IV. ENVIRONMENTAL IMPACT ANALYSIS
B. AIR QUALITY

The following information summarizes the findings and conclusions of the Air Quality Impact Analysis prepared by Giroux & Associates, dated May 3, 2001. The entire Air Quality Impact Analysis and modeling calculation reports are included in Appendix B to this Draft EIR.

ENVIRONMENTAL SETTING

Atmospheric Setting

The climate of the Granada Hills community of Los Angeles, technically called an interior valley subclimate of Southern California's Mediterranean-type climate, is characterized by warm summers, mild winters, infrequent rainfall, moderate afternoon breezes, and generally fair weather. The clouds and fog that form along the Southern California coastline infrequently extend as far inland as Granada Hills, and if they do, they usually burn off quickly after sunrise. The most important local weather pattern is associated with the funneling of the daily onshore sea breeze up the Los Angeles River Valley into the eastern San Fernando Valley. This airflow has passed over heavily developed portions of the Los Angeles Basin throughout the morning hours before arriving in the project area by mid-day. This daily airflow brings polluted air into the project area from late spring to early fall. This transport pattern creates both unhealthful air quality as well as destroying the scenic vistas of the mountains surrounding the valley. Although substantial air quality improvement has occurred through this decade, complete attainment of all clean air standards is still well into the future.

Temperatures near the project site average a very comfortable 63°F year-round. Summer afternoons reach close to 90° and winter mornings drop to the low- to mid-40s. About 50 summer days reach 90°F, and one day per year may drop to 32°, but significant extremes of temperature are rare. Rainfall in the San Fernando Valley varies considerably in both time and space. Rainfall amounts vary from an average of 10 to 18 inches as a function of local exposure and topography. Burbank Airport as representative of the eastern San Fernando Valley averages 14.5 inches of rain during a normal year. Almost all the annual rainfall comes from the fringes of mid-latitude storms from late November to early April with summers often completely dry. Light rain (0.1" in 24 hours) falls on 22 days during a normal year with 9 days in the moderate (0.5" in 24 hours) category.

Winds blow primarily from southeast to northwest by day and from northwest to the southeast in response to the regional pattern of onshore flow by day and offshore flow at night. Winds in the eastern San Fernando Valley are steered by the Los Angeles River drainage. They are somewhat reversed from the normal west to east winds by day and east to west at night which occur throughout much of the Los Angeles Basin south of the Santa Monica Mountains. Because the ocean is cooler than the land for much of the warm season both by day and by night, the onshore/upriver component from the southeast is overall more dominant, particularly during the summer "smog season." A large portion of the airflow through the eastern San Fernando Valley therefore has its origin in more developed areas of the Los Angeles Basin. Air arriving in Granada Hills at noon likely passed over LAX at 8:00 a.m. and over downtown Los Angeles at 10:00 a.m. before moving into the Valley. By mid-afternoon, a west-to-east flow is often established across the project site in response to stronger marine air inflow across Ventura County and the western San Fernando Valley.

Daytime wind speeds are moderately strong, averaging from 6-10 mph, but become light and variable at night. Daytime local ventilation is therefore very good, but there may be nocturnal stagnation near local emissions sources such as area freeways during near-calm wind periods. The two primary eastern San Fernando Valley air quality concerns therefore are that there is a general transport of polluted air into the area by day, especially in summer, and that there is poor local ventilation and air stagnation at night, especially in winter.

In addition to winds that control the rate and direction of pollution dispersal, Southern California is notorious for strong temperature inversions that limit the vertical depth through which pollution can be mixed. In summer, coastal areas are characterized by a sharp discontinuity between the cool marine air at the surface and the warm, sinking air aloft within the high pressure cell over the ocean to the west. This marine/subsidence inversion allows for good local mixing, but acts like a giant lid over the basin. Air starting onshore at the beach is relatively clean, but becomes progressively more polluted as sources continue to add pollution from below without any dilution from above. Some dilution occurs in the thermal chimneys along the heated slopes of the Santa Monica and San Gabriel Mountains, but not enough to prevent the intrusion of significantly polluted air into the eastern San Fernando Valley.

A second inversion type forms on clear, winter nights when cold air off the mountains sinks to the valley floor while the air aloft over the valley remains warm. This process forms radiation inversions. These inversions, in conjunction with nearly calm nocturnal winds, trap pollutants such as automobile exhaust near their source. Both types of inversions occur throughout the year to some extent, but the marine inversions are very dominant during the day in summer, and radiation inversions are much stronger on winter nights when nights are long and air is cool. The governing role of these inversions in atmospheric dispersion leads to a substantially different air quality environment in summer near the project area than in winter.

Ambient Air Quality Standards (AAQS)

In order to gauge the significance of the air quality impacts of the proposed Hillcrest Christian School expansion, those impacts, together with existing background air quality levels, must be compared to the applicable ambient air quality standards. These standards are the levels 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 above these minimum standards before adverse effects are observed. It has been demonstrated, however, that chronic exposure to ozone may have adverse long-term health implications. A new federal ozone standard for chronic exposure (8-hours) was adopted in 1997 to deal with unhealthful long-term exposure.

National AAQS were established in 1971 for six pollution species with states retaining the option to add other pollutants, require more stringent compliance, or to include different exposure periods. The initial attainment deadline of 1977 was extended to 1987 for national AAQS, and ambient air quality was still far from attainment by the end of 1987 in air quality problem areas like Southern California. Subsequent amendments to clean air compliance regulations extended the attainment deadline to 2010 for extreme non-attainment airsheds such as the South Coast Air Basin (SCAB). Because California had 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. Those standards currently in effect in California are shown in Table IV.B-1 on page 80.

The entries in Table IV.B-1 include the recently (1997) adopted federal standards for chronic (8-hour) ozone exposure or for ultra-small diameter particulate matter of 2.5 microns or less in diameter (called " $PM_{2.5}$"). Compliance with these new national standards will be addressed during the next update of the regional clean air plan , or must await several years of data collection to determine baseline levels. Enforcement of the newest federal clean air standards was recently halted based upon an appellate court decision that EPA can not establish standards without specific congressional approval. Data collection is continuing, but no enforcement or attainment actions are currently ongoing for these standards.

Table IV.B-1 Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards		Federal Standards		
		Concentration	**Method**	**Primary**	**Secondary**	**Method**
Ozone (O_3)	1 Hour	0.0.9 ppm (180 ug/m^3)	Ultraviolet Photometry	0.12 ppm (235 ug/m^3)	Same as Primary Standard	Ethylene Chemiluminescence
	8 Hour	---		0.08 ppm (157 ug/m^3)		
Respirable Particulate Matter (PM_{10})	Annual Geometric Mean	30 ug/m^3	Size Selective Inlet Sampler ARB Method P(8/22/85)	---	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	24 Hour	50 ug/m^3		150 ug/m^3		
	Annual Arithmetic Mean	---		50 ug/m^3		
Fine Particulate Matter ($PM_{2.5}$)	24 Hour	No Separate State Standard		65 ug/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean			15 ug/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 ug/m^3)	Same as Primary Standard	Gas Phase Chemiluminescence
	1 Hour	0.25 ppm (470 ug/m^3)		---		
Lead	30 days average	1.5 ug/m^3	AIHL Method 54 (12/74) Atomic Absorption	---	---	High Volume Sampler and Atomic Absorption
	Calendar Quarter	---		1.5 ug/m^3	Same as Primary Standard	
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	---	Fluorescence	0.030 ppm (80 ug/m^3)	---	Pararoscaniline
	24 Hour	0.04 ppm (105 ug/m^3)		0.14 ppm (365 ug/m^3)	---	
	3 Hour	---		---	0.5 ppm(1300 ug/m^3)	
	1 Hour	0.25 ppm (655 ug/m^3)		---	---	
Visibility Reducing Particles	8 Hour (10 am to 6 pm, PST)	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)		**No Federal Standards**		
Sulfates	24 Hour	25 ug/m^3	Turbidamtric Barium Sulfate – AIHL Method 61 (2/76)			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 ug/m^3)	Cadmium Hydroxide STRactan			

Baseline Air Quality

Existing levels of ambient air quality and historical trends and projections in the eastern San Fernando Valley are best documented from measurements made by the South Coast Air Quality Management District (SCAQMD). The SCAQMD has operated an air quality monitoring station in Burbank for many years. The Burbank station monitors regional air pollutants such as ozone and fine particulates, as well as species such as carbon monoxide (CO) and nitrogen oxides (NOx) which tend to be more related to local source-receptor relationships. Table IV.B-2on page 82 summarizes the last seven years of published data for the Burbank air monitoring station. While ozone levels continue to often exceed the California one-hour standard of 0.10 ppm, the data presented in Table IV.B-2 shows a very encouraging downward trend in both the maximum concentrations measured near the project site as well as in the frequency of violations of standards. The data also shows that there is a continuing high frequency of violations of the 10-micron diameter respirable particulate (PM_{10}) standard. High PM_{10} levels are due to a combination of local sources such as resuspended roadway dust from numerous vehicles as well as from byproducts of atmospheric chemical reactions. Because of limited nocturnal dispersive potential, heavily developed portions of the San Fernando Valley also have elevated CO and NOx exposure sometimes exceeding State and federal standards. It is encouraging, however, that CO levels have been dropping substantially with the peak hour CO level in 1997-98 no higher than the allowable 8-hour average. The 8-hour CO standard was met in both 1997-98.

Air quality in the eastern San Fernando Valley was better in the last few years than at any other time since monitoring began in Burbank almost forty years ago. Several air quality milestones were noted in the early 1990s, including:

- last violation of nitrogen dioxide standards in 1991,
- last first-stage smog alert in 1992,
- first attainment of the 8-hour CO standard in 1993.

In 1997 through 1999, however, air pollution levels were by far the lowest in recorded history. The following air pollution "bests" were achieved in the eastern San Fernando Valley in 1997-99:

- Fewest violations ever of State ozone standard (13)
- Fewest violations ever of federal 1-hour standard (0)
- Lowest maximum 1-hour ozone level (0.12 ppm)

Table IV.B-2
Project Area Air Quality Summary
(Days Standards Were Exceeded and Indicated Maximum Concentrations)[1]

Pollutant	1993	1994	1995	1996	1997	1998	1999
Ozone:							
1-hour > 0.09 ppm	45	56	58	31	15	34	13
1-hour > 0.12 ppm	16	18	20	6	2	7	0
8-hour > 0.08 ppm	---	---	---	---	6	14	3
Max. 1-hour Conc. (ppm)	0.18	0.17	0.17	0.14	0.13	0.18	0.12
Max. 8-hour Conc. (ppm)	---	---	---	---	0.11	0.13	0.10
Carbon Monoxide:							
1-hour > 20.0 ppm	0	0	0	0	0	0	0
8-hour >9.0 ppm	0	5	7	1	0	0	0
Max. 1-hr. Conc. (ppm)	12	13	13	12	9	8	9
Max. 8-hr. Conc. (ppm)	8.4	10.7	12.0	9.4	7.4	7.5	9.0
Nitrogen Dioxide:							
1-hour > 0.25 ppm	0	0	0	0	0	0	0
Max. 1-hr. Conc. (ppm)	0.17	0.18	0.19	0.20	0.120	0.14	0
Sulfur Dioxide							
1-hour > 0.25 ppm	0	0	0	0	0	0	0
24-hour > 0.045 ppm	0	0	0	0	0	0	0
Max. 1-hour Conc. (ppm)	0.08	0.03	0.01	0.01	0.04	0.01	0.01
Max. 24-hour Conc. (ppm)	0.010	0.010	0.005	0.009	0.008	0.009	0.003
Particulate Matter (PM_{10} µ)							
24-hour > 50 $\mu g/m^3$	21/58	11/60	15/59	15/59	17/56	9/59	21/60
24-hour > 150 $\mu g/m^3$	0/58	0/60	0/59	0/59	0/56	0/59	0/60
Max. 24-hour ($\mu g/m^3$)	93.0	114.0	135.0	110.0	92.0	75.0	82.0

Note: --- = New air quality standard adopted 1997.
[1] Results expressed as ratios = number exceeded/total samples taken.
Source: SCAQMD-Burbank Air Monitoring Station, Giroux and Associates, May 2001.

- Fewest violations of 8-hour CO standard (0[1])
- Lowest maximum 1-hour CO level (8 ppm)
- Lowest maximum 8-hour CO level (7.4 ppm)
- Lowest maximum 1-hour NO2 level (0.14 ppm)
- Lowest maximum 24-hour PM_{10} concentration (75 μg/m3)

Meteorological variability may have contributed somewhat to the very promising conditions in 1997-99. Projections of the trends in Table IV.B-2 do suggest, however, that attainment of clean air standards in the project vicinity is clearly an attainable goal within the next decade.

Air Quality Management Planning

The Federal Clean Air Act (1977 Amendments) stated 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 SCAB could not meet the deadline for ozone, nitrogen dioxide, carbon monoxide, or PM_{10}. In the South Coast Air Basin, 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 in 1982 to project attainment of the standards in 2000.

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. 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 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 SCAB portion of the SIP. The 1991 SIP submittal estimated that an 85% basinwide reduction in volatile organic compound (VOC) emissions and a 59% reduction in oxides of nitrogen (NOx) between 1990 to 2010 was needed to meet federal clean air standards.

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[1] *Also in 1993.*

In 1996, EPA finally approved the 1994 submittal of the SCAB portion of the SIP. The plan was 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 includes attainment plans for all pollutants exceeding federal standards, not just ozone. The CCAA requires an update of the state-mandated clean air plan every three years. The next update was due December 31, 1997.

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

- Demonstration of attainment for ozone, CO, and PM_{10}
- Updated emissions inventories (1993 base year) of VOC, NOx, CO, SOx 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.

Before EPA could act on the proposed 1997 SIP Revision, several environmental activist groups challenged the plan in the Ninth Circuit Court. The Court agreed that too many air pollution control measures were excessively delayed. The proposed 1997 plan was further revised to accelerate the adoption/implementation of 13 control measures. While the 1999 SIP Revisions are believed to meet all legal requirements, they have not yet been formally approved by EPA as the approved SIP for the South Coast Air Basin.

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 IV.B-3 on page 85 summarizes the currently proposed regional attainment planning for ozone (VOC and NOx) and for carbon monoxide (CO). Emissions reductions of around 68 percent for VOC, 57 percent for NOx and 68 percent for CO are anticipated from the currently proposed AQMP update.

An institutional (school) project relates to the AQMP and/or SIP through the land use and growth assumptions used to forecast automotive air pollution emissions. The SCAB air quality plans are based on the designated land use for the project site contained in the Los Angeles County and City of Los Angeles General Plans. To the extent that the proposed development is consistent with the General Plan, it is, by inference, also consistent with the AQMP. Such consistency implies that the project will

Table IV.B-3
South Coast Air Basin Attainment Plan
(Emissions in tons/days)

	VOC*	**NOx***	**CO****
Current Inventory [a]			
Stationary + Area Sources	410	144	363
On-Road Mobile	562	761	5,826
Off-Road Mobile	119	304	1,009
TOTAL	1,092	1,208	7,197
2010 Forecast [b]			
Stationary + Area Sources	448	121	412
On-Road Mobile	262	416	2,580
Off-Road Mobile	83	235	934
TOTAL	794	771	3,926
Short-term + Intermediate Reductions	<221>	<120>	<1,468>
Long-term Reductions	<204>	< 77>	< 0>
2010 Remaining [c]	369	574	2,458

[a] *1995 Base Year*
[b] *With current emissions reduction programs and adopted growth forecasts.*
[c] *Levels at which all federal air quality standards will be met.*
* - *summer ozone precursors*
** - *winter CO "hot spot" precursors*
Source: SCAQMD, Draft Final 1997 AQMP (October 1996) and California ARB, "The 2001 California Almanac of Emissions & Air Quality".

not create any unanticipated regional air quality impacts because such impacts have already been incorporated within the framework of the regional air quality planning process. If, however, adoption of the proposed project allows for a greater intensity of development than currently anticipated, such growth inducement may create air quality planning inconsistency. The potential significance of any possible planning inconsistency would depend upon the magnitude of emissions associated with "approved" versus "proposed" land uses.

ENVIRONMENTAL IMPACTS

Thresholds of Significance

Many air quality impacts from dispersed mobile sources (i.e., the dominant pollution generators from the proposed school expansion project), often occur hours later and miles away after photochemical processes have converted primary exhaust pollutants into secondary contaminants such as ozone. The incremental regional air quality impact of an individual source is generally immeasurably small. The SCAQMD has therefore developed suggested surrogate significance thresholds based on the volume of pollution emitted rather than on actual ambient air quality because the direct air quality impact of a project is not quantifiable on a regional scale. The SCAQMD CEQA Air Quality Handbook (1993) states that any projects in the SCAB with daily emissions that exceed any of the following thresholds should be considered as having an individually and cumulatively significant air quality impact:

55 lbs per day of ROC[2]
55 lbs per day of NOx[3]
550 lbs per day of CO
150 lbs per day of PM_{10}
150 lbs per day of SOx

Beyond emissions magnitude, the SCAQMD also recommends that any relevant secondary evaluation criteria be applied to a proposed project. These additional indicators are as follows: a) 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; b) Project could result in population increases within the regional statistical area which would be in excess of that projected in the AQMP; c) Project could generate vehicle trips that cause a CO hot spot; d) Project might have the potential to create or be subjected to objectionable odors; e) Project could have hazardous materials on site and could result in an accidental release of air toxic emissions; f) Project could emit an air toxic contaminant regulated by District rules or that is on a federal or state air toxic list; g) Project could involve disposal of hazardous waste; h) Project could be occupied by sensitive receptors near a facility that emits air toxics or near CO hot spots; i) Project could emit carcinogenic air contaminants that could pose a cancer risk.

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[2] *75 lbs/day during construction.*

[3] *100 lbs/day during construction.*

For a planned school expansion whose primary source of potential air quality impact is from a limited number of additional vehicular sources, very few of these secondary impact indicators are likely applicable to the proposed project. Upon review of the secondary evaluation criteria listed above, a CO “hot spot” analysis was included in this analysis. The remaining evaluation criteria listed do not apply to this project.

Project Impacts

The impact from an institutional project, even if it were to generate a substantial number of new vehicle trips, is very small on a regional scale. Vehicles themselves disperse their emissions over a wide geographic area. There is also a time delay from when pollutants are emitted and when they are converted into their most unhealthful form. Air quality impacts from "indirect" (mobile source-intensive) sources are thus immeasurably small on an individual project basis. Basinwide air quality impacts are, therefore, addressed mainly in terms of project compatibility with regional air quality plans.

Locally, changes in the location of any collection of automotive sources, or changes in the number of vehicles or travel speeds may impact the microscale air quality around any given development site. Traffic increases not only contribute air pollutants indirect proportion to their cumulative percentage of traffic volume growth, but they slow all existing traffic to slower, more inefficient travel speeds. The development traffic/air quality impact is thus compounded. Such microscale impacts, in addition to numerous small miscellaneous sources associated with institutional construction and operations, comprise the primary project related air quality concerns.

Construction Impacts

Project development will entail construction activity to demolish any existing West Campus structures and to build new structures and facilities. Construction will occur in two phases, with the heaviest earth moving and demolition activities occurring during the Initial Phase. The future athletic field and parking areas will be graded to accommodate portable temporary classrooms and to provide parking for students and staff. The Final Phase will entail construction of the new high school building and final preparation of the athletic field. Operation of a temporary campus concurrent with the Final Phase construction period is anticipated. Upon completion and occupancy of the proposed permanent education building, the temporary buildings will be removed to convert the area to its final playfield use.

Particulate Matter (PM_{10}) Emissions. Construction has typically been considered a source of potential nuisance from dust or odors such that these temporary emissions are typically categorized as insignificant in many air quality impact analyses. Dust is normally the primary concern during construction. Because dust emissions from soil disturbance are not amenable to collection and discharge through a controlled source, they are called "fugitive emissions."

Particulate matter dust (PM_{10}) emission rates vary as a function of many parameters (soil silt, soil moisture, wind speed, area disturbed, number of vehicles, depth of disturbance or excavation, etc.). Regulatory agencies generally use one universal factor based on the area disturbed assuming that all other input parameters into emission rate prediction fall into mid-range average values. The SCAQMD, in its 1993 "CEQA Air Quality Handbook," estimates daily PM_{10} emissions during construction to be 26.4 pounds per day (lbs/day) per acre disturbed when "standard" dust control procedures required by SCAQMD Rule 403 are implemented. Recent studies have shown that enhanced dust control procedures can reduce the average daily PM_{10} emission rate to as low as 10 pounds per day when a highly aggressive control program is implemented. The most recent measurements of construction PM_{10} emissions using enhanced dust control required by the recently expanded SCAQMD Rule 403 is 10.2 pounds per acre per day (BACM Project Report No. 1, 1996).

The proposed expansion site is 5.5 acres in size. West Campus development will be split into two phases. The maximum disturbance area during preparation of the parking lot and pads for the temporary classrooms during the Initial Phase construction period is less than four (4) acres. Dust (PM_{10}) emissions from a 4.0 acre disturbance area with the use of standard dust control are 106 pounds per day.[4] Even with a maximum disturbance area (i.e., 5.5 acres), the SCAQMD significance threshold of 150 pounds per day will not be exceeded. Given, however, the proximity of adjacent residential uses and the East Campus that could be temporarily affected by dust soiling due to nearby construction, the use of enhanced dust control procedures is recommended to minimize such nuisance potential.

The lack of a potentially significant air quality impact from construction activities is further supported in noting that dust inhalation health impacts are mainly associated with the $PM_{2.5}$ fraction of particulate matter. Clearing/grading activities have little adverse health impact potential because:

(1) $PM_{2.5}$ contains almost no “crustal materials.” Soil particles do not break down from abrasion processes small enough to become $PM_{2.5}$. The crustal material fraction of ambient $PM_{2.5}$ in the South Coast Air Basin is less than two percent, on average.

(2) The small amount of earth that can be broken down into the 2.5 micron ($PM_{2.5}$) size range is physically and chemically inert. Any inhaled sub-2.5 micron dusts from earth disturbance is

[4] *(26.4 lbs/day PM_{10} X 4.0 acres = 105.6 lbs/day PM_{10}).*

readily immobilized by mucus and scavenger cells in the lungs without the damage that chemically active $PM_{2.5}$ can cause.

In addition to the limited magnitude of PM_{10} emissions from site demolition and construction, there is additional rationale to support a finding of a less-than-significant impact because of the very low fraction of any chemically active $PM_{2.5}$ within the construction dust PM_{10} burden. Certainly from a human health perspective, project-related construction activity PM_{10} generation has a less-than-significant impact, particularly because of the relatively small size of this project.

Nuisance Dust. Construction activity dust impacts that are noticeable to the public derive almost exclusively from the largest diameter material that has a residence time of only a few seconds. These large particulates quickly settle out on parked cars, landscaping, outdoor furniture and other horizontal surfaces. The USEPA states that the primary zone of impact is less than 100 feet from the source unless there are unusually strong winds that can keep large particles suspended for more than a few seconds. Beyond 100 feet from the source, the deposition velocity is low, and the amount of dust likely to settle out is small. Even within the 100 foot soiling "envelope", the most substantial dust deposition occurs within 50 feet of the source. Although the zone of potential soiling nuisance is limited in areawide extent, there are several homes in close proximity to the project site that could be affected by soiling nuisance from large particle deposition. The closest temporary classrooms may similarly be within the dust soiling impact zone during construction. Prevailing winds from west to east would make the temporary classrooms east of site grading more susceptible to potential dust soiling than homes to the west, but wind directions are variable and could thus affect both receptor locations.

Whereas a water truck is the common way to reduce dust soiling during grading operations, the small distance buffer (almost zero feet in some instances) requires an even more aggressive dust control program for nuisance abatement. A hydrant water delivery system should be available during all heavy equipment operations within 100 feet of a dust sensitive receptor for immediate dust control rather than waiting for a water truck. Equipment activity shall be temporarily suspended, and high pressure water spray shall be applied to any visible dust generation that occurs within 100 feet of any dust-sensitive use as soon as a visible cloud is observed to extend more than 5 feet from its point of origin. With an immediate dust abatement response during operations in very close proximity to homes or classrooms, dust soiling can be precluded from reaching any significant levels.

Construction Equipment Emissions. In addition to PM_{10} emissions, construction will entail the use of internal combustion engines to power on-road trucks and off-road mobile, semi-mobile and semi-stationary equipment. Such sources are mainly diesel-powered and are poorly regulated in terms of allowable emission levels. Off-road sources are sometimes not well maintained because there is no regulatory mechanism to enforce efficient combustion as there is for on-road sources. Construction activities also include minor amounts of emissions from construction worker commuting.

The type of equipment, number of employees and daily activity scenario varies dramatically among contractors. Emissions estimates for construction activities have a high degree of uncertainty. TheCARB, in the development of the statewide emissions inventory for institutional construction, has determined that the average energy expenditure from all activities is 250,000 Brake-Horsepower-Hours (BHP-HR) per acre of construction activity disturbance. This activity level was assumed to occur over a 5-month (100-day) intensive heavy construction schedule. This activity level was applied to the 4.0 acre maximum disturbance size and combined with the SCAQMD average diesel equipment emission factor (Handbook Table A9-3-A) to calculate the following daily construction-related emissions in Table IV.B-4 on page 91.

As with PM_{10} generation from construction, the scope of construction is sufficiently limited such that construction equipment exhaust emissions will be well below the identified significance threshold. Because the margin of safety between the calculated daily NOx emissions and the 100 ppd significance threshold is relatively small, measures are recommended to include reasonably available controls on construction activity exhaust pollutants.

The addition of on-road vehicular exhaust from delivery truck activities and construction worker commuting will slightly increase the construction activity emissions burden. However, on-site construction emissions will be sufficiently at sub-threshold levels with recommended controls to accommodate the on-road emissions increment without exceeding thresholds for any pollutants.

Construction activities are concentrated at the construction site, but they may also spill over into the adjacent community. Vehicles track dirt off-site, lane closures create congestion on public roadways and construction worker vehicles and supply trucks compete with the general public for sometimes inadequate roadway capacity. Trucks are often left idling near off-site sensitive receptors while waiting to load or unload. Each of these small impacts may become substantial when summed over all basinwide construction activities. As with the on-site impacts, a heightened level of impact mitigation will need to be implemented to minimize off-site, spill-over effects during construction because of the proximity of pollution-sensitive land uses to the project site.

Table IV.B-4
Daily Construction-Related Emissions

Pollutant	EMFAC (lb/1000 BHP-HR)	Emissions* (lb/day)	Threshold (lb/day)	% of Threshold
ROG	0.6	6.0	75.0	8%
CO	1.9	19.0	550.0	3%
NOx	8.6	86.0	100.0	86%
PM_{10}	0.3	3.0	150.0	2%
SOx	0.6	6.0	150.0	4%

**Source: Giroux & Associates, Air Quality Impact Analysis, May 2001. Calculations based on 4.0 acres x EMFAC x 250,000x BHP-HR/ac/100 days*

Operational Impacts

The primary source of project-related air quality impact will derive from site-related traffic. Minor amounts of air emissions will result from energy needs met by burning fossil fuels (electrical generation and natural gas consumption), and from various miscellaneous emissions sources (mowers, paint, cleaning products, etc.). The project traffic study estimates that the addition of 400 students under project implementation would add 1,400 daily trips (3.5 trips/student/day). This trip generation factor is based upon a "default" value for private schools (see Section IV.J.1 Traffic/Circulation).

Air emissions associated with daily project-related trips were calculated using the California Air Resources Board URBEMIS7G air quality computer model. Full project, or Final Phase implementation emissions were calculated for a Year 2005 expansion completion consistent with the traffic analysis “buildout” year. Data from these calculations are summarized in Table IV.B-5 on page 92. Project operational activity emissions from each pollutant category are less than the SCAQMD threshold of significance. The project-specific regional air quality impact of the proposed project is, therefore, less than significant.

While project-related regional (mainly mobile source) emissions would not have an individually significant impact on San Fernando Valley air quality, the incremental addition of growth-related traffic over a wide area may change microscale air quality distributions. To determine whether future traffic changes will create an adverse air quality impact, a microscale air quality impact analysis was performed for the traffic analysis grid around the project area. A Caltrans screening procedure based on the California line source roadway dispersion model CALINE4 was run for three traffic scenarios

Table IV.B-5
"New" Project Operations Air Pollution Emissions
(pounds/day)

Source	CO	ROC	NOx	PM_{10}	SOx
400-Student Increase (year=2005)	73.4	15.9	9.7	7.8	3.5
SCAQMD Significance Threshold	550.0	55.0	55.0	150.0	150.0
Percent of Threshold (both)	13%	29%	18%	5%	2%
Exceeds Threshold (?)[a]	No	No	No	No	No

[a] It should be noted that even when operational impacts and construction impacts are combined, air emissions would still be below the significance thresholds for all five criteria pollutants.

Source(s): Giroux & Associates, Air Quality Impact Analysis, May 2001. California ARB URBEMIS7G Air Quality Model; output provided in Appendix B.

(Existing and Future Year 2005 Without and With Project, each for a.m. and p.m. conditions) to evaluate any possible microscale air quality impacts due to changes in patterns of growth anticipated as part of the proposed project.

The model procedure that was followed combined the results of the traffic analysis with very restrictive dispersion conditions in order to generate a worst-case impact assessment. Light winds almost parallel to each roadway analyzed were used to estimate pollutant exposure adjacent to seven arterial intersections analyzed in the project traffic study. Carbon monoxide (CO) was used as an indicator of any "hot spot" potential because CO, unlike regional pollutants such as ozone, is directly related to source activity immediately adjacent to the receptor (a primary, unreacted pollutant impact). The results of the microscale impact analysis are summarized in Table IV.B-6 on page 93. Existing one-hour background CO levels in the project vicinity are 8-9 ppm. Background hourly CO levels have decreased from 12-13 ppm in the early to mid-1990s to 8-9 ppm by the end of the decade. As a worst-case assumption, the existing background level (8.5 ppm avg.) was presumed to continue unchanged unitl 2005 despite a probably downward trend. It was also assumed that the same meteorological conditions that create a maximum local CO impact are also the same conditions found on the worst-case background day.

With such worst-case assumptions, it would require local contribution exceeding 11.5 ppm to cause the California one-hour CO standard of 20 ppm to be violated. This standard would not be violated at any of the relevant intersections, with or without the project, except for the Rinaldi/Balboa intersection. Table IV.B-6 shows the future p.m. levels of service of "F" at Rinaldi/Balboa may create

Table IV.B-6
Microscale Impact Assessment
(Hourly CO concentrations at 25 feet from the roadway edge in ppm)

Intersection	-2000-	-2005-	
	Existing	No Project	With Project
AM			
Balboa/SR-118 EB Ramps	---	11	11
Balboa/SR-118 WB Ramps	---	14	15
Rinaldi/Balboa	19	19	19
Rinaldi/Louise	11	16	16
Rinaldi/Andosol	---	12	12
Rinaldi/Encino	11	11	11
Rinaldi/Shoshone	12	16	16
Rinaldi/White Oak	11	12	12
Rinaldi/Zelzah	11	12	12
Rinaldi/Reseda	19	17	17
Rinaldi/SR-118 WB Ramps	---	12	12
Rinaldi/SR-118 EB Ramps	---	14	14
PM			
Balboa/SR-118 EB Ramps	---	14	14
Balboa/SR-118 WB Ramps	---	15	15
Rinaldi/Balboa	15	21*	21*
Rinaldi/Louise	10	10	10
Rinaldi/Andosol	---	10	10
Rinaldi/Encino	10	10	11
Rinaldi/Shoshone	11	11	11
Rinaldi/White Oak	10	10	10
Rinaldi/Zelzah	10	11	11
Rinaldi/Reseda	15	15	15
Rinaldi/SR-118 WB Ramps	---	14	14
Rinaldi/SR-118 EB Ramps	---	15	15

**= possible CO "hot spot" on sidewalk adjacent to intersection*
Source: Giroux & Associates, Air Quality Impact Analysis, May 2001. Caltrans screening procedure based upon CALINE4 Computer Model dispersion calculations (AQTAN, 1988)

CO levels that slightly exceed the 20 ppm standard due to cumulative background traffic volumes. The project traffic would slightly exacerbate this possible local violation of CO standards, but not enough to measurably change the degree of "excess." Excess CO levels are highly localized to within less than 25 feet of the edge of the intersection. This intersection clearly illustrates, however, the dramatic increase in air pollution exposure with decreasing levels of service. Unless there are moderate background CO levels and high traffic levels with highly degraded LOS, as at this intersection, there are no forecast CO "hot spots." For the same intersection travel volumes, a decrease in the intersection level of service from "D" to "F" causes almost a doubling of localized CO exposures due to excessive idling. Maximum differences in future CO exposures for the with-project versus the cumulative no-project scenario are 1 ppm or less SCAQMD Rule 1303 shows any CO increase of 1.0 ppm or less to be a "de minimis" increase.[5] Microscale air quality impacts from project implementation are thus individually and cumulatively less than significant.

CUMULATIVE IMPACTS

Implementation of the proposed project in conjunction with the related projects listed in Section III.F. Related Projects, would increase existing ambient air pollution levels in the project vicinity. Construction emissions are generally confined to the immediate vicinity of the activity. There would be no substantial overlap in construction on the parcel site with other nearby related projects. In addition, each of the related projects would be required to conform to applicable SCAQMD regulations, such as Rule 403 (fugitive dust) and Rule 1403 (asbestos containing materials). Provided such regulations are met by each related project, cumulative construction air quality impacts would be less than significant. Based on the analysis above, microscale air quality impacts are considered individually and cumulatively less than significant.

Operational activity emissions will not exceed SCAQMD thresholds for any of the 5 criteria pollutants analyzed. Any regional impacts are therefore cumulative in nature, deriving from overall growth, but they are individually less than significant. The proposed project will generate 8,000 daily vehicle miles traveled (VMT). The CARB planning inventory for the SCAB predicts an increase of 47+ million VMT per day from light-duty autos and trucks between 2000 and 2010. As such, the proposed project represents less than 0.02 percent of anticipated regional growth. As long as new overall regional development does not exceed the level of growth forecast in the Regional Comprehensive Plan and Guide (RCPG), the basin will meet federal clean air standards by 2010.

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[5] Pursuant to CEQA Guidelines Section 15130(4) a "de minimus" contribution means that the environmental conditions would essentially be the same whether or not the proposed project is implemented.

Although expansion of the West Campus is expected to generate additional vehicle trips in the project area, it is reasoned that such trips are likely to occur with or without the project's construction. It is assumed that in the absence of the Hillcrest school's expansion, such trips would likely transfer to other public or private schools located in the north San Fernando Valley. Additionally, since the proposed project would be substantially consistent with the City's General Plan, the project would also be consistent with the AQMP. Hillcrest expansion will therefore not delay timely attainment of the clean air standards and cumulative impacts would be less than significant.

MITIGATION MEASURES

Construction activities were shown to possibly have locally adverse, but less than significant air quality impact. Because of the proximity of nearby residences, construction activity impacts should be mitigated to the extent feasible. In compliance with SCAQMD Rule 403, the following mitigation measures are recommended:

Dust Control:

1. Use more than one enhanced dust control measure required by SCAQMD Rule 403. The menu of enhanced dust control measures includes the following:
    - Water all active construction areas at least twice daily.
    - Cover all haul trucks or maintain at least two feet of freeboard.
    - Pave or apply water four times daily to all unpaved parking or staging areas.
    - Sweep any site access points within 30 minutes of any visible dirt deposition on any public roadway.
    - Cover or water twice daily any on-site stockpiles of debris, dirt or other dusty material.
    - Suspend all operations on any unpaved surface if winds exceed 25 mph.

Emissions:

2. Require 90-day low-NOx tune-ups for off-road equipment.
3. Limit allowable idling to 10 minutes for trucks and heavy equipment.
4. Prohibit truck/equipment idling in front of any adjacent residences.

Off-Site Impacts:

5. Encourage car pooling for construction workers.
6. Limit lane closures to off-peak travel periods.
7. Park construction vehicles off traveled roadways.
8. Wet down or cover dirt hauled off-site.
9. Wash or sweep access points daily.
10. Schedule receipt of construction materials and haul routes during non-peak traffic hours.
11. Sandbag construction sites for erosion control.

On Site Impacts:

12. The applicant shall install air filtration system(s) to reduce the diminished indoor air quality effects on occupants of the project.

LEVEL OF SIGNIFICANCE AFTER MITIGATION

Air quality impacts would be less than significant before and after implementation of the recommended mitigation measures.