C.2 AIR QUALITY

This section provides an updated environmental setting and impact analysis from that presented in the Final Environmental Impact Statement/Environmental Impact Report (FEIS/EIR) for the California-Oregon Transmission Project and the Los Banos-Gates Project (TANC/WAPA, 1988). Section C.2.1 describes the environment of the project area, and Section C.2.2 describes the regulations relevant to air quality. Section C.2.3 describes the environmental impacts and mitigation measures of the Proposed Project; Sections C.2.4 and C.2.5 describe environmental impacts and mitigation measures of the alternatives; and Section C.2.6 presents the Mitigation Monitoring Table.

Essentially all the air quality data and analysis presented in this document has been updated to reflect the current environmental baseline and regulatory conditions, as opposed to the conditions presented in the 1988 FEIS/EIR. The Federal Clean Air Act Amendments (CAAA) of 1990 were not in place at the time that the FEIS/EIR was released. It is currently the most widely enforced regulatory tool to reduce air pollution emissions. The CAAA establishes non-attainment area classifications ranked according to the severity of the area's air pollution problem, thus triggering varying requirements the area must comply with in order to meet the standard. In 1991, the California Air Resources Board (CARB) divided the State into separate air basins with similar geographical and meteorological conditions. At the time of the 1988 FEIS/EIR, air pollution was regulated by county air pollution control districts (APCDs). Although this is still the practice of most counties in California, the county agencies in the San Joaquin Valley Air Basin (e.g., Merced APCD, Fresno APCD, etc.) realized that air quality problems would be best managed on a regional basis and so they combined their regulatory agencies into one regional agency, the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD).

General air quality in the San Joaquin Valley Air Basin (SJVAB) has not improved since the release of the 1988 FEIS/EIR. Although steady statewide progress has been made that has reduced levels of carbon monoxide, the same cannot be said for ozone and PM_{10} levels in the SJVAB. Ozone and PM_{10} are currently classified as non-attainment of Federal and State Standards and on June 19, 2000, a notice was published in the Federal Register formally notifying the public that the U.S. Environmental Protection Agency (USEPA) was proposing to redesignate the SJVAB from serious to severe non-attainment of the National Standard for ozone.

The 1988 FEIS/EIR indicated that transmission line construction and operation would not be a significant source of air pollutants. For this SEIR, the SJVUAPCD has recommended a 10-ton per year threshold of significance for assessment of potential construction-related impacts associated with ozone precursor emissions. The 1988 FEIS/EIR did not quantify ozone precursor emission levels associated with project construction. The air analysis for this SEIR provides quantification of ozone precursor emissions associated with the Proposed Project. Emissions associated with one ozone precursor (NO_X) were found to be significant. Although it was likely that NO_X emissions generated by the construction of the Eastern Corridor Alternative would be less than those generated under the Proposed Project, it is anticipated that NO_X emissions associated with the Eastern Corridor Alternative would also be significant.

With regard to fine particulates (PM10), the 1988 FEIS/EIR found that impacts would be less than significant with implementation of a mitigation measure that would require frequent watering of the construction sites. Similar to the findings of the FEIS/EIR, this SEIR finds construction PM10 emissions to be less than significant with implementation of the current SJVUAPCD mandatory Regulation VIII control measures and additional recommended mitigation measures, which are much more comprehensive than the mitigation measure recommended in the FEIS/EIR.

The Eastern Corridor Alternative would have less severe impacts than the Proposed Project, although the impact significance levels are the same. Construction of the Eastern Corridor Alternative would not require the development of as many new access roads to each tower location as the Proposed Project. Construction of access roads would require heavy diesel construction equipment that would disturb the ground surface generating PM_{10} emissions, and would produce exhaust that would contain ozone precursor emissions.

C.2.1 ENVIRONMENTAL BASELINE

C.2.1.1 Climate and Meteorology

The study area in which the Proposed Project and Alternative Segments are located is in the San Joaquin Valley Air Basin (SJVAB), which is approximately 250 miles long and an average of 35 miles wide (see Figure C.2-1). The region's air quality is directly related to the basin's topographic features. The SJVAB is defined by the Sierra Nevada mountains in the east (8,000 to 14,000 feet in elevation), the coast ranges in the west (6,000 to 8,000 feet in elevation), and the Tehachapi mountains in the south (6,000 to 8,000 feet in elevation). The Valley opens to the sea at the Carquinez Straits into the San Francisco Bay Area. The mountains surrounding the Valley restrict air movement through and out of the basin: the coast range hinders wind access into the San Joaquin Valley from the west, the Tehachapis prevent southerly passage of air flow, and the high Sierra Nevada range is a significant barrier to the east. These topographic features result in weak air flow that becomes blocked vertically by high barometric pressure over the San Joaquin Valley. As a result, the SJVAB is highly susceptible to pollutant accumulation over time. Most of the surrounding mountains are above the normal height of summer inversion layers[1], which vary from 1,500 to 3,000 feet (SJVUAPCD, 1998).

Climate Effects on Air Quality. Specific climatological effects can exacerbate air quality problems in the SJVAB: temperature and precipitation, wind speed and direction, inversion layers, and fog. Temperature and solar radiation (sunshine) are particularly important in the chemistry of ozone formation. Ozone is formed in a photochemical reaction, which requires sunlight. Generally, the higher the temperature, the more ozone is formed, because reaction rates increase with temperature.

[1] A temperature inversion layer is the height that a layer of warm air contacts cooler air below. Inversion layers can present problems in polluted areas because they resist the natural dispersion and dilution of air contaminants.

Figure C.2-1

San Joaquin Valley Unified Air Pollution District Boundaries

[See link on webpage]

However, extremely hot temperatures can "lift" the inversion layer. Typically, if the inversion layer does not lift to allow the build up of contaminants to be dispersed, the ozone levels will peak in the late afternoon. When winds occur, the ozone levels peak in the early afternoon and decrease in the later afternoon as the contaminants become dispersed. Temperature is not as important in the formation of high carbon monoxide (CO) or particulate matter less than 10 microns (PM_{10}; SJVUAPCD, 1998).

Precipitation and fog tend to reduce or limit some pollutant concentrations. Ozone needs sunlight for its formation, and clouds and fog block the required radiation. CO is slightly water-soluble so precipitation and fog tends to reduce CO concentrations in the atmosphere. PM_{10} is somewhat washed from the atmosphere with precipitation (SJVUAPCD, 1998).

Wind speed and direction play an important role in dispersion and transport of air pollutants. Wind can disperse pollution by mixing vertically and by transporting it to other locations.

The vertical dispersion of air pollutants in the Basin is limited by the presence of persistent temperature inversions. A temperature inversion is when air temperature increases with height to a point referred to as the "mixing height." The mixing height of a temperature inversion represents an abrupt density change where little exchange of air occurs.

Temperature and Precipitation. Monitoring stations in Los Banos and Five Points were selected to represent the average climate of the northern and southern portions of the study area, respectively. The Los Banos weather station is approximately one-half mile east of Milepost (MP) 3 of Proposed Segment 3. The Five Points weather station is approximately 7 miles east of MP 64 of the Eastern Corridor Alternative Segment 5. As described in Table C.2-1, average summer (July) high and low temperatures in the Los Banos area are 94.1 F and 64.2 F, while the average summer high and low in Five Points are 97.4 F and 62.6 F. Average winter (January) high and low temperatures in the Los Banos area are 53.6 F and 39.1 F, while the average winter high and low in Five Points are 53.6 F and 39.1 F. Annual rainfall at the Los Banos and Five Points monitoring stations average approximately 8.53 and 6.91 inches, respectively. Most of the annual rainfall occurs between November and April, with minor precipitation during summer months. Snow and hailstorms are rare in the project area and severe snow and hailstorms are very rare.

Wind Speed and Direction. During the summer months, wind usually originates at the north end of the Basin and flows in a south-southwesterly direction through the Basin, through Tehachapi pass, and into the Southeast Desert Air Basin. The mean wind speed in the summer ranges from 16 to 20 mph. In the winter, wind speed and direction data indicate that wind occasionally originates from the south and blows in a north-northwesterly direction. During the winter months, the Basin experiences light, variable winds, less than 10 mph (SJVUAPCD, 1998).

Temperature Inversions. Temperature inversions are more persistent (stable) during the winter months, when the inversion usually occurs 500 to 1,000 feet above the valley floor (SJVUAPCD, 1998). Compared to summer inversions layers that are typically 1,500 to 3,000 feet above the Valley

floor, winter inversions tend to create greater air pollution problems because pollutants stay concentrated below the inversion layer, rather than dispersing upward, which dilutes the pollutants.

Table C.2-1 Monthly Temperature and Precipitation in the Project Area

Month	Los Banos			Five Points		
	Temperature (F)		Precipitation (inches)	Temperature (F)		Precipitation (inches)
	Maximum	MINIMUM		Maximum	MINIMUM	
January	53.6	39.1	1.80	55.2	36.5	1.48
February	60.0	42.9	1.72	62.7	39.9	1.28
March	65.1	46.0	1.34	68.1	41.9	1.05
April	72.0	49.3	0.46	75.5	45.7	0.52
May	79.8	54.7	0.03	83.9	50.9	0.27
June	87.6	60.3	0.05	91.5	57.1	0.10
July	94.1	64.2	0.03	97.4	62.6	0.01
August	92.8	63.4	0.03	95.3	61.5	0.02
September	87.5	60.7	0.29	90.2	57.9	0.21
October	77.5	54.4	0.44	80.3	50.2	0.35
November	63.7	45.7	0.98	66.6	51.5	0.72
December	54.0	38.5	1.10	55.5	36.2	0.90

Note: The periods of record for the Los Banos and Five Points stations are from July 1, 1968 to December 31, 2000, and December 1, 1948 to July 31, 2000, respectively.
Source: Western Regional Climate Center, 2001.

Fog. Between winter storms, high pressure and light winds allow cold moist air to pool on the Valley floor. This creates strong low-level temperature inversions and very stable air conditions. These conditions create the Valley's famous Tule Fog. The formation of the Tule Fog is caused by local cooling of the atmosphere until it reaches its dew point and becomes saturated. This type of fog is known as radiation fog. Conditions favorable to fog are also conditions favorable to high concentrations of CO and PM_{10}. Ozone levels are low during these periods because of the lack of sunlight to drive the photochemical reaction. Maximum CO concentrations tend to occur on clear, cold nights prior to the formation of fog, when a strong surface inversion is present and large numbers of fireplaces are in use (SJVUAPCD, 1998).

C.2.1.2 Existing Air Quality

Criteria Pollutants. The quality of the surface air (air quality) is evaluated by measuring ambient concentrations of criteria pollutants, which are air pollutants for which acceptable levels of exposure can be determined and for which standards have been set. The degree of air quality degradation is then compared to the current National and California Ambient Air Quality Standards (NAAQS and CAAQS). Because of unique meteorological problems in California, and because of differences of opinion by medical panels established by the California Air Resources Board (CARB) and the U.S. Environmental Protection Agency (USEPA), there is considerable diversity between State and Federal standards currently in effect in California. In general, the CAAQS are more stringent than the corresponding NAAQS. The standards currently in effect in California are shown in Table C.2-2.

Table C.2-2 National and California Air Quality Standards

Pollutant	Averaging Time	California Standards[1]	National Standards[2]
Ozone (O_3)	8-hour	NS	0.08 ppm[3]
	1-hour	0.09 ppm	0.12 ppm
Carbon Monoxide (CO)	8-hour	9.0 ppm	9.0 ppm
	1-hour	20 ppm	35 ppm
Nitrogen Dioxide (NO_x)	Annual Average	NS	NS
	1-hour	0.25 ppm	0.053 ppm
Sulfur Dioxide (SO_x)	Annual Average	NS	0.03 ppm
	24-hour	0.05 ppm	0.14 ppm
	1-hour	0.25 ppm	NS
Fine Particulate Matter (PM_{10})	Annual Arithmetic Mean	NS	50 ug/m^3
	Annual Geometric Mean	30 ug/m^3	NS
	24-hour	50 ug/m^3	150 ug/m^3
Fine Particulate Matter ($PM_{2.5}$)[3]	Annual Arithmetic Mean	NS	15 ug/m^3
	24-hour	NS	65 ug/m^3

Notes: ppm = parts per million; ug/m^3 = micrograms per cubic meter; NS = no standard

1. California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1-hour and 24-hour), nitrogen dioxide, and PM_{10} are values that are not to be exceeded.
2. National standards other than for ozone and those based on annual averages or annual arithmetic means are not to be exceeded more than once a year. For example, the ozone standard is attained if, during the most recent three-year period, the average number of days per year with maximum hourly concentrations above the standard is equal to or less than one.
3. In 1997, USEPA established an 8-hour standard for ozone and annual and 24-hour standards for very fine particulate matter ($PM_{2.5}$). The USEPA's new standards were challenged in court. However, on February 27, 2001, the U.S. Supreme Court unanimously affirmed USEPA's ability to set national air quality standards that protect people from the harmful effects of air pollution. The USEPA is currently reviewing the results of the litigation to determine the approach and schedule for moving forward with implementing the new ozone standard. With regard to $PM_{2.5}$, the USEPA cannot start implementing the 1997 standards until the USEPA and the states collect three years of monitoring data to determine which areas are attaining the standards. The $PM_{2.5}$ monitoring network was completed in 2000. In most cases, areas would not be designated "attainment" or "nonattainment" for $PM_{2.5}$ until 2004-5.

Sources: SJVUAPCD, 1998; BAAQMD, 1999; and USEPA, 2001a.

Air quality standards are designed to protect those people most susceptible to respiratory distress, such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and people engaged in strenuous work or exercise. Table C.2-3 provides a summary of the health effects from the major criteria air pollutants. Healthy adults can tolerate occasional exposure to air pollutant concentrations above these minimum standards before adverse effects are observed.

Table C.2-3 Summary of Health Effects of the Major Criteria Pollutants

Air Pollutant	Adverse Effects
Ozone	-Eye irritation -Respiratory function impairment -Aggravation of respiratory and cardiovascular diseases
Carbon Monoxide	-Impairment of oxygen transport in the bloodstream, increase of carboxyhemoglobin -Aggravation of cardiovascular disease -Impairment of central nervous system function -Fatigue, headache, confusion, dizziness -Death at high levels of exposure -Aggravation of some heart diseases (angina)
Nitrogen Dioxide	-Risk of acute and chronic respiratory disease
Suspended Particulates (PM_{10})	-Increased risk of chronic respiratory disease -Reduced lung function -With SO_2, may produce acute illness -Particulate matter 10 microns or less in size (PM_{10}) may lodge in and/or irritate the lungs

Source: SCAQMD, CEQA Air Quality Handbook, 1993.

Attainment Status. Air pollution sources in the SJVAB are under the jurisdiction of the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD). A summary of the air quality status within the SJVAB relative to meeting the National and State AAQS is provided in Table C.2-4. "Non-attainment" is a term used to indicate violations of the standards. In addition, CARB and USEPA have several levels of non-attainment classification based on the severity of the problem. For example, USEPA has seven non-attainment ozone classifications ranging from submarginal to extreme. The classifications affect the number of years that a district would have to reach attainment of the applicable standard and the amount and type of control measures that the District would be responsible for implementing to reach attainment. The SJVAB is classified as "severe non-attainment" for the Federal ozone standard, "serious non-attainment" of the State ozone standard, and "serious non-attainment" for the Federal PM_{10} standard. A pollutant is designated unclassified if the data are not complete and do not support a designation of attainment or non-attainment. For the federal carbon monoxide standards, all the non-urbanized areas of the SJVAB are designated as "unclassified," while urbanized areas are classified "attainment." Fresno, Tulare, Stanislaus, and San Joaquin Counties, and the SJVAB portion of Kern County are designated as "attainment," while Merced, Madera, and Kings Counties are designated "unclassified" by the State for carbon monoxide standards. Current State and Federal designations in the SJVAB are indicated in Table C.2-4.

Table C.2-4 San Joaquin Valley Air Basin Attainment Status

Air Basin	O_3		CO		NO_2		PM_{10}	
	State	Federal	State	Federal	State	Federal	State	Federal
San Joaquin Valley Air Basin	N-Severe	N-Serious[a]	A	U/A[b]	A	U/A	N	N-Serious

Notes: A = Attainment; N = Non-attainment; U = Unclassified

[a] Serious non-attainment classification has a design value of 0.16 up to 0.18 ppm based on the fifth highest eight-hour average per year, averaged over three consecutive years at any monitoring station in the basin. Severe non-attainment classification has a design value of 0.18 to 0.28 ppm. In June 19, 2000, a notice was published in the Federal Register formally notifying the public that the USEPA is proposing to redesignate the SJVAB from serious to severe non-attainment of the NAAQS for ozone. As of July 2001, the proposal has not been finalized.

[b] 40 CFR Parts 52 and 81 – Fresno Urbanized Area, Bakersfield Metropolitan Area, Stockton Urbanized Area and Modesto Urbanized Area were redesignated attainment on March 31, 1998. All non-urbanized areas of the SJVAB are classified as "unclassified" for federal carbon monoxide standards.

Sources: SJVUAPCD, 1998; USEPA, 2001b; and EMEC, 2000.

The CARB operates regional air quality monitoring networks that regularly measure the concentrations of major air pollutants. The two closest monitoring stations near the Proposed Project area in Merced and Hanford were selected to provide a general profile of the air quality within the northern and southern portions of the study area, respectively. Merced is approximately 30 miles east-northeast of the Los Banos Substation. Hanford is approximately 45 miles east-northeast of the Gates Substation. Table C.2-5 presents the ambient air quality concentrations recorded from 1998 through 2000.

As indicated in Table C.2-5, there were five violations of the NAAQS for ozone at each of the two stations. However, the Merced and Hanford stations recorded 101 and 103 cases, respectively, when ozone levels exceeded CAAQS during the three-year monitoring period. With regard to PM_{10}, the Merced Station recorded 14 cases in 1999 and nine cases in 2000 (data was not available for 1998) when levels exceeded the CAAQS, while CAAQS violations at the Hanford Station ranged from 15 to 17 violations per year during the 3-year monitoring period. Neither station recorded a violation of the

NAAQS for PM_{10}. There were no violations recorded for nitrogen dioxide and the subject stations do not monitor for CO.

Table C.2-5 Air Quality Summary

STANDARDS	Monitoring Station Merced, S. Coffee Street			Monitoring Station Hanford, S. Irwin Street		
	1998	1999	2000	1998	1999	2000
OZONE (1-HOUR) STANDARD						
Max. Concentration (ppm)	0.14	0.13	0.12	0.14	0.14	0.12
Days>CAAQS (0.09 ppm)	37	42	32	27	28	48
Days>NAAQS (0.12 ppm)	3	2	0	3	2	0
PM_{10} (24-Hour) STANDARD [b]						
Maximum Concentration (ug/m^3)	NA	134	104	146	143	119
Days > CAAQS (50 ug/m^3)	NA	14/61	9/61	15/61	17/61	17/61
Days > NAAQS (150 ug/m^3)	NA	0/61	0/61	0/61	0/61	0/61
NO_2 (Annual) Standard						
Max. Concentration (ppm)	0.06	0.08	0.06	0.09	0.09	0.07
Days>CAAQS (0.25 ppm)[a]	0	0	0	0	0	0

Source: CARB, 2001. *Aerometric Data Analysis and Management System website (http://www.arb.ca.gov/adam).*
Notes: ppm = parts per million; ug/m^3 = micrograms per cubic meter; NA = not available
[a] No Federal (1-hour) NO_2 standard.
[b] "Days" for PM_{10} are given as exceedances/ approximate number of annual measurements (measurements are typically calculated every six days, or approximately 61 days a year).

C.2.2 APPLICABLE REGULATIONS, PLANS, AND STANDARDS

Federal, state, and regional agencies have established air quality standards, regulations, and plans that affect projects, proposed or existing, within their jurisdictions. The following federal and state regulatory considerations apply to the Proposed Project and to all alternatives.

C.2.2.1 Federal

The Federal Clean Air Act of 1970 directs the attainment and maintenance of National Ambient Air Quality Standards (NAAQS). The 1990 Amendments to this Act determine attainment and maintenance of NAAQS (Title I), motor vehicles and fuel reformulation (Title II), hazardous air pollutants (Title III), acid deposition (Title IV), operating permits (Titles V), stratospheric ozone protection (Title VI), and enforcement (Title VII). The USEPA also implements the NAAQS and determines attainment of Federal air quality standards on a short- and long-term basis.

C.2.2.2 State

The California Air Resources Board (CARB) has established the California Ambient Air Quality Standards (CAAQS) and determines attainment status for criteria air pollutants. The California Clean Air Act (CCAA) went into effect on January 1, 1989 and was amended in 1992. The CCAA mandates achieving the health-based CAAQS at the earliest practicable date.

C.2.2.3 San Joaquin Valley Unified APCD

Table C.2-6 summarizes the requirements of a series of SJVUAPCD rules known collectively as Regulation VIII that are applicable to the Proposed Project. The purpose of Regulation VIII is to reduce the amount of PM_{10} generated from construction activities. Compliance with Regulation VIII does not constitute mitigation because it is already required by law.

Table C.2-6 SJVUAPCD Control Measures for Construction Emissions of PM_{10}

REGULATION VIII CONTROL MEASURES
All disturbed areas, including storage piles, which are not being actively utilized for construction purposes, shall be effectively stabilized of dust emissions using water, chemical stabilizer/suppressant, or vegetative ground cover.
All on-site unpaved roads and off-site unpaved access roads shall be effectively stabilized of dust emissions using water or chemical stabilizers/suppressant.
All land clearing, grubbing, scraping, excavation, land leveling, grading, cut & fill, and demolition activities shall be effectively controlled of fugitive dust emissions utilizing application of water or by presoaking.
When materials are transported off-site, all material shall be covered, effectively wetted to limit visible dust emissions, or at least six inches of freeboard space from the top of container shall be maintained.
All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at least once every 24 hours when operations are occurring. (The use of dry rotary brushes is expressly prohibited except where proceeded or accompanied by sufficient wetting to limit the visible dust emissions.) (Use of blower devices is expressly forbidden.)
Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, said piles shall be effectively stabilized of fugitive dust emissions utilizing sufficient water or chemical stabilizer/suppressant.

Source: SJVUAPCD, 1998.

In addition, the SJVUAPCD has adopted the following attainment plans in an attempt to achieve State and Federal air quality standards:

- *1991 Air Quality Attainment Plan for the San Joaquin Valley*. Establishes the regulatory groundwork in order to bring the SJVAB into compliance with CAAQS for ozone and CO.
- *1992 Federal Attainment Plan for Carbon Monoxide*. Establishes the regulatory groundwork in order to bring the SJVAB into compliance with NAAQS for CO.
- *The Ozone Attainment Demonstration Plan*. Establishes the regulatory groundwork in order to bring the SJVAB into compliance with NAAQS for ozone. This plan also satisfies the required triennial review for the CAAQS.
- *PM_{10} Attainment Demonstration Plan*. Establishes the regulatory groundwork in order to bring the SJVAB into compliance with the NAAQS for PM_{10}.

C.2.3 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES FOR THE PROPOSED PROJECT

C.2.3.1 Introduction

Short-term construction impacts and long-term operational impacts would result from implementation of the Proposed Project; in this section, those potential impacts are analyzed. Section C.2.3.2 presents the significance criteria for evaluation of air quality impacts. Section C.2.3.3 presents the impacts and mitigation measures that were identified in the 1988 FEIR/EIS. Impacts and mitigation measures for the Proposed Project are presented in Sections C.2.3.4 and C.2.3.5.

C.2.3.2 Definition and Use of Significance Criteria

This discussion provides information on the applicable significance criteria for construction and operation related activities associated with the Proposed Project. It describes the regulatory thresholds that have been established to determine if a project would impact air quality within the SJVAB.

Construction

A project's construction phase produces many types of emissions, but PM_{10} and ozone precursor emissions [reactive organic compounds (ROC) and NO_X] are the pollutants of greatest concern to the SJVUAPCD because ozone and PM_{10} are non-attainment of Federal and State air quality standards.

- ***Fugitive Dust (PM_{10}).*** The SJVUAPCD's approach to CEQA analyses of PM_{10} construction emissions is to require implementation of effective and comprehensive control measures rather than to require detailed quantification of emissions. The SJVUAPCD emphasizes implementation of the control measures outlined in Regulation VIII (see Table C.2-6) for all sites and implementation of additional enhanced measures for all large construction projects to reduce potential significant construction impacts to a level that is less than significant.
- ***Ozone Precursor Emission Thresholds (ROC and NO_X).*** The SJVUAPCD does not have standard construction significance thresholds for ozone precursors (SJVUAPCD, 1998). However, the SJVUAPCD recommends a 10-ton per year threshold for assessment of potential construction related impacts associated with ozone precursor (ROC and NO_X) emissions for large construction projects lasting many months (SJVUAPCD, 2001a). Therefore, construction-generated ROC or NO_X emissions in excess 10 tons would be considered to have a significant air quality impact.

Operations

The thresholds for ozone precursors and carbon monoxide concentrations are presented below. Thresholds for offensive odors and toxic air contaminants are not addressed below because such operational impacts would not occur under the Proposed Project.

- ***Ozone Precursor Emissions Thresholds.*** Ozone precursor emissions from project operations exceeding 10 tons per year would be considered to have a significant air quality impact per SJVUAPCD operational significance thresholds (SJVUAPCD, 1998). Both direct (on site) and indirect (off site) operational emissions should be evaluated.
- ***Local Carbon Monoxide (CO) Concentrations Thresholds.*** Estimated CO concentrations exceeding the CAAQS of 9 parts per million (ppm) averaged over 8 hours and 20 ppm for 1 hour would be considered a significant impact (SJVUAPCD, 1998).

C.2.3.3 Impacts and Mitigation Measures from 1988 Final EIR/EIS

Table C.2-7 presents all of the air quality impacts from the Final EIS/EIR and their significance (after mitigation) as well as the impacts and significance identified in this SEIR.

Table C.2-7 Summary of Impacts: 1988 FEIS/EIR* and SEIR

Final EIS/EIR Impact	Significance	SEIR Impact	Significance
Dust and engine emissions	Less than significant	**Impact 2-1**: PM_{10} emissions from construction disturbance. **Impact 2-3**: Equipment emissions related to inspection and maintenance of the Proposed Project.	Less than significant with mitigation
		Impact 2-2: Construction equipment exhaust emissions of ozone precursors (ROC and NO_X).	Significant

* Impacts summarized from FEIS/EIR Table 2B, Summary of Significant Environmental Impacts, Applicable Mitigation Measures, and Mitigation Effectiveness for Los Banos-Gates.

The FEIS/EIR (TANC/WAPA, 1988) concluded that the construction, operation, and maintenance of the proposed 500 kV transmission line project would not significantly impact air quality. The mitigation measures listed in Table C.2-8 were recommended to minimize potential adverse project impacts. The second column of this table shows how the 1988 recommendation is addressed in this SEIR. The mitigation measures recommended in the EIS/EIR are not recommended in this document

because current laws (Regulation VIII) and mitigation measures developed by the SJVUAPCD are much more comprehensive.

Table C.2-8 Mitigation Measures from 1988 FEIS/EIR

Measure from 1988 FEIR/EIS	Disposition
Soil surfaces will be wetted at a rate of 0.5 gallons of water per square yard two times per day for dust control (EPA 1977). This measure reduces dust by about 50 percent.	Covered by Regulation VIII
When possible construction activities should be scheduled during periods of low wind to reduce fugitive dust emissions.	Mitigation Measure **A-1** supersedes this measure
All construction equipment should be frequently monitored and serviced to ensure conformance with exhaust standards.	Mitigation Measure **A-2** supersedes this measure

C.2.3.4 Construction Impacts

The following impacts to air quality associated with the Proposed Project have been identified:

- **Impact 2-1.** PM_{10} emissions from construction disturbance.
- **Impact 2-2.** Construction equipment exhaust emissions of ozone precursors (ROC and NO_X).
- **Impact 2-3.** Equipment emissions related to inspection and maintenance of the Proposed Project.

Impact 2-1: PM_{10} emissions from construction disturbance

Many construction activities associated with the Proposed Project, such as earth-moving operations (e.g., augering and pole access road development) and soil disturbance from construction equipment (especially from travel over unpaved roads), would generate PM_{10} emissions. PM_{10} emissions can vary greatly depending on the level of activity, the specific activities taking place, and weather and soil conditions. Implementation of the SJVUAPCD Regulation VIII Control Measures presented in Table C.2-6, combined with the additional enhanced mitigation measures presented below, would reduce potentially significant PM_{10} emission impacts to levels that are less than significant (**Class II**).

Mitigation Measure for Impact 2-1, PM_{10} Emissions

The following PM_{10} mitigation measure shall be implemented in addition to Regulation VIII control measures during project construction to reduce potential PM_{10} impacts to less than significant levels (**Class II**).

A-1 The following procedures for reducing fugitive dust shall be implemented. Records documenting personnel awareness and the wind speed log shall be maintained at the construction site and shall be provided to CPUC's environmental monitor upon request.

- Traffic speeds on unpaved roads shall not exceed 15 mph. PG&E shall insure that all project personnel (including contractors, subcontractors, and service company representatives) sign a statement acknowledging their awareness of the unpaved road speed limit restriction. The signed statement shall specify that 15 mph is the maximum speed limit on any unpaved road.
- Wash off all truck tires and equipment leaving the construction site. PG&E shall insure that all project personnel (including contractors, subcontractors, and service company representatives) sign a

statement acknowledging their awareness that tires and equipment leaving the construction site are to be washed.

- Suspend excavation and grading activity when winds exceed 20 mph for a sustained period of 10 minutes, as measured by an anemometer. PG&E shall measure the wind speed with the anemometer when moderate to high winds occur, based on the fair judgment of a designated PG&E representative. PG&E shall maintain a written log to be maintained at the construction sites that documents day, time, and wind speed of each measurement.

Impact 2-2: Construction equipment exhaust emissions of ozone precursors (ROC and NO_x)

Because the SJVUAPCD has specifically requested that the CPUC use a construction significance threshold of 10 tons per year to assess potential impacts associated with NO_x and ROC from project construction (SJVUAPCD, 2001a), assumptions regarding the types and use of construction equipment were made to estimate the emissions of NO_x and ROC that would be generated during the peak 12 months of project construction.

Emission levels for construction activities vary with the type of equipment, duration of use, operation schedules, and the number of construction workers. Because of the length of this transmission line project (84 miles), for the purposes of this analysis, it is assumed that two construction spreads would operate simultaneously for the following emission activity sources: access, clearing, and cleanup; tower construction; transmission line assembly; and substation improvements. Table C.2-9 presents the estimated construction emissions for the Proposed Project. Project construction emissions were estimated using emission factors from the South Coast Air Quality Management District's *CEQA Air Quality Handbook* and Appendix J of USEPA's AP-42. Refer to Appendix 3 for all other assumptions and calculations used to estimate the emissions. As indicated in Table C.2-9, the estimated NO_x construction emissions associated with the Proposed Project are above SJVUAPCD's recommended significance threshold of 10 tons for the peak year of construction.

Table C.2-9 Annual Ozone Precursor Emissions from Project Construction

Source	ROC (tons)	NO_X (tons)
Worker Commute Trips	1.32	0.01
Access, Clearing, and Cleanup	0.36	3.18
Tower Construction	1.66	14.02
Transmission Line Assembly	0.43	3.57
Substation Improvements	0.50	5.47
TOTAL Emissions	**4.27**	**26.25**
SJVUAQMD Emission Threshold	10	10
Exceedance of the SJVUAQMD Thresholds?	**NO**	**YES**

Ozone precursor emissions from construction would exceed the applicable SJVUAPCD significance criteria for this project, which would result in significant impacts (**Class I**). Although it is anticipated that the Proposed Project would create significant impacts that cannot be reduced to levels that are less than significant, it is the responsibility of the Lead Agency to apply all available feasible mitigation measures to the project to reduce impacts as much as possible. Therefore, Mitigation Measures **A-2** and **A-3** described below are recommended to further reduce emissions.

Mitigation Measures for Impact 2-2, Ozone Precursor Emissions during Construction

A-2 Construction equipment shall be maintained in tune, per manufacturing specifications. PG&E/contractor shall provide a maintenance schedule for all vehicles and equipment. PG&E/contractor shall provide a certification from a third-party certified mechanic stating the timing of all internal combustion construction equipment engines has been properly maintained. PG&E/contractor shall re-certify each piece of construction equipment/vehicle based on the respective manufacturer maintenance schedule. Certifications shall be provided to the CPUC before the start of construction, and on an ongoing basis as new equipment is brought to the construction site.

A-3 Vehicles shall not idle in excess of ten minutes. PG&E shall ensure that project personnel operating vehicles (including contractors, subcontractors, and service company representatives) sign a statement acknowledging their awareness of the idling restrictions and these records shall be maintained at the construction site for inspection by the CPUC environmental monitor.

C.2.3.5 Operational Impacts

Impact 2-3: Equipment emissions related to inspection and maintenance of the Proposed Project

Emission sources associated with operation of the proposed 84-mile 500 kV transmission line and associated substations would be related to inspection and maintenance of the transmission line, instrumentation and control, substations, and support systems. As described in Section B.4, PG&E would inspect all of the structures from the surface annually for corrosion, misalignment, etc. The proposed transmission line structures, access roads, and rights-of-way would be regularly inspected by air patrol or, if necessary, by foot or vehicle, one to three times per year. Emergency repairs would be made if the transmission line were damaged and required immediate attention. Maintenance crews of fewer than 10 persons would use tools, trucks, assist trucks, aerial lift trucks, cranes and other equipment necessary for repairing and maintaining insulators, conductors, structures and access roads. Emissions generated by routine maintenance and inspection activities would be minimal and well below the SJVUAPCD's operational significant criteria because of the short-term and periodic nature of project operational activities. Potential impacts associated with proposed operations of the project are considered to be adverse, but less than significant (**Class III**).

C.2.3.6 Proposed Changes South of Gates Substation

PG&E has indicated that one option for the reconfiguration of the electrical system south of Gates Substation would require that the entire 70 miles of existing double circuit 230 kV line serving Gates-Arco-Midway be reconductored. Reconductoring requires removal of the existing conductors and installation of new conductors with greater capacity. According to PG&E, it is unlikely that this reconductoring would require structural enhancements to the existing towers, installation of new towers, or development of new access roads. This construction work would include limited or no ground disturbance. Implementation of the applicable SJVUAPCD Regulation VIII Control Measures would insure that all impacts associated with PM_{10} emissions (Impact 2-1) are less than significant (**Class III**).

With regard to ozone precursors, the reconductoring work would take place after the other components of the Proposed Project are complete. Therefore, emissions associated with reconductoring the existing 70-mile line south of the Gates Substation would not contribute to the emissions generated during the peak year of construction, as presented in Table C.2-9. Precursor emission levels generated by this phase of the project would be well under the SJVUAPCD's suggested significance threshold of 10 tons. Therefore, potential impacts associated with ozone precursor emissions (Impact 2-2) from the reconductoring south of Gates Substation would be less than significant (**Class III**).

C.2.4 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES FOR WESTERN CORRIDOR ALTERNATIVE SEGMENTS

There are four Western Corridor Alternative Segments to the Proposed Project (Segments 2A, 4A, 6A, and 6B). The SJVUAPCD has stated that transmission line route selection would have little impact on the level of emissions generated during construction, and that all routes could be expected to result in similar levels of emissions (SJVUAPCD, 2001b). Therefore, as described in Section C.2.3.4 for the Proposed Western Corridor, ozone precursor construction emissions in the form of NO_x would result in potentially significant and unmitigable impacts (Impact 2-1; **Class I**). Although NO_x emissions would not be mitigated to levels that are less than significant, Mitigation Measures **A-2** and **A-3** would reduce emission levels as much as feasible. With regard to fugitive dust, construction impacts would be less than significant with implementation of Regulation VII Control Measures (see Table C.2-6) and Mitigation Measure **A-1**, which are also described in Section C.2.3.4 (Impact 2-2; **Class II**).

C.2.5 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES FOR THE EASTERN CORRIDOR ALTERNATIVE

As mentioned above, it is the position of the SJVUAPCD that the route selection of the transmission line would have little impact on the level of emissions generated during construction, and that all routes could be expected to result in similar levels of emissions. However, the Eastern Corridor Alternative would not require construction of new access roads, as would be required for the proposed Western Corridor or Alternative Segments. This would reduce NO_x emissions associated with construction of the Eastern Corridor Alternative to approximately 23.1 tons compared to approximately 26.3 tons that were estimated for the Proposed Western Corridor. Nevertheless, 23.1 tons is still over the significance threshold of 10 tons for NO_x emissions. Therefore, as described in Section C.2.3.4 for the Proposed Western Corridor, the Eastern Corridor Alternative would result in ozone precursor construction emissions in the form of NO_x that would result in significant and unmitigable impacts (**Class I**). Although NO_x precursor emissions are not mitigable to levels that are less than significant, Mitigation Measures **A-2** and **A-3** would reduce emission levels as much as feasible. With regard to fugitive dust, construction impacts would be less than significant with implementation of Regulation VIII Control Measures (see Table C.2-6) and Mitigation Measure **A-1** (**Class II**), which are also described in Section C.2.3.4.

C.2.6 MITIGATION MONITORING, COMPLIANCE, AND REPORTING TABLE

Table C.2-10 presents the recommended mitigation measures for reduction of air quality impacts.

Table C.2-10 Mitigation Monitoring Program

Impact	Mitigation Measure	Location	Monitoring/ Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
Proposed Project and Alternatives						
2-1: Construction fugitive dust emission levels	**A-1:** The following procedures for reducing fugitive dust shall be implemented. Records documenting personnel awareness and the wind speed log shall be maintained at the construction site and shall be provided to CPUC's environmental monitor upon request. • Traffic speeds on unpaved roads shall not exceed 15 mph. PG&E shall insure that all project personnel (including contractors, subcontractors, and service company representatives) sign a statement acknowledging their awareness of the unpaved road speed limit restriction. The signed statement shall specify that 15 mph is the maximum speed limit on any unpaved road. • Wash off all truck tires and equipment leaving the construction site. PG&E shall insure that all project personnel (including contractors, subcontractors, and service company representatives) sign a statement acknowledging their awareness that tires and equipment leaving the construction site are to be washed. • Suspend excavation and grading activity when winds exceed 20 mph for a sustained period of 10 minutes, as measured by an anemometer. PG&E shall measure the wind speed with the anemometer when moderate to high winds occur, based on the fair judgment of a designated PG&E representative. PG&E shall maintain a written log to be maintained at the construction sites that documents day, time, and wind speed of each measurement.	All unpaved roads used by the construction crews; All construction sites adjacent to public roads; all construction sites where the ground will be disturbed	Construction plan; CPUC to monitor construction activities	PM_{10} emissions are reduced, Effectiveness cannot be monitored in the field	CPUC and the SJVUAPCD	During construction and operations, if applicable
2-2: Construction ozone precursor emission levels	**A-2:** Construction equipment shall be maintained in tune, per manufacturing specifications. PG&E/contractor shall provide a maintenance schedule for all vehicles and equipment. PG&E/contractor shall provide a certification from a third-party certified mechanic stating the timing of all internal combustion construction equipment engines has been properly maintained. PG&E/contractor shall re-certify each piece of construction equipment/vehicle based on the respective manufacturer maintenance schedule. Certifications shall be provided to the CPUC before the start of construction, and on an ongoing basis as new equipment is brought to the construction site.	All construction sites	Construction plan; CPUC to monitor construction activities	NO_x emissions are reduced, Effectiveness cannot be monitored in the field	CPUC and the SJVUAPCD	During construction
	A-3: Vehicles shall not idle in excess of ten minutes. PG&E shall ensure that project personnel operating vehicles (including contractors, subcontractors, and service company representatives) sign a statement acknowledging their awareness of the idling restrictions and these records shall be maintained at the construction site for inspection by the CPUC environmental monitor.	All construction sites	Construction plan; CPUC to monitor construction activities	NO_x emissions are reduced, Effectiveness cannot be monitored in the field	CPUC and the SJVUAPCD	During construction

C.2.7 REFERENCES

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