5.9 AIR QUALITY

5.9.1 INTRODUCTION

This section describes the existing meteorological climate setting and associated regulatory environment of the project area, as well as an assessment of potential project-related impacts on air quality up to buildout of the proposed project area.

The technical report upon which this section is based was provided by Giroux & Associates and is included in it entirety in Appendix E.

5.9.2 ENVIRONMENTAL SETTING

Meteorology/Climate

The climate of the Chino area, as with all of Southern California, is governed largely by the strength and location of the semi-permanent high pressure center over the Pacific Ocean and the moderating effects of the nearby vast oceanic heat reservoir. Local climatic conditions are characterized by very warm summers, mild winters, infrequent rainfall, moderate daytime on-shore breezes, and comfortable humidities. Unfortunately, the same climatic conditions that create such a desirable living climate combine to severely restrict the ability of the local atmosphere to disperse the large volumes of air pollution generated by the population and industry attracted in part by the climate.

Chino is situated in an area where the pollutants generated in coastal portions of the Los Angeles basin undergo photochemical reactions and then move inland across the project site during the daily sea breeze cycle. The resulting smog at times gives western San Bernardino County some of the worst air quality in all of California. Despite dramatic improvement in air quality in the local area throughout the 1980’s, the project site is, nevertheless, expected to continue to experience some unhealthful air quality for at least two more decades.

Temperatures average 62 degrees Fahrenheit annually with summer afternoons in the low 90’s and winter mornings in the low 40’s. Temperatures much above 100 or below 30 degrees occur infrequently only under unusual weather conditions and even then these limits are not far exceeded.

In contrast to the slow annual variation of temperature, precipitation is highly variable seasonally. Rainfall in the far western portions of San Bernardino County averages 17 inches annually and falls almost exclusively from late October to early April. Summers are almost completely dry with frequent periods of 4-5 months of no rain at all. Because much of the rainfall comes from the fringes of mid-latitude storms, a shift in the storm track of a few hundred miles can mean the difference between a very wet year and a year with drought conditions.

Winds across the project area are an important meteorological parameter because they control both the initial rate of dilution of locally generated air pollutant emissions as well as their regional trajectory. Wind across Chino, as determined from long-term wind data at Ontario Airport, show a very unidirectional daytime onshore flow from the SW-NW with a very weak offshore return flow from the NE that is strongest on winter nights when the land is cooler than the ocean. The onshore winds during the day average 6-8 mph, while the offshore flow is often calm or drifts slowly westward at 1-3 mph.

During the daytime, any locally generated air emissions are thus transported eastward toward San Bernardino and Cajon Pass without generating any localized air quality impacts. The drainage winds, which move slowly across the area, have some potential for localized stagnation. Fortunately, these winds have their origin in the San Gabriel Mountains where background pollution levels are low such that any localized contributions do not create any unhealthful impacts. The wind distribution is such that nominal project-related air quality impacts occur more on a regional scale rather than in the immediate Chino area.

One other important wind condition occurs when a high-pressure center forms over the western United States with sinking air forced seaward through local canyons and mountain passes. The air warms by compression and relative humidities drop dramatically. The dry, gusty winds from the N-NE create dust nuisance potential around areas of soil disturbance such as construction sites and sometimes create serious visibility and safety problems for vehicles on area freeways.

In conjunction with the two dominant wind regimes that affect the rate and orientation of horizontal pollutant transport, there are two similarly distinct types of temperature inversions that control the vertical depth through which pollutants are mixed. The summer on-shore flow is capped by a massive dome of warm, sinking air which caps a shallow layer of cooler ocean air. These marine/subsidence inversions act like a giant lid over the basin. They allow for local mixing of emissions, but they confine the entire polluted air mass within the basin until it escapes into the desert or along the thermal chimneys formed along heated mountain slopes.

In winter, when the air near the ground cools while the air aloft remains warm, radiation inversions are formed that trap low-level emissions such as automobile exhaust near their source. As background levels of primary vehicular exhaust rise during the seaward return flow, the combination of rising non-local baseline levels plus emissions trapped locally by these radiation inversions creates microscale air pollution “hot spots” near freeways, shopping centers and other traffic concentrations. Because the incoming air draining off the mountains during nocturnal radiation inversion conditions is relatively clean, the summer subsidence inversions are a far more critical factor in determining Chino area air quality than the winter time local trapping inversions.

Ambient Air Quality Standards (AAQS)

In order to gauge the significance of the air quality impacts of the proposed Subarea 2 development, those impacts, together with existing background air quality levels, must be compared to the applicable ambient air quality levels, must be compared to the applicable ambient air quality standards. These standards are the level of air quality considered safe, with an adequate margin of safety, to protect the public health and welfare. They are designed to protect those people most susceptible to further respiratory distress such as asthmatics, the elderly, very young children, people already weakened by other disease, or illness and persons engaged in strenuous work or exercise, called "sensitive receptors." Healthy adults can tolerate occasional exposure to air pollutant concentrations somewhat above these minimal standards before adverse effects are observed. Recent research has shown, however, that there may even be adverse respiratory effects from chronic exposure to ozone at levels that only marginally exceed or even meet national clean air standards.

National Ambient Air Quality Standards (NAAQS) and those standards currently in effect in California are shown in Tables 5.9-1. Because California established AAQS several years before the federal action and because of unique air quality problems introduced by the restrictive dispersion meteorology, there is considerable difference between state and national clean air standards.

Planning and enforcement of the new federal standards for PM-2.5 and for ozone (8-hour) were put on hold through a decision by the U.S. Court of Appeals. A California statewide standard for PM-2.5, more stringent than its federal counterpart, was adopted on June 20, 2002. Where the federal clean air standard operates as a specific attainment planning requirement, the State PM-2.5 standard acts as more of a goal to serve as a reminder that major progress is needed regarding small-diameter particulate pollution.

TABLE 5.9-1
AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	California Standards		Federal Standards		
		Concentration	Method	Primary	Secondary	Method
Ozone (O_3)	1 Hour	0.09 ppm (180 μg/m^3)	Ultraviolet Photometry	0.12 ppm (235 μg/m^3)	Same as Primary Standard	Ethylene Chemiluminescence
	8 Hour	—		0.08 ppm (157 μg/m^3)		
Respirable Particulate Matter (PM_{10})	Annual Geometric Mean	30 μg/m^3	Size Selective Inlet Sampler ARB Method P (8/22/85)	—	Same as Primary Standard	Inertial Separation and Gravimetic Analysis
	24 Hour	50 μg/m^3		150 μg/m^3		
	Annual Arithmetic Mean	—		50 μg/m^3		
Fine Particulate Matter ($PM_{2.5}$)	24 Hour	No Separate State Standard		65 μg/m^3	Same as Primary Standard	Inertial Separation and Gravimetic Analysis
	Annual Arithmetic Mean			15 μg/m^3		
Carbon Monoxide (CO)	8 hour	9.0 ppm (10 mg/m^3)	Non-dispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m^3)	None	Non-dispersive Infrared Photometry (NDIR)
	1 Hour	20 ppm (23 mg/m^3)		35 ppm (40 mg/m^3)		
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		—		
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	—	Gas Phase Chemiluminescence	0.053 ppm (100 μg/m^3)	Same as Primary Standard	Gas Phase Chemiluminescence
	1 Hour	0.25 ppm (470 μg/m^3)		—		
Lead	30 Days average	1.5 μg/m^3	AIHL Method 54 (12/74) Atomic Absorption	—	—	High Volume Sampler and Atomic Absorption
	Calendar Quarter	—		1.5 μg/m^3	Same as Primary Standard	

TABLE 5.9-1 (Cont.)
AMBIENT AIR QUALITY STANDARDS

<table>
<tr><th rowspan="2">Pollutant</th><th rowspan="2">Averaging Time</th><th colspan="2">California Standards</th><th colspan="3">Federal Standards</th></tr>
<tr><th>Concentration</th><th>Method</th><th>Primary</th><th>Secondary</th><th>Method</th></tr>
<tr><td rowspan="4">Sulfur Dioxide (SO_2)</td><td>Annual Arithmetic Mean</td><td>—</td><td rowspan="4">Fluorescence</td><td>0.030 ppm (80 µg/m^3)</td><td>—</td><td rowspan="4">Pararosoaniline</td></tr>
<tr><td>24 Hour</td><td>0.04 ppm (105 µg/m^3)</td><td>0.14 ppm (365 µg/m^3)</td><td>—</td></tr>
<tr><td>3 Hour</td><td>—</td><td>—</td><td>0.5 ppm (1300 µg/m^3)</td></tr>
<tr><td>1 Hour</td><td>0.25 ppm (655 µg/m^3)</td><td>—</td><td>—</td></tr>
<tr><td>Visibility Reducing Particles</td><td>8 Hour (10 am to 6 pm PST)</td><td colspan="2">In sufficient amount to produce an extinction coefficient of 0.23 per kilometer – visibility of ten miles or more (0.07 – 30 miles or more for Lake Tahoe) due to particles when the relative humidity is less than 70 percent. Method: ARB Method V (8/18/89).</td><td colspan="3" rowspan="3">No Federal Standards</td></tr>
<tr><td>Sulfates</td><td>24 Hour</td><td>25 µg/m^3</td><td>Turbidimetric Barium Sulfate (AIHL Method 61 (2/76)</td></tr>
<tr><td>Hydrogen Sulfide</td><td>2 Hour</td><td>0.03 ppm (42 µg/m^3)</td><td>Cadmium Hydroxide STRactan</td></tr>
</table>

Baseline Air Quality

Existing levels of ambient air quality and historical trends and projections in the Chino area are well documented from measurements made by the South Coast Air Quality Management District (SCAQMD). Although there are no measurements made in Chino, measurements are made at nearby monitoring stations in Pomona, Upland and Ontario Airport. From these data, one can readily infer that baseline air quality levels near the project site are occasionally very unhealthful, but there are some encouraging signs that the air is slowly, but surely, getting better. Attainment may still be many years away but the frequency of smog alerts, especially those considered unhealthy for all people, has dropped dramatically in the last decade. Available SCAQMD monitoring data around Chino shows a fairly similar air quality pattern. In terms of Chino's relationship to weather and air pollution patterns in the local area, the data from Pomona are likely most representative of the Subarea 2 project site. Tables 5.9-2 summarizes the monitoring history from the Pomona monitoring station for the last seven years of published data. Ozone, the primary ingredient in photochemical smog, is obviously the biggest pollution problem in the area. Since 1995, about one-eighth of all days of the year experience a violation of the State hourly ozone standard. There have been no first-stage smog alerts since 1995. No second-stage alert levels of 0.35 ppm for one hour have been called in the last ten years near the project site.

Throughout the last decade, there has been a marked trend in lower maximum concentrations and a significant reduction in the frequency of standard violations. Some of that improvement may be due, in part, to year-to-year variations in weather patterns that affect smog levels but a good portion of that trend is due to reductions in emissions from stationary sources and from smog control equipment on cars. In particular, the noticeable decrease in first-stage smog alerts in the Pomona area from 30 days per year at mid-decade to only 10 per year by the end of the 1980's and none since 1995 is dramatic evidence of the benefits of aggressive pollution control programs. Violations of the State one-hour ozone standard have declined from over 100 days per year in 1993-94 to an average of less than 30 per year in 1997-99. Violations of the federal one-hour ozone standard have declined from near 50 per year during this time period to an average of 2 per year over the last three years of reported data.

TABLE 5.9-2
CHINO AREA AIR QUALITY MONITORING SUMMARY 1994-2000
(Days Standards Were Exceeded and Maximum Observed Levels)

Pollutant/Standard	1995	1996	1997	1998	1999	2000	2001
Ozone							
1-Hour>0.09 ppm	87	44	30	41	19	18	12
1-Hour>0.12 ppm	47	16	7	18	2	3	1
1-Hour>0.20 ppm	2	0	0	0	0	0	0
8-Hour>0.08 ppm	55	22	10	20	8	5	3
Max 1-Hour Conc. (ppm)	0.22	0.19	0.16	0.18	0.14	0.15	0.14
Carbon Monoxide							
1-Hour>20 ppm	0	0	0	0	0	0	0
8-Hour>9 ppm	0	0	0	0	0	0	0
Max 1-Hour Conc. (ppm)	8	8	8	10	10	7	5
Max 8-Hour Conc. (ppm)	6.1	5.0	5.1	7.3	6.7	4.9	3.4
Nitrogen Dioxide							
1-Hour>0.25 ppm	0	0	0	0	0	0	0
Max 1-Hour Conc. (ppm)	0.18	0.18	0.15	0.15	0.16	0.14	0.13
Particulate Sulfate	—	—	—	—	—	—	—
24-Hour≥25. $\mu g/m^3$	0/59	0/58	0/61	0/62	—	0/56	0/60
Max 24-Hour Conc. ($\mu g/m^3$)	12.5	13.6	9.7	10.1	—	11.5	10.7
Inhalable Particulates: (PM-10)							
24-Hour>50 $\mu g/m^3$	31/62	34/64	21/59	20/59	32/57	26/58	34/60
24-Hour>150 $\mu g/m^3$	3/62	0/64	1/59	0/59	0/57	0/58	0/60
Max 24-Hour Conc. ($\mu g/m^3$)	167	129	208	92	112	124	106
Ultra-fine Particulates (PM-2.5)							
24-Hour> $\mu g/m^3$	—	—	—	—	2/96	2/111	4/114
Max 24-Hour Conc.	—	—	—	—	86.9	73.4	74.8
Source: South Coast AQMD – Pomona Air Monitoring Station Data Summaries, supplemented by Ontario and/or Upland data for particulate species.							

While the secondary pollution levels of ozone and to a certain extent particulates are high from transport of pollution into the area, the primary vehicular pollution levels of such species as carbon monoxide (CO) and nitrogen oxides (NO_x) are quite low. Standards for these species are violated infrequently in Pomona and by inference in Chino. The levels of CO and NO_x at or below allowable standards suggest that there is adequate dispersive capacity to accommodate the additional vehicular emissions to be generated by the proposed Subarea 2 development without any significant local air quality degradation.

<u>Dairy Industry Impacts on Air Quality</u>

The dairy industry has been identified as a major contributor to elevated levels of particulates (PM10) in air basins where dairy activities are prevalent (e.g. San Joaquin Valley). In addition, studies by the Radian Corporation have identified the dairy and poultry industries as major ammonia sources in the South Coast Air Basin (SCAB), of which Subarea 2 is a part[1]

The types of air pollutants generated by dairy operations in and surrounding Chino include:

- PM-10 emissions from cattle movement on unpaved surfaces,
- Reactive organic gases, ammonia, hydrogen sulfide and methane generated by manure decomposition,
- Methane generated during digestion in multi-chamber cattle stomachs,
- Equipment exhaust used in dairy operations (tractors, etc.),
- On-road vehicle exhaust from dairy-related traffic (feed, milk, cattle and support trucks and dairy worker commuting).

Existing Dairy-Related Emissions—Subarea 2

Existing emissions from the 31 dairies in Chino Subarea 2 were calculated based upon generally accepted emission factors. Current emissions data was used, where available. Many emission factors associated with the operation of a dairy are not precisely known. For those dairy activities with ambiguous or poorly defined emissions data, regulatory agency (SCAQMD or CARB) estimation data were generally used.

A recent extensive review of air pollution estimation from concentrated animal feeding operations (CAFO) was published by the U.S. Dept. of Agriculture (USDA "White Paper," June 19, 2000). This document was used, where feasible, to estimate air pollution emissions from the 28,730 existing milking cows (51,300 total herd size), and 940 acres of croplands within the Subarea 2 site.

Emissions calculations include the following:

[1] South Coast Air Basin PM10 Task Force Meeting Minutes; pp. 1-3 (August 4, 1995).

TABLE 5.9-3
ESTIMATED DAILY EMISSIONS FROM AGRICULTURAL ACTIVITIES—SUBAREA 2

Pollutant/Source	Factor/Unit Calculation		Daily Emissions
PM-10:			
Corrals:	4.0 lb/1000 head/day X 51,300 head		205 lb/day
Unpaved Roads:	10 mi/day X 4.54 LB		45 lb/day
Cropland:	940 acres X 0.0044 lb/ac/day		4 lb/day
Windblown:	940 acres X 0.0039 lb/ac/day		4 lb/day
	Total		258 lb/day
Methane:			
Digestion:	28,730 mature cows X 0.72 lb/animal day 11,285 yearlings X 0.13 lb/animal/day 11,285 non-milkers X 0.37 lb/animal/day		20,686 lb/day 1,467 lb/day 4,175 lb/day
Manure:	51,300 animals X 0.38 lb/animal/day		19,454 lb/day
	Total		45,822 lb/day
Ammonia:	51,300 animals X 0.0822 lb/animal/day		4,216 lb/day
On-Site Equipment:	10,000 BHP-HR/day	CO ROG NO_x PM-10	19 lb/day 6 lb/day 86 lb/day 3 lb/day
Off-Site Trucks:	5,000 mi/day	CO ROG NO_x PM-10	123 lb/day 32 lb/day 137 lb/day 25 lb/day

Total daily air emissions from existing Chino Subarea 2 dairy activities are estimated as follows:

TABLE 5.9-4
ESTIMATED TOTAL DAIRY-RELATED EMISSIONS—SUBAREA 2

Source	Emissions (lb/day)			
	CO	ROG	NO_x	PM-10
Operational Dust	---	---	---	258
Digestion & Manure	---	4,582*	---	---
Ammonia	---	---	---	4,216**
On-Site Equipment	19	6	86	3
Off-Site Trucks	123	32	137	25
Total	142	4,620	223	4,502

* Assume 10 percent of total organic gases (mainly methane) is reactive
** Assume all ammonia gas is converted to microscopic particles

Air Quality Management Planning

The Federal Clean Air Act (1977 Amendments) required that designated agencies in any area of the nation not meeting national clean air standards must prepare a plan demonstrating the steps that would bring the area into compliance with all national standards by December 31, 1987. The South Coast Air Basin (SCAB) could not meet the deadline for ozone, nitrogen dioxide, carbon monoxide, or PM-10. In the SCAB, the agencies designated by the Governor to develop regional air quality plans are the SCAQMD and the Southern California Association of Governments (SCAG). The two agencies first adopted an Air Quality Management Plan (AQMP) in 1979 and revised it several times subsequently as earlier attainment forecasts were shown to be overly optimistic.

In 1988, because of uncertainty in federal Clean Air Act reauthorization, the California Legislature enacted the California Clean Air Act (CCAA). The CCAA requires that regional emissions be reduced by 5 percent per year, averaged over 3-year periods, until attainment can be demonstrated. Each area that did not meet a national or state ambient air quality standard was required to prepare a plan which demonstrated how the 5 percent reductions were to be achieved. In July 1991, the SCAQMD adopted a revised AQMP which was designed to meet the CCAA requirements. The 1991 AQMP deferred the attainment date to 2010, consistent with the 1990 federal Clean Air Act.

The 1990 federal Clean Air Act Amendments (CAAA) required that all states with airsheds with “serious” or worse ozone problems submit a revision to the State Implementation Plan (SIP). The 1991 AQMP was modified/adapted and submitted as the South Coast Air Basin (SCAB) portion of the SIP. The 1991 SIP submittal estimated that an 85% basin-wide reduction in volatile organic compound (VOC) emissions and a 59% reduction in oxides of nitrogen (NO_x) between 1990 to 2010 was needed to meet federal clean air standards. About 40% of these reductions were to come from existing pollution control programs. The rest would come from new rules, technologies, or other reduction programs.

In 1996, EPA approved the 1994 submittal of the SCAB portion of the SIP. The plan was finally approved after considerable debate on the contingency measures that should be implemented if progress is not as rapid as anticipated in the 1994 SIP. The federal Clean Air Act required that an updated plan be submitted by February 8, 1997, which included attainment plans for all pollutants exceeding federal standards. The CCAA requires an update of the State-mandated clean air plan every three years. The last update was due December 31, 1997.

An updated 1997 AQMP was locally adopted. The California Air Resources Board (ARB) forwarded this plan on to EPA for its consideration and recommended approval. The 1997 AQMP was designed to meet both federal (EPA) and State (ARB) air quality planning guidelines. Components of the 1997 plan update included:

- Demonstration of attainment for ozone, CO, and PM-10
- Updated emissions inventories (1993 base year) of VOC, NO_x, CO, SO_x and PM-10
- Emissions budgets for future years of the inventoried compounds
- An updated pollution control strategy
- Contingency measures if the plan as presently proposed fails to meet stated timetables.

Additional research and photochemical computer modeling, as well as improved emissions estimates, now suggest that formerly predicted emissions reductions required to meet standards need not be quite as severe as thought earlier. Table 5.9-5 summarizes the currently proposed regional attainment planning for ozone (VOC and NO_x) and for carbon monoxide (CO). Emissions reductions of around 66 percent for VOC, 56 percent for NO_x and 66 percent for CO are anticipated from the currently proposed AQMP update. Within the plan, some measures considered "long-term reductions" require additional technological development whose development schedule is uncertain. There is therefore no clear scientific consensus that the 1997 AQMP update will be able to achieve its mandatory clean air objectives by the end of 2010.

TABLE 5.9-5
SOUTH COAST AIR BASIN ATTAINMENT PLAN
(Emissions in tons/day)

	VOC*	NO_x*	CO**
Current Inventory ([a])			
Stationary + Area Sources	410	144	363
On-Road Mobile	562	761	5,826
Off-Road Mobile	120	303	1,008
Total	1,092	1,208	7,197
2010 Forecast[b]			
Stationary + Area Sources	531	98	337
On-Road Mobile	163	360	1,913
Off-Road Mobile	144	269	1,643
Total	838	727	3,893
Short-term + Intermediate			
Reductions	<221>	<120>	<1,468>
Long-Term Reductions	<204>	<77>	<0>
2010 Remaining	413	530	2,425

[a] Year 2000 Estimate
[b] With current emissions reduction programs and adopted growth forecasts.
[c] Levels at which all federal air quality standards will be met
Source: California Air Resources Board, "2001, California Almanac of Emission & Air Quality," and SCAQMD Draft Final 1997 AQMP (October 1996)
* summer ozone precursors
** winter CO "hot spot" precursors

The Draft 1997 AQMP was challenged by several environmental organizations as not being consistent with the 1990 federal CAAA on rates of progress toward attaining the ozone standard. The Ninth Circuit Court found for these organizations. A 1999 Amendment to the proposed SIP Revisions was developed that accelerates the schedule for a number of new SCAQMD rules and regulations. The 1999 SIP Amendment is believed to meet the court-ordered acceleration of the rate of progress. The 1999 Amendments were approved by the California ARB on January 27, 2000. EPA staff has proposed approval of the amendments with additional minor changes. Formal EPA approval of the 1999 SIP Amendment is expected in the next few months.

A large-planned development such as Subarea 2 relates to the AQMP through the land use and growth assumptions used to forecast automotive air pollution emissions. The basinwide AQMP is based on the designated land use for the project site contained in the City of Chino and San Bernardino County General Plans. To the extent that the proposed development represents a level of growth anticipated in these general plans, it is, by inference, consistent with the AQMP. Implementation of planned growth will not delay the timely attainment of regional clean air standards. However, SCAQMD's position is that consistency with the AQMP alone is not a sufficient basis for a finding of an insignificant air quality impact. Impact significance is therefore determined by a direct project analysis.

5.9.3 THRESHOLD OF SIGNIFICANCE

Air quality impacts generally occur on two scales of motion. Near an individual source of emissions or a collection of sources, such as a crowded intersection or parking lot, levels of those pollutants that are emitted in their already unhealthful form will be highest. Such pollutants are called primary pollutants. Carbon monoxide (CO) is an example of such a pollutant.

Many pollutants, however, require time to transform from a more benign form to a more unhealthful contaminant. These are called secondary pollutants and their impact occurs regionally far from the source. Their incremental regional impact is minute on an individual project basis and cannot be quantified except through complex photochemical computer models. Analysis of the significance of such emissions is thus based on a specified amount of emissions (pounds, tons, etc.) even though there is no way to explicitly translate those emissions into a corresponding ambient air quality impact.

The South Coast AQMD[2] recommends that projects in the SCAB with daily emissions that exceed any of the following emission thresholds should be considered to be significant:

[2] Source: SCAQMD CEQA Air Quality Handbook, November, 1993 Rev.

55 lbs per day of ROC	(75 lbs per day during construction)
55 lbs per day of NO_x	(100 lbs per day during construction)
550 lbs per day of CO	
150 lbs per day of PM-10	
150 lbs per day of SO_x	

The South Coast AQMD, however, only has an advisory capacity relative to general development and its associated air pollution emissions. Responsibility for a finding of air quality impact (in) significance rests with the Lead Agency.

Besides the emissions magnitude, the SCAQMD recommends that other indicators should be used as screening criteria to determine the need for further analysis with respect to air quality. These additional indicators are as follows:

- Project could interfere with the attainment of the federal or state ambient air quality standards by either violating or contributing to an existing or projected air quality violation.

- Project could result in population increases within the regional statistical area which would be in excess of that projected in the AQMP for the project's build-out year.

- Project could generate vehicle trips that cause a CO hot spot.

5.9.4 PROJECT IMPACTS

Residential, institutional, commercial, business, light industrial, recreational, as well as limited continuation of agricultural activities in Subarea 2 potentially impact air quality largely through increased automotive emissions. Any single project typically does not cause enough traffic and associated air pollutants to be generated as to individually threaten clean air standards. It is the cumulative effect of hundreds of such developments that causes the small incremental impact from any one development to become cumulatively significant. Minor secondary emissions during construction, from increased fossil-fueled energy utilization and from small miscellaneous sources will also be generated, but these are usually much smaller in both duration and volume than the mobile source emissions.

With implementation of the proposed plan, dairy operations in Subarea 2 will eventually be phased out. Until then, the dairy operations may be perceived as a nuisance because of air emissions and odors. These are existing emissions and are not an impact created by the project. However, existing dust and especially odor may create an impact upon the project. Manure odor may reduce the attractiveness of the area for residential and other nuisance-sensitive land uses. Airborne ammonia which is a chemical by product of manure reacts to form very tiny light-scattering particulates that are linked to adverse health effects. Nonetheless, the actual dairy industry impact to human health is minimal, yet the perceived impact from odor and/or large diameter soiling nuisance dust may be a temporary impediment in attracting highly desirable development within the planning area.

Construction Activity Impacts

Project development will create temporary emissions of fugitive dust from soil disturbance and combustion emissions from on-site construction equipment and from off-site trucks moving dirt, delivering construction materials, and from worker travel. Emissions from such activities are difficult to estimate because project-specific emission characteristics vary from site to site within the project area. In general, the most significant source of air pollution from project construction will be the dust generated during clearing, excavation and site preparation.

The average uncontrolled dust emission rate during construction is about 1.2 tons per acre per month of disturbance. This factor is for total suspended particulates (TSP). The SCAQMD "CEQA Air Quality Handbook" (1993) states that the PM-10 fraction of TSP is about one-half, or 55 pounds of PM-10 per workday in the absence of any dust control. This is a universal factor that may not necessarily be completely applicable to specific soil conditions at the Subarea 2 project site. Because there is no way to accurately estimate site-specific modification to the generic dust generation factor, the approach by most air pollution regulatory jurisdictions has been to require a very aggressive program of dust control during construction to compensate for any uncertainty in the possible particulate air quality impact from project construction. Dust control measures required by the South Coast AQMD under its nuisance abatement and fugitive dust rules (Rules 402 and 403) can reduce dust emissions from 50-80 percent of their uncontrolled rate. An additional dust control rule regulating unpaved roads and sweeping of paved roads was adopted in 1997 (Rule 1186).

Project emissions were calculated by assuming that, at worst case, five percent (5%) of the 2448.7 acres that are proposed for development would be under simultaneous heavy construction during the buildout lifetime of the project. While the actual daily rate will depend on individual project phasing, the total PM-10 generation could be as high as 3.37 tons per day for the assumed 122-acre daily disturbance area. Dust control as required by SCAQMD Rule 403 will reduce PM-10 emissions by around 50 percent using water or similar dust palliatives. A more successful dust control program using multiple techniques (chip sealing access roads, hydroseeding exposed surfaces, adding chemical binders or surfactants to the water) may achieve up to a 80 percent reduction.

At 50 percent ("standard") control, daily dust emissions during an intensive disturbance event would be around 3,220 pounds per day. With maximally effective measures (up to 80 percent control), daily PM-10 emissions could be reduced to 1280 pounds per day compared to the daily emissions significance threshold of 150 pounds per day. Daily PM-10 emissions would exceed the significance threshold by a wide margin. In order to achieve a less-than-significant emission, it will require maintaining the individual daily disturbance area at a reasonably small level (approximately 15 acres/day).

In addition to fine particles that remain suspended in the atmosphere semi-indefinitely, construction activities generate many larger particles with shorter atmospheric residence times. This dust is comprised mainly of large diameter inert silicates that are chemically non-reactive and are further readily filtered out by human breathing passages. These fugitive dust particles are therefore more of a potential soiling nuisance as they settle out on parked cars or landscape foliage rather than any adverse health hazard. With a low current population density in and around Subarea 2, dust nuisance potential for this project is not considered individually significant.

Exhaust emissions will result from on and off-site heavy equipment. The types and numbers of equipment will vary among contractors such that these emissions cannot be quantified with certainty. Typical emission rates for a single diesel powered scraper were obtained from the SCAQMD Air Quality Handbook and were utilized to estimate construction equipment emissions in Table 5.9-6." Diesel scrapers are the most common equipment used for grading activities. A typical large project in Subarea 2 may utilize 20-30 pieces of heavy equipment at any one time during mass grading operations. Assuming that 25 pieces of heavy equipment were operated an average of eight hours per day, the emissions that would be anticipated are also shown in Table 5.9-6.

TABLE 5.9-6
CONSTRUCTION ACTIVITY EMISSIONS (lbs/day)

	ROG	NOx	CO	PM-10	SOx
Construction Equipment*	54	768	250	82	92
Worker Commuting	1	1	8	3	<1
Grading Dust	—	—	—	3220	—
Total	**55**	**769**	**258**	**3305**	**92**
SCAQMD Threshold	75	100	550	150	150

* Estimates based on 25 pieces of equipment, 8 hrs/day, utilizing emission rates from SCAQMD Air Quality Handbook, Table A9-8-A.

Construction activities involve mobile source emissions from construction workers. The number of workers commuting to Chino on any given day 10-20 years from now is highly speculative. As an approximation of the addition of this emissions increment, approximately 400 worker trips were assumed to be driven in 2020. As seen in Table 5.9-6, the inclusion of this small emissions increment does not change any conclusions regarding impact significance.

Although the NO_x emissions exceed the SCAQMD significance threshold, the mobile nature of the on-site construction equipment and off-site trucks will prevent any localized violation of the NO_x or other standards. There may be localized instances when the characteristic diesel exhaust odor is noticeable from passing trucks or nearby heavy equipment, but such transitory exposure is a brief nuisance and will not threaten air quality standards. Truck exhaust impacts can be minimized by controlling construction routes to reduce interference with non-project traffic patterns and to preclude truck queuing or idling near sensitive receptor sites.

Some mitigation in the form of anticipated future emission standards for heavy, off-road equipment have been passed by the California ARB to be phased in later in this decade. Until such mandatory standards are promulgated, the South Coast AQMD urges the inclusion of control measures for construction activities as part of any local discretionary actions that are comparably effective as the future mandatory measures. Recommended measures abstracted from the AQMD "menu" of possible control options are detailed in the mitigation selection of this report. With mitigation to keep equipment in good tune (low-NO_x tune-ups), average daily construction equipment emissions can be reduced, but not to less than significant levels during maximum grading activity days.

Construction activity air quality impacts occur mainly in close proximity to individual disturbance areas. There may, however, be some "spill-over" into the surrounding community. That spill-over may be physical as vehicles drop or carry out dirt or silt which is washed into public streets. Passing non-project vehicles then pulverize the dirt to create off-site dust impacts. Spill-over may also occur via congestion effects. Construction may entail roadway encroachment, detours, lane closures and competition between construction vehicles (trucks and contractor employee commuting) and ambient traffic for available roadway capacity. Emissions controls require good housekeeping procedures and a construction traffic management plan that maintains such "spill-over" effects at a less-than-significant level.

Operational Impacts

By far, the greatest project-related air quality concern centers on vehicle trips. In 2010 (interim analysis year), there will be 71,500 vehicle trips per day. By 2020 (project build-out) there will be 192,500 daily trips generated. For typical western San Bernardino County trip lengths of 10 miles per trip, additional vehicle travel from project implementation will be about 766,000 vehicle miles traveled (VMT) at the 2010 interim analysis year, and at project completion in 2020 there will be about 2.4 million VMT per day.

Secondary impact potential will derive from energy consumption in power plants or on-site heaters, stoves, water heaters, etc. Although individual sources will generate emissions at well below significance threshold levels, combined emissions from all Subarea 2 development could be substantial. In the absence of specific development proposals, anticipating the magnitude of such emissions would be speculative. Except for more readily quantifiable energy consumption, small miscellaneous sources are typically not quantified on a single project basis. Because of electricity deregulation, there is no direct linkage between the locations of power generation and power consumption. This lack of a direct energy consumption/generation relationship precludes providing an accurate stationary source emissions estimate. Because the mobile source emissions from over two million VMT per day far exceed the SCAQMD's threshold of significance for all pollutants analyzed, the omission of power consumption emissions does not affect the project impact findings.

The California Air Resources Board has developed a land use and air pollution emissions computer model that allows one to reliably calculate the daily emissions increase associated with the proposed project. This model, called URBEMIS7G, was run for interim years of 2010 and 2020, and a post-2020 buildout year. The project-related emissions burden, along with a comparison of SCAQMD recommended significance thresholds, are shown in Table 5.9-7.

TABLE 5.9-7
PROJECT-RELATED EMISSIONS BURDEN (pounds/day)

Pollutant	Analysis Year			SCAQMD Threshold
	2010	2020	Buildout	
ROG	788	1,358	305	55
NOx	611	1,021	240	55
CO	8,618	17,209	4,016	550
PM-10	493	1,357	1,613	150
SOx	4	11	29	150
Source: URBEMIS-2001 (Version. 6.2.2). Output in Appendix.				

<u>Displacement of Dairy Operations</u>

Eventual replacement of dairy operations with the proposed urban development will cause some emissions to increase, and some to decline, as indicated in Table 5.9-8.

TABLE 5.9-8
EMISSIONS COMPARISON

Source	Emissions Comparison (lbs/day)			
	CO	**ROG**	**NO_x**	**PM-10**
Existing Dairies	142	4620	223	4502
Proposed Plan Mobile-Sources (Subarea 2 Traffic *2020*)	17,209	1,358	1,021	1,357
Net Change:	+17,067	-3,262	+ 798	-3245
SCAQMD Threshold	550	55	55	150

Project implementation will thus create significant increases in CO and NO_x levels due to traffic exhaust emissions. However, displacement of dairy operations will cause a significant reduction in reactive organic gases and in particulates. There is no basis for comparing pollutants as one type being better or worse than another. However, the basin is in attainment for CO, but not for ozone (created by ROG + NO_x + sunlight), or for particulates. The net effect of project implementation is that two non-attainment pollutants or precursors (ROG and PM-10) will be significantly reduced, while one non-attainment precursor (NO_x) and one attainment pollutant (CO) will be increased significantly. The ROG fraction of dairy-related gaseous emissions contains a number of complex organic molecules that are detectable in very low concentration.

Organic nitrates and sulfides from manure, plus ammonia from urea, and hydrogen sulfide (rotten egg) gases give dairy operations a characteristic pungent odor. Odors would be dramatically reduced with the gradual displacement of dairy operations within Subarea 2 and other existing dairy operations in the Chino/Norco area. Odor exposure for new developments downwind of on-going dairy operations may be temporarily adverse unless a large block of land develops simultaneously to reduce the patchwork quilt of individual new tracts surrounded by dairies that have not yet relocated. This represents an impact of the environment upon the project, and not of the project upon the ambient environment. Although simultaneous development of larger sub-tracts is encouraged to minimize local odor nuisance potential, odor impacts on sensitive uses (e.g. residential, schools) are anticipated to be significant during the transition period to urban use.

Development of Subarea 2 assumes the relocation of the existing IEUA Co-Composting Facility from its current location just east of the California Institution for Women—Chino (CIW-Chino), to a new location outside Subarea 2. IEUA has initiated a relocation feasibility study. The IEUA Co-Composting Facility is expected to relocate prior to adjacent residential development, from such a facility. Residential development in the vicinity of this facility (i.e. within 0.5 mile) may be affected by facility-generated odor prior to facility relocation.

The Subarea 2 Specific Plan establishes a 300-foot overlay zone around the perimeter of the existing composting plant in case the facility is not relocated prior to nearby residential phasing. The adequacy of this distance buffer in minimizing possible odor nuisance is unknown because daytime winds from the west and nocturnal winds from the northeast do not currently blow toward any substantial number of people as a basis for judging odor from the current operation.

The current siting study for a replacement facility establishes 500 feet (0.l mile) as the minimum desirable separation from residences, and does not consider the buffer distance to be completely optimal until it reaches two miles. The use of 300 feet as an overlay distance is an indication of possible odor nuisance conflict if residential development occurs in close proximity to the IEUA Co-Composting Facility. The transition zone between an unacceptable versus acceptable buffer distance is not precisely defined, but occurs somewhere between the 0.1 mile probable odor impact and a 2 mile probable no odor impact source-receiver separation. For purposes of analysis, residential development within 0.5 mile of the IEUA Co-Composting Facility is considered likely to have a potentially significant odor exposure.

This odor exposure to the Co-Composting Facility could be further reduced with the potential enclosure of the facility by IEUA. Odors, particulates (PM10) and other emissions from composting facilities would be substantially reduced with implementation of South Coast Air Quality Management District (SCAQMD) Proposed Rule 1133—'Emission Reductions from Composting Facilities and Related Operations'. The objective of this pending rule is to reduce ammonia (NH3), volatile organic compounds (VOC), and particulate matter (PM10) emissions from composting and related operations through enclosure, aerated static or in-vessel compost pile, biofilter or equivalent emission control equipment and compliance plans. Odor reductions would be a related benefit of these control strategies. PR 1133 would require enclosure of all compost feedstock preparation, curing and storage areas, and is scheduled for implementation as early as January 1, 2003.

The project clearly contributes to the regional inability to attain the ozone standard based on SCAQMD's recommended significance levels. Project-related emission levels for the three primary exhaust pollutants (CO, NO_x and ROG) for a 2020 buildout exceed the SCAQMD threshold up to almost 3000 percent for NO_x, and over 1000 percent for CO and ROG.

As previously noted, the question of impact significance from growth-associated emissions should not be solely related to the size of a project or the magnitude of its emissions, but rather whether such growth has been properly anticipated in the air quality planning process. The growth assumptions for the most recent update of the 1994 Regional Comprehensive Plan (RCP) calls for an increase of over 1,000,000 residents in western San Bernardino County between 2000-2025 housed in 365,000 new homes, along with an increase of 520,000 jobs. The conversion of agricultural/ranch land to more transportation-intensive land use is therefore anticipated. Subarea 2 will provide a measurable fraction of the forecast job and housing growth. Project size alone and its associated emissions should therefore not be the sole basis for a finding of a significant impact because the growth-related impact from hundreds of small projects at sub-threshold levels is not different than from one large development such as Subarea 2.

The basic conclusion from the above discussion is that regional air quality impact significance from general development cannot be properly evaluated on any single project basis. Subarea 2 emissions substantially exceed the SCAQMD's significance thresholds, but the project contributes positively to jobs/housing (J/H) or vehicle miles traveled/vehicle trips (VMT/VT) goals. The regional air quality management plan has concluded that this planned level of growth can be accommodated while clean air standards will be met, though the project's air quality impacts will be significant.

The regional jobs/housing ratio is 1.4 jobs per residence. Western San Bernardino is housing rich and jobs poor. Subarea 2 is estimated to create approximately 13,500 jobs in approximately ten million square feet of industrial, office, business park and retail space. The project includes 9,779 homes. The J/H ratio for the proposed plan is therefore 1.36 or higher (with airport, prison, schools, and indirect employment, etc. included). Therefore, project implementation is considered consistent with regional jobs/housing balance and air quality goals, and is superior to the no-project alternative in this regard.

In addition to regional air quality concerns which focus on the photochemical conversion of air pollution emissions to more harmful forms, vehicular exhaust may impact air quality immediately adjacent to the roadway travel lanes. Such impacts occur during periods of maximum traffic congestion and minimum atmospheric dispersion.

In order to determine whether any possible traffic congestion may contribute to localized air pollution standard violations, a screening procedure based upon the California roadway dispersion model CALINE4 was run on a large number of roadways surrounding Subarea 2. Carbon monoxide (CO) was used as an indicator pollutant to determine "hot spot" potential. Rush hour traffic was combined with minimum dispersion conditions in order to create a theoretical worst-case impact estimate for existing conditions, the near-term future (2010), and an "ultimate" buildout year of 2020. Because CO emissions data is less reliable beyond the year 2020, emissions data from 2020 were assigned to buildout conditions even though buildout would occur somewhat later than 2020. The results of these calculations are shown in Table 5.9-9. Because the formation of possible CO "hot spots" requires heavy local congestion, only those intersections operating at a level of service (LOS) of "D" or worse were analyzed. Of the 63 intersections evaluated in the project traffic study, 49 intersections operate at LOS=D or worse during either the A.M. or P.M. peak traffic hour now or in the future.

TABLE 5.9-9
MICROSCALE AIR QUALITY IMPACT ANALYSIS
(Hourly CO Concentration (ppm) Above Background)

Intersection	Exist. 2001	Interim Year 2010			Buildout Year		
		No Proj.	With Proj.	With Project With Improvements	No Proj.	With Proj.	With Project With Improvements
A.M. Peak Traffic Hour							
Pipeline Avenue/Chino Hills Pkwy.	4.6	2.3	2.3	2.3	2.4	2.6	1.9
SR-71 Fwy SB Ramps/Pine Avenue	—	—	—	—	—	—	—
SR-71 Fwy NB Ramps/Pine Avenue	—	—	—	—	0.6	2.1	—
Central Avenue/Edison Avenue	—	2.0	2.0	2.2	1.8	1.9	1.9
Central Avenue/El Prado Road	—	1.9	2.0	—	1.9	2.3	—
El Prado Road/Kimball Avenue	—	—	0.8	—	1.1	1.7	—
El Prado Road/Pine Avenue	—	—	—	—	—	2.1	—
Mountain Avenue/SR-60 Fwy WB Ramps	4.8	2.4	2.4	2.4	1.8	1.8	—
Mountain Avenue/SR-60 Fwy EB Ramps	—	—	2.2	—	—	1.7	—
Mountain Avenue/Walnut Avenue	6.7	4.5	4.6	2.6	3.3	3.5	2.0
Mountain Avenue/Riverside Drive	—	—	2.1	—	—	1.7	1.6
Euclid Avenue/SR-60 Fwy WB Ramps	4.0	2.0	2.1	2.1	2.5	3.0	1.7
Euclid Avenue/SR-60 Fwy EB Ramps	—	—	—	—	—	3.2	—
Euclid Avenue/Walnut Avenue	—	—	—	—	—	—	—
Euclid Avenue/Riverside Drive	—	—	—	—	—	2.2	2.1
Euclid Avenue/Edison Street	—	—	2.1	—	1.5	4.0	2.3
Euclid Avenue/Merrill Avenue	—	—	—	—	—	3.6	2.1
Euclid Avenue/Kimball Avenue	—	—	2.0	—	—	4.7	—
Euclid Avenue/Bickmore Avenue	—	—	2.5	1.6	—	3.7	—

TABLE 5.9-9 (Cont.)
MICROSCALE AIR QUALITY IMPACT ANALYSIS
(Hourly CO Concentration (ppm) Above Background)

Intersection	Exist. 2001	Interim Year 2010			Buildout Year		
		No Proj.	With Proj.	With Project With Improvements	No Proj.	With Proj.	With Project With Improvements
A.M. Peak Traffic Hour							
Euclid Avenue/Pine Avenue	—	—	2.1	2.1	—	5.1	3.0
Grove Avenue/SR-60 Fwy WB Ramps	—	2.1	2.2	2.2	1.6	3.3	—
Grove Avenue/SR-60 Fwy EB Ramps	—	—	1.9	—	1.3	1.7	—
Grove Avenue/Edison Street	—	2.0	2.1	—	2.0	2.5	1.4
Grove Avenue/Merrill Avenue	—	—	—	—	—	—	—
Grove Avenue/Kimball Avenue	—	—	1.8	—	—	2.2	—
Grove Avenue/Bickmore Avenue	—	—	1.0	—	—	1.1	—
Grove Avenue/Pine Avenue	—	—	1.9	—	—	3.3	—
Walker Avenue/Edison Avenue	—	2.1	2.0	—	2.0	2.6	—
Hellman Avenue/Merrill Avenue	—	—	0.9	—	—	2.2	1.4
Hellman Avenue/Kimball Avenue	—	—	1.1	—	—	3.0	1.7
Hellman Avenue/Pine Avenue	—	1.5	3.0	—	1.4	3.2	2.0
Hellman Avenue/Chandler Street	—	—	1.6	—	0.4	2.4	—
Vineyard Avenue/SR-60 Fwy WB Ramps	—	—	—	—	—	1.5	—
Vineyard Avenue/SR-60 Fwy EB Ramps	—	—	—	—	—	—	—
Archibald Avenue/Riverside Drive	—	1.4	1.4	1.5	1.4	1.2	1.2
Archibald Avenue/Edison Avenue	—	1.0	1.3	1.2	1.2	2.9	1.6
Archibald Avenue/Merrill Avenue	—	—	1.6	—	1.2	1.8	—
Archibald Avenue/Cloverdale Road	—	—	—	—	—	2.2	1.3
Archibald Avenue/Pine Avenue	—	—	1.6	1.3	0.8	1.9	1.2

TABLE 5.9-9 (Cont.)
MICROSCALE AIR QUALITY IMPACT ANALYSIS
(Hourly CO Concentration (ppm) Above Background)

Intersection	Exist. 2001	Interim Year 2010			Buildout Year		
		No Proj.	With Proj.	With Project With Improvements	No Proj.	With Proj.	With Project With Improvements
A.M. Peak Traffic Hour							
Archibald Avenue/River Road	—	2.2	2.7	1.7	1.6	2.9	1.8
River Road/Corydon Street	—	1.4	1.4	1.6	1.0	1.9	1.5
River Road/Second Street	2.6	1.5	—	1.7	1.2	1.6	1.7
Haven Avenue/SR-60 Fwy. EB Ramps	—	—	—	—	—	2.3	—
Hamner Avenue/Cloverdale Road	—	1.1	1.8	1.3	1.1	2.8	—
Hamner Avenue/Schleisman Road	2.8	2.2	2.3	—	2.2	2.5	—
I-15 Fwy SB Ramps/Galena Street	—	—	0.7	—	—	1.1	—
I-15 Fwy SB Ramps/Limonite Avenue	—	—	1.5	—	—	1.3	1.2
I-15 Fwy SB Ramps/Second Street	—	—	1.8	—	2.4	2.1	—
I-15 Fwy NB Ramps/Second Street	2.6	2.4	2.5	1.4	1.9	2.1	1.2
P.M. Peak Traffic Hour							
Pipeline Avenue/Chino Hills Pkwy.	6.8	5.4	5.5	3.3	3.7	3.9	2.3
SR-71 Fwy SB Ramps/Pine Avenue	—	—	—	—	—	—	1.1
SR-71 Fwy NB Ramps/Pine Avenue	—	—	—	—	—	2.2	—
Central Avenue/Edison Avenue	—	2.3	2.3	2.4	3.9	4.0	2.3
Central Avenue/El Prado Road	—	2.1	2.4	—	1.7	2.4	—
El Prado Road/Kimball Avenue	—	—	1.4	—	1.0	1.7	—
El Prado Road/Pine Avenue	—	—	1.2	—	—	2.0	—
Mountain Avenue/SR-60 Fwy WB Ramps	—	—	2.6	—	—	1.9	—
Mountain Avenue/SR-60 Fwy EB Ramps	6.5	2.2	4.3	2.6	3.3	3.6	2.1

TABLE 5.9-9 (Cont.)
MICROSCALE AIR QUALITY IMPACT ANALYSIS
(Hourly CO Concentration (ppm) Above Background)

Intersection	Exist. 2001	Interim Year 2010			Buildout Year		
		No Proj.	With Proj.	With Project With Improvements	No Proj.	With Proj.	With Project With Improvements
P.M. Peak Traffic Hour							
Mountain Avenue/Walnut Avenue	—	—	—	2.2	—	—	1.8
Mountain Avenue/Riverside Drive	—	—	2.3	2.3	1.9	3.5	2.0
Euclid Avenue/SR-60 Fwy WB Ramps	—	—	2.3	2.3	1.5	3.4	2.0
Euclid Avenue/SR-60 Fwy EB Ramps	4.6	—	3.5	3.0	3.4	3.8	—
Euclid Avenue/Walnut Avenue	—	—	—	—	1.5	—	2.4
Euclid Avenue/Riverside Drive	—	—	2.5	2.5	1.7	2.1	2.6
Euclid Avenue/Edison Street	—	—	2.5	2.5	3.2	5.2	3.1
Euclid Avenue/Merrill Avenue	—	—	—	—	—	4.9	—
Euclid Avenue/Kimball Avenue	—	—	3.7	—	—	5.6	3.3
Euclid Avenue/Bickmore Avenue	—	—	3.1	—	—	5.2	3.1
Euclid Avenue/Pine Avenue	—	—	2.2	2.2	—	6.6	3.9
Grove Avenue/SR-60 Fwy WB Ramps	—	—	—	—	—	3.4	2.0
Grove Avenue/SR-60 Fwy EB Ramps	—	2.2	2.4	2.4	2.9	3.5	2.0
Grove Avenue/Edison Street	—	2.4	2.6	—	2.5	2.8	1.7
Grove Avenue/Merrill Avenue	—	—	1.3	—	—	0.6	—
Grove Avenue/Kimball Avenue	—	—	2.2	—	—	2.9	1.7
Grove Avenue/Bickmore Avenue	—	—	1.3	—	—	1.3	—
Grove Avenue/Pine Avenue	—	—	2.2	—	—	3.7	—
Walker Avenue/Edison Avenue	—	2.3	2.0	—	2.3	2.7	1.7
Hellman Avenue/Merrill Avenue	—	—	1.3	—	—	3.7	2.2

TABLE 5.9-9 (Cont.)
MICROSCALE AIR QUALITY IMPACT ANALYSIS
(Hourly CO Concentration (ppm) Above Background)

Intersection	Exist. 2001	Interim Year 2010			Buildout Year		
		No Proj.	With Proj.	With Project With Improvements	No Proj.	With Proj.	With Project With Improvements
P.M. Peak Traffic Hour							
Hellman Avenue/Kimball Avenue	—	—	2.3	1.6	—	4.1	2.7
Hellman Avenue/Pine Avenue	—	1.2	3.7	2.2	1.1	4.4	2.6
Hellman Avenue/Chandler Street	—	—	2.2	—	—	3.4	—
Vineyard Avenue/SR-60 Fwy WB Ramps	—	—	—	—	—	1.4	1.4
Vineyard Avenue/SR-60 Fwy EB Ramps	—	2.0	2.0	2.0	2.9	3.0	1.8
Archibald Avenue/Riverside Drive	3.0	2.2	1.7	2.2	2.8	2.4	2.1
Archibald Avenue/Edison Avenue	—	—	1.7	1.7	1.8	3.7	2.1
Archibald Avenue/Merrill Avenue	—	1.0	2.2	—	1.3	2.3	—
Archibald Avenue/Cloverdale Road	—	—	—	—	—	2.7	1.9
Archibald Avenue/Pine Avenue	—	—	2.1	1.6	0.7	2.7	1.6
Archibald Avenue/River Road	—	1.5	2.4	—	0.9	3.0	—
River Road/Corydon Street	—	1.3	1.8	1.7	1.0	3.0	1.8
River Road/Second Street	—	—	—	—	—	1.9	—
Haven Avenue/SR-60 Fwy. EB Ramps	—	—	—	—	4.4	4.6	2.7
Hamner Avenue/Cloverdale Road	—	1.3	2.4	1.4	2.4	2.6	1.6
Hamner Avenue/Schleisman Road	1.9	2.0	2.2	—	2.5	2.6	—
I-15 Fwy SB Ramps/Galena Street	—	—	—	—	3.0	3.4	—
I-15 Fwy SB Ramps/Limonite Avenue	—	—	1.3	—	—	1.3	—
I-15 Fwy SB Ramps/Second Street	—	4.0	4.1	—	3.2	3.7	—

TABLE 5.9-9 (Cont.)
MICROSCALE AIR QUALITY IMPACT ANALYSIS
(Hourly CO Concentration (ppm) Above Background)

Intersection	Exist. 2001	Interim Year 2010			Buildout Year		
		No Proj.	With Proj.	With Project With Improvements	No Proj.	With Proj.	With Project With Improvements
P.M. Peak Traffic Hour							
I-15 Fwy NB Ramps/Galena Street	—	—	—	—	—	—	—
I-15 Fwy NB Ramps/Second Street	—	1.3	1.3	1.3	1.5	1.9	—

Localized one-hour CO contributions at 25 feet from the edge of 49 area intersections were calculated using a Caltrans roadway pollution screening model. Such local contributions must be superimposed upon any regional background level relative to meeting the ambient air quality standard. If the worst case, one-hour local exposure were to occur at the same hour as the highest non-local CO concentration, the following localized impacts would be required to equal the allowable one-hour level of 20 ppm:

Year:	**2002**	**2010(est)**	**Post 2020(est)**
Background (ppm)	6.4	5.1	5.1
Max. Allowable Local (ppm)	13.6	14.9	14.9
Total (1-Hr. Standard)	20.0	20.0	20.0

Maximum hourly CO levels of 6.8 ppm over background are currently found near the Pipeline and Chino Hills Parkway intersection. In 2010, the peak one-hour exposure of 3.0 ppm will occur at Euclid Avenue/SR-60 EB ramps in Norco. For ultimate area buildout, cars will be so “clean” such that peak local exposures will be less than 4.0 ppm even at the most congested intersections.

Table 5.9-9 shows that the maximum project-related CO increment (with project minus no project) is less than 2.0 ppm at any intersection if recommended roadway improvements are constructed in concert with project development. This small increment will not cause the hourly standard to be exceeded. All “with-project” CO increments are dominated by the no-project area growth of traffic and congestion. Microscale air quality impacts are not considered significant.

5.9.5 CUMULATIVE IMPACTS

The cumulative nature of air quality impacts is discussed in the analysis for the proposed project, above. Significance levels are based on regional growth and impact levels. Other development throughout the entire region is contributing cumulatively to significant impacts on regional air quality. In the regional context, the location of industrial uses in their area contributes to goals for improving the balance between housing and job opportunities and reducing miles traveled.

The fact that the proposed development will cumulatively contribute to continued regional air quality degradation places a special responsibility on project proponents and local regulatory agencies to develop effective impact mitigation. However, since almost all the significant project impacts derive from mobile source emissions beyond the control of project sponsors, there is only a limited potential for reducing any large percentage of project impacts.

Effective emissions reduction of mobile source emissions requires a unified transportation system management (TSM) approach where a wide variety of transportation control measures (TCM's) are integrated into a comprehensive system of procedures and goals. An effective TSM program as a means for reducing vehicular traffic and its associated environmental effects (air pollution, noise, energy consumption, etc.) is difficult to achieve in practice because of the dependence on the low (mainly single) occupancy vehicle as the primary means of transportation. The difficulties inherent in TCM implementation notwithstanding, the City of Chino should identify effective and feasible tactics to improve air quality for local implementation.

5.9.6 MITIGATION MEASURES

The proposed project will employ standard mitigation measures, such as dust control measures mandated by the SCAQMD during construction , and energy efficient design practices required by Title 24 of the California Code of Regulations.

Effective emissions reduction of mobile source emissions requires a unified transportation system management (TSM) approach where a variety of transportation control measures (TCM's) are integrated into a comprehensive system of procedures and goals. The proposed project includes several important components of an effective mobile source emissions reduction program. These components include basic project design features which are consistent with air quality objectives and "smart growth" principles, and include:

- Community design to facilitate local transit (The Preserve Mobility Plan and Transit System);
- Development of park-and-ride facilities.
- Encouragement of bicycle and pedestrian circulation alternatives (The Preserve Community Paseo and Open Space System and Bicycle System.

- Encouragement of local employment-generating uses to reduce jobs-housing imbalances that promote long commutes in and out of the local area (The Preserve Land Use Development Plan, including approximately 626 acres of Business Uses).

To further reduce mobile source emissions and promote local and regional transit access, the following measure is added:

AQ-1. **Mobile Source Emissions/Transit.** The City of Chino shall contact appropriate transit agencies to encourage an expansion of transit services up to and within the project area. The City will coordinate with such agencies and other jurisdictions to promote express transit access from the Chino area to other regional employment centers.

To reduce construction activity emissions, the following measure is included:

AQ-2. **Construction Emissions.** Per SCAQMD Rule 403, the City shall enforce the following measures:

- During all construction activities, construction contractors shall use low emission mobile construction equipment where feasible to reduce the release of undesirable emissions.

- During all construction activities, construction contractors shall encourage rideshare and transit programs for project construction personnel to reduce automobile emissions.

- During all grading and site disturbance activities, construction contractors shall water active grading sites at least twice a day, and clean construction equipment in the morning and/or evening to reduce particulate emissions and fugitive dust.

- During all construction activities, construction contractors shall, as necessary, wash truck tires leaving the site to reduce the amount of particulate matter transferred to paved streets as required by SCAQMD Rule 403.

- During all construction activities, construction contractors shall sweep on and off site streets if silt is carried over to adjacent public thoroughfares, as determined by the City Engineer to reduce the amount of particulate matter on public streets.

- During all construction activities, construction contractors shall limit traffic speeds on all unpaved road surfaces to 15 miles per hour or less to reduce fugitive dust.

- During grading and all site disturbance activities, at the discretion of the City's Planning Director, construction contractors shall suspend grading operations during first and second stage smog alerts to reduce fugitive dust.

- During grading and all site disturbance activities, at the discretion of the City's Planning Director, construction contractors shall suspend all grading operations when wind speeds (including instantaneous gusts) exceed 25 miles per hour to reduce fugitive dust.

- During all construction activities, the construction contractors shall maintain construction equipment engines by keeping them tuned.

- During all construction activities, the construction contractors shall use low sulfur fuel for stationary construction equipment as required by AQMD Rules 431.1 and 431.2 to reduce the release of undesirable emissions.

- During all construction activities, the construction contractors shall use existing on site electrical power sources to the maximum extent practicable. Where such power is not available, the Contractor shall use clean fuel generators during the early stages of construction to minimize or eliminate the use of portable generators and reduce the release of undesirable emissions.

- During all construction activities, the construction contractors shall use low emission, on site stationary equipment (e.g., clean fuels) to the maximum extent practicable to reduce emissions, as determined by the City Engineer.

- During all construction activities, the construction contractors, in conjunction with the City Engineer, shall locate construction parking to minimize traffic interference on local roads.

- During all construction activities, the construction contractors shall ensure that all trucks hauling dirt, sand, soil or other loose materials are covered or should maintain at least two feet of freeboard (i.e. minimum vertical distance between top of the load and the top of the trailer) in accordance with the requirements of the California Vehicle Code Section 23114 to reduce spilling of material on area roads.

5.9.7 LEVEL OF SIGNIFICANCE AFTER MITIGATION

Buildout of the proposed project will result in construction-related dust and equipment exhaust emissions phased over an approximate 20-year period. Although, these temporary but long-term impacts can be minimized if a commitment is made to aggressively pursue available impact mitigation, both PM_{10} and NOx emissions are likely to remain significant.

Although the project is consistent with regional growth projections, favorable with respect to jobs/housing balance goals, and includes a local transit system with significant potential air quality benefits, project-related emissions cannot be reduced to levels considered less than significant by the SCAQMD. Further, because the project is in a non-attainment region, any significant release of air emissions from the proposed project would contribute to a cumulatively adverse impact on required air quality. Therefore, the proposed project will have a significant project and cumulative impact on regional air quality.

Odor impacts from dairy operations and the co-composting facility to new receptors (e.g., residences, schools) during the transition phase are likely to remain significant and unavoidable.