APPENDIX E-1
AIR QUALITY IMPACT ANALYSIS

AIR QUALITY IMPACT ANALYSIS FOR THE PROPOSED MORGAN HILL DOWNTOWN SPECIFIC PLAN CITY OF MORGAN HILL

Prepared for:
David J. Powers & Associates
1885 The Alameda, Suite 204
San Jose, CA. 95126

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Donald Ballanti *Certified Consulting Meteorologist*

1424 Scott Street / El Cerrito, California 94530 / (510) 234-6087 / Fax: (510) 232-7752

EXISTING CONDITIONS

Air Pollution Climatology

The amount of a given pollutant in the atmosphere is determined by the amount of pollutant released and the atmosphere's ability to transport and dilute the pollutant. The major determinants of transport and dilution are wind, atmospheric stability, terrain and, for photochemical pollutants, sunshine.

Morgan Hill is located in the central portions of the Santa Clara Valley. The Santa Clara Valley is bound by the San Francisco Bay to the north and by mountains to the east, south and west. Winds reflect the orientation of the valley, with the primary wind directions being up-valley (northwesterly) and down-valley (southeasterly). Up valley winds dominate in the afternoon and early evening, while light down valley "drainage" flows occur in the late evening and early morning. In the summer the southern end of the Santa Clara Valley becomes a "convergence zone" when air flowing from the Monterey Bay gets channeled northward in the southern end of the valley and meets with prevailing north-northwesterly winds.[1]

Wind speeds are greatest in the spring and summer and weakest in the fall and winter. Nighttime and early morning hours frequently have calm winds in all seasons, while summer afternoons and evenings are quite breezy. Strong winds are rare associated mostly with winter storms.

Pollutants can be diluted by mixing in the atmosphere both vertically and horizontally. Vertical mixing and dilution of pollutants are often suppressed by inversion conditions, when a warm layer of air traps cooler air close to the surface. During the summer, inversions are generally elevated above ground level, but are present over 90 percent of the time in both the morning and afternoon. In winter, surface-based inversions dominate in the morning hours, but frequently dissipate by afternoon.

Topography can restrict horizontal dilution and mixing of pollutants by creating a barrier to air movement. The Santa Clara valley has significant terrain features that affect air quality.

The air pollution potential of the Santa Clara Valley is high. High summer temperatures, stable air and mountains surrounding the valley combine to promote ozone formation. In addition to local sources of pollution, ozone precursors from San Francisco, San Mateo and Alameda Counties are carried by prevailing winds to the Santa Clara Valley. In addition, on summer days with low level inversions, ozone can be recirculated by southerly drainage flows in the late evening/early morning and by the prevailing northwesterlies in the afternoon. A similar recirculation patterns occurs in the winter, affecting levels of carbon monoxide and particulate matter. This movement of the air up and down the valley

[1] Bay Area Air Quality Management District, BAAQMD CEQA Guidelines, 1996 (Revised December 1999).

increases the impact of the pollutants significantly.[2]

The project is within the San Francisco Bay Air Basin and within the Bay Area Air Quality Management District (BAAQMD). The project is near the southern border of the San Francisco Bay Air Basin and near its border with the North Central Coast Air Basin (NCCAB) and the Monterey Bay Unified Air Pollution Control District. The NCCAB is comprised of Monterey, Santa Cruz and San Benito Counties. The San Benito Valley lies directly south of the Santa Clara Valley and extends southeastwardly. Northwesterly air flow frequently transports pollutants into the San Benito Valley from the Santa Clara Valley, particular in the fall months when the normal sea breeze diminishes.

Ambient Air Quality Standards

Criteria Pollutants

Both the U. S. Environmental Protection Agency and the California Air Resources Board have established ambient air quality standards for common pollutants. These ambient air quality standards are levels of contaminants which represent safe levels that avoid specific adverse health effects associated with each pollutant. The ambient air quality standards cover what are called "criteria" pollutants because the health and other effects of each pollutant are described in criteria documents. Table 1 identifies the major criteria pollutants, characteristics, health effects and typical sources. The federal and California state ambient air quality standards are summarized in Table 2.

The federal and state ambient standards were developed independently with differing purposes and methods, although both processes attempted to avoid health-related effects. As a result, the federal and state standards differ in some cases. In general, the California state standards are more stringent. This is particularly true for ozone and particulate matter (PM_{10} and $PM_{2.5}$)

Suspended particulate matter (PM) is a complex mixture of tiny particles that consists of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. These particles vary greatly in shape, size and chemical composition, and can be made up of many different materials such as metals, soot, soil, and dust. "Inhalable" PM consists of particles less than 10 microns in diameter, and is defined as "suspended particulate matter" or PM_{10}. Fine particles are less than 2.5 microns in diameter ($PM_{2.5}$). $PM_{2.5}$, by definition, is included in PM_{10}.

Toxic Air Contaminants

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[2] Bay Area Air Quality Management District, BAAQMD CEQA Guidelines, 1996 (Revised December 1999).

In addition to the criteria pollutants discussed above, Toxic Air Contaminants (TACs) are another group of pollutants of concern. There are many different types of TACs, with varying degrees of toxicity. Sources of TACs include industrial processes such as petroleum refining and chrome plating operations, commercial operations such as gasoline stations and dry cleaners, and motor vehicle exhaust. Cars and trucks release at least forty different toxic air contaminants. The most important, in terms of health risk, are diesel particulate, benzene, formaldehyde, 1,3-butadiene and acetaldehyde.

Public exposure to TACs can result from emissions from normal operations, as well as accidental releases. Health effects of TACs include cancer, birth defects, neurological damage and death.

Ambient Air Quality

The Bay Area Air Quality Management District (BAAQMD) monitors air quality at several locations within the San Francisco Bay Air Basin. The closest multi-pollutant monitoring site to the project site is located in downtown San Jose (Central San Jose). The BAAQMD also operates two monitoring sites measuring only ozone in southern Santa Clara Valley in San Martin and in Gilroy.

The Monterey Bay Unified Air Pollution Control District monitors air quality within the North Central Coast Air Basin (NCCAB). The nearest NCCAB monitoring site to the project is located in Hollister, located in San Benito Valley.

Table 3 summarizes exceedances of State and Federal standards at theses monitoring sites during the period 2005-2007. Table 3 shows that the state/federal ozone and state PM_{10} standards are exceeded in the Santa Clara Valley. The state ozone and PM_{10} standards are also exceeded in the San Benito Valley in the NCCAB.

Attainment Status and Regional Air Quality Plans

The federal Clean Air Act and the California Clean Air Act of 1988 require that the State Air Resources Board, based on air quality monitoring data, designate portions of the state where the federal or state ambient air quality standards are not met as "nonattainment areas". Because of the differences between the national and state standards, the designation of nonattainment areas is different under the federal and state legislation.

The U. S. Environmental Protection Agency has classified the San Francisco Bay Area as a non-attainment area for the federal 8-hour ozone standard. The Bay Area was designated as unclassifiable/attainment for the federal PM_{10} and $PM_{2.5}$ standards.

Under the California Clean Air Act Santa Clara County is a nonattainment area for ozone and particulate matter (PM_{10} and $PM_{2.5}$). The county is either attainment or unclassified for other pollutants.

Table 1: Major Criteria Pollutants

Pollutant	Characteristics	Health Effects	Major Sources
Ozone	A highly reactive photochemical pollutant created by the action of sunshine on ozone precursors (primarily reactive hydrocarbons and oxides of nitrogen). Often called photochemical smog.	•Eye Irritation •Respiratory function impairment.	The major sources ozone precursors are combustion sources such as factories and automobiles, and evaporation of solvents and fuels.
Carbon Monoxide	Carbon monoxide is an odorless, colorless gas that is highly toxic. It is formed by the incomplete combustion of fuels.	•Impairment of oxygen transport in the bloodstream. •Aggravation of cardiovascular disease. •Fatigue, headache, confusion, dizziness. •Can be fatal in the case of very high concentrations.	Automobile exhaust, combustion of fuels, combustion of wood in woodstoves and fireplaces.
Nitrogen Dioxide	Reddish-brown gas that discolors the air, formed during combustion.	•Increased risk of acute and chronic respiratory disease.	Automobile and diesel truck exhaust, industrial processes, fossil-fueled power plants.
Sulfur Dioxide	Sulfur dioxide is a colorless gas with a pungent, irritating odor.	•Aggravation of chronic obstruction lung disease. •Increased risk of acute and chronic respiratory disease.	Diesel vehicle exhaust, oil-powered power plants, industrial processes.
Particulate Matter	Solid and liquid particles of dust, soot, aerosols and other matter which are small enough to remain suspended in the air for a long period of time.	•Aggravation of chronic disease and heart/lung disease symptoms.	Combustion, automobiles, field burning, factories and unpaved roads. Also a result of photochemical processes.

Table 2: Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	Federal Primary Standard	State Standard
Ozone	1-Hour 8-Hour	-- 0.075 PPM	0.09 PPM 0.07 PPM
Carbon Monoxide	8-Hour 1-Hour	9.0 PPM 35.0 PPM	9.0 PPM 20.0 PPM
Nitrogen Dioxide	Annual Average 1-Hour	0.05 PPM --	0.03 PPM 0.18 PPM
Sulfur Dioxide	Annual Average 24-Hour 1-Hour	0.03 PPM 0.14 PPM --	-- 0.04 PPM 0.25 PPM
PM_{10}	Annual Average 24-Hour	-- 150 $\mu g/m^3$	20 $\mu g/m^3$ 50 $\mu g/m^3$
$PM_{2.5}$	Annual 24-Hour	15 $\mu g/m^3$ 35 $\mu g/m^3$	12 $\mu g/m^3$ --
Lead	Calendar Quarter 30 Day Average	1.5 $\mu g/m^3$ --	-- 1.5 $\mu g/m^3$
Sulfates	24 Hour	25 $\mu g/m^3$	--
Hydrogen Sulfide	1-Hour	0.03 PPM	--
Vinyl Chloride	24-Hour	0.01 PPM	--

PPM = Parts per Million
$\mu g/m^3$ = Micrograms per Cubic Meter

Source: California Air Resources Board, Ambient Air Quality Standards (04/01/08) http://www.arb.ca.gov/research/aaqs/aaqs2.pdf

Table 3: Air Quality Data for the Santa Clara and San Benito Valleys

Pollutant/ Standard	Year	San Jose	San Martin	Gilroy	Hollister
Ozone/State 1-Hour	2005	1	2	0	0
	2006	5	7	4	1
	2007	0	1	0	0
Ozone/State 8-Hour	2005	1	3	0	1
	2006	6	11	8	5
	2007	0	4	0	2
Ozone Fed. 8-Hour	2005	0	0	0	0
	2006	1	5	2	1
	2007	0	0	0	0
Carbon Monoxide/State-Fed. 8-Hour	2005	0	-	-	-
	2006	0	-	-	-
	2007	0	-	-	-
Nitrogen Dioxide/State 1-Hour	2005	0	-	-	-
	2006	0	-	-	-
	2007	0	-	-	-
PM_{10}/State-24-Hour	2005	2	-	-	0
	2006	2	-	-	0
	2007	3	-	-	0
PM_{10}/Federal 24-Hour	2005	0	-	-	0
	2006	0	-	-	0
	2007	0	-	-	0
$PM_{2.5}$/Federal 24-Hour	2005	0	-	-	-
	2005	0	-	-	-
	2006	0	-	-	0

Source: Air Resources Board, Aerometric Data Analysis and Management (ADAM), 2008 (http: //www.arb.ca.gov./adam/cgi-bin/adamtop/d2wstart)

Air districts periodically prepare and update plans to achieve the goal of healthy air. Typically, a plan will analyze emissions inventories (estimates of current and future emissions from industry, motor vehicles, and other sources) and combine that information with air monitoring data (used to assess progress in improving air quality) and computer modeling simulations to test future strategies to reduce emissions in order to achieve air quality standards. Air quality plans usually include measures to reduce air pollutant emissions from industrial facilities, commercial processes, motor vehicles, and other sources. Bay Area plans are prepared with the cooperation of the Metropolitan Transportation Commission, and the Association of Bay Area Governments. Ozone Attainment Demonstrations are prepared for the national ozone standard and Clean Air Plans are prepared for the California ozone standard.

Sensitive Receptors

The Bay Area Air Quality Management District defines sensitive receptors as facilities where sensitive receptor population groups (children, the elderly, the acutely ill and the chronically ill) are likely to be located. These land uses include residences, schools playgrounds, child care centers, retirement homes, convalescent homes, hospitals and medical clinics. Sensitive receptors within the project area are primarily residences. The Lewis H. Britton Middle School is located just north of the Downtown Specific Plan area.

Global Warming Gases

The greenhouse effect is a natural process by which some of the radiant heat from the sun is captured in the lower atmosphere of the earth. The gases that help capture the heat are called greenhouse gases (GHG). While greenhouse gases are not normally considered air pollutants, all of these gases have been identified as forcing the earth's atmosphere and oceans to warm above naturally occurring temperatures. Some greenhouse gases occur naturally in the atmosphere, while others result from human activities. Naturally occurring greenhouse gases include water vapor, carbon dioxide, methane, nitrous oxide and ozone. Certain human activities add to the levels of most of these natural occurring gases.

According to the 2006 California Climate Action Team Report[3] (CCAT), the following climate change effects are predicted in California over the course of the next century:

- A diminishing Sierra snowpack declining by 70% to 90%, threatening the state's water supply.
- Increasing temperatures from 8 to 10.4 degrees Fahrenheit under the higher emission scenarios, leading to a 25 to 35% increase in the number of days ozone pollution levels are exceeded in most urban areas.
- Coastal erosion along the length of California and sea water intrusion into the Delta from a 4- to 33-inch rise in sea level. This would exacerbate flooding in already vulnerable regions.

[3] California Environmental Protection Agency Climate Action Team, Climate Action Team Report to Governor Scharzenegger and the Legislation, March 2006.

- Increased vulnerability of forests due to pest infestation and increased temperatures.
- Increased challenges for the state's important agriculture industry from limited water shortage, increasing temperatures, and saltwater intrusion into the Delta.
- Increased electricity demand, particularly in the hot summer months.

In September 2006, the California legislature passed the California Global Warming Solutions Act (CGWSA), which was added to Health and Safety Code Section 38500 (also commonly referred to as AB32). The CGWSA states that global warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California. Many scientists believe that anthropogenic emissions of greenhouse gases (GHG) (defined as carbon dioxide [CO_2], methane [CH_4], nitrous oxide [N_2O], hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride) are having a significant impact on the global environment by accelerating or even causing global warming.

The CGWSA requires that the state reduce emissions of GHG to 1990 levels by 2020. This reduction will be accomplished through an enforceable statewide cap on GHG emissions that will be phased-in starting in 2012. To effectively implement the cap, CGWSA directs CARB to develop appropriate regulations and establish a mandatory reporting system to track and monitor GHG emission levels.

The CGWSA mandates that by January 1, 2008, CARB must determine what the statewide GHG emissions level was in 1990 and approve a statewide GHG emissions limit that is equivalent to the level to be achieved by 2020. On or before January 1, 2011, CARB must adopt GHG emission limits and emission reduction measures by regulation to achieve the maximum technologically feasible and cost-effective reductions in GHG emissions in furtherance of achieving the statewide GHG emissions limit, to become operative beginning on January 1, 2012.

The scientific community has largely agreed that the earth is warming, and that humans are contributing to that change. However, the earth's climate is composed of many complex mechanisms, including: ocean currents, cloud cover, as well as the jet-stream and other pressure/temperature weather guiding systems. These systems are in turn influenced by changes in ocean salinity, changes in the evapotranspiration of vegetation, the reflectivity (albedo) of groundcover, as well as numerous other factors. Some changes have the potential to reduce climate change, while others could form a feedback mechanism that would speed the warming process beyond what is currently projected. The climate system is inherently dynamic; however, the overall trend is towards a gradually warming planet.

Significance Criteria

The document *BAAQMD CEQA Guidelines*[4] provide the following definitions of a significant air quality impact:

[4] Bay Area Air Quality Management District, BAAQMD CEQA Guidelines, 1996 (Revised December 1999).

- A project contributing to carbon monoxide (CO) concentrations exceeding the State Ambient Air Quality Standard of 9 parts per million (ppm) averaged over 8 hours or 20 ppm for 1 hour would be considered to have a significant impact.

- A project that generates criteria air pollutant emissions in excess of the BAAQMD annual or daily thresholds would be considered to have a significant air quality impact. The current thresholds are 15 tons/year or 80 pounds/day for Reactive Organic Gases (ROG), Nitrogen Oxides (NO_x) or PM_{10}. Any proposed project that would individually have a significant air quality impact would also be considered to have a significant cumulative air quality impact.

- Any project with the potential to frequently expose members of the public to objectionable odors would be deemed to have a significant impact.

- Any project with the potential to expose sensitive receptors or the general public to substantial levels of toxic air contaminants would be deemed to have a significant impact.

Despite the establishment of both federal and state standards for $PM_{2.5}$ (particulate matter, 2.5 microns), the BAAQMD has not developed a threshold of significance for this pollutant. For this analysis, $PM_{2.5}$ impacts would be considered significant if project emissions of PM_{10} exceed 80 pounds per day.

The BAAQMD significance threshold for construction dust impacts is based on the appropriateness of construction dust controls. The BAAQMD guidelines provide feasible control measures for construction emissions of PM_{10}. If the appropriate construction controls are to be implemented, then air pollutant emissions for construction activities would be considered less-than-significant.

The above thresholds are to be applied to individual projects. The BAAQMD has also developed thresholds of significance for local plan (general plans, redevelopment plans specific area plans). The BAAQMD threshold of significance general plans is inconsistency with the most recently adopted Clean Air Plan (CAP). According to the BAAQMD, the following criteria must be satisfied for a local plan to be determined to be consistent with the CAP and not have a significant air quality impact:

1. The local plan should be consistent with the CAP population and Vehicle Miles Traveled (VMT) assumptions. This is demonstrated if the population growth over the planning period will not exceed the values included in the current CAP, and the rate of increase in VMT for the jurisdiction is equal to or less than the rate of increase in population.

2. The local plan demonstrates reasonable efforts to implement the Transportation Control Measures (TCMs) included in the CAP that identify cities as implementing agencies.

3. For local plans to have a less-than-significant impact with respect to potential odors/or toxic air contaminants, buffer zones should be established around existing and proposed land uses that would emit these air pollutants

IMPACTS AND MITIGATION

Impact 1: Construction Dust Emissions. Demolition and construction activities permitted and/or facilitated by the proposed project may generate construction-period exhaust emissions and fugitive dust that could temporarily affect local air quality. This would represent a potentially significant impact. I

Construction activities associated with project-facilitated public and private development and infrastructure improvements may include building demolition, grading, new building construction, and paving. Generally, the most substantial air pollutant emissions would be dust generated from building demolition or site grading. The physical demolition of existing structures and other infrastructure can generate substantial dust. In addition to the dust created during demolition, substantial dust emissions could be created as debris is loaded into trucks for disposal. Without adequate dust control measures, visible dust clouds extending beyond the construction or demolition site could occur.

According to the *BAAQMD CEQA Guidelines*, emissions of ozone precursors (ROG and NOx) and carbon monoxide related to construction equipment are already included in the emission inventory that is the basis for regional air quality plans, and thus are not expected to impede attainment or maintenance of ozone and carbon monoxide standards in the Bay Area. Thus, the effects of construction activities would be increased dustfall and locally elevated levels of PM_{10} downwind of construction activity. Construction dust has the potential for creating a nuisance at nearby properties. This is considered a potentially significant impact.

Mitigation Measure 1. For all discretionary grading, demolition, or construction activity in the Specific Plan Area, require implementation of the following dust control measures by construction contractors, where applicable:

During demolition of existing structures:

- Water active demolition areas to control dust generation during demolition of structures and break-up of pavement.
- Cover all trucks hauling demolition debris from the site.
- Use dust-proof chutes to load debris into trucks whenever feasible.

During all construction phases:

- Water all active construction areas at least twice daily.
- Water or cover stockpiles of debris, soil, sand, or other materials that can be blown by the wind.

- Cover all trucks hauling soil, sand, and other loose materials, or require all trucks to maintain at least two feet of freeboard.

- Pave, apply water three times daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas, and staging areas at construction sites.

- Sweep daily (with water sweepers) all paved access roads, parking areas, and staging areas at construction sites.

- Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets.

- Hydroseed or apply (non-toxic) soil stabilizers to inactive construction areas (previously graded areas inactive for ten days or more).

- Enclose, cover, water twice daily, or apply (non-toxic) soil binders to exposed stockpiles (dirt, sand, etc.).

- Limit traffic speeds on unpaved roads to 15 miles per hour.

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

- Replant vegetation in disturbed areas as quickly as possible.

The following are additional mitigation measures recommended by the BAAQMD to reduce engine exhaust emissions:

- Use alternative fueled construction equipment

- Minimize idling time (5 minutes maximum);

- Maintain properly tuned equipment;

- Limit the hours of operation of heavy equipment and/or the amount of equipment in use.

The above measures include all feasible measures for construction emissions identified by the Bay Area Air Quality Management District for large sites. According to the District threshold of significance for construction impacts, implementation of the measures would reduce construction impacts of the project to a less-than-significant level.

Impact 2: Construction TAC Emissions. During construction various diesel-powered vehicles and equipment would be in use on the site. Exposure of sensitive receptors to diesel particulate would represent a less-than-significant impact.

During the build-out period of the project various diesel-powered vehicles and equipment would be in use within the Specific Plan area. In 1998 the California Air Resources Board identified particulate matter from diesel-fueled engines as a toxic air contaminant (TAC). CARB has completed a risk management process that identified potential cancer risks for a range of activities using diesel-fueled engines.[5] High volume freeways, stationary diesel engines and facilities attracting heavy and constant diesel vehicle traffic (distribution centers, truckstop) were identified as having the highest associated risk.

Health risks from Toxic Air Contaminants are a function of both concentration and duration of exposure. Unlike the above types of sources, construction diesel emissions are temporary, affecting an area for a period of days or perhaps weeks. Additionally, construction related sources are mobile and transient in nature. Statewide emissions standards for heavy-duty construction equipment will be causing diesel particulate emission rates to drop over the build-out period of the project. Because of its short duration at any one location, health risks from construction emissions of diesel particulate would be a less-than-significant impact.

Mitigation Measure 2: None required.

Impact 3: **Permanent Local Impacts.** Project traffic would add to carbon monoxide concentrations near streets and intersections providing access to the site. This is a less than significant impact.

On the local scale, the project would change traffic on the local street network, changing carbon monoxide levels along roadways used by project traffic. Carbon monoxide is an odorless, colorless poisonous gas whose primary source in the Bay Area is automobiles. Concentrations of this gas are highest near intersections of major roads.

Carbon monoxide concentrations under worst-case meteorological conditions have been predicted for signalized intersections affected by the project. These intersections were selected as having the worst intersection Level Of Service and highest potential for elevated concentrations of carbon monoxide.

Peak hour traffic volumes were applied to a screening form of the CALINE-4 dispersion model to predict maximum 1-and 8-hour concentrations near these intersections. Appendix 1 provides a description of the model and a discussion of the methodology and assumptions used in the analysis. The model results were used to predict the maximum 1- and 8-hour concentrations, corresponding to the 1- and 8-hour averaging times specified in the state and federal ambient air quality standards for carbon monoxide.

Table 4 shows the results of the CALINE-4 analysis for the peak 1-hour and 8-hour traffic periods in parts per million (PPM). The 1-hour values are to be compared to the federal 1-hour standard of 35 PPM and the state standard of 20 PPM. The 8-hour values in Table 4

[5] California Air Resources Board, Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles, October 2000.

are to be compared to the state and federal standard of 9 PPM.

Table 4 shows that existing predicted concentrations near the intersections meet the 1-hour and 8-hour standards. Levels in 2015 under the current general plan would be below current levels due to anticipated reductions in per-mile emission rates from vehicles. Additional traffic from the project would increase concentrations by no more that 0.1 Parts Per Million (PPM) in 2015.

Levels in 2030 under the current general plan would be below current levels due to anticipated reductions in per-mile emission rates from vehicles. Additional traffic from the project would increase concentrations by less than 0.1 Parts Per Million (PPM) in 2030. Cumulative traffic increases in 2030 would increase concentrations by up to 0.1 PPM, but concentrations with project and cumulative traffic growth would not exceed the state/federal ambient air quality standards.

Since project traffic would not cause any new violations of the 8-hour standards for carbon monoxide, nor contribute substantially to an existing or projected violation, project impacts on local carbon monoxide concentrations are considered to be less-than-significant.

Mitigation Measure 3: None required.

Impact 4: Permanent Regional Impacts. Additional trips to and from the project and area sources associated with project land uses would result in new air pollutant emissions within the San Francisco Bay and North Central Coast air basins. The emissions from these new trips and area sources would exceed the BAAQMD thresholds of significance for ozone precursors and PM_{10}, and would result in a significant impact.

Vehicle trips generated by the project would result in air pollutant emissions affecting the entire San Francisco Bay Air Basin. Regional emissions associated with anticipated net new development through the year 2015 has been calculated using the URBEMIS2007 emission model. The methodology used in estimating emissions is described in Attachment 2.

The incremental daily emission increase associated with project land uses is identified in Table 5 for reactive organic gases and oxides of nitrogen (two precursors of ozone) and PM_{10}. The Bay Area Air Quality Management District has established thresholds of significance for ozone precursors and PM_{10} of 80 pounds per day. Proposed project emissions shown in Table 5 would exceed these thresholds of significance for all ROG and PM_{10}, so the proposed project would have a significant impact on regional ozone and particulate matter (PM_{10} and $PM_{2.5}$) air quality.

Table 4: Worst Case Carbon Monoxide Concentrations Near Worst-Case Intersections, in Parts Per Million

Intersection	Existing (2008)		2015GP		2015 Project		2030 GP		2030 Project		2030 Project w/Cumulative	
	1-Hour	8-Hour	1-Hour	8-Hour	1-Hour	8-Hour	1-Hour	8-Hour	1-Hour	8-Hour	1-Hour	8-Hour
Monterey/ Cochrane	6.6	4.1	5.7	3.5	5.7	3.5	5.1	3.1	5.1	3.1	5.2	3.2
Butterfield/ Cochrane	6.2	3.9	5.2	3.2	5.2	3.2	4.8	2.9	4.8	2.9	4.9	3.0
Monterey/ Main	5.9	3.6	5.1	3.1	5.2	3.2	4.6	2.8	4.6	2.8	4.7	2.8
Monterey/ Dunne	6.9	4.4	5.5	3.4	5.6	3.4	4.7	2.8	4.7	2.8	4.7	2.8
Butterfield/ Main	6.2	3.8	5.3	3.2	5.3	3.3	4.6	2.8	4.6	2.8	4.7	2.8
Most Stringent Standard	20.0	9.0	20.0	9.0	20.0	9.0	20.0	9.0	20.0	9.0	20.0	9.0

Table 5: Project Regional Emissions in Pounds Per Day, Year 2015

	Reactive Organic Gases	**Nitrogen Oxides**	**PM_{10}**	**$PM_{2.5}$**
Area Sources:	47.7	6.6	0.4	0.4
Vehicles:	35.7	31.9	81.6	15.5
Total	83.4	38.5	82.0	15.9
BAAQMD Significance Threshold	80.0	80.0	80.0	N.A.

Mitigation Measure 4: Residential development in the Specific Plan shall implement the following measures to reduce air quality impacts:

- Provide bicycle lanes, sidewalks and/or paths, connecting project residences to adjacent schools, parks, the nearest transit stop and nearby commercial areas.
- Provide secure and conveniently placed bicycle parking and storage facilities at parks and other facilities.
- Allow only natural gas fireplaces. No wood burning devices would be allowed.
- Require electric lawn and garden equipment for landscaping and maintenance.
- Construct transit amenities such as bus turnouts/bus bulbs, benches, shelters, etc.
- Provide direct, safe, attractive pedestrian access from project land uses to transit stops and adjacent development.

Non-residential development in the Specific Plan shall implement the following measures to reduce air quality impacts:

- Provide physical improvements, such as sidewalk improvements, landscaping and bicycle parking that would act as incentives for pedestrian and bicycle modes of travel.
- Construct transit amenities such as bus turnouts/bus bulbs, benches, shelters, etc.
- Provide direct, safe, attractive pedestrian access from project land uses to transit stops and adjacent development.
- Connect site with regional bikeway/pedestrian trail system.
- Provide transit information kiosks and bicycle parking at commercial facilities.
- Provide showers and lockers for employees bicycling or walking to work.
- Provide secure and conveniently located bicycle parking and storage for workers and patrons.
- Provide electric vehicle charging facilities.
- Provide preferential parking for Low Emission Vehicles (LEVs).

The above measures have the potential to reduce project-related regional emissions by

5-10%. A reduction of this magnitude would reduce emissions to below the BAAQMD significance threshold of 80 pounds per day. Project regional air quality impacts would be less-than-significant after mitigation.

Impact 5: Exposure to TACs/Odors. The project would include sensitive receptors that would be exposed to stationary and mobile sources of TACs. This impact would be a less-than-significant impact.

The California Air Resources Board recently published an air quality/land use handbook.[6] The handbook, which is advisory and not regulatory, was developed in response to recent studies that have demonstrated a link between exposure to poor air quality and respiratory illnesses, both cancer and non-cancer related. The CARB handbook recommends that planning agencies strongly consider proximity to these sources when finding new locations for "sensitive" land uses such as homes, medical facilities, daycare centers, schools and playgrounds. Air pollution sources of concern include freeways, rail yards, ports, refineries, distribution centers, chrome plating facilities, dry cleaners and large gasoline service stations.

The Specific Plan area undoubtedly contains minor stationary sources of TAC emissions. Common sources are gasoline stations, emergency diesel generators, dry cleaners and some industrial processes. All these sources are regulated by the Bay Area Air Quality Management District. Such sources are subject to the rules and regulations of the District, which currently require that all sources of TACs be evaluated for health risks prior to issuance of a permit.

The Specific Plan does not place sensitive receptors near major stationary or mobile sources of TACs. There are no major odor sources within or near the Specific Plan area. The impacts of the Specific Plan related to health risks from TACs and exposure to odors would be less-than-significant.

Mitigation Measure 5: None required.

Impact 6: Cumulative Regional Impacts. The project would not have a cumulatively significant regional air quality impact.

According to the BAAQMD, the following criteria must be satisfied for a local plan to be determined to be consistent with the CAP and not have a significant air quality impact:

1. The local plan should be consistent with the CAP population and Vehicle Miles Traveled (VMT) assumptions. This is demonstrated if the population growth over the planning period will not exceed the values included in the current CAP, and the rate of increase in VMT for the jurisdiction is equal to or less than the rate of increase in population.

[6] California Air Resources Board, Air Quality and Land Use Handbook: A Community Health Perspective, April 2005.

2. The local plan demonstrates reasonable efforts to implement the Transportation Control Measures (TCMs) included in the CAP that identify cities as implementing agencies.

3. For local plans to have a less-than-significant impact with respect to potential odors/or toxic air contaminants, buffer zones should be established around existing and proposed land uses that would emit these air pollutants

The EIR on the Morgan Hill General Plan found that General Plan growth would result in Vehicles Miles Traveled (VMT) growing faster than population. With mitigation, the General Plan was found to demonstrate reasonable efforts to implement the TCM's in the regional Clean Air Plan. Even with mitigation, the Morgan Hill General Plan was found to result in VMT increasing faster than population. This was identified as a significant and unavoidable impact.

The project would have a beneficial impact on reducing the rate of increase in regional Vehicles Miles Traveled. The project would not increase population, but would result in shorter and fewer vehicle trips. The rate of residential growth is controlled by the City's Residential Development Control System that limits new residences in the City to approximately 250 units per year. The Specific Plan proposes to exempt 500 residential units, within the Specific Plan project area, by 2020 from the City's Residential Development Control System. However, these 500 additional residential units would not result in an increase in population in the City since the 48,000 population cap by 2020 would remain in place. The number of allocations for units outside the Specific Plan project area would decrease due to this proposed exemption.

The project would be consistent with the Transportation Control Measures that comprise the regional air quality plan. Specifically, Regional Transportation Control Measure 15 (Local Land Use Planning and Development Strategies) commits the BAAQMD, MTC and ABAG to the promotion of Smart Growth patterns of development. Smart growth planning seeks to create and preserve thriving communities based upon compact and efficient use of land, a mix of compatible land uses, a range of housing opportunities and choices, and a variety of viable transportation options. The proposed project utilizes a number of Smart Growth strategies. The project is an infill development, providing high density residential development, mixed uses, and a range of housing opportunities with transit access.

The third criterion for consistency with the Clean Air Plan (TACs and Odors) is addressed as Impact 5 above. The project was found to have a less than significant impact with respect to exposure to TACs and odors.

Based on the above evaluation, the proposed project is consistent with the regional Clean Air Plan and would not have a significant cumulative impact on air quality.

Impact 7: Greenhouse Gas Impacts. Additional trips to and from the project and combustion of fuels would result in greenhouse gas emissions.

Carbon dioxide emissions associated with the proposed project were estimated using the

URBEMIS-2007 program based on anticipated net land use changes in 2015. The estimated annual emission of carbon dioxide (the primary greenhouse gas associated with development projects) is 9,510 tons per year.

There are currently no federal, state, county or air district thresholds of significance by which the above emissions can be determined to be significant or not. Greenhouse gas impacts of a single project are therefore considered too speculative to allow a determination of significance.

Mitigation Measure 7: None required. However, Mitigation Measure 4 above would act to reduce emissions of greenhouse gases from both stationary and mobile sources.

ATTACHMENT 1: CALINE-4 MODELING

The CALINE-4 model is a fourth-generation line source air quality model that is based on the Gaussian diffusion equation and employs a mixing zone concept to characterize pollutant dispersion over the roadway. Given source strength, meteorology, site geometry and site characteristics, the model predicts pollutant concentrations for receptors located within 150 meters of the roadway. The CALINE-4 model allows roadways to be broken into multiple links that can vary in traffic volume, emission rates, height, width, etc.

A screening-level form of the CALINE-4 program was used to predict concentrations.[7] Normalized concentrations for each roadway size (2 lanes, 4 lanes, etc.) are adjusted for the two-way traffic volume and emission factor. Calculations were made for a receptor at a corner of the intersection, located at the curb. Emission factors were derived from the California Air Resources Board EMFAC2007 computer program based on a 2008, 2015 and 2030 Bay Area vehicle mix.

The screening form of the CALINE-4 model calculates the local contribution of nearby roads to the total concentration. The other contribution is the background level attributed to more distant traffic. The 1-hour background level in all years was taken as 4.1 PPM and the 8-hour background concentration was taken as 2.4 PPM. These backgrounds were estimated using isopleth maps and correction factors developed by the Bay Area Air Quality Management District.

Eight-hour concentrations were obtained from the 1-hour output of the CALINE-4 model using a persistence factor of 0.7.

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[7] Bay Area Air Quality Management District, BAAQMD CEQA Guidelines, 1999.

ATTACHMENT 2: URBEMIS 2007 PROGRAM

Estimates of construction phase emissions and operational emissions generated by project traffic and area sources were made using a program called URBEMIS-2007 (Version 9.2.4). URBEMIS-2007 is a program that estimates the emissions that result from development projects. Land use projects can include residential uses such as single-family dwelling units, apartments and condominiums, and nonresidential uses such as shopping centers, office buildings, and industrial facilities. URBEMIS-2007 contains default values for much of the information needed to calculate emissions. However, project-specific, user-supplied information can also be used when it is available.

On-Road Vehicular Emissions

Inputs to the URBEMIS-2007 program include trip generation rates, vehicle mix, average trip length by trip type and average speed. Default trip lengths and average trip speeds for Santa Clara County were used. The analysis was carried out assuming a 2015.

Area Source Emissions

Area source emissions were also quantified using the URBEMIS-2007 program. The URBEMIS-2007 program identifies 5 categories of area source emissions:

Natural Gas Combustion
Hearth Emissions
Landscaping Emissions
Architectural Coatings
Consumer Products

Natural gas emissions result from the combustion of natural gas for space heating and water heating. Estimates are based on the size of project.

Hearth emissions consist of emissions from wood stoves, wood fireplaces, and natural gas fireplaces related to residential uses. The fraction of homes using wood burning stoves and fireplaces was set to zero, and the fraction of home utilizing natural-gas fireplaces was set to 100%.

URBEMIS-2007 calculates emissions from fuel combustion and evaporation of unburned fuel by landscape maintenance equipment. Equipment in this category includes lawn mowers, roto-tillers, shredders/grinders, blowers, trimmers, chain saws, and hedge trimmers used in maintenance of the site.

Architectural coating emissions result from the evaporation of solvents contained in paints, varnished, primers and other surface coatings associated with maintenance of structures. This category of emission is associated with operation of project land uses rather than with initial construction of the project. The default assumption is that 10% of structures will be painted each year. The URBEMIS 2007 program utilizes VOC (volatile organic compounds) content limits as they have been specified by each air district.

Consumer product emissions are generated by a wide range of product categories, including air fresheners, automotive products, household cleaners and personal care produces. Emissions associated with these products primarily depend on the increase in population in the area associated with residential development.

The URBEMIS-2007 program was used to quantify emissions separately for summer and winter. Summertime emissions were utilized for reactive organic gases (ROG) and oxides of nitrogen (NO_x), as both are ozone precursors (ozone is a summer time pollutant). Winter emissions were utilized for PM_{10} when emissions of this pollutant are at a maximum. The program was also used to estimate project carbon dioxide emissions on an annual basis. The program output is attached.

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Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name:

Project Name: Morgan Hill Downtown Specific Plan

Project Location: Santa Clara County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	47.73	6.60	5.96	0.00	0.02	0.02	8,358.21
TOTALS (lbs/day, mitigated)	47.73	6.60	5.96	0.00	0.02	0.02	8,358.21
Percent Reduction	0.00	0.00	0.00	NaN	0.00	0.00	0.00

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	35.65	31.94	376.25	0.45	81.64	15.50	45,864.54

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	83.38	38.54	382.21	0.45	81.66	15.52	54,222.75

Both Area and Operational Mitigation must be turned on to get a combined mitigated total.

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Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	0.51	6.56	2.87	0.00	0.01	0.01	8,352.59
Hearth - No Summer Emissions							
Landscape	0.25	0.04	3.09	0.00	0.01	0.01	5.62
Consumer Products	41.19						
Architectural Coatings	5.78						
TOTALS (lbs/day, unmitigated)	47.73	6.60	5.96	0.00	0.02	0.02	8,358.21

Area Source Changes to Defaults

Percentage of residences with wood stoves changed from 35% to 0%

Percentage of residences with wood fireplaces changed from 10% to 0%

Percentage of residences with natural gas fireplaces changed from 55% to 100%

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Condo/townhouse general	32.83	29.39	348.22	0.42	75.70	14.37	42,526.77
Strip mall	2.82	2.55	28.03	0.03	5.94	1.13	3,337.77
TOTALS (lbs/day, unmitigated)	35.65	31.94	376.25	0.45	81.64	15.50	45,864.54

Operational Settings:

7/1/2008 2:38:06 PM

Includes correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2015 Temperature (F): 85 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Condo/townhouse general	52.62	7.00	dwelling units	842.00	5,894.00	44,118.14
Strip mall		40.00	1000 sq ft	21.22	848.80	3,460.76
					6,742.80	47,578.90

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	55.1	0.2	99.6	0.2
Light Truck < 3750 lbs	11.7	0.9	97.4	1.7
Light Truck 3751-5750 lbs	20.7	0.0	100.0	0.0
Med Truck 5751-8500 lbs	6.3	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	0.7	0.0	71.4	28.6
Lite-Heavy Truck 10,001-14,000 lbs	0.6	0.0	66.7	33.3
Med-Heavy Truck 14,001-33,000 lbs	0.8	0.0	25.0	75.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.3	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.0	0.0	0.0	0.0
Motorcycle	2.9	48.3	51.7	0.0
School Bus	0.1	0.0	0.0	100.0

7/1/2008 2:38:06 PM

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Motor Home	0.7	0.0	85.7	14.3

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Strip mall				2.0	1.0	97.0

7/1/2008 2:39:03 PM

Urbemis 2007 Version 9.2.4

Combined Winter Emissions Reports (Pounds/Day)

File Name:

Project Name: Morgan Hill Downtown Specific Plan

Project Location: Santa Clara County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	47.75	11.22	4.85	0.03	0.39	0.38	14,296.12
TOTALS (lbs/day, mitigated)	47.75	11.22	4.85	0.03	0.39	0.38	14,296.12
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	34.96	48.44	396.02	0.39	81.64	15.50	39,488.73

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	82.71	59.66	400.87	0.42	82.03	15.88	53,784.85

Both Area and Operational Mitigation must be turned on to get a combined mitigated total.

7/1/2008 2:39:03 PM

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	0.51	6.56	2.87	0.00	0.01	0.01	8,352.59
Hearth	0.27	4.66	1.98	0.03	0.38	0.37	5,943.53
Landscaping - No Winter Emissions							
Consumer Products	41.19						
Architectural Coatings	5.78						
TOTALS (lbs/day, unmitigated)	47.75	11.22	4.85	0.03	0.39	0.38	14,296.12

Area Source Changes to Defaults

Percentage of residences with wood stoves changed from 35% to 0%

Percentage of residences with wood fireplaces changed from 10% to 0%

Percentage of residences with natural gas fireplaces changed from 55% to 100%

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Condo/townhouse general	31.55	44.62	363.62	0.36	75.70	14.37	36,614.72
Strip mall	3.41	3.82	32.40	0.03	5.94	1.13	2,874.01
TOTALS (lbs/day, unmitigated)	34.96	48.44	396.02	0.39	81.64	15.50	39,488.73

Operational Settings:

7/1/2008 2:39:03 PM

Includes correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2015 Temperature (F): 40 Season: Winter

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Condo/townhouse general	52.62	7.00	dwelling units	842.00	5,894.00	44,118.14
Strip mall		40.00	1000 sq ft	21.22	848.80	3,460.76
					6,742.80	47,578.90

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	55.1	0.2	99.6	0.2
Light Truck < 3750 lbs	11.7	0.9	97.4	1.7
Light Truck 3751-5750 lbs	20.7	0.0	100.0	0.0
Med Truck 5751-8500 lbs	6.3	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	0.7	0.0	71.4	28.6
Lite-Heavy Truck 10,001-14,000 lbs	0.6	0.0	66.7	33.3
Med-Heavy Truck 14,001-33,000 lbs	0.8	0.0	25.0	75.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.3	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.0	0.0	0.0	0.0
Motorcycle	2.9	48.3	51.7	0.0
School Bus	0.1	0.0	0.0	100.0

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Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Motor Home	0.7	0.0	85.7	14.3

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Strip mall				2.0	1.0	97.0

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Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name:

Project Name: Morgan Hill Downtown Specific Plan

Project Location: Santa Clara County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	8.68	1.20	0.80	0.00	0.00	0.00	1,527.83
TOTALS (tons/year, mitigated)	8.68	1.20	0.80	0.00	0.00	0.00	1,527.83
Percent Reduction	0.00	0.00	0.00	NaN	NaN	NaN	0.00

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	6.46	6.83	69.87	0.08	14.90	2.83	7,982.42

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	15.14	8.03	70.67	0.08	14.90	2.83	9,510.25

Both Area and Operational Mitigation must be turned on to get a combined mitigated total.

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Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name:

Project Name: MH

Project Location: Santa Clara County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	12.55	1.93	1.35	0.00	0.00	0.00	2,436.32

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	17.78	20.07	193.31	0.14	26.50	5.06	14,231.23

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	30.33	22.00	194.66	0.14	26.50	5.06	16,667.55

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Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	0.15	1.92	0.93	0.00	0.00	0.00	2,431.32
Hearth	0.00	0.00	0.00	0.00	0.00	0.00	4.24
Landscape	0.03	0.01	0.42	0.00	0.00	0.00	0.76
Consumer Products	10.71						
Architectural Coatings	1.66						
TOTALS (tons/year, unmitigated)	12.55	1.93	1.35	0.00	0.00	0.00	2,436.32

Area Source Changes to Defaults

Percentage of residences with wood stoves changed from 35% to 0%

Percentage of residences with wood fireplaces changed from 10% to 0%

Percentage of residences with natural gas fireplaces changed from 55% to 100%

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Condo/townhouse general	12.60	14.46	140.16	0.10	19.44	3.71	10,443.22
Strip mall	3.94	4.16	39.32	0.03	5.14	0.98	2,760.57
General office building	1.24	1.45	13.83	0.01	1.92	0.37	1,027.44
TOTALS (tons/year, unmitigated)	17.78	20.07	193.31	0.14	26.50	5.06	14,231.23

Operational Settings:

8/4/2008 10:46:27 AM

Includes correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2010 Season: Annual

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Condo/townhouse general	75.00	6.90	dwelling units	1,200.00	8,280.00	61,977.97
Strip mall		42.94	1000 sq ft	93.49	4,014.46	16,367.92
General office building		11.01	1000 sq ft	85.59	942.35	6,112.10
					13,236.81	84,457.99

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	55.2	1.1	98.5	0.4
Light Truck < 3750 lbs	11.8	2.5	95.0	2.5
Light Truck 3751-5750 lbs	20.5	0.5	99.5	0.0
Med Truck 5751-8500 lbs	6.2	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	0.7	0.0	71.4	28.6
Lite-Heavy Truck 10,001-14,000 lbs	0.6	0.0	66.7	33.3
Med-Heavy Truck 14,001-33,000 lbs	0.8	0.0	25.0	75.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.4	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.0	0.0	0.0	0.0
Motorcycle	2.9	69.0	31.0	0.0

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Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.7	0.0	85.7	14.3

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Strip mall				2.0	1.0	97.0
General office building				35.0	17.5	47.5