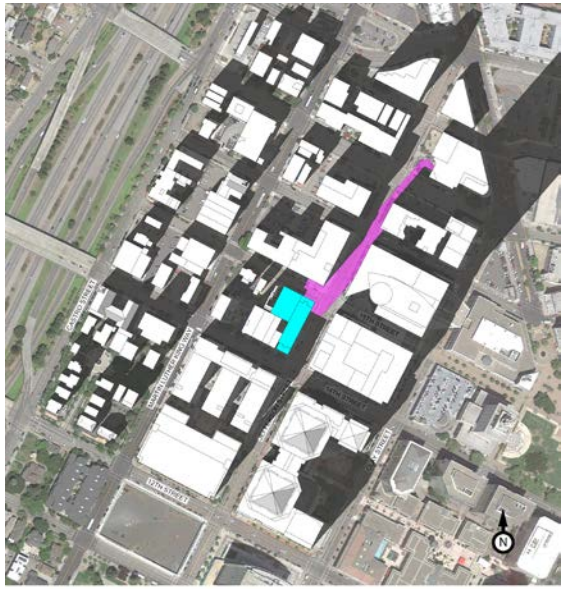

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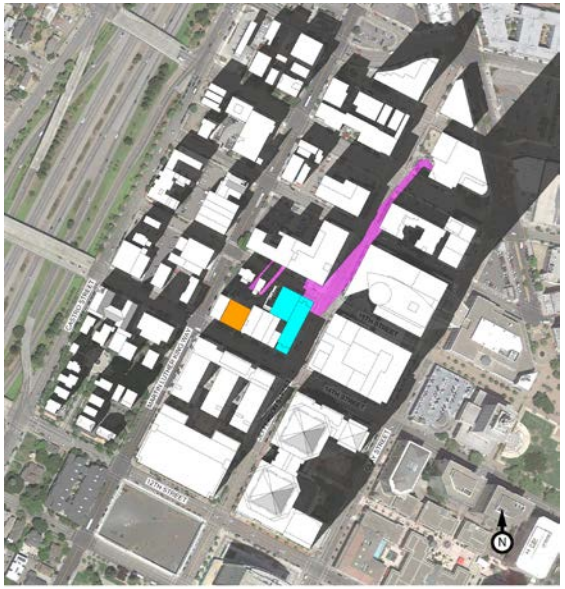

CUMULATIVE

LEGEND

- Existing building on-site
- Proposed project
- Cumulative / Future building
- Net new shadow

6. CONCLUSIONS

The renderings included in this report illustrate the shadows cast by the proposed 1431 Jefferson project and its surroundings on the 21st day of March, June, September and December as defined in the City of Oakland CEQA Thresholds of Significance Guidelines, dated October 17, 2016.

The project will be 19 stories tall and surrounded by fairly low buildings up to six stories in height. Several tall buildings of the order of 20 stories in height exist to the northeast, east and south. Shadows cast by the project overlap those cast by the other buildings at 9.00 AM on all four days simulated. In all of the instances simulated, the project creates net new shadows (defined in Section 4), that do not exist without the project, on adjacent streets. Longest shadows are seen on December 21st at 9 am and 3pm. Shortest shadows are seen at noon in the summer (June 21).

The City of Oakland requires that a building not cast shadows that would substantially impair the beneficial use of PV solar collectors, any public or quasi-public park, lawn, garden, or open space, or historic buildings (Section 3). Known public open spaces in the vicinity include Preservation Park and historic buildings in the park and Ronald V. Dellums Federal Building Plaza – both a few blocks away from the Project. Shadows cast by the Project do not extend to these areas.

The project is however found to cast shadows on the roof of the building at 619 15th Street that houses PV solar collectors, on the following dates and times:
March: 9.00 AM and 12.00 Noon
June: 12.00 Noon
September: 9.00 AM and 12.00 Noon.

The project therefore, may be considered to have a significant impact and a detailed assessment of the energy impact of the predicted shadows may be beneficial.

7. APPLICABILITY OF RESULTS

The results presented in this report pertain to the model of the proposed 1431 Jefferson project generated using the architectural design drawings received from Lamphier-Gregory on February 7, 2017. Should there be any design changes that deviate from these drawings, the results presented may change. Therefore, if changes in the design are made, it is recommended that RWDI be contacted and requested to review their potential effects on shadow impacts. It is the responsibility of others to contact RWDI to initiate this process.

ATTACHMENT H: Pedestrian Wind Study

FINAL REPORT

1431 JEFFERSON

OAKLAND, CA

PEDESTRIAN WIND STUDY

RWDI #1603552

May 23, 2017

SUBMITTED TO

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Senior Planner
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EXECUTIVE SUMMARY

The wind conditions around the proposed 1431 Jefferson project are discussed in detail within the content of this report and may be summarized as follows:

- The pedestrian wind hazard criterion is expected to be met at all grade level locations for the three tested configurations. Therefore, no significant wind impact is expected to be created by the proposed project.
- Wind comfort was also analyzed for informational purposes.
- Wind speeds for the Existing configuration are acceptable with the exception of eight grade level locations (out of 59), where winds are expected to exceed the comfort criterion.
- For the Existing plus Project Configuration, wind speeds at 12 grade locations are expected to exceed the comfort criterion.
- For the Project plus Cumulative Configuration, wind speeds at 11 grade level locations exceed the comfort criterion.

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1 INTRODUCTION

Rowan Williams Davies & Irwin Inc. (RWDI) was retained by Lamphier-Gregory to consult on the pedestrian wind conditions for the proposed 1431 Jefferson project in Oakland, California. The purpose of the study was to assess the wind environment around the project in terms of pedestrian wind comfort and wind hazard relative to the City of Oakland's Wind Hazard Significance Threshold. The assessment was based on the wind tunnel testing of a 1:400 scale model of the proposed project for the following configurations:

A – Existing: Existing site and surrounding buildings within 1600 ft of the project site;

B – Existing Plus Project: Existing surroundings with the proposed development; and,

C – Cumulative: Existing and future surroundings with the proposed development.

The photographs in Figures 1a through 1c show the test model in RWDI's boundary-layer wind tunnel. The proposed building is 190 ft high, consisting of an 18-story tower and a 4-story parking garage. The test model was constructed using the design information and drawings listed in Appendix A. This report summarizes the methodology of wind tunnel studies for pedestrian wind conditions, describes the wind criteria, and presents the test results.

2 METHODOLOGY

2.1 Wind Tunnel Testing

As shown in Figures 1a through 1c, the wind tunnel model included the proposed development and all relevant surrounding buildings within a 1600 ft radius of the study site. The boundary-layer wind conditions beyond the modelled area were also simulated in RWDI's wind tunnel. The model was instrumented with 67 wind speed sensors to measure mean and gust wind speeds at a full-scale height of approximately 5 ft. These measurements were recorded for 36 equally incremented wind directions. The placement of wind measurement locations was based on our experience and understanding of the pedestrian usage for this site, and was reviewed by Lamphier-Gregory.

2.2 Local Climate

Wind statistics recorded at the Metropolitan Oakland International Airport between 1984 and 2014 and between the hours of 7:00 am and 6:00 pm were analyzed for annual wind conditions. Figure 2 graphically depicts the directional distributions of annual wind frequencies and speeds. Winds are frequent from the west-northwest through west-southwest directions throughout the year, as indicated by the wind rose. Strong winds of a mean speed greater than 20 mph measured at the airport (at an anemometer height of 33ft) occur 3.5% of the time annually.

Wind statistics from the Metropolitan Oakland International Airport were combined with the wind tunnel data in order to predict the frequency of occurrence of full-scale wind speeds. The full-scale wind predictions were then compared with the City of Oakland Wind Hazard Significance Threshold.

2.3 City of Oakland Wind Hazard Significance Threshold

For the purposes of this study, the City of Oakland considers a significant wind hazard impact to occur if a project were to "Create winds exceeding 36 mph for more than one hour during daylight hours during the year". A wind analysis is required if the project's height is 100 feet or greater (measured to the roof) and one of the following conditions exists: (a) the project is located adjacent to a substantial water body (i.e. Oakland Estuary, Lake Merritt or San Francisco Bay); or (b) the project is located in Downtown. Since the proposed project exceeds 100 feet in height and is located in Downtown, it is subject to analysis.

The equivalent wind speeds for hazard exceedance were calculated according to the specifications in the City of Oakland Wind Hazard Significance Threshold, whereby the mean hourly wind speed is increased when the turbulence intensity is greater than 15% according to the following formula:

$$\boldsymbol{EWS = V_m \times (2 \times TI + 0.7)}$$

Where $\boldsymbol{EWS}$ = equivalent wind speed

$\boldsymbol{V_m}$ = mean pedestrian-level wind speed

$\boldsymbol{TI}$ = turbulence intensity

2.4 Comfort Criteria

The comfort criteria are used for informational purposes only, and are not applicable towards Significant Wind Impacts as defined by the City of Oakland. The comfort criteria require that wind speeds do not exceed 11 mph for more than 10% of the time during the year, when calculated for daylight hours, in substantial pedestrian use areas. A lower wind speed threshold of 7 mph may be considered for public seating areas where calmer conditions are desired.

3 TEST RESULTS

This section presents the results of the wind tunnel measurements analyzed in terms of equivalent wind speeds as defined by the equation in Section 2.3. The text of the report simply refers to the data as wind speeds.

The wind measurement locations and results at each location corresponding to both the wind comfort conditions and significant impact (hazard) criterion are graphically presented in Figures 3a through 4c.

Tables 1.1 and 1.2 present the wind hazard results for both grade and above-grade locations, respectively. The tables list the predicted wind speed to be exceeded one hour per year. The predicted number of hours per year that the City of Oakland Significant Wind Impact Criterion is exceeded is also provided. A letter “e” in the last column of each configuration indicates a wind hazard exceedance.

Tables 2.1 and 2.2, located in the tables section of this report, present the wind comfort results for the three configurations tested both at grade and above-grade levels. For each measurement point, the measured 10% exceeded (90th percentile) equivalent wind speed and the percentage of time that the wind speed exceeds 11 mph are shown for areas considered to be used primarily for walking. A letter “e” in the last column of each configuration indicates a wind comfort exceedance.

3.1 Wind Hazard Conditions (CEQA Threshold)

A total of 59 wind speed sensors were installed at grade level to measure the wind conditions on the project site and its vicinity. In the Existing configuration, winds at none of the 59 grade level locations currently exceed the prescribed hazard criterion (Figure 3a and Table 1.1).

Wind speeds at grade level are not expected to exceed the hazard criterion for the Existing plus Project and Project plus Cumulative configurations (Figures 3b, 3c and Table 1.1).

Eight wind speed sensors were installed on the building to measure wind speeds on the proposed parking garage roof and private terraces. Wind speeds at three of the eight above-grade locations (Locations 64, 66 and 67) are predicted to exceed the hazard criterion for both configurations (Figures 3b, 3c and Table 1.2). It is our understanding that the terraces and parking garage roof are not publically accessible areas and therefore are not considered in determining the presence of a significant wind impact for CEQA purposes.

Considering the predicted wind conditions, we conclude that the proposed project does not have a significant negative impact on the wind conditions at the public areas around the project site.

3.2 Wind Comfort Conditions

3.2.1 Grade Level (Locations 1 through 59)

Wind comfort speeds have been calculated for informational purposes, and are not applicable towards Significant Wind Impacts as defined by the City of Oakland. For the Existing Configuration, wind speeds on and around the project site are predicted to be moderate, with those at a majority of locations meeting the 11 mph criterion (Figure 4a and Table 2.1). Wind speeds exceeding the 11mph comfort threshold exist at eight out of 59 locations, mostly on 14th Street to the southeast of the project site. The average wind speed considering all 59 locations is 10 mph.

Similar wind conditions are expected with the addition of the proposed project (Existing plus Project configuration), with a reduction in wind speeds on 14th Street between Martin Luther King Way and Jefferson Street (Figure 4.b and Table 2.1). However, an increase in wind speeds is expected along Jefferson Street and on 14th and 15th Streets to the west of the project. Wind speeds exceeding the 11mph comfort threshold are expected at 12 out of 59 locations. The average wind speed considering all 59 locations is 10 mph.

With the addition of the future developments (Project plus Cumulative configuration), wind conditions are generally expected to remain similar to those predicted for the Existing plus Project configuration, but for a few localized wind speed changes (Figure 4c and Table 2.1). It is worth mentioning that the main entrance at Location 2 is predicted to be subject to wind speeds that exceed the 11 mph comfort criterion, mainly due to westerly winds blowing along 15th Street. Wind speeds exceeding the 11mph comfort threshold are expected at 11 out of 59 locations. The average wind speed considering all 59 locations is 10 mph.

3.2.2 Above-Grade Levels (Locations 60 through 68)

Eight wind sensors were located on the proposed building to measure the wind speeds at the top of the parking garage as well as at the terraces on Level 12.

Wind conditions are identical for both the Existing plus Project and Project plus Cumulative configurations, with winds at seven out of eight locations expected to exceed the 11mph comfort threshold (Figures 4b, 4c and Table 2.2). The average wind speed considering all eight above-grade locations is 14 mph for both configurations.

4 APPLICABILITY

The wind conditions presented in this report pertain to the proposed 1431 Jefferson development as detailed in the architectural design drawings listed in Appendix A. Should there be any design changes that deviate from this list of drawings, the wind condition predictions presented may change. Therefore, if changes in the design are made, it is recommended that RWDI be contacted and requested to review their potential effects on wind conditions.

5 REFERENCES

1. ASCE Task Committee on Outdoor Human Comfort (2004). *Outdoor Human Comfort and Its Assessment*, 68 pages, American Society of Civil Engineers, Reston, Virginia, USA.

2. Williams, C.J., Hunter, M.A. and Waechter, W.F. (1990). "Criteria for Assessing the Pedestrian Wind Environment," *Journal of Wind Engineering and Industrial Aerodynamics*, Vol.36, pp.811-815.

3. Williams, C.J., Soligo M.J. and Cote, J. (1992). "A Discussion of the Components for a Comprehensive Pedestrian Level Comfort Criteria," *Journal of Wind Engineering and Industrial Aerodynamics*, Vol.41-44, pp.2389-2390.

4. Soligo, M.J., Irwin, P.A., and Williams, C.J. (1993). "Pedestrian Comfort Including Wind and Thermal Effects," *Third Asia-Pacific Symposium on Wind Engineering*, Hong Kong.

5. Soligo, M.J., Irwin, P.A., Williams, C.J. and Schuyler, G.D. (1998). "A Comprehensive Assessment of Pedestrian Comfort Including Thermal Effects," *Journal of Wind Engineering and Industrial Aerodynamics*, Vol.77&78, pp.753-766.

6. Williams, C.J., Wu, H., Waechter, W.F. and Baker, H.A. (1999). "Experiences with Remedial Solutions to Control Pedestrian Wind Problems," *Tenth International Conference on Wind Engineering*, Copenhagen, Denmark.

7. Lawson, T.V. (1973). "Wind Environment of Buildings: A Logical Approach to the Establishment of Criteria", *Report No. TVL 7321*, Department of Aeronautic Engineering, University of Bristol, Bristol, England.

8. Durgin, F. H. (1997). "Pedestrian Level Wind Criteria Using the Equivalent average", *Journal of Wind Engineering and Industrial Aerodynamics*, Vol. 66, pp. 215-226.

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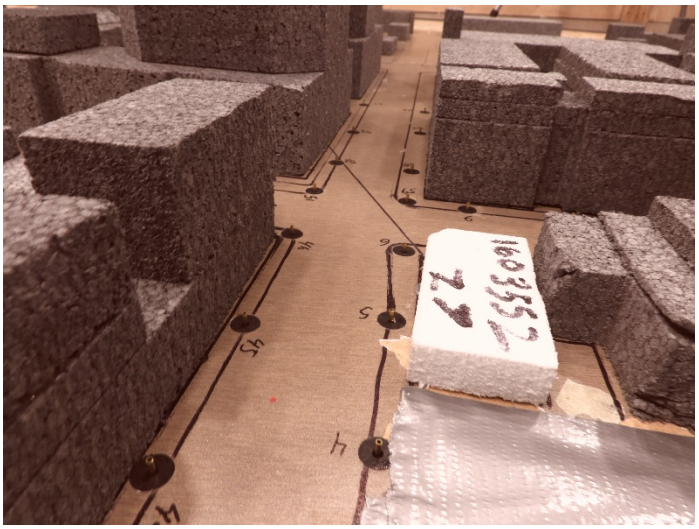
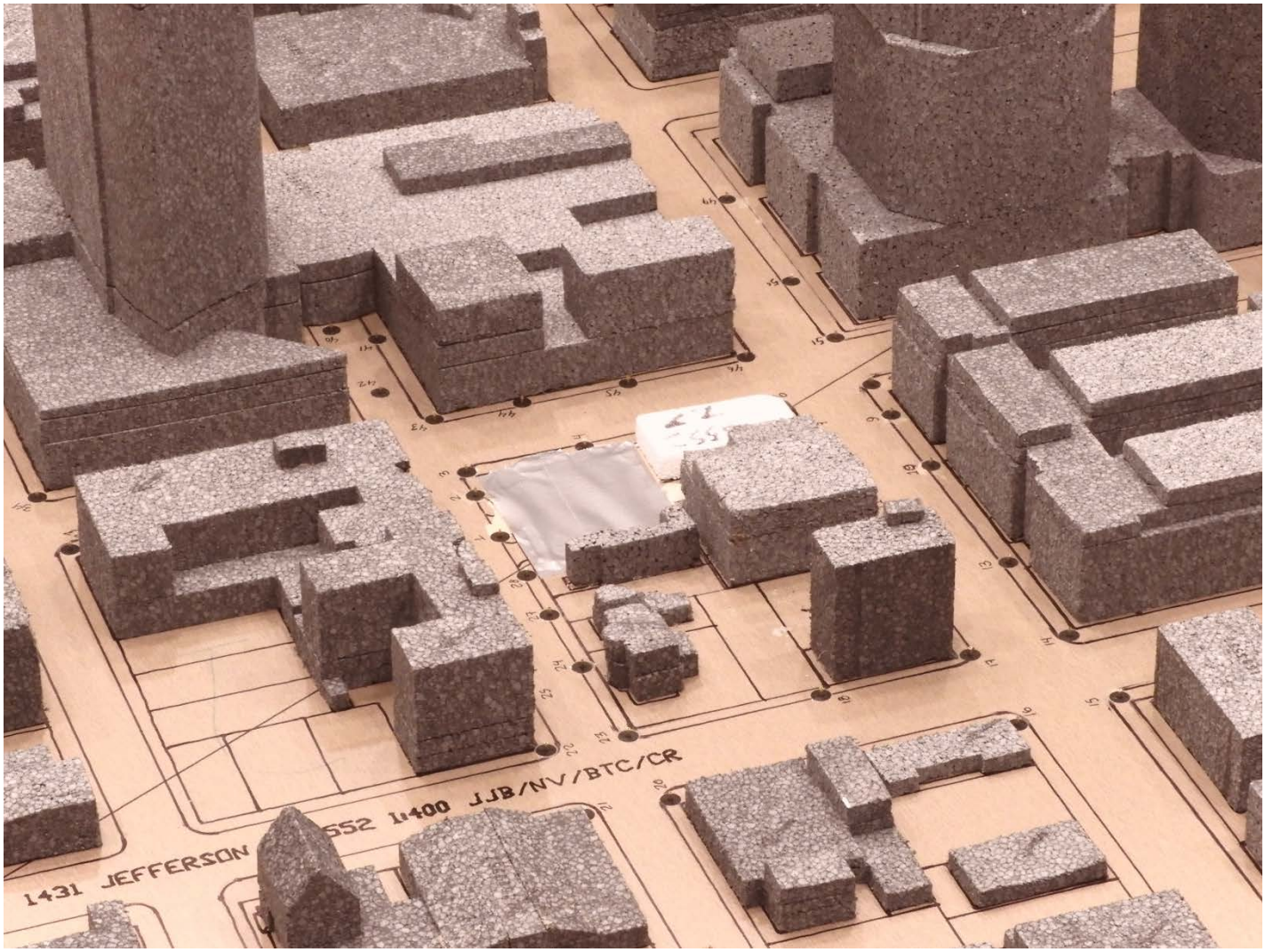
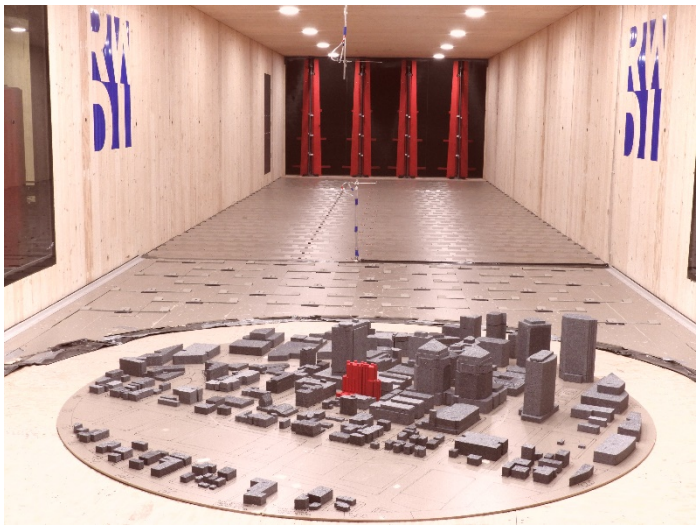
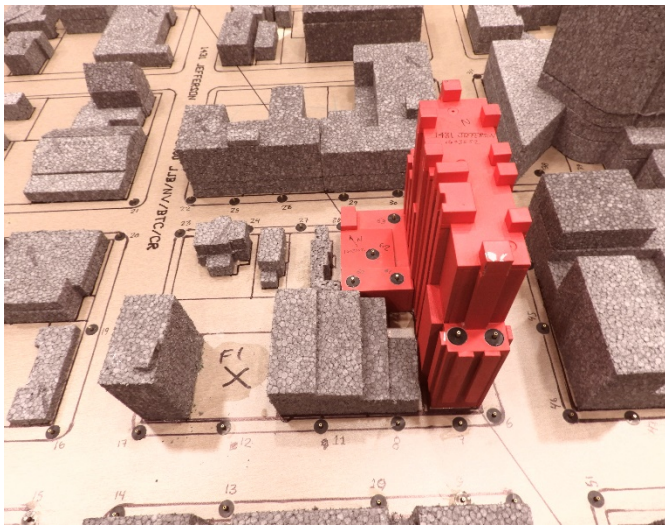
FIGURES

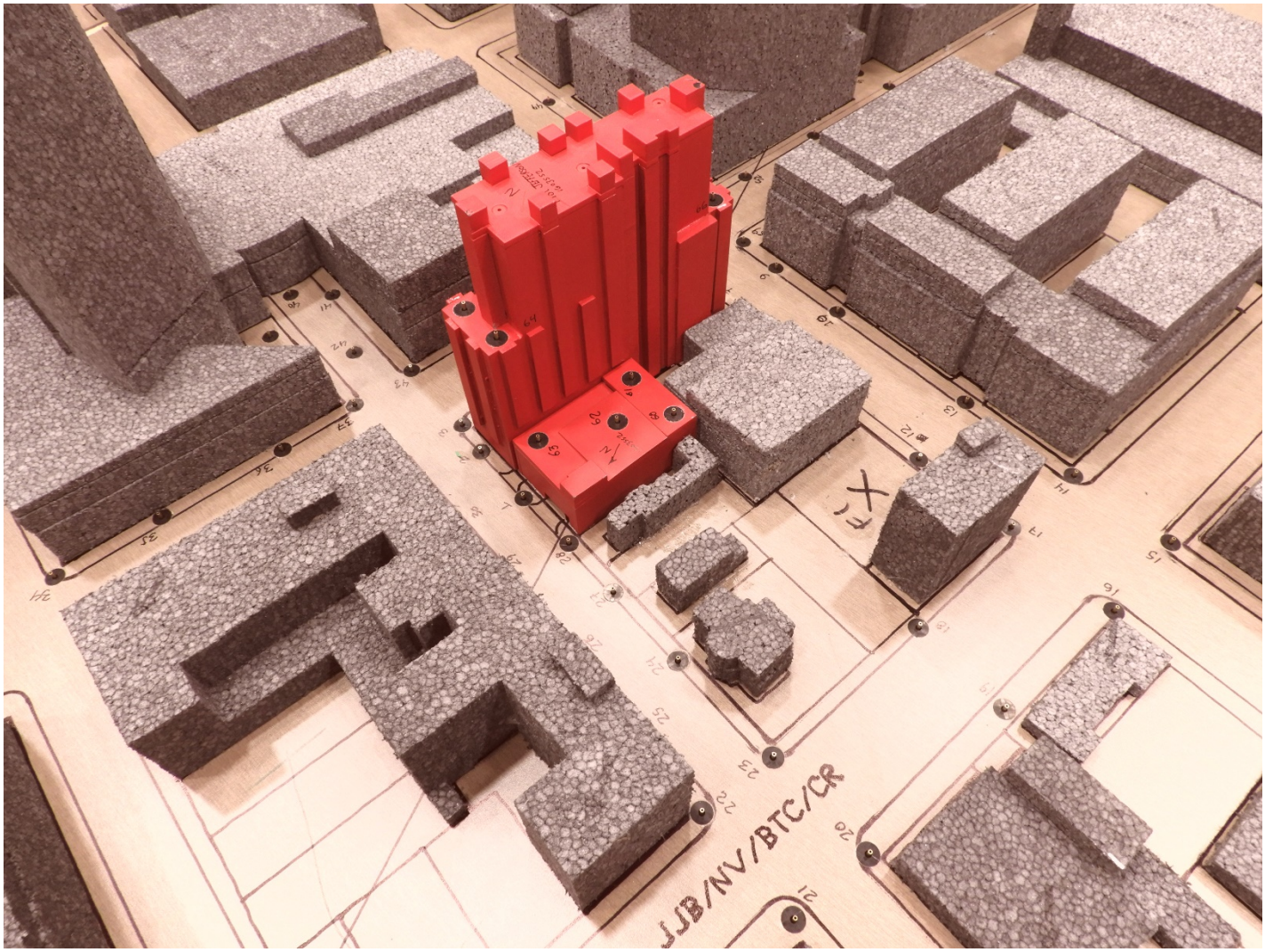




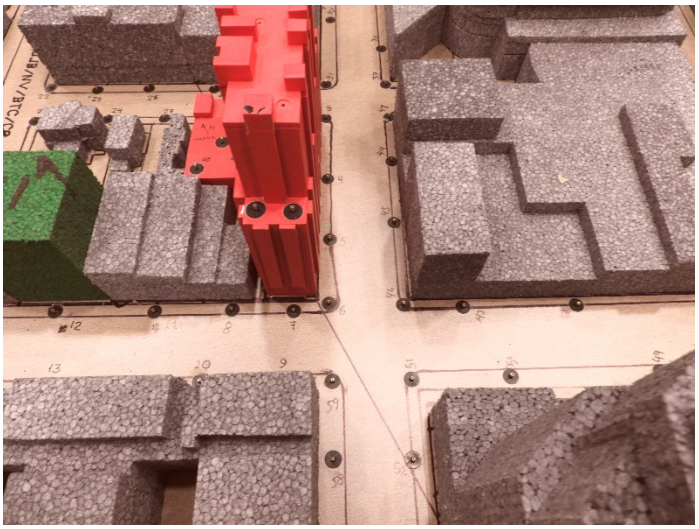
Wind Tunnel Study Model **Existing Configuration**	Figure: 1a	
1431 Jefferson – Oakland, CA Project #1603552	Date: March 10, 2017	

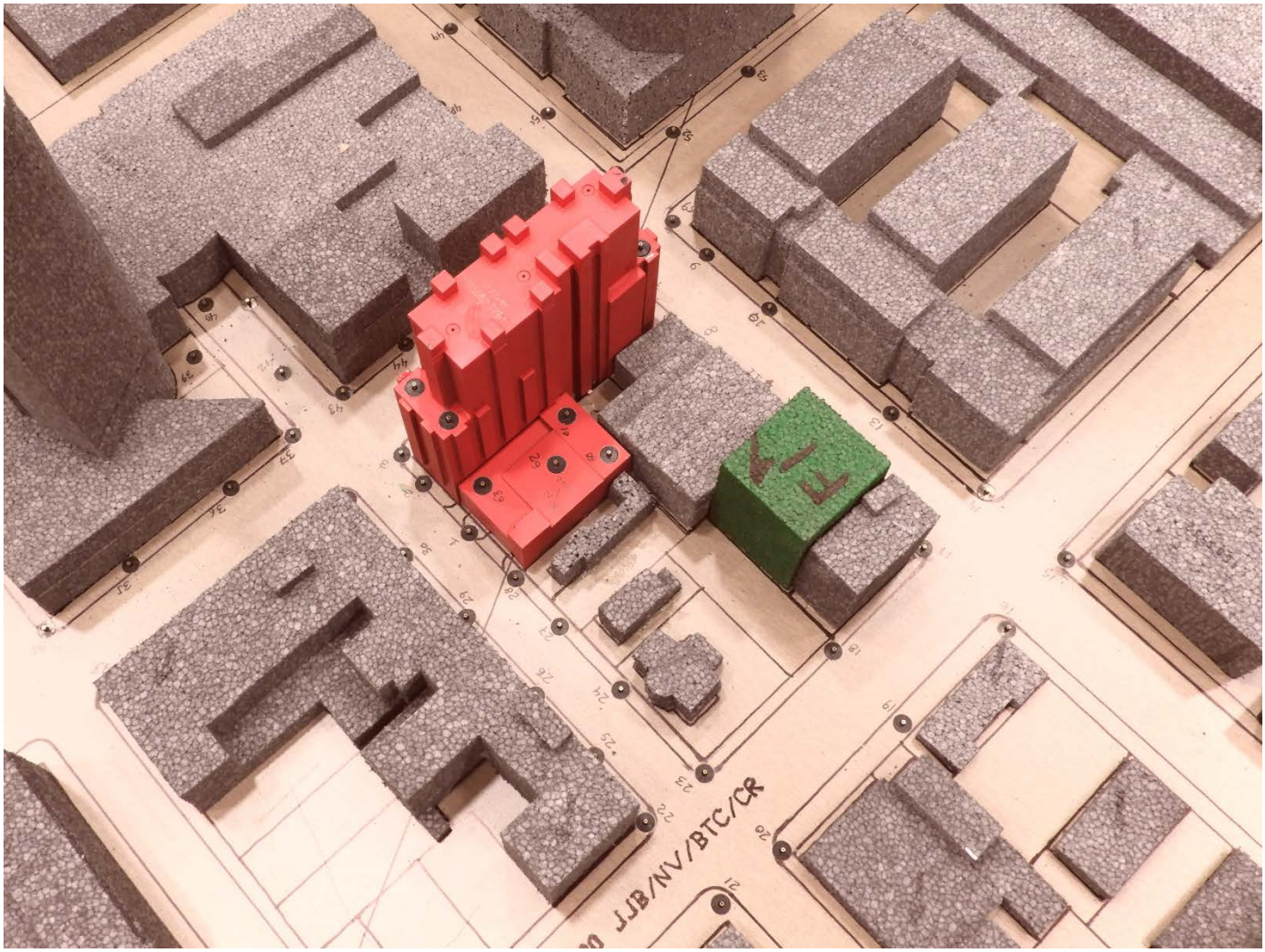




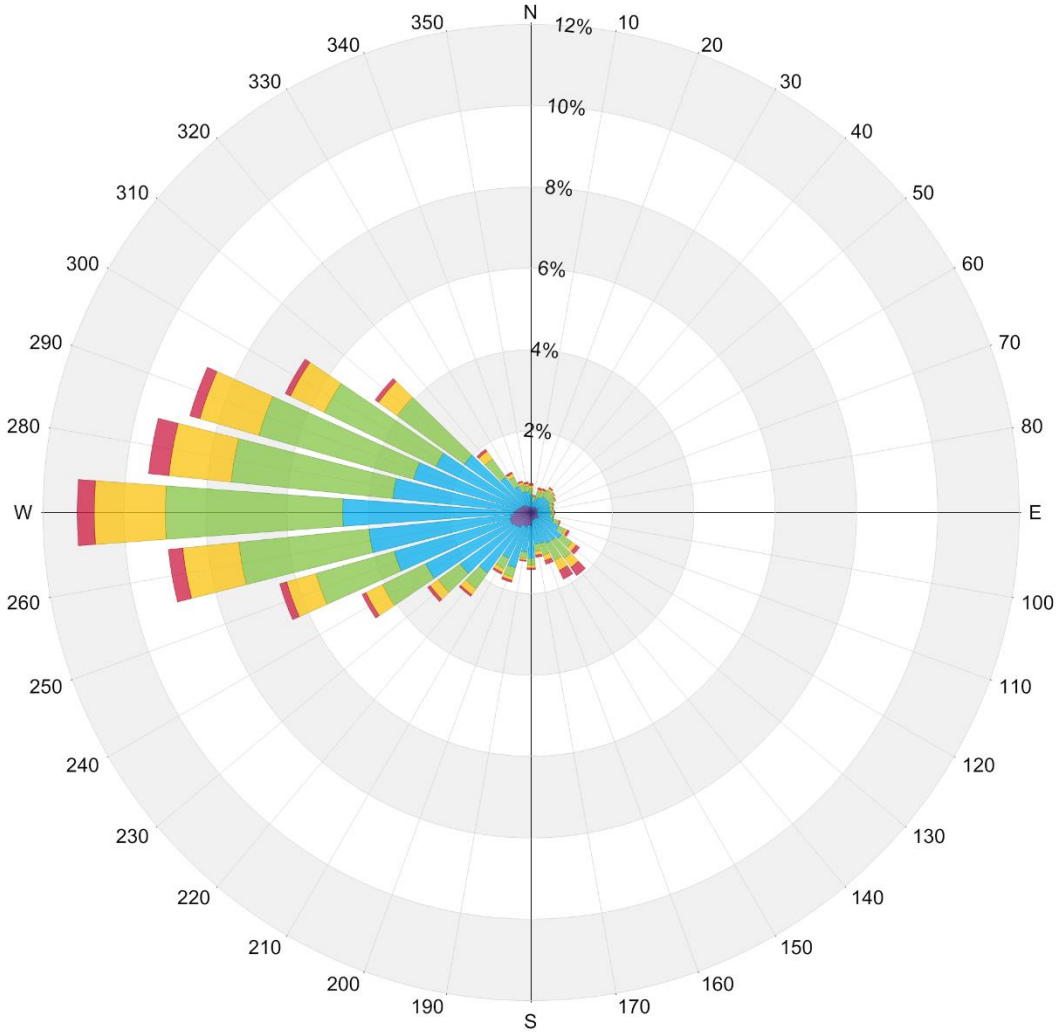


Wind Tunnel Study Model **Existing + Project Configuration**	Figure: 1b	
1431 Jefferson – Oakland, CA Project #1603552	Date: March 10, 2017	





Wind Tunnel Study Model **Project + Cumulative Configuration**	Figure: 1c	
1431 Jefferson – Oakland, CA Project #1603552	Date: March 10, 2017	



Annual Winds

Wind Speed (mph)	Probability (%)
Calm	6.6
1-5	9.2
6-10	38.9
11-15	30.4
16-20	11.4
>20	3.5

Velocity Distribution of Approaching Winds

Metropolitan Oakland International Airport (1984 - 2014)

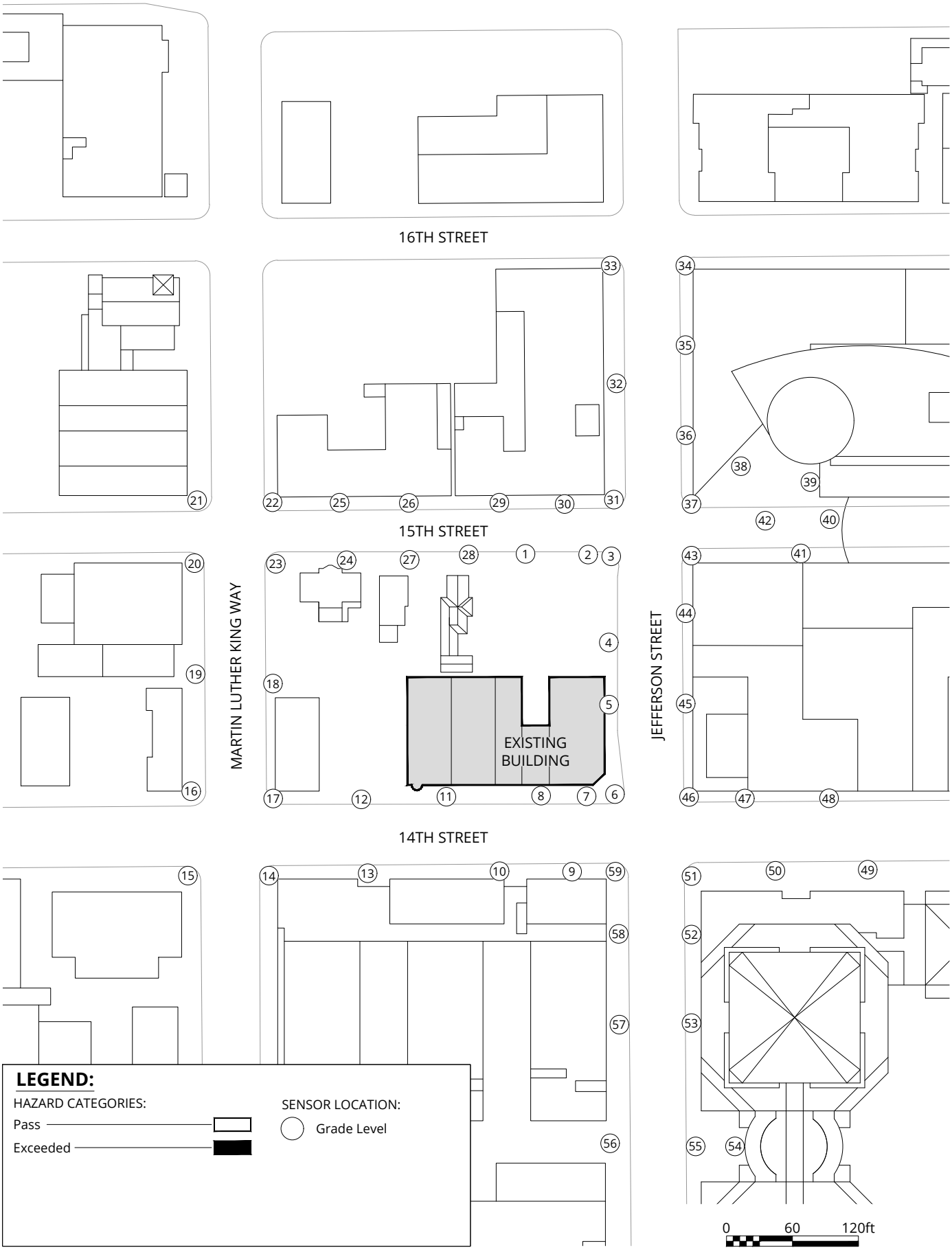
7:00 - 18:00 hrs

1431 Jefferson – Oakland, CA

Project #1603552

Figure No. 2

Date: May 11, 2017



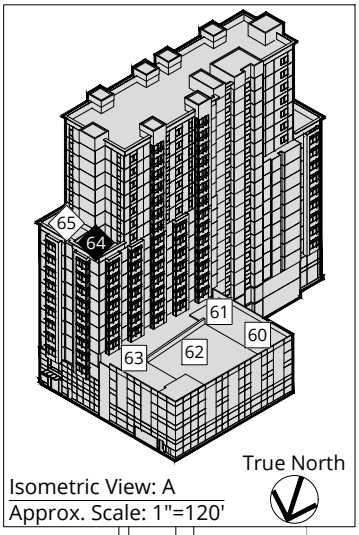
Pedestrian Wind Hazard Conditions
Existing Configuration
Annual (January to December, 7:00 to 18:00)

1431 Jefferson - Oakland, CA

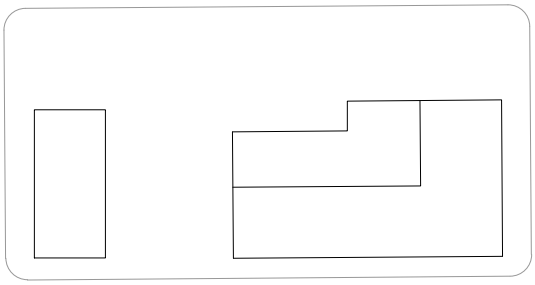
Project #1603552

True North

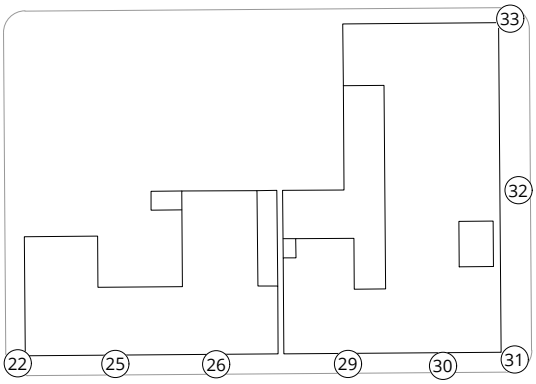
Drawn by: ESM	Figure: 3a
Approx. Scale:	1"=120'
Date Revised:	Mar. 10, 2017



Isometric View: A
Approx. Scale: 1"=120'



16TH STREET



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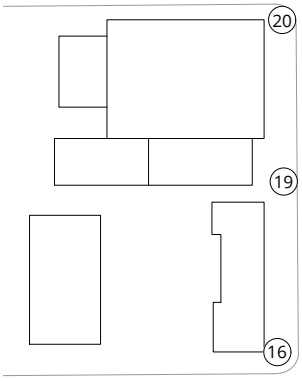
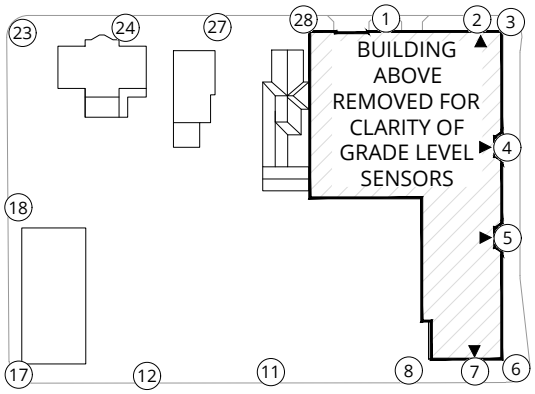


MARTIN LUTHER KING WAY



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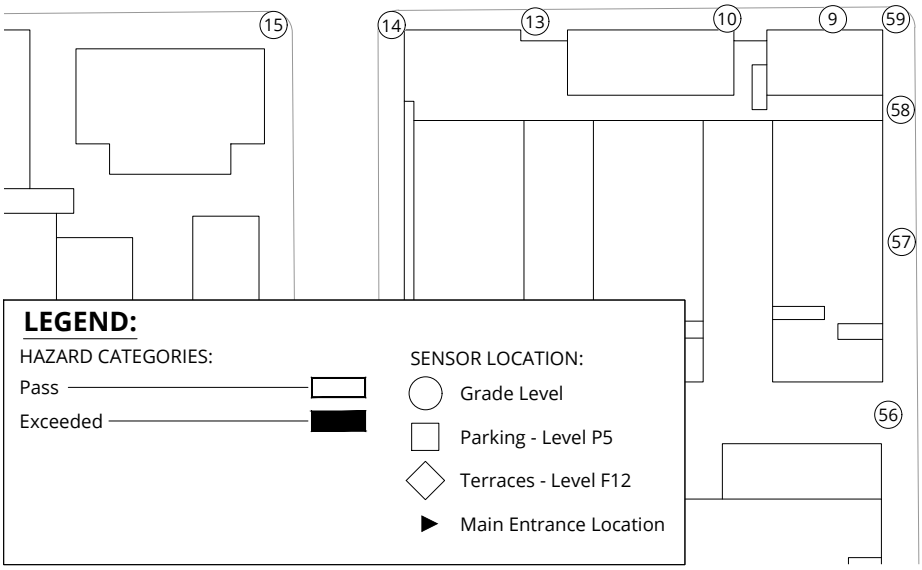
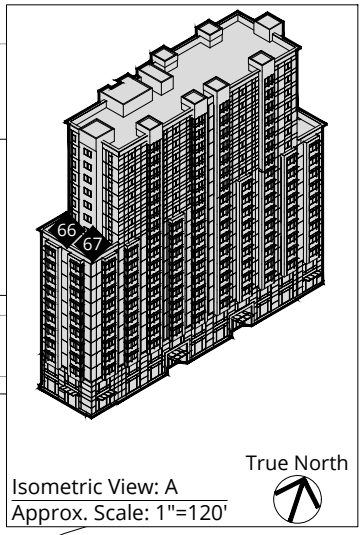
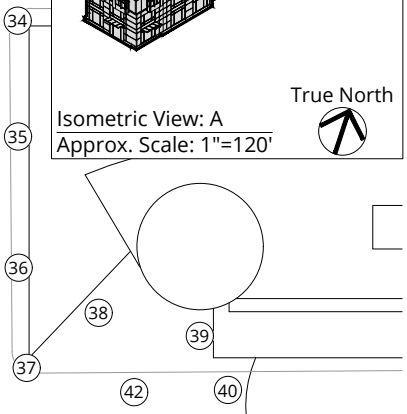
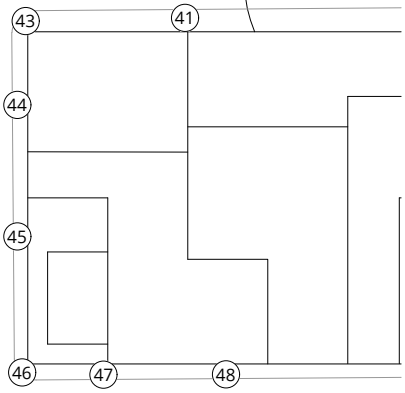




Isometric View: A
Approx. Scale: 1"=120'





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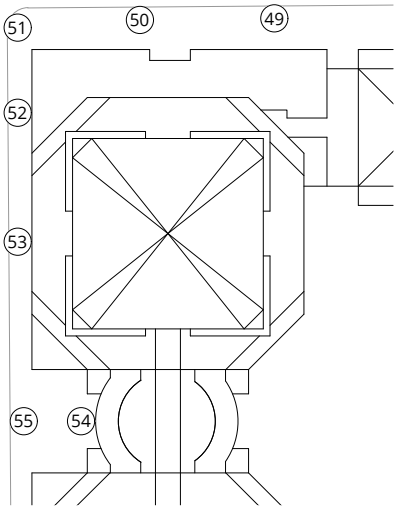


0 60 120ft

LEGEND:

HAZARD CATEGORIES:
- Pass
- Exceeded

SENSOR LOCATION:
- Grade Level
- Parking - Level P5
- Terraces - Level F12
- Main Entrance Location

Pedestrian Wind Hazard Conditions

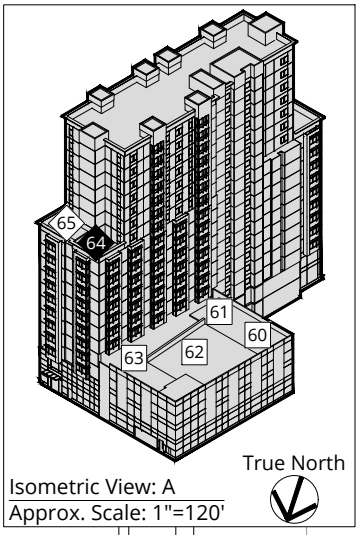
Existing + Project Configuration
Annual (January to December, 7:00 to 18:00)

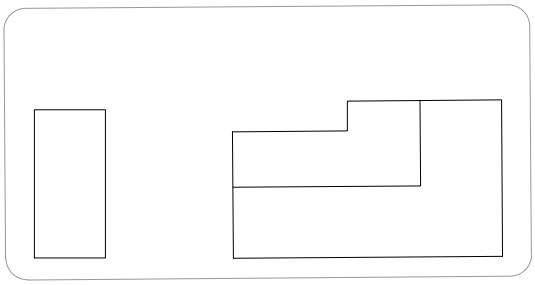
True North

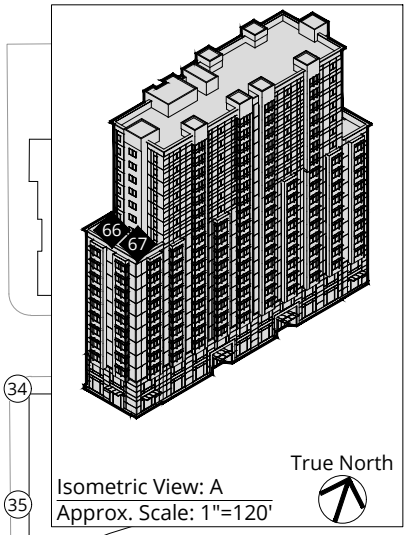
1431 Jefferson - Oakland, CA

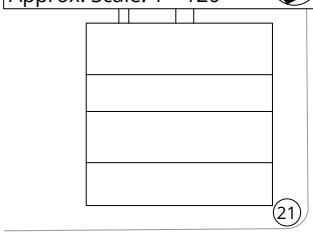
Project #1603552

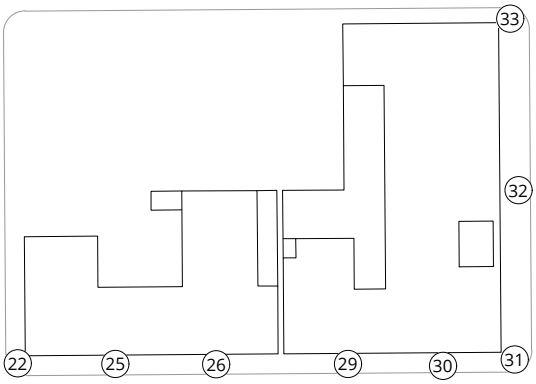
Drawn by: ESM	Figure: 3b
Approx. Scale:	1"=120'
Date Revised:	Mar. 10, 2017

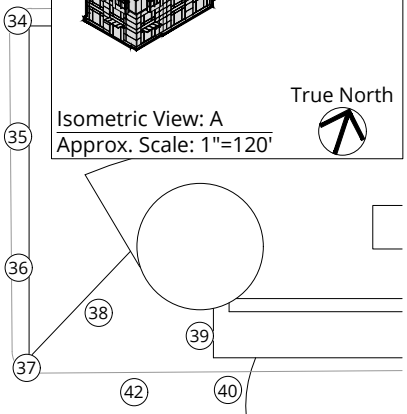


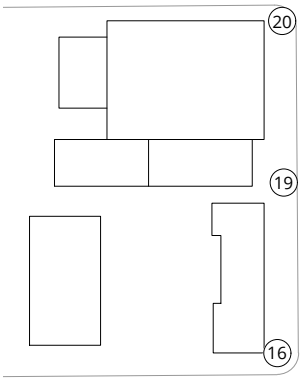


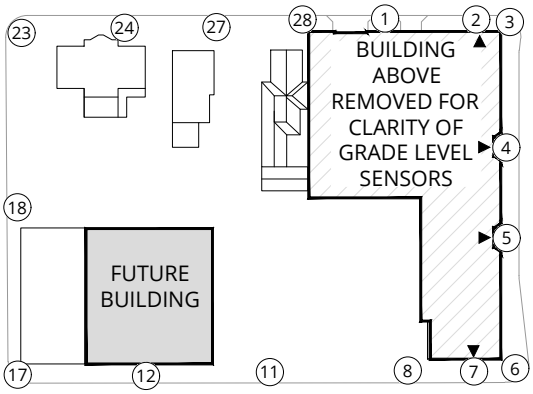


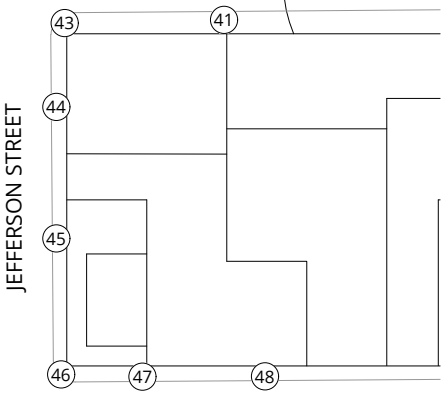


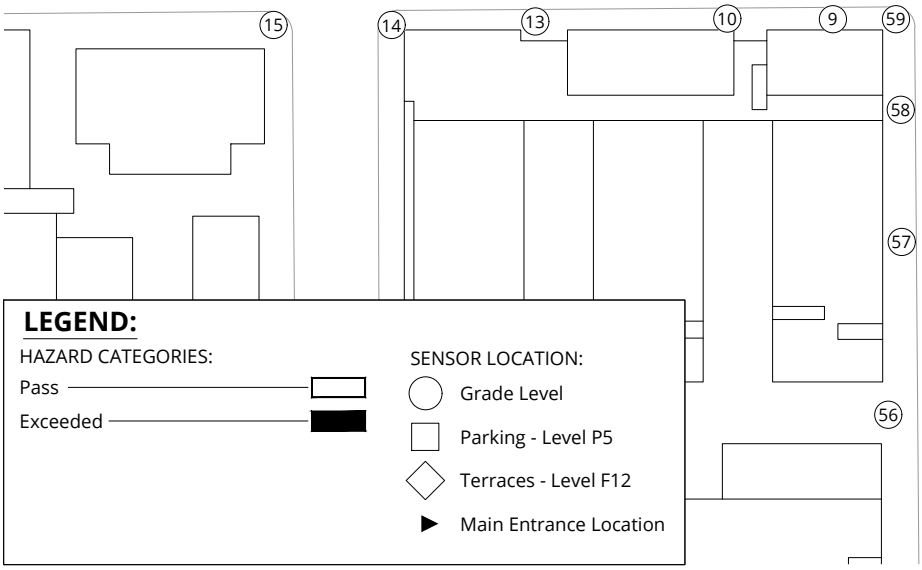


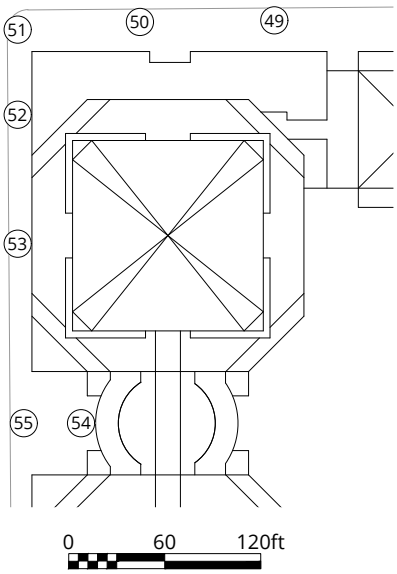












LEGEND:

HAZARD CATEGORIES:
- Pass
- Exceeded

SENSOR LOCATION:
- Grade Level
- Parking - Level P5
- Terraces - Level F12
- Main Entrance Location

Pedestrian Wind Hazard Conditions

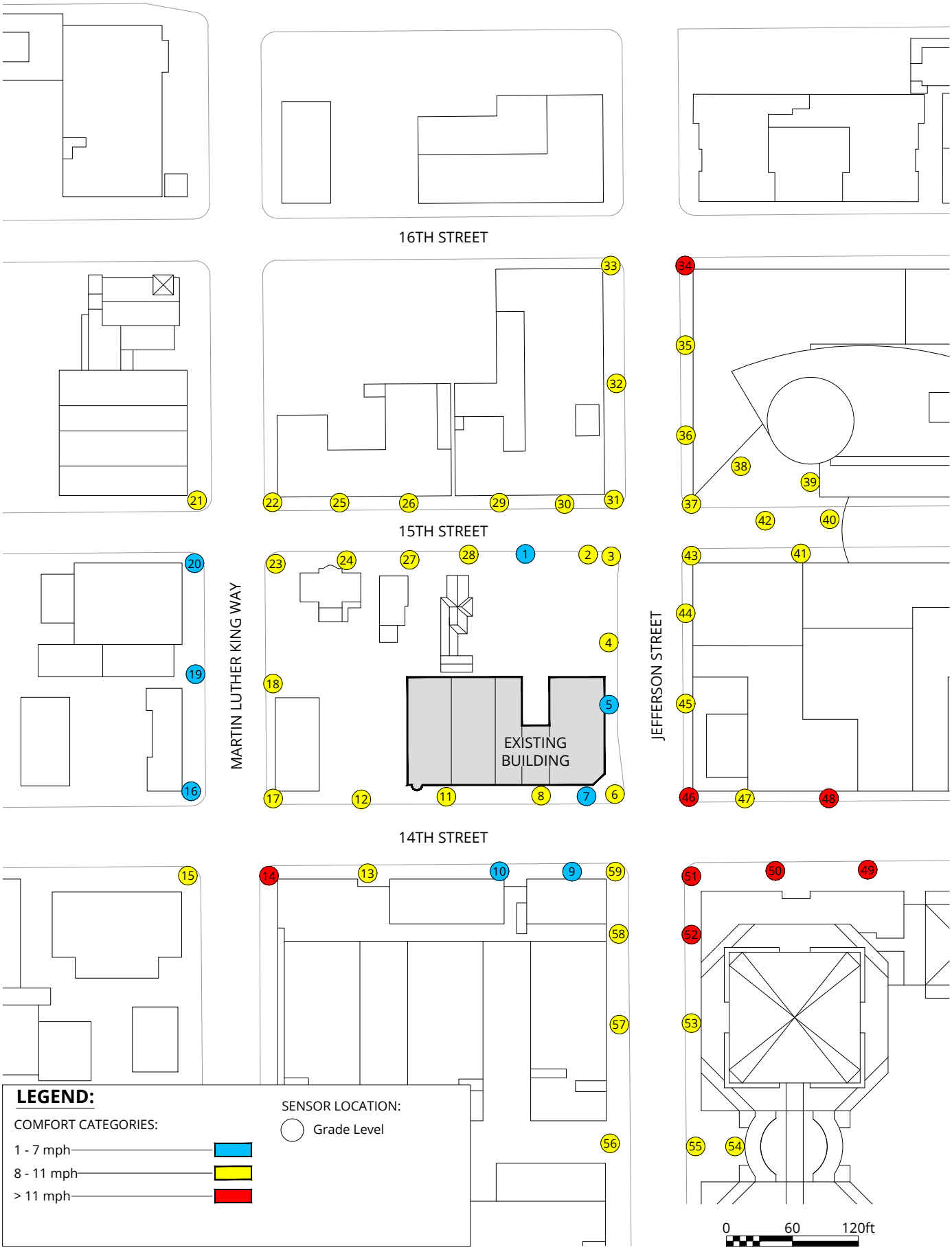
Project + Cumulative Configuration
Annual (January to December, 7:00 to 18:00)

True North

1431 Jefferson - Oakland, CA

Project #1603552

Drawn by: ESM	Figure: 3c
Approx. Scale:	1"=120'
Date Revised:	Mar. 10, 2017



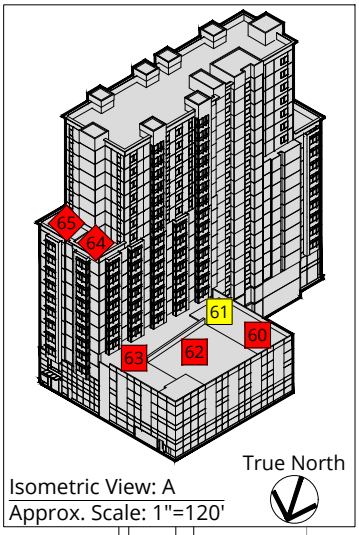
Pedestrian Wind Comfort Conditions
Existing Configuration
Annual (January to December, 7:00 to 18:00)

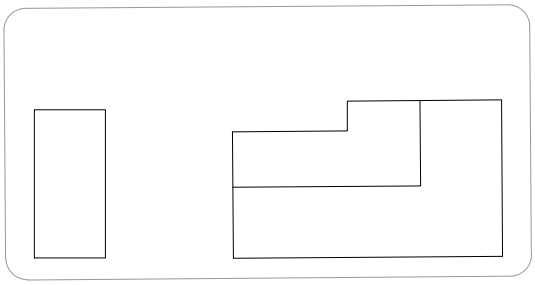
1431 Jefferson - Oakland, CA

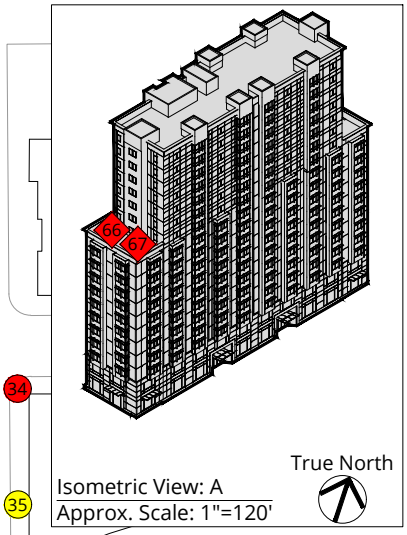
Project #1603552

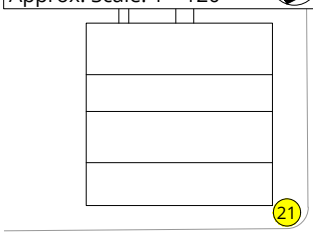
True North

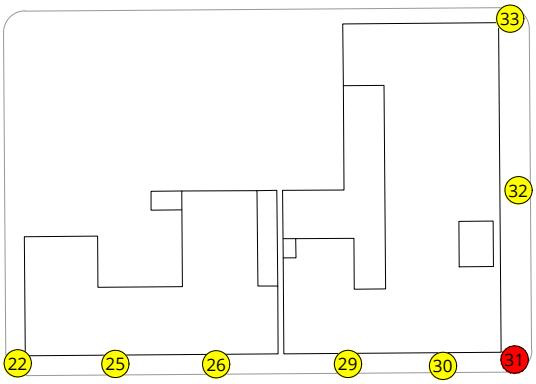
Drawn by: ESM	Figure: 4a
Approx. Scale:	1"=120'
Date Revised:	Mar. 10, 2017

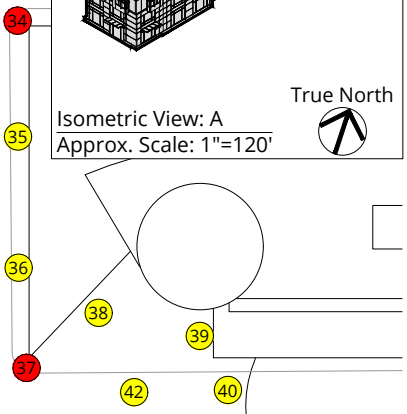




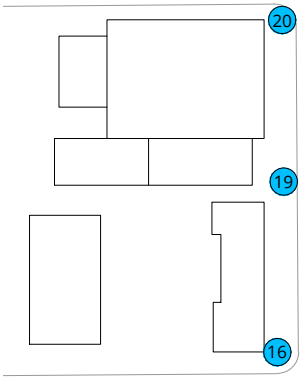




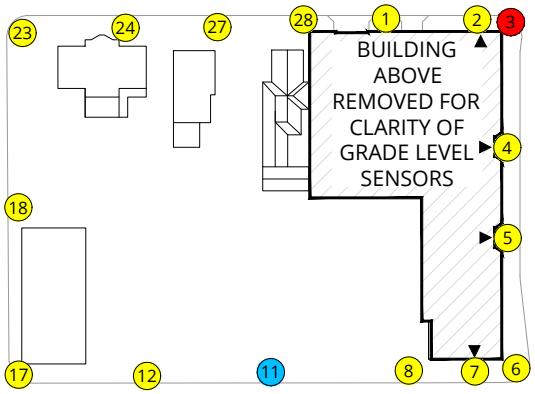




15TH STREET



MARTIN LUTHER KING WAY



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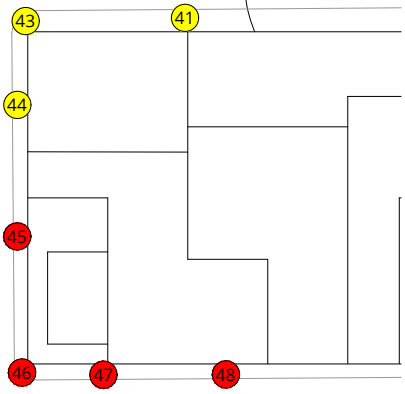

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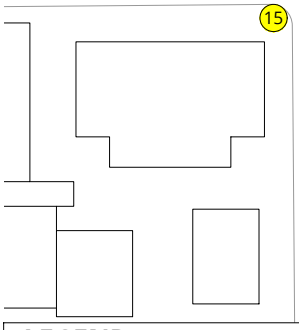
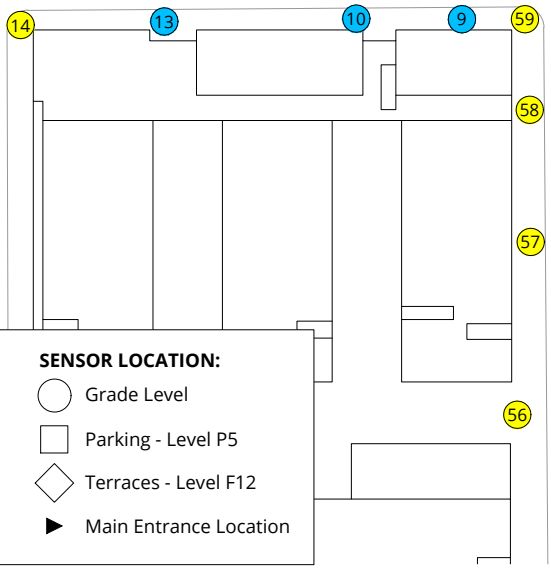
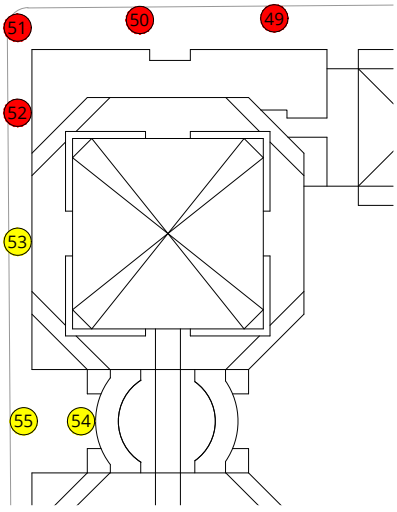






LEGEND:

COMFORT CATEGORIES:

- 1 - 7 mph
- 8 - 11 mph
- > 11 mph

SENSOR LOCATION:

- Grade Level
- Parking - Level P5
- Terraces - Level F12
- Main Entrance Location

0 60 120ft

Pedestrian Wind Comfort Conditions

Existing + Project Configuration

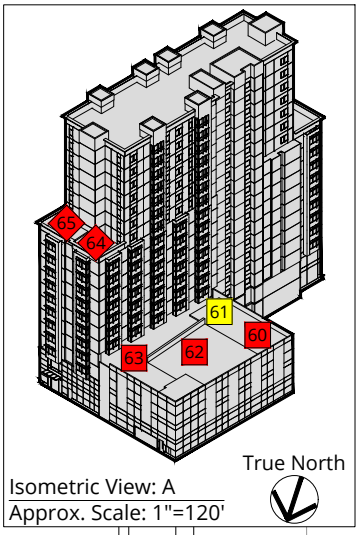
Annual (January to December, 7:00 to 18:00)

True North

1431 Jefferson - Oakland, CA

Project #1603552

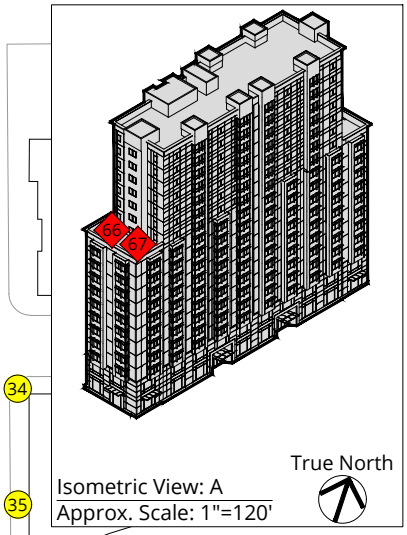
Drawn by: ESM	Figure: 4b
Approx. Scale:	1"=120'
Date Revised:	Mar. 10, 2017



Isometric View: A
Approx. Scale: 1"=120'

True North

16TH STREET



Isometric View: A
Approx. Scale: 1"=120'

True North

15TH STREET

MARTIN LUTHER KING WAY

BUILDING ABOVE REMOVED FOR CLARITY OF GRADE LEVEL SENSORS

FUTURE BUILDING

JEFFERSON STREET

14TH STREET

LEGEND:

COMFORT CATEGORIES:

- 1 - 7 mph
- 8 - 11 mph
- > 11 mph

SENSOR LOCATION:

- Grade Level
- Parking - Level P5
- Terraces - Level F12
- Main Entrance Location

0 60 120ft

Pedestrian Wind Comfort Conditions

Project + Cumulative Configuration
Annual (January to December, 7:00 to 18:00)

1431 Jefferson - Oakland, CA

Project #1603552

True North

Drawn by: ESM	Figure: 4c
Approx. Scale:	1"=120'
Date Revised:	Mar. 10, 2017

TABLES

Table 1.1: Wind Hazard Results – Grade Level Locations

	Existing			Existing + Project				Project + Cumulative			
Location Number	Wind Speed Exceeded 1hr/year (mph)	Hours/ Year Wind Speeds Exceed Hazard Criterion	Exceeds	Wind Speed Exceeded 1hr/year (mph)	Hours/ Year Wind Speeds Exceed Hazard Criterion	Hours Change Relative to Existing	Exceeds	Wind Speed Exceeded 1hr/year (mph)	Hours/ Year Wind Speeds Exceed Hazard Criterion	Hours Change Relative to Existing	Exceeds
1	16	0		23	0	0		22	0	0	
2	28	0		26	0	0		25	0	0	
3	29	0		29	0	0		29	0	0	
4	30	0		31	0	0		31	0	0	
5	23	0		30	0	0		30	0	0	
6	18	0		25	0	0		25	0	0	
7	16	0		21	0	0		21	0	0	
8	17	0		21	0	0		21	0	0	
9	19	0		20	0	0		19	0	0	
10	19	0		20	0	0		20	0	0	
11	17	0		23	0	0		22	0	0	
12	21	0		20	0	0		18	0	0	
13	21	0		21	0	0		27	0	0	
14	26	0		25	0	0		23	0	0	
15	26	0		26	0	0		27	0	0	
16	17	0		17	0	0		19	0	0	
17	23	0		22	0	0		24	0	0	
18	22	0		21	0	0		24	0	0	

	Existing			Existing + Project				Project + Cumulative			
Location Number	Wind Speed Exceeded 1hr/year (mph)	Hours/ Year Wind Speeds Exceed Hazard Criterion	Exceeds	Wind Speed Exceeded 1hr/year (mph)	Hours/ Year Wind Speeds Exceed Hazard Criterion	Hours Change Relative to Existing	Exceeds	Wind Speed Exceeded 1hr/year (mph)	Hours/ Year Wind Speeds Exceed Hazard Criterion	Hours Change Relative to Existing	Exceeds
19	17	0		17	0	0		20	0	0	
20	22	0		22	0	0		21	0	0	
21	22	0		22	0	0		21	0	0	
22	23	0		22	0	0		21	0	0	
23	21	0		21	0	0		21	0	0	
24	21	0		19	0	0		18	0	0	
25	21	0		22	0	0		22	0	0	
26	22	0		25	0	0		24	0	0	
27	20	0		27	0	0		26	0	0	
28	21	0		31	0	0		30	0	0	
29	22	0		27	0	0		26	0	0	
30	20	0		24	0	0		23	0	0	
31	27	0		28	0	0		28	0	0	
32	24	0		24	0	0		24	0	0	
33	24	0		23	0	0		23	0	0	
34	30	0		28	0	0		28	0	0	
35	23	0		22	0	0		21	0	0	
36	26	0		26	0	0		26	0	0	
37	35	0		34	0	0		34	0	0	
38	25	0		24	0	0		24	0	0	

	Existing			Existing + Project				Project + Cumulative			
Location Number	Wind Speed Exceeded 1hr/year (mph)	Hours/ Year Wind Speeds Exceed Hazard Criterion	Exceeds	Wind Speed Exceeded 1hr/year (mph)	Hours/ Year Wind Speeds Exceed Hazard Criterion	Hours Change Relative to Existing	Exceeds	Wind Speed Exceeded 1hr/year (mph)	Hours/ Year Wind Speeds Exceed Hazard Criterion	Hours Change Relative to Existing	Exceeds
39	23	0		24	0	0		24	0	0	
40	21	0		21	0	0		21	0	0	
41	26	0		26	0	0		26	0	0	
42	31	0		30	0	0		30	0	0	
43	28	0		28	0	0		28	0	0	
44	26	0		28	0	0		28	0	0	
45	23	0		28	0	0		28	0	0	
46	28	0		31	0	0		30	0	0	
47	24	0		24	0	0		24	0	0	
48	32	0		33	0	0		31	0	0	
49	28	0		29	0	0		28	0	0	
50	27	0		27	0	0		28	0	0	
51	30	0		32	0	0		33	0	0	
52	27	0		28	0	0		27	0	0	
53	25	0		25	0	0		25	0	0	
54	22	0		22	0	0		22	0	0	
55	23	0		22	0	0		23	0	0	
56	23	0		23	0	0		24	0	0	
57	24	0		25	0	0		25	0	0	
58	24	0		24	0	0		24	0	0	

	Existing			Existing + Project				Project + Cumulative			
Location Number	Wind Speed Exceeded 1hr/year (mph)	Hours/ Year Wind Speeds Exceed Hazard Criterion	Exceeds	Wind Speed Exceeded 1hr/year (mph)	Hours/ Year Wind Speeds Exceed Hazard Criterion	Hours Change Relative to Existing	Exceeds	Wind Speed Exceeded 1hr/year (mph)	Hours/ Year Wind Speeds Exceed Hazard Criterion	Hours Change Relative to Existing	Exceeds
59	24	0		25	0	0		25	0	0	
Average speed, Total hours, Total exceedances	**24**	**0**	**0**	**25**	**0**	**1**	**0**	**25**	**0**	**1**	**0**

Table 1.2: Wind Hazard Results – Above-Grade Level Locations

	Existing + Project			Project + Cumulative		
Location Number	Wind Speed Exceeded 1hr/year (mph)	Hours/ Year Wind Speeds Exceed Hazard Criterion	Exceeds	Wind Speed Exceeded 1hr/year (mph)	Hours/ Year Wind Speeds Exceed Hazard Criterion	Exceeds
60	29	0		30	0	
61	26	0		26	0	
62	30	0		31	0	
63	36	0		36	0	
64	38	2	e	38	2	e
65	35	0		36	0	
66	38	2	e	38	2	e
67	37	1	e	37	1	e
Average speed, Total hours, Total exceedances	**34**	**5**	**3**	**34**	**5**	**3**

Table 2.1: Wind Comfort Results – Grade Level Locations

	Existing			Existing + Project				Project + Cumulative			
Location Number	Wind Speed Exceeded 10% of Time (mph)	Percent of Time Wind Speed Exceeds 11 mph	Exceeds	Wind Speed Exceeded 10% of Time (mph)	Percent of Time Wind Speed Exceeds 11 mph	Speed Change Relative to Existing (mph)	Exceeds	Wind Speed Exceeded 10% of Time (mph)	Percent of Time Wind Speed Exceeds 11 mph	Speed Change Relative to Existing (mph)	Exceeds
1	7	0		9	3	2		9	4	2	
2	9	3		11	10	2		12	12	3	e
3	9	5		13	19	4	e	13	19	4	e
4	8	2		10	5	2		10	6	2	
5	7	1		10	6	3		10	5	3	
6	8	2		11	10	3		11	10	3	
7	7	1		10	4	3		10	6	3	
8	8	2		8	1	0		9	4	1	
9	5	0		7	1	2		8	1	3	
10	7	1		7	1	0		8	1	1	
11	8	2		7	1	-1		9	4	1	
12	10	6		9	3	-1		9	2	-1	
13	8	1		7	1	-1		8	2	0	
14	12	15	e	11	10	-1		11	10	-1	
15	9	4		9	4	0		9	4	0	
16	7	1		7	1	0		7	1	0	
17	10	5		9	3	-1		10	5	0	
18	10	6		9	4	-1		9	4	-1	

	Existing			Existing + Project				Project + Cumulative			
Location Number	Wind Speed Exceeded 10% of Time (mph)	Percent of Time Wind Speed Exceeds 11 mph	Exceeds	Wind Speed Exceeded 10% of Time (mph)	Percent of Time Wind Speed Exceeds 11 mph	Speed Change Relative to Existing (mph)	Exceeds	Wind Speed Exceeded 10% of Time (mph)	Percent of Time Wind Speed Exceeds 11 mph	Speed Change Relative to Existing (mph)	Exceeds
19	7	1		7	1	0		8	1	1	
20	7	1		7	1	0		7	1	0	
21	8	2		8	2	0		8	2	0	
22	10	5		9	4	-1		10	5	0	
23	9	2		8	2	-1		9	3	0	
24	9	3		8	2	-1		8	1	-1	
25	9	4		9	2	0		8	2	-1	
26	10	5		9	4	-1		9	3	-1	
27	9	4		9	4	0		10	4	1	
28	9	3		10	5	1		10	6	1	
29	10	6		10	6	0		10	6	0	
30	9	4		11	10	2		11	10	2	
31	11	10		13	20	2	e	13	19	2	e
32	10	5		9	3	-1		8	3	-2	
33	8	3		9	3	1		8	3	0	
34	14	24	e	12	13	-2	e	11	10	-3	
35	11	10		10	5	-1		10	5	-1	
36	10	6		11	10	1		11	10	1	
37	10	8		13	19	3	e	13	18	3	e
38	11	10		9	5	-2		9	5	-2	
39	8	2		8	2	0		8	2	0	

	Existing			Existing + Project				Project + Cumulative			
Location Number	Wind Speed Exceeded 10% of Time (mph)	Percent of Time Wind Speed Exceeds 11 mph	Exceeds	Wind Speed Exceeded 10% of Time (mph)	Percent of Time Wind Speed Exceeds 11 mph	Speed Change Relative to Existing (mph)	Exceeds	Wind Speed Exceeded 10% of Time (mph)	Percent of Time Wind Speed Exceeds 11 mph	Speed Change Relative to Existing (mph)	Exceeds
40	9	3		8	2	-1		8	2	-1	
41	8	3		9	4	1		9	3	1	
42	11	10		11	10	0		11	10	0	
43	10	7		11	10	1		11	10	1	
44	8	2		11	10	3		11	10	3	
45	9	5		13	21	4	e	13	21	4	e
46	13	20	e	15	30	2	e	14	28	1	e
47	11	10		12	12	1	e	11	10	0	
48	14	23	e	15	24	1	e	15	24	1	e
49	13	20	e	14	21	1	e	14	21	1	e
50	13	17	e	13	18	0	e	13	19	0	e
51	15	29	e	16	34	1	e	16	34	1	e
52	13	18	e	13	19	0	e	13	19	0	e
53	11	10		11	10	0		11	10	0	
54	9	5		10	5	1		10	6	1	
55	10	8		11	10	1		11	10	1	
56	11	10		11	10	0		11	10	0	
57	10	8		10	7	0		10	7	0	
58	11	10		11	10	0		11	10	0	
59	11	10		11	10	0		11	10	0	

	Existing			Existing + Project				Project + Cumulative			
Location Number	Wind Speed Exceeded 10% of Time (mph)	Percent of Time Wind Speed Exceeds 11 mph	Exceeds	Wind Speed Exceeded 10% of Time (mph)	Percent of Time Wind Speed Exceeds 11 mph	Speed Change Relative to Existing (mph)	Exceeds	Wind Speed Exceeded 10% of Time (mph)	Percent of Time Wind Speed Exceeds 11 mph	Speed Change Relative to Existing (mph)	Exceeds
Average speed, Average % exceedance, Total exceedances	**10**	**7**	**8 of 59**	**10**	**8**	**0**	**12 of 59**	**10**	**8**	**0**	**11 of 59**

Table 2.2: Wind Comfort Results – Above-Grade Level Locations

	Existing + Project			Project + Cumulative		
Location Number	Wind Speed Exceeded 10% of Time (mph)	Percent of Time Wind Speed Exceeds 11 mph	Exceeds	Wind Speed Exceeded 10% of Time (mph)	Percent of Time Wind Speed Exceeds 11 mph	Exceeds
60	13	21	e	14	24	e
61	10	5		9	5	
62	13	22	e	13	21	e
63	14	23	e	14	23	e
64	17	30	e	16	31	e
65	12	14	e	12	15	e
66	18	36	e	18	36	e
67	17	38	e	18	38	e
Average speed, Average % exceedance, Total exceedances	**14**	**24**	**7**	**14**	**24**	**7**

APPENDIX A

Drawing List for Model Construction

The drawings and information listed below were received from Lamphier-Gregory and were used to construct the scale model of the proposed 1431 Jefferson. Should there be any design changes that deviate from this list of drawings, the results may change. Therefore, if changes in the design are made, it is recommended that RWDI be contacted and requested to review their potential effects on wind conditions.

File Name	File Type	Date Received (dd/mm/yyyy)
1431 JEFFERSON_CENTRAL_170112.rvt	Revit	7/2/2017

ATTACHMENT I: Solar Energy Impact Assessment

REPORT

1431 JEFFERSON

OAKLAND, CA

SOLAR ENERGY IMPACT ASSESSMENT

PROJECT #: 1603552

MAY 3, 2017

SUBMITTED TO

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INTRODUCTION

Rowan Williams Davies & Irwin Inc. (RWDI) was retained by Lamphier-Gregory to assess the impact of the proposed 1431 Jefferson project in Oakland, CA on the solar energy systems located on the roof on an adjacent building (619 15th Street). The objectives of this study were to quantify any potential loss of solar energy potential caused by the proposed building.

This study involved the use of a three-dimensional (3D) computer model of the project for the following site configurations:

Existing (Baseline): Existing site and surroundings; and
Project: Proposed project and existing surroundings;

As the aim of this study is to understand the impact of the proposed building alone on the solar panels, a cumulative configuration was not simulated.

The 3D models were used in conjunction with 18 years of research-grade, ground level solar insolation data for this area of Oakland to estimate the average annual solar energy reaching the solar panels under the Existing and Project conditions. The net difference in insolation due to the proposed building alone was then computed.

Figure 1 – Rendering of the proposed project (Aerial view from the west)

SITE & BUILDING INFORMATION

The proposed building will be in the Downtown neighborhood of Oakland, CA, at the east end of the block bordered by Jefferson Street on the east, 14th Street on the south, M.L.K. Jr Way on the west and 15th Street on the north. The building will be 19 stories tall (approximately 187 feet in height). Figure 1 shows a rendering and Figure 2 shows an aerial view of the existing site and its immediate surroundings. Elevations of the building are shown in Figure 3. Currently the site is occupied by a one-story commercial building and a parking lot, surrounded predominantly by fairly low buildings up to six stories in height. Several tall buildings of the order of 20 stories in height exist to the northeast, east and south.

Figure 2 – Aerial view of the site and surroundings (Credit: Google™ Earth)

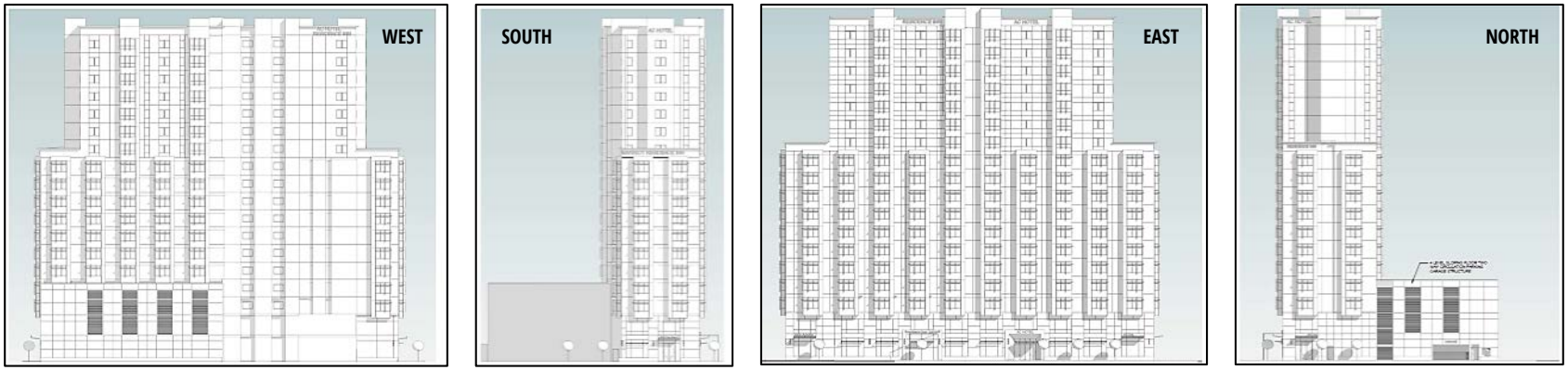


Figure 3 – Exterior elevations of the proposed building

METHODOLOGY

A 3D model of the proposed development and the surroundings was created by RWDI in accordance with architectural drawings received from Lamphier-Gregory on February 7, 2017. Information on the existing surroundings and size and locations of the solar panels were obtained from various external sources including Google Earth™ and the official websites of ArcGIS[1] and the City of Oakland[2]. The two configurations which were studied are illustrated on the following page in Figure 4.

To ensure an accurate estimation of the solar energy potential, 18 years of high quality ground level solar insolation data were sourced from the National Solar Radiation Database[3] (NSRDB), published by the National Renewable Energy Laboratory (NREL). This data combines satellite measurements and a sophisticated atmospheric model to compute ground level solar radiation at half-hourly intervals from 1998 to 2015 inclusive for majority of North America which includes the effect of cloud cover and other atmospheric factors.

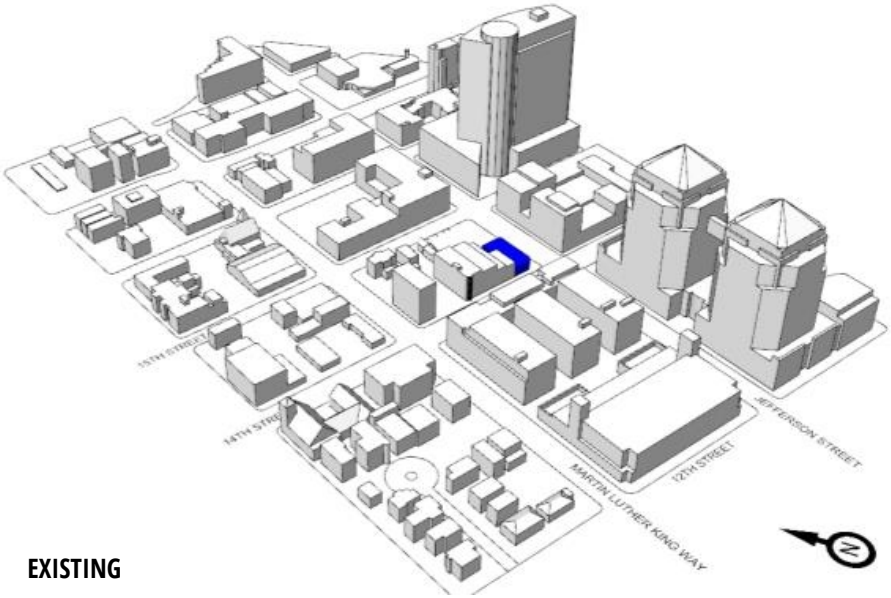
The surfaces representing the solar panels were subdivided into approximately 14 square inch subsurfaces to mimic the size of a typical solar cell. Each sub-surface was then then tested for solar exposure for each of the 315,552 NSRDB records under both the Existing and Project conditions. The net difference in insolation was then computed.

It should be noted that this analysis only predicts the quantity of solar radiation incident on the panels (i.e. the solar energy *potential*). This represents an upper limit of what is available which does not account for of losses present in all solar energy systems. These losses can include: dirty panels, DC to AC conversion losses, efficiency drops due to panel heating and the effects of partial shading.

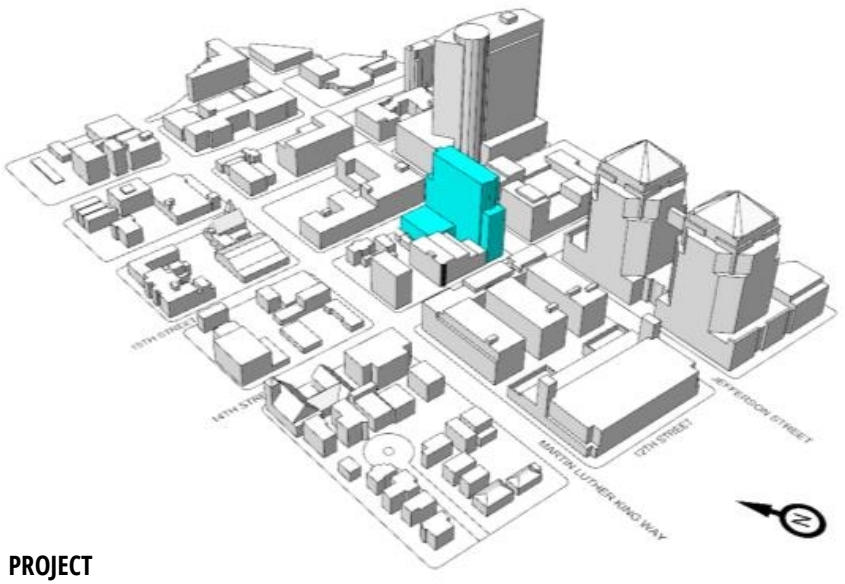
Some solar systems are very sensitive to partial shading and can even stop generating power entirely when only a small area is shaded. The specifics of the neighboring solar panels were not available to RWDI and as such cannot be accounted for in this analysis. However, based on Google Earth™ satellite imagery, the panels appear to have been installed between June 2014 and May 2015. This means the panels are relatively new and likely feature "bypass diodes" and other features designed to minimize the impacts of partial shading.

1. http://www.arcgis.com/home/webmap/viewer.html?webmap=19084f90a4cd4fc5a71b9bad0f694c2a&extent=-122.3732,37.7371,-122.0865,37.8616 – Last accessed on March 5, 2017
2. http://www2.oaklandnet.com/oakca1/groups/ceda/documents/form/oak058486.pdf – Last accessed on March 5, 2017
3. http://maps.nrel.gov/nsrdb-viewer/ - Last accessed on May 1, 2017

3D Computer Model



EXISTING



PROJECT

LEGEND

- Existing building on-site
- Proposed project

Figure 4 – Studied configurations

SIMULATION RESULTS

The results of the solar energy impact assessment are summarized in Table 1 below and presented graphically on the following pages in Figures 6 and 7. The panel numbering scheme used in Table 1 is illustrated in Figure 5, at right.

Table 1 – Results summary table

	Total Annual Insolation [kWh/yr]			Average Insolation Reduction [kWh/m²/yr]	Average Insolation Reduction [%]
	Existing	Project	Net		
Panel 1	14,125	13,080	-1045	90	7%
Panel 2	15,968	8,304	-7664	661	48%
Panel 3	15,792	14,702	-1090	69	7%
Panel 4	7,777	4,012	-3765	553	48%

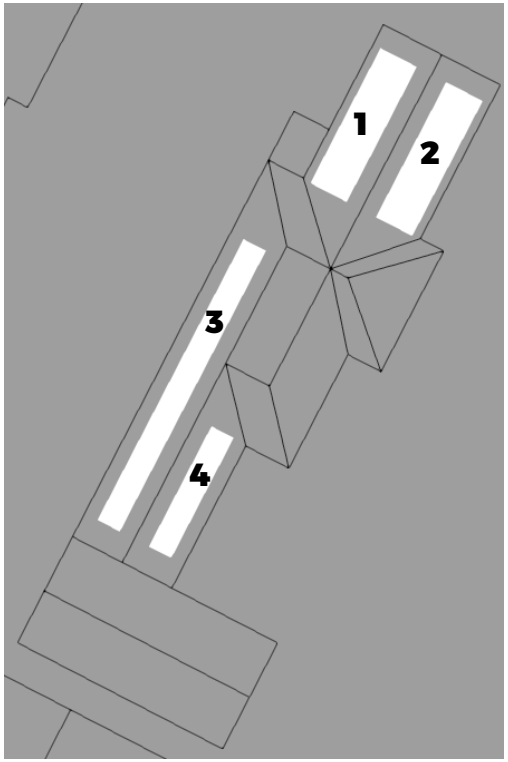
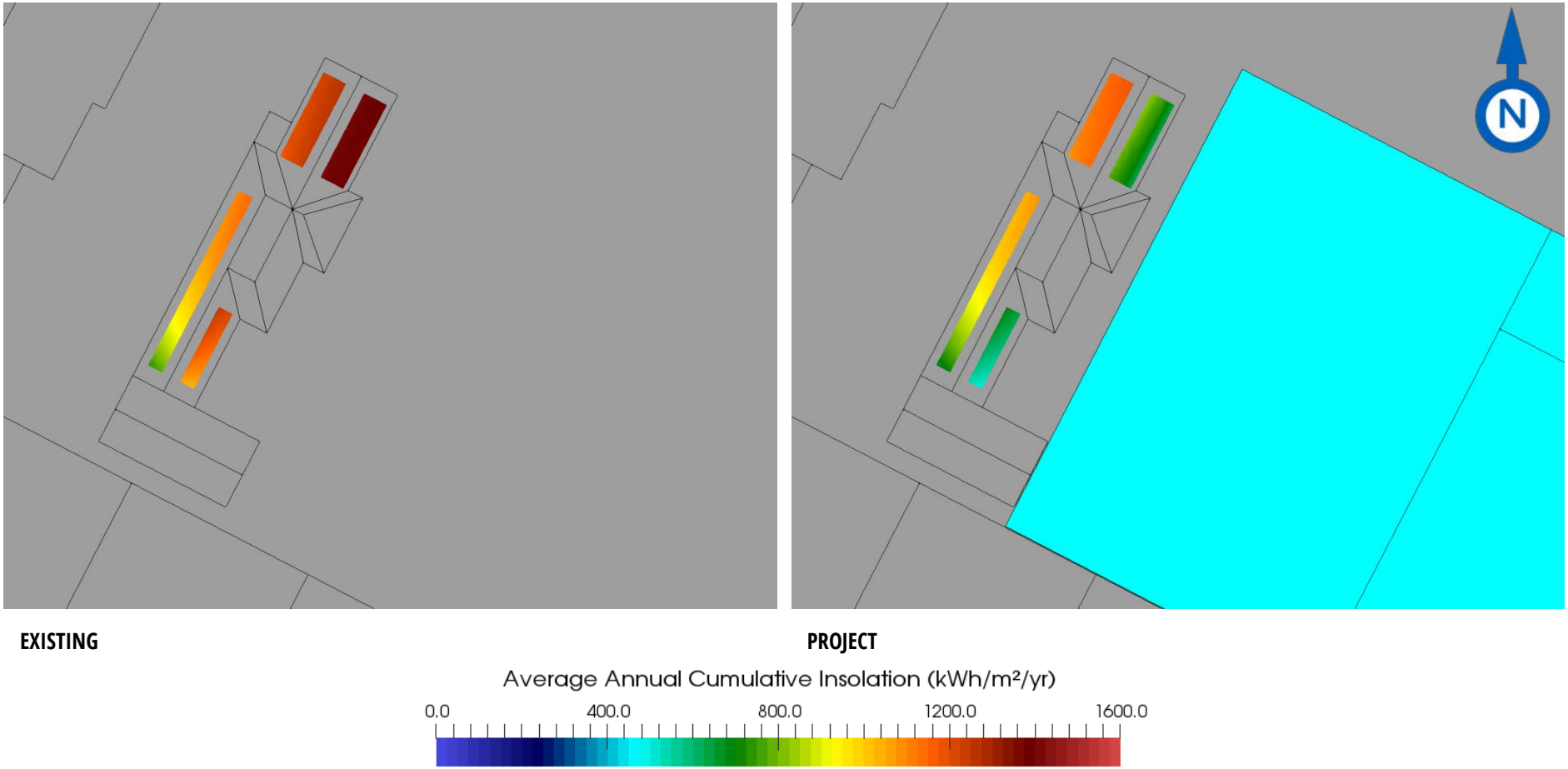


Figure 5 – Panel numbering scheme

SIMULATION RESULTS

Average Annual Incident Solar Insolation

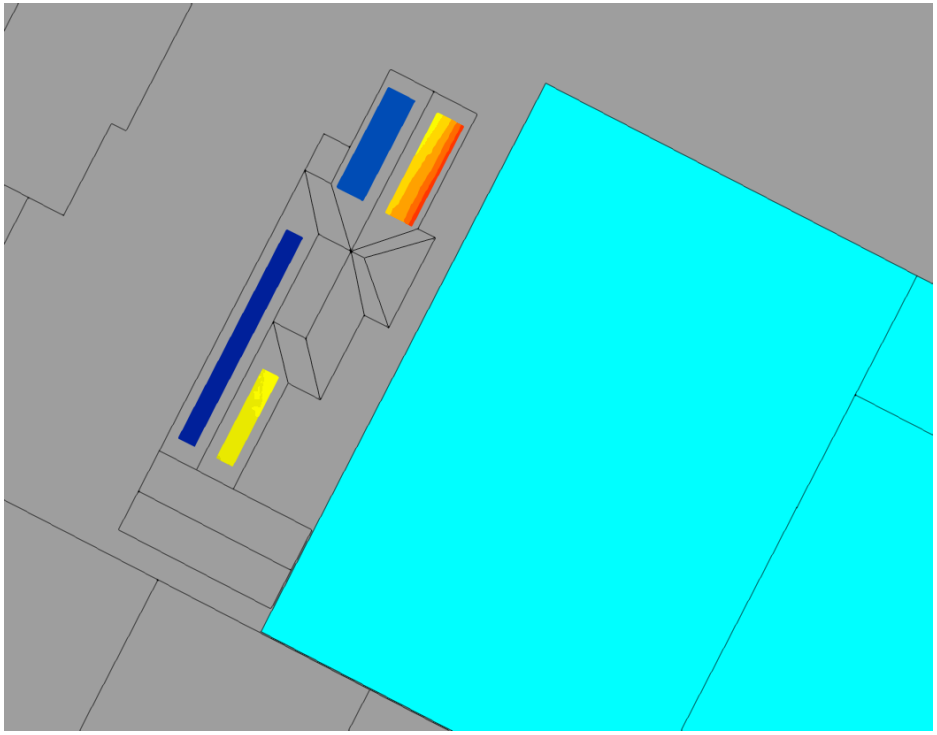


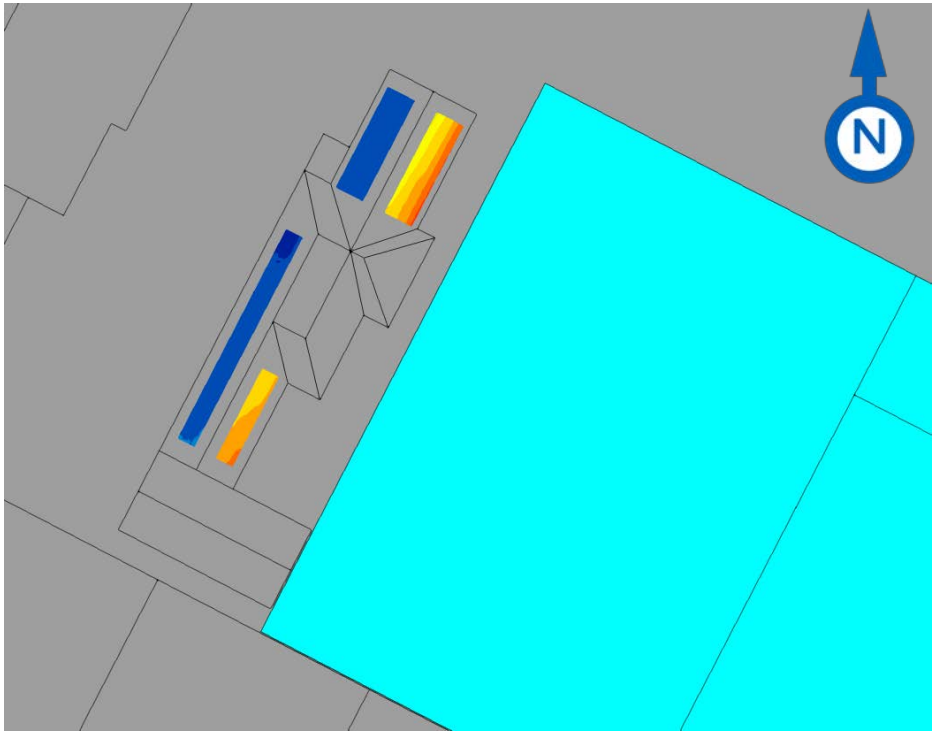
EXISTING **PROJECT**

Figure 6 – Average annual insolation plots

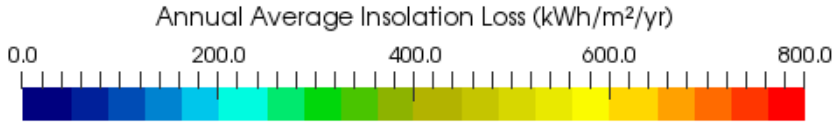
SIMULATION RESULTS

Reduction of Average Annual Incident Solar Insolation





ABSOLUTE REDUCTION



PERCENT REDUCTION

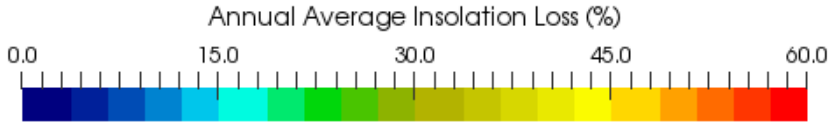


Figure 7 – Reduction in average annual insolation plots

OBSERVATIONS AND CONCLUSIONS

1. Upon completion, the proposed 1431 Jefferson building is predicted to have a significant impact on the available solar energy incident on the existing solar panels on the roof of 619 15th Street.

2. The eastern panels, which are immediately adjacent to the proposed building, are predicted to experience a 48% reduction in available solar energy.

3. The western panels, are predicted to experience a more modest reduction of only 7%.

4. Overall the simulations predict a net loss of available solar energy on the panels of approximately 13,564 kWh/yr.

5. The actual amount of lost electricity to the grid will be substantially less than this and depend on the conversion efficiency of the panels. According to data collected by the state of California[1] the average residential solar module efficiency is 15.6%. Thus, the shadows are expected to result in a loss of at least 2116 kWh/yr to the local grid.

6. The actual loss in energy will depend on the specific design and manufacturing of the panels. If the panels are of a simpler design (and thus more susceptible to the effects of shadows), the actual impact could be significantly higher than the predictions in this report.

7. Similarly, the estimated monetary losses due to the shadowing also depend on specifics of the installed panels, the financing method, and any local, state or federal energy production based incentives and is therefore not possible to accurately predict at this stage. Though as a rough estimate,, if we assume a worst case scenario where the shadows result in a complete loss in solar energy production, a panel efficiency of 15.6% and a 20¢/kWh residential electricity rate[2]; the resulting financial impact would be approximately $1674/year.

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1. https://www.californiasolarstatistics.ca.gov/data_downloads/ - Last Accessed May 2, 2017
2. https://www.pge.com/en_US/residential/rate-plans/rate-plan-options/tiered-base-plan/tiered-base-plan.page - Last Accessed May 2, 2017

APPLICABILITY OF RESULTS

The results presented in this report pertain to the model of the proposed 1431 Jefferson project generated using the architectural design drawings received from Lamphier-Gregory on February 7, 2017. Should there be any design changes that deviate from these drawings, the results presented may change. Therefore, if changes in the design are made, it is recommended that RWDI be contacted and requested to review their potential effects on the impacts described herein. It is the responsibility of others to contact RWDI to initiate this process.