3.3: AIR QUALITY

Introduction

This section describes the existing air quality and the regulatory responsibilities for air quality in the project area, which lies within the boundaries of the Northern Sacramento Valley Air Basin (NSVAB). This section analyzes potential air quality impacts from construction activities and from operation of the proposed project.

Environmental Setting

REGIONAL SETTING

Ambient air quality is affected by local climate, topography, and pollutants emitted into the atmosphere.

Air Basin

The project study area is located in the NSVAB, which includes the counties of Colusa, Butte, Sutter, Yuba, Glenn, Tehama, and Shasta. The NSVAB is geographically bounded by the Coastal Mountain Range on the west and northwest, on the northeast by the lower end of the Cascade Mountain Range, and on the east by the north end of the Sierra Nevada Mountains. The mountains create a substantial physical barrier to locally created air pollution. The NSVAB is open to the south. The southern portion of the Sacramento Valley, which includes the metropolitan area of Sacramento, is also part of the same physical air basin. The NSVAB has been separated from the Sacramento area for air quality planning purposes due to the generally higher pollution levels and greater number of emission sources in the Sacramento area. Transport of pollutants from the greater Sacramento area into the NSVAB by prevailing winds is itself a significant source of the NSVAB's ambient air pollution.

Meteorology

The surrounding topography normally confines airflow along the Sacramento Valley axis. Winds in summer, especially by day, are up valley from the southeast through south. Winter winds, especially at night, are down valley from the northwest through north. Average wind speeds are around 8 mph with a low frequency of completely calm winds. Moderate speeds and an absence of calm winds minimize air stagnation and provide reasonable levels of dispersion from any locally generated air pollutants.

The valley is often capped by inversion layers that, combined with the geographic barriers and high summer temperatures, create an ideal atmosphere for elevated levels of photochemical ambient air pollution. However, because of a low population density in the air basin, smog levels are only marginally elevated compared to other California air basins.

Baseline Air Quality

The NSVAB has been designated as non-attainment or non-attainment-transitional (Glenn, Butte, and Colusa Counties) for the state ozone Ambient Air Quality Standard (AAQS). The southern tip of Sutter County is also designated as non-attainment for the federal AAQS for ozone. Ozone is the gas that forms in the atmosphere when 3 atoms of oxygen are combined. Ozone formed along earth's surface is an air pollutant that damages human health, vegetation, and many common materials. Ozone is a key element in urban smog (EPA 2002). The entire NSVAB has been designated as non-attainment for the state standard for particulate matter of less than 10 microns (PM-10). SHOULD BE PM_{10}Particulate matter (PM) is the general term used for a mixture of solid particles and liquid droplets found in the air. PM-10 particles are coarse particles approximately 10 micrometers in size that are generally emitted from sources such as cars and smokestacks (EPA 2002). All other pollutants for which there are AAQS are in attainment or are unclassified in the NSVAB. Non-attainment of the AAQS for ozone and for the state AAQS for particulate matter are the most significant air quality problems in the NSVAB.

Ozone and particulate air quality are monitored at many locations throughout the NSVAB. The stations most representative of the project area are located in Colusa, Chico, Willows, Yuba City, and at the Sutter Buttes (12 miles west of Yuba City, ozone only.) The maximum concentrations measured at these sites and the numbers of exceedances of AAQS from 1996 through 2000 are presented in Tables 3.3-1 through 3.3-4. Because these sites surround the project study area and display similar pollutant maximum concentrations, the data presented in Tables 3.3-1 through 3.3-4 are reasonably representative of the existing air quality for the project study area.

Table 3.3-1: Project Area Air Quality Monitoring Summary-City of Colusa, Colusa County (Days exceeding Standards*)

Pollutant	1996	1997	1998	1999	2000
Ozone:					
1-Hour >0.09 ppm (S)	5	0	2	1	0
1-Hour > 0.12 ppm (F)	0	0	0	0	0
Particulate Matter (PM-10):					
24-Hour > 50 μg/ m^3 (S)	3	2	1	11	0
24-Hour > 150 μg/ m^3 (F)	0	0	0	1	0
Max. 24-Hour μg/m^3	57	57	58	171	48

--: No Year 2000 Data
S: State Standard
F: Federal Standard
*: PM-10 is monitored only every sixth day; days per year with exceedances approximately six times the number of indicated violations.

SOURCE: WGSI 2001

Table 3.3-2: Project Area Air Quality Monitoring Summary-Chico (Butte County) (Days exceeding Standards*)

Pollutant	1996	1997	1998	1999	2000
Ozone:					
1-Hour >0.09 ppm (S)	2	0	2	7	1
1-Hour > 0.12 ppm (F)	0	0	0	1	0
8-Hour >0.08 ppm (F)	0	0	1	5	--
Max. 1-Hour (ppm)	0.11	0.09	0.11	0.14	0.10
Particulate Matter (PM-10):					
24-Hour > 50 μg/ m^3 (S)	3	4	4	7	2
24-Hour > 150 μg/ m^3 (F)	0	0	0	0	0
Max. 24-Hour μg/m^3	66	108	68	95	58

Pollutant	1996	1997	1998	1999	2000
Particulate Matter (PM-10):					
Annual Geometric mean ($\mu g/m^3$)	22	22	19	26	21

--: No Year 2000 Data
S: State Standard
F: Federal Standard
*: PM-10 is monitored only every sixth day; days per year with exceedances approximately six times the number of indicated violations.

SOURCE: WGSI 2000

Table 3.3-3: Project Area Air Quality Monitoring Summary-Willows (Glenn County) (Days exceeding Standards*)

Pollutant	1996	1997	1998	1999	2000
Ozone:					
1-Hour >0.09 ppm (S)	1	1	2	4	0
1-Hour > 0.12 ppm (F)	0	0	0	0	0
8-Hour >0.08 ppm (F)	0	0	1	2	--
Max. 1-Hour (ppm)	0.10	0.10	0.10	0.10	0.09
Particulate Matter (PM-10):					
24-Hour > 50 $\mu g/ m^3$ (S)	5	2	2	9	0
24-Hour > 150 $\mu g/ m^3$ (F)	0	0	0	0	0
Max. 24-Hour $\mu g/m^3$	75	72	53	88	49
Annual Geometric mean ($\mu g/m^3$)	20	19	17	20	18

--: No Year 2000 Data
S: State Standard
F: Federal Standard
*: PM-10 is monitored only every sixth day; days per year with exceedances approximately six times the number of indicated violations.

SOURCE: WGSI 2000

Table 3.3-4: Project Area Air Quality Monitoring Summary-Yuba (Sutter County) (Days exceeding Standards*)

Pollutant	1996	1997	1998	1999	2000
Ozone:					
1-Hour >0.09 ppm (S)	22	3	12	10	1
1-Hour > 0.12 ppm (F)	0	0	0	0	0
8-Hour >0.08 ppm (F)	4	0	5	1	--
Max. 1-Hour (ppm)	0.12	0.11	0.12	0.10	0.10
Particulate Matter (PM-10):					
24-Hour > 50 $\mu g/ m^3$ (S)	5	4	4	8	2
24-Hour > 150 $\mu g/ m^3$ (F)	0	0	0	0	0
Max. 24-Hour $\mu g/m^3$	82	98	60	150	70
Annual Geometric mean ($\mu g/m^3$)	26	25	20	30	22

--: No Year 2000 Data
S: State Standard
F: Federal Standard
*: PM-10 is monitored only every sixth day; days per year with exceedances approximately six times the number of indicated violations.

SOURCE: WGSI 2000

The California 24-hour PM-10 standard was exceeded fairly frequently during 1996 through 2000. The California annual geometric mean standard for PM-10 was exceeded only in Sutter County (marginally) in 1999 during this period. The results were attributed primarily to agricultural activities, dust generated by traffic, and wildfires. The less stringent federal standards were exceeded on only one 24-hour reading during any of these years. The dominance of agricultural activities in the project area reflect a common effect of such operations; difficulty in attaining state PM-10 standards.

Tables 3.3-1 through 3.3-4 showed that the California one-hour ozone standard was exceeded on average for 15 days per year in the four-county area during the 1996 through 2000 period (the exceedances reported at different stations may have been concurrent). Nearly two-thirds of these events occurred in Sutter County, to the south of the project area, probably primarily as a result of pollutant transport from the Sacramento metropolitan area.

Existing Project Emissions

Existing combustion equipment installed at the Wild Goose Gas Storage Project Remote Facility Site in Butte County during the initial project development includes the following:

- Two 3,335 horsepower gas-engine-driven reciprocating natural gas compressors

- Two dehydration units (triethylene glycol/natural gas contactor towers with natural-gas-fired glycol reboilers)
- One thermal oxidizer for the still vapors from the dehydration units
- One natural gas-fueled standby generator.

The compressor engines utilize clean burn combustion chamber design as best available control technology (BACT), and the reboiler burners are of low emissions design.

WGSI's Permit to Operate (Number WGS-09-01) issued by the Butte County Air Quality Management District (AQMD) has enforceable conditions limiting total annual emissions of nitrous oxides (NO_x) and reactive organic gases (ROG) from all combustion equipment to below 25 tons per year on a rolling monthly basis. Emission limits are monitored using fuel consumption for each piece of combustion equipment. Based on current operations and measured fuel usage to date, average actual annual emissions are stated by the applicant to be less than 11 tons of NO_x and less than one ton of ROG. By retrofitting existing sources with Best Available Control Technology (BACT), and by using BACT on proposed new sources, the applicant proposes to maintain annual nitrogen oxide emissions at less than the 25-ton/year significance threshold.

Regulatory Setting

FEDERAL SETTING

Ambient Air Quality Standards (AAQS)

To gauge the significance of the air quality impacts of the proposed storage facility 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, (sensitive receptors). Healthy adults can tolerate occasional exposure to air pollutant concentrations considerably above these minimum standards before adverse effects are observed. Recent research has shown, however, that chronic exposure to ozone (the primary ingredient in photochemical smog) may lead to adverse respiratory health even at concentrations close to the ambient standard.

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 has now been further extended in air quality problem areas like Southern California until the year 2010.

The Federal Clean Air Act Amendments (CAAA) of 1990 required that the U.S. Environment Protection Agency (EPA) review all national AAQS in light of currently known health effects. EPA was charged with modifying existing standards or promulgating new ones

where appropriate. EPA subsequently developed standards for chronic ozone exposure (8+ hours per day) and for very small diameter particulate matter (called "PM-2.5"). New national AAQS were adopted on July 17, 1997.

Planning and enforcement of the new federal standards for PM-2.5 and for ozone (8-hour) were put on hold through a decision by the U.S. Court of Appeals. The Appeals Court ruled that EPA did not have discretionary authority to adopt national clean air standards without specific congressional approval. The Court refused the request for a rehearing filed on behalf of EPA by the Department of Justice. The U.S. Supreme Court heard the appeal in late 2000. In a unanimous decision published at the end of February 2001, the court ruled that EPA did not require specific congressional authorization to adopt national clean air standards. The court also ruled that health-based standards did not require preparation of a cost/benefit analysis. The court did find, however, that there was some inconsistency between existing and "new" standards in their respective attainment schedules. Data collection for these standards is therefore on going, but attainment planning and enforcement is delayed until the schedule issues are resolved.

STATE/REGIONAL SETTING

Ambient Air Quality Standards (AAQS)

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 3.3-5. California standards for PM-10, which includes PM-2.5, are more stringent than the federal PM-2.5 standard.

LOCAL SETTING

At the local level, air quality is managed through land use and development planning practices. The practices are implemented in Butte, Colusa, Sutter, Yuba, and Glenn Counties through the counties' general planning processes. WGSI's Permit to Operate (Number WGS-09-01) was issued by the Butte County Air Quality Management District. The proposed project would be regulated under the jurisdiction of the Butte County Air Quality Management District (AQMD), the Colusa County Air Quality Management District, the Sutter County-Feather River Air Quality Management District, and the Glenn County Air Quality Management District. The Air Quality Management Districts are responsible for establishing and enforcing local air quality rules and regulations that address the requirements of federal and state air quality laws.

Butte County utilizes the Indirect Source Review Guidelines (Appendix G) in order to reduce emissions in the NSVAB and utilize mitigation to produce a less than significant effect on air quality within the basin.

Table 3.3-5: Federal and California Ambient Air Quality Standards

Ambient Air Quality Standards						
Pollutant	**Averaging Time**	**California Standards [1]**		**Federal Standards [2]**		
		Concentration [3]	**Method [4]**	**Primary [3,5]**	**Secondary [3,6]**	**Method [7]**
Ozone (O_3)	1 Hour	0.09 ppm (180 µg/m³)	Ultraviolet Photometry	0.12 ppm (235 µg/m³)[8]	Same as Primary Standard	Ethylene Chemiluminescence
	8 Hour	—		0.08 ppm (157 µg/m³)		
Respirable Particulate Matter (PM_{10})	Annual Geometric Mean	30 µg/m³	Size Selective Inlet Sampler ARB Method P (8/22/85)	—	Same as Primary Standard	Inertial Separation and Gravimetic Analysis
	24 Hour	50 µg/m³		150 µg/m³		
	Annual Arithmetic Mean	—		50 µg/m³		
Fine Particulate Matter ($PM_{2.5}$)	24 Hour	No Separate State Standard		65 µg/m³	Same as Primary Standard	Inertial Separation and Gravimetic Analysis
	Annual Arithmetic Mean			15 µg/m³		
Carbon Monoxide (CO)	8 Hour	9.0 ppm (10 mg/m³)	Non-dispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m³)	None	Non-dispersive Infrared Photometry (NDIR)
	1 Hour	20 ppm (23 mg/m³)		35 ppm (40 mg/m³)		
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m³)		—		
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	—	Gas Phase Chemiluminescence	0.053 ppm (100 µg/m³)	Same as Primary Standard	Gas Phase Chemiluminescence
	1 Hour	0.25 ppm (470 µg/m³)		—		
Lead	30 days average	1.5 µg/m³	AIHL Method 54 (12/74) Atomic Absorption	—	—	High Volume Sampler and Atomic Absorption
	Calendar Quarter	—		1.5 µg/m³	Same as Primary Standard	
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	—	Fluorescence	0.030 ppm (80 µg/m³)	—	Pararosoaniline
	24 Hour	0.04 ppm (105 µg/m³)		0.14 ppm (365 µg/m³)	—	
	3 Hour	—		—	0.5 ppm (1300 µg/m³)	
	1 Hour	0.25 ppm (655 µg/m³)		—	—	
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 µg/m³	Turbidimetric Barium Sulfate-AIHL Method 61 (2/76)			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m³)	Cadmium Hydroxide STRactan			

1. California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1 and 24 hour), Nitrogen dioxide, suspended particulate matter—PM10, and visibility reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations. In addition, Section 70200.5 lists vinyl chloride (chloroethene) under "Ambient Air Quality Standards for Hazardous

Substances." In 1978, the California Air Resources Board (ARB) adopted the vinyl chloride standard of 0.010 ppm (26 mg/m3) averaged over a 24-hour period and measured by gas chromatography.

The standard notes that vinyl chloride is a "known human and animal carcinogen" and that "low-level effects are undefined, but are potentially serious. Level is not a threshold level and does not necessarily protect against harm. Level specified is lowest level at which violation can be reliably detected by the method specified. Ambient concentrations at or above the standard constitute an endangerment to the health of the public."

In 1990, the ARB identified vinyl chloride as a Toxic Air Contaminant and determined that there was not sufficient available scientific evidence to support the identification of a threshold exposure level. This action allows the implementation of health-protective control measures at levels below the 0.010-ppm ambient concentration specified in the 1978 standard.

2. National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest eight-hour concentration in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24-hour standard is attained when 99 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. For PM2.5, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard.

Contact U.S. EPA for further clarification and current federal policies.

3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 mm of mercury. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 mm of mercury (1,013.2 millibar); ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

4. Any equivalent procedure, which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard, may be used. 5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

7. Reference method as described by the EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the EPA.

8. New federal 8-hour ozone and fine particulate matter standards were promulgated by the U.S. EPA on July 18, 1997. The federal 1-hour ozone standard continues to apply in areas that violated the standard. Contact U.S. EPA for further clarification and current federal policies.

SOURCE: California Air Resources Board, 1999

Environmental Analysis

AREAS OF POTENTIAL ENVIRONMENTAL CONCERN

The following topics are areas of potential environmental concern that may be associated with implementation of the proposed project:

- Conflict with or obstruct implementation of the applicable air quality plan
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions, which exceed quantitative thresholds for ozone precursors)

- Expose sensitive receptors to substantial pollutant concentrations
- Create objectionable odors affecting a substantial number of people

THRESHOLD OF SIGNIFICANCE

Air quality impacts would be significant if they caused a violation of ambient air quality standards, or if they exposed people to air pollutants that caused harm or nuisance for which no "safe" exposure standard exists.

Many air pollutants require additional chemical transformations to reach their most unhealthful levels. These processes require several hours or even days to occur. By the time the conversion is completed, emissions from a given pollution source would be diluted to microscopic levels. Most air quality issues are therefore the cumulative sum of all individual sources covering the entire air basin. Because it is impossible to isolate the impact of a single source, some air quality management jurisdictions have adopted thresholds based upon the level of emissions released even if the source specific impact cannot be quantified.

The project is under the jurisdiction of the Butte County Air Quality Management District (AQMD). The AQMD utilizes the Indirect Source Review Guidelines to aide the decision makers in CEQA/NEPA analyses. CEQA states that effects are less than significant if they comply with the rules and regulations of agencies that regulate a given class of impact. The AQMD rules meet CEQA Guideline tests for appropriate governing regulations. Compliance with AQMD requirements is thus seen as a sufficient basis to support a finding of a less than significant impact for those emissions sources regulated by the air district. Impacts from sources not regulated by district rules are presumed less than significant since the emissions level is a de minimis level exempt from regulations.

The Indirect Source Review Guidelines establish Action Level Thresholds "A", "B", and "C" to determine the extent of the indirect source impacts resulting from projects and as a basis from which to apply mitigation measures. The three action level thresholds are:

- **Level A:** Indirect sources which have the potential to emit less than 25 pounds per day of ROG or No_x, or less than 80 pounds per day of PM10 (as calculated by the District), would be subject to the recommended list of standard mitigation measure unless exempted in writing by the applicable planning agency (See Section VI, Mitigation Measures). Developers would be required to coordinate with the planning agencies to identify feasible mitigation measures.
- **Level B**: Indirect sources which have the potential to emit 25 pounds per day of ROG or NO_x, or 80 pounds per day of PM10, or any nonattainment criteria pollutant (as calculated by the District) would select as many supplemental mitigation measures as are feasible, in addition to the recommended list of standard mitigation measures (see Section VI, Mitigation Measures). Developers would be required to coordinate with the Planning Agencies to identify feasible mitigation measures.
- **Level C**: Indirect sources which have the potential to emit 137 pounds per day or greater (25 tons per year) of ROG or NO_X, PM10, or any nonattainment criteria pollutant (as calculated by the District) would select as many supplemental mitigation measures as are feasible, in addition to the recommended list of standard mitigation measures (see Section VI, Mitigation Measures). Developers would be required to coordinate with the Planning Agencies to identify feasible mitigation measures.

Depending on factors specific to the project, an environmental impact report may also be necessary under the California Environment Quality Act (CEQA)

IMPACT DISCUSSION

The majority of project impacts would result from construction of the various project components. The following analysis describes the worst-case impacts to air quality within the entire project area. The impact analysis follows the guidelines of the Butte County Air Quality Management District. Representatives of the Sutter County-Feather River, Colusa County, and Glenn County Air Districts stated that Butte County Air Quality Management guidelines and suggested mitigation would be sufficient for addressing air impacts in all four counties (Krug 2002; Matlock 2002; and Stuart 2002).

Impact 3.3-1: Potential to Conflict with or Obstruct Implementation of the Applicable Air Quality Plan.

Air quality plans, both within the air basin and in California, encourage use of natural gas as a "clean fuel" replacement for liquid or solid fuels. The proposed project would facilitate those planning objectives. The air quality plan implicitly incorporated all the rules and regulations of the Butte County AQMD. The present and future project complies with, and would continue to comply with, these rules. There is therefore no conflict with the applicable air quality plan.

Level of Significance Without Mitigation. There is no conflict with the air quality plan and therefore no impact.

Mitigation Measures. No mitigation is required

Impact 3.3-2: Potential to Violate Any Air Quality Standard or Contribute Substantially to an Existing or Projected Air Quality Violation

Construction Impacts. Standards for ozone and particulate matter are exceeded in the air basin. The proposed project may generate air emissions that could substantially exacerbate these violations. All other standards are met with large margins of safety. Project-related emissions would be generated during construction and from facility operations.

Construction Equipment Emissions. In order to determine a "worst-case scenario" with the greatest potential for air quality impacts during construction, equipment emissions were estimated for the various construction activities, and then the schedule was reviewed to determine the period when the activities with the greatest potential emission could occur simultaneously. The peak period for construction emissions was determined to be during the summer of 2003, when work on the Line 400/401 Connection Pipeline, the Delevan Interconnect Facility, the mechanical and electrical components at the Remote Facility Site, and the well drilling at the Well Pad Site would occur. This period represents the worst-case scenario for air emissions.

Exhaust emissions of NO_x, ROG, carbon monoxide (CO), sulfur dioxide (SO_2), and PM-10 would occur from internal combustion engines in dump trucks, dozers, scrapers, excavators and other heavy construction equipment, and from construction workers' cars and supply trucks traveling to and from the work site. During the worst-case construction emission scenario, it is anticipated that there could be up to 204 construction workers,

with approximately 65 of them working on the pipeline. Local workers and non-local workers staying in motels are expected to travel an average of 25 miles (one-way) to the jobsite. The pipeline contractor would have staging areas at various locations where bus transportation would be provided for pipeline construction personnel.

The equipment assumed and the project-generated emissions for the worst-case scenario are shown in Tables 3.3-6 through 3.3-11. For assessment purposes, all of the construction sub-tasks associated with these activities were assumed to be simultaneously operating at peak loads. The total concurrent estimated peak day emissions for this hypothetical maximum-activity, worst-case are shown in Table 3.3-11 in pounds and tons per day. Under actual conditions, the worst-case scenario is very unlikely to occur.

Theoretical worst-case project related construction emissions would range from 0.06 tons per day of SO_2 to 1.67 tons of PM-10 and 1.71 tons of NO_x per day. These emissions would place the proposed project under Action Level "C" according to the Indirect Source Review Guidelines. The PM-10 emissions alone would create a significant effect on air quality (Williams 2002).

Fugitive Dust. One pollutant of concern during construction would be fugitive dust (PM-10 emissions) generated from the disturbance of soil during pipeline clearing, grading, trenching, and backfilling, construction vehicle movement, and excavation, and placement of fill dirt at the Well Pad Site and Remote Facility Site. Fugitive dust can also be generated by wind erosion of disturbed areas prior to the re-establishment of vegetation. The basin is a non-attainment area for PM-10. Project construction would incrementally increase PM-10 levels. With implementation of mitigation, the presumed impact is considered less than significant on a regional scale in light of the already substantial agricultural activity PM-10 emissions.

In addition to its contribution to regional air pollution, dust depositing on the leaves of fruit and nut orchard trees along the Line 400/401 Connection Pipeline route near the Sacramento River may adversely affect production. While the project's contribution to local PM-10 emissions would not be considered significant, the possible impact to orchard production along the pipeline route near the Sacramento River would be considered potentially adverse.

EPA's AP-42 ("Compilation of Air Pollutant Emission Factors") states that the dust deposition distance from large diameter fugitive dust is generally within 50 feet of the activity. Dust deposition on orchard trees would thus occur only on the first tier of trees closest to the activity. When orchard trees are present within 50 feet adjacent to a construction site, use of enhanced dust control procedures beyond the minimum requirements of Butte County AQMD Rule 207 is recommended. Rule 207 requires use of "reasonable precautions" for dust control. Use of best available control measures (BACMs) that go beyond reasonable precautions is thus recommended when working very close to orchard trees. WGSI mitigation measure 3.3-7 follows the requirements of Rule 207.

Table 3.3-6: Maximum Daily Construction Emissions (Pounds per day)– Pipeline Construction

Equipment Type	ROG	CO	NO_x	SO_2	PM-10
Pickup (16)	10.71	26.78	171.87	4.35	8.46
Passenger Bus (2)	0.67	1.67	10.74	0.27	0.53
Truck, 3/4-1T (16)	28.56	75.30	215.46	6.25	21.01
Truck, 2-5T (10)	20.26	53.46	152.86	4.43	14.91
Dump Truck, 6-10 yards (6)	24.31	64.11	183.44	5.32	17.89
Truck Tractor (10)	57.89	152.64	436.75	12.66	42.60
Dozer, D6 (6)	8.36	28.53	142.73	3.58	8.59
Dozer, D7 (8)	14.09	48.11	240.68	6.03	14.49
Backhoe (7)	22.96	60.55	173.24	5.02	16.90
Excavator (1)	4.05	10.69	30.57	0.89	2.98
Trencher (1)	4.82	12.72	36.40	1.06	3.55
Side boom Tractor (11)	15.32	52.31	261.67	6.56	15.95
Truck Crane, 25 T (1)	2.13	7.27	36.38	0.91	2.19
Loader (3)	9.84	25.95	74.25	2.15	7.24
Motor Grader (1)	1.23	4.20	20.99	0.53	1.26
Boring Machine (1)	1.23	4.20	20.99	0.53	1.26
Drilling Rig	19.67	67.14	335.83	8.41	20.21
Welder (16)	19.03	52.86	67.84	1.89	6.68
Air Compressor (4)	8.72	30.75	68.01	1.59	5.01
Construction Dust	----	----	----	----	3090.91
Worker Commute (65)	1.88	22.39	4.80	0.00	2.37
Total	275.74	801.31	2685.52	72.40	3304.80

SOURCE: WGSI 2001

Table 3.3-7: Maximum Daily Construction Emissions (Pounds per day)– Delevan Interconnect Facility

Equipment Type	ROG	CO	NO_x	SO_2	PM-10
Pickup (22)	1.34	3.35	21.48	0.54	1.06
Truck, 3/4-1T (1)	1.78	4.71	13.47	0.39	1.31
Dozer, D6 (1)	0.70	2.38	11.89	0.30	0.72
Backhoe (1)	1.64	4.32	12.37	0.36	1.21

Equipment Type	ROG	CO	NO_x	SO_2	PM-10
Truck 2-5T w/ boom (1)	2.03	5.34	15.29	0.44	1.49
Welder (2)	2.38	6.61	8.48	0.24	0.84
Air Compressor (1)	2.18	7.69	17.00	0.40	1.25
Construction Dust	----	----	---	----	3.00
Worker Commute (20)	0.58	6.89	1.48	0.00	0.73
Total	12.63	41.28	101.47	2.67	11.60

SOURCE: WGSI 2001

Table 3.3-8: Maximum Daily Construction Emissions (Pounds per day)– Well Pad Site

Equipment Type	ROG	CO	NOx	SO_2	PM-10
Drilling Rig (1)	3.20	46.00	319.60	33.00	4.20
Worker Commute (32)	0.93	11.02	2.37	0.00	1.17
Total	4.13	57.02	321.97	33.00	5.37

SOURCE: WGSI 2001

Table 3.3-9: Maximum Daily Construction Emissions (Pounds per day)– Remote Facility Site (Mechanical)

Equipment Type	ROG	CO	NO_x	SO_2	PM-10
Pickup (4)	2.68	6.70	42.97	1.09	2.12
Truck, 3/4-1T (3)	5.35	14.12	40.40	1.17	3.94
Truck, 2-5T (1)	2.03	5.34	15.29	0.44	1.49
Truck Crane, 25T (1)	2.13	7.27	36.38	0.91	2.19
Welder (3)	3.57	9.91	12.72	0.36	1.25
Air Compressor (3)	6.54	23.06	51.01	1.19	3.76
Materials Deliveries	0.66	9.78	6.50	0.00	0.72
Worker Commute (42)	1.22	14.47	3.10	0.00	1.53
Total	24.18	90.65	208.37	5.16	17.00

SOURCE: WGSI 2001

Table 3.3-10: Maximum Daily Construction Emissions (Pounds per day)– Remote Facility Site (Electrical/Instrumentation)

Equipment Type	ROG	CO	NO_x	SO_2	PM-10
Pickup (5)	3.35	8.37	53.71	1.36	2.64
Truck, 3/4-1T (4)	7.14	18.83	53.87	1.56	5.25
Worker Commute (45)	1.30	15.50	3.33	0.00	1.64
Total	11.79	42.70	110.90	2.92	9.54

SOURCE: WGSI 2001

Table 3.3-11: Total Maximum Daily Construction Emissions Results

Total Project Results	ROG	CO	NO_x	SO_2	PM-10
Concurrent Worst-Case Emissions Peak Day Totals, Pounds per Day	328.46	1033.27	3428.23	116.17	3348.31
Concurrent Worst-Case Emissions Peak Day Totals, Ton per Day	0.16	0.52	1.71	0.06	1.67

SOURCE: WGSI 2001

Operational Impacts. Air pollutants associated with the operation of the proposed project could be emitted from the following equipment:

- Combustion equipment (natural-gas-fired compressor engines, glycol dehydrator reboilers, thermal oxidizer, and standby generator)
- Relief vent system
- Fugitive natural gas emissions from valves and flanges

Combustion Equipment Emissions. Combustion equipment associated with the proposed expansion would include three additional compressor units and two additional dehydration units. These new combustion units would include best available control technology (BACT) as determined by the Butte County AQMD. Assuming the same emission rates as the existing equipment, the cumulative site emissions would exceed the 25-ton level for NOx and trigger the requirement for offsets. WGSI would apply BACT to both the existing compressor engines, and equip the new compressor engines with Selective Catalytic Reduction (SCR). Based upon preliminary data, the "potential to emit" (maximum theoretical emissions) would be less than 25 tons per year for nitrogen oxides. The applicant is further prepared to accept a limit of 100 hours per year of operation of the emergency generator. This restriction would reduce the project's potential to emit by an additional 1.85 tons per year for nitrogen oxides. The maximum possible NOx increase would be 5 tons above existing annual levels, and well below the 25-ton/year threshold of significance. Annual air quality impacts from the combustion of natural gas to operate the

compressors, glycol reboiler burners and the glycol still vent flare would be less than significant.

Glycol solutions may emit small amounts of toxic air contaminants when they are heated. EPA AP-42 states as follows:

> "Regeneration of the glycol solutions used for dehydrating natural gas can release significant quantities of benzene, toluene, ethylbenzene, and xylene, and a wide range of less toxic organics" (Section 5.3-1, Natural Gas Processing).

There is no available emissions data for toxic air contaminants (TACs) from existing or proposed gas dehydration units. Although the EPA document states that significant quantities of TACs are released, the large source receptor distances is expected to dilute carcinogenic emissions from the glycol regeneration to less-than-significant levels. Because the glycol still emissions are burned in the thermal oxidizer with a destruction efficiency of 99+ percent, the already small amount of TACs is further dramatically reduced before any release to the atmosphere.

Combustion emissions may be released during workover and other well servicing activities. Portable units providing such services are exempt from AQMD regulation. The quantity of emissions generated from such intermittent activities is small on an annual basis, and the nearest receptors are located well away from the well fields where such activities occasionally occur. In the absence of any thresholds and the exemption of such sources from local regulation, impacts are presumed less than significant.

Pressure Relief and Blowdown Vent. Venting natural gas and relieving the pressure (termed "blowdown") is required on natural gas pipelines during normal operations and for certain infrequent maintenance activities where pressurized pipe represents a safety hazard. These valves are vented directly to the atmosphere. Annual emissions of any reactive organic compounds (ROC) within the predominantly methane gas fraction are currently 0.70 tons per year. At proposed full additional production, the annual ROC emissions from blowdown would increase to 1.40 tons. The impact from such an emission level, dispersed throughout the length of the storage and distribution system, is minimal at any individual receptor location.

Pressure relief from compressor station piping is necessary for safe operation of the facility. The WGSI gas compressor facility, like all gas facilities, has incorporated a number of redundant safety systems into the overall operation of the facility. During normal operations, sectional piping is usually automatically blown down whenever a compressor unit shuts down. Sensors in the compressor building monitor air gas composition. Methane levels at 40% and higher or a fire would trigger activation of emergency shutdown (ESD) valves, which blow down the entire facility. Both of these blowdowns are rapid depressurization and are routed to a silencer for noise attenuation. The third type of depressurization is via the pressure safety valves. These valves activate only when the pressure exceeds the safe operating parameters of piping or vessels. Under these circumstances, the safest method is to immediately relieve the pressure directly to the atmosphere, not by a controlled release through a silencer. In normal operating mode and even under the first level of alarm mode where the ESDs are activated, the pressure relief valves do not open.

Based on operating experience to date, sectional blowdowns following a compressor shutdown occur an average of four times per week during the summer injection season, approximately two or three ESD releases per year may occur, and the complete system maintenance blowdown would occur only once each year.

The main line block valve lot(s) would also be equipped with manual blowdown valves to evacuate natural gas or relieve pressure from the pipeline, either partially or completely, if needed for emergency situations or for the infrequent pipeline maintenance activity that requires de-pressurization. The volume of gas released would depend on which portion(s) of the pipeline are being blown down by the particular valve, and the extent to which pressure is relieved. For maintenance blowdowns, the pipeline operator would remove as much of the gas as possible, injecting it into storage prior to depressurizing the pipeline. The existing Permit to Operate allows blowdown for emergencies or scheduled maintenance. The permit does not set emissions limits since methane, the principal component of natural gas, is not a regulated emission. As such, no significant air quality impacts would result from blowdowns.

Blowdown releases substantial quantities of methane to the atmosphere. There are no ambient air quality standards for methane, and there is a massive global background concentration from biogenic decay processes. Methane is a greenhouse gas that is believed to be related to global warming. Limited numbers of blowdown events would add a microscopic methane increment to the existing global burden and has an insignificant impact.

Valves and Flanges. Fugitive natural gas emissions from incidental leakage at the valves and flanges on the pipeline, compression and dehydration facilities, and wellhead facilities may also occur. Fugitive emissions are difficult to predict by their nature, and depend on the number and types of valves or connections used and the frequency of maintenance to repair leaks. Most valves for the pipeline, compressions and dehydration facilities, and wellhead facilities would be full-opening, flanged ball valves. Except where necessary for maintenance, all steel piping would be welded, thus minimizing the number of flanges. Good maintenance and safety practices would also minimize leakage from valves and flanges, and leaks would be repaired promptly.

Abandoned and Working Wells. Leakage from wells may occur over time due to long term well seal deterioration. Wells were abandoned according to DOGGR specifications, and are periodically tested for leaks using an organic vapor analyzer. Organic gas emissions have been found to be minimal to date. Any future substantial well leaks would be a basis for re-abandonment with new seals.

Level of Significance Without Mitigation. The project would create a significant impact on air quality.

Mitigation Measures. The following measures would be followed to mitigate any air impacts to be less than significant. The measures are proposed by WGSI and follow the suggested mitigation provided by the Butte County Indirect Source Review Guidelines.

Construction Emissions from Construction Vehicles and Equipment. Although construction vehicle emissions are minimal relative to the ambient emission levels and are a shorter construction time, the following mitigation measures have been incorporated into the project to reduce ROG and NOx emissions during construction activities:

WGSI Measure 3.3-1. Workers will be bussed from staging areas to the daily pipeline work site to minimize emissions from workers' vehicles.

WGSI Measure 3.3-2. Car-pooling will be encouraged among construction workers through contractor bid specifications and project orientation training for workers.

WGSI Measure 3.3-3. Vehicles used in construction activities will be tuned per the manufacturer's recommended maintenance schedule, or at least annually thereafter.

Fugitive Dust. The following mitigation measures have been incorporated into the project to ensure PM-10 emissions are minimized during construction activities:

WGSI Measure 3.3-4. Beginning with the initial clearing and continuing until the disturbed area is restored, water will be applied to disturbed areas as necessary (at least twice daily) to reduce dust when vehicle traffic is present.

WGSI Measure 3.3-5. If construction of the Line 400 /401 Connection Pipeline along the orchards near the Sacramento River must occur during the growing season (anytime between bud break and the conclusion of harvest), additional water will be applied as necessary to minimize dust or vehicle speeds will be limited to 15 mph.

WGSI Measure 3.3-6. Construction vehicles will use paved roads to access the ROW wherever possible.

WGSI Measure 3.3-7. Any soil or mud deposited by construction equipment on paved roads near the egress from unpaved areas will be removed on a daily basis.

WGSI Measure 3.3-8. Following the completion of construction, disturbed areas will be stabilized as prescribed in the Restoration and Monitoring Plan.

Mitigation Measure 3.3-1. WGSI shall use adequate dust control measures that are implemented in a timely and effective manner during all phases of project development.

Mitigation Measure 3.3-2. Vehicle speeds shall be limited to 15 mph on private unpaved roads and the ROW, or as required to control dust.

Mitigation Measure 3.3-3. Open haul trucks shall be covered with tarps both on and off the work site.

Mitigation Measure 3.3-4. WGSI shall construct an area to wash all heavy equipment vehicle tires before entering paved roadways.

Mitigation Measure 3.3-5. WGSI shall utilize chemical soil stabilizers on inactive construction areas (disturbed lands within construction projects that are unused for at least four consecutive days).

Mitigation Measure 3.3-6. Land clearing, grading, earth moving or excavation activities shall be suspended when winds exceed 20 miles per hour within the project area.

Mitigation Measure 3.3-7. WGSI shall use alternatives to open burning of vegetative material on the project site unless otherwise deemed infeasible by the AQMD (Among suitable alternatives are chipping, mulching, or conversion to biomass fuel).

Mitigation Measure 3.3-8. WGSI shall cover all inactive storage piles during construction and operation of the proposed project.

Mitigation Measure 3.3-9. WGSI shall post a publicly visible sign with the telephone number and person to contact regarding dust complaints at all major construction and operation areas. This person shall respond and take corrective action within 24 hours. The

telephone number of the AQMD shall also be visible to ensure compliance with BCAQMD Rule 201 & 207 (Nuisance and Fugitive Dust Emissions).

Mitigation Measure 3.3-10. Prior to final occupancy, the applicant shall demonstrate that all ground surfaces have been covered or treated sufficiently to minimize fugitive dust emissions.

Mitigation Measure 3.3-11. WGSI shall use fleet vehicles that use clean-burning fuels as may be practical.

Mitigation Measure 3.3-12: WGSI shall use non-toxic binders on exposed areas after cut and fill operation and hydroseed areas.

With the implementation of these mitigation measures, PM-10 emissions from construction activities would be further reduced and are considered less than significant.

Operations Combustion Equipment. As described above, the combustion equipment associated with the proposed expansion could exceed the 25-ton threshold authorized by the current facility air permit. The project would retrofit existing facilities, and use BACT (Selective Catalytic Reduction) on new facilities to remain under the 25-ton per year emissions cap. Butte County AQMD would confirm that potential air quality impacts associated with the proposed expansion are less than significant. WGSI will provide a copy of the Authority to construct and/or Amended Permit to Operate to the CPUC prior to construction of the proposed combustion facilities and equipment.

Pressure Relief and Blowdown Vents. No specific mitigation measures are required for these types of vents, since methane is not a regulated emission. Consequently, infrequent and short-term emissions would not cause or contribute to any failure to meet NSVAB requirements to attain the AAQS. Good maintenance practices would also minimize the need for relief vent operations. Although natural gas odor would be present following a blowdown, no substantial numbers of people are located in the vicinity of such events. Consequently, the odor associated with this infrequent event would not be significant.

Valves and Flanges. Although fugitive natural gas emissions and odors from valves and flanges are difficult to quantify, the following mitigation measures would minimize these fugitive emissions.

WGSI Measure 3.3-9. Valves and flanges will be subject to a leak test following installation and following any maintenance on the valve.

WGSI Measure 3.3-10. Welded connections will be used to the extent feasible to minimize the number of flanges.

WGSI Measure 3.3-11. Unless necessitated by specific design requirements or valve location limitations, pipeline pressure valve actuators will not be used by WGSI. Pneumatic valve actuators are presently powered by compressed air. PG&E may use natural gas valve actuators on its portions of the Interconnect Sites, and WGSI may use similar actuators for its main line block valve(s) if they must be remotely operated. However, the remote location of these facilities should preclude any odor impacts.

Impact 3.3-3: Potential to Result in a Cumulatively Considerable Net Increase of any Criteria Pollutant for Which the Project Region is Non-attainment Under an Applicable Federal or State Ambient Air Quality Standard (Including Releasing Emissions, Which Exceed Quantitative Thresholds for Ozone Precursors)

Cumulative impacts could result during operation of some new facilities simultaneously with construction of the second phase of proposed improvements. The margin of safety between maximum annual operational emissions and the adopted significance threshold is more than adequate to simultaneously accommodate both operational and construction emissions without exceeding the relevant thresholds. Compliance with AQMD rules on operational emissions and substantial source-receptor distances to pollution-sensitive uses is further presumed to maintain a less than significant air quality impact.

Level of Significance Without Mitigation. The cumulative net increase of any criteria pollutants would be less than significant.

Mitigation Measures. No mitigation is required.

Impact 3.3-4: Potential to Expose Sensitive Receptors to Substantial Pollutant Concentrations

The Hazards section (Section 3.7) in this document lists and evaluates the location of the closest sensitive receptors to the project components, analyzes the impacts, and addresses mitigation. Sensitive receptors may be located on the same property during construction of the pipeline. Construction would be short term and mitigation (as stated in the Hazards section and Impact 3.3-2 in this section) would be applied to minimize the effect on air quality to less than significant effect. The closest sensitive receptor to an operational emission source of the proposed project is located at the Well Pad Site. The closest sensitive receptor is a residence 1700 feet north of the Well Pad Site. The buffer distance between operational emissions of any substantial levels of air pollution and sensitive receptors is believed to be large enough to reduce such emissions by turbulent dispersion to less than significant levels.

Level of Significance Without Mitigation. The impact on sensitive receptors would be less than significant.

Mitigation Measures. No mitigation is required.

Impact 3.3-5: Potential to Create Objectionable Odors Affecting a Substantial Number of People

During a blowdown, the odor of the natural gas vented would be temporarily present in the vicinity of the vent. Residences near the aboveground facilities may infrequently detect natural gas odors. Due to the infrequency of blowdowns and/or the distance to the nearest residences, these odors would not be considered a significant impact. The AQMD has confirmed that no odor complaints have ever been registered related to existing WGSI operations. Although the frequency of natural gas releases during blowdown may increase, the mechanism and magnitude of an individual event would remain unchanged.

The automatic natural gas valve actuators commonly used in valve lots and compressor stations can be a potential source of natural gas emissions. These actuators may use the pipeline pressure to operate the valve, resulting in a constant bleed of natural gas during valve operations. The potential impact of these emissions is the odor of natural gas. Since

the gas coming from the PG&E line would be odorized, natural gas odors may be present wherever these valve types are used. For the required modifications and connections to PG&E's system at the existing Line 167 interconnect and the proposed Delevan Interconnect Facility, this type of valve actuator would likely be used by PG&E. All WGSI valves at the Remote Facility Site and Well Pad Site would use compressed air (pneumatic) actuators, so these valves would not be an odor source. However, the remoteness of the Delevan Interconnect Facility and the main line block valve lot(s) may necessitate the use of pipeline pressure actuators if it is not feasible to install an air compressor for pneumatic valve actuators. Due to the extremely small quantities of natural gas released by valves and flanges and/or the distance to the nearest residences, these odors would not be considered a significant impact.

As mitigated above, emissions from project valves and flanges would be negligible. Natural gas odors would be minimal (if any), only in the immediate vicinity of the valve or flange, and dispersed by even a light breeze. The odors associated with these fugitive emissions, as mitigated, are considered less than significant.

Level of Significance Without Mitigation. The potential to create objectionable orders would be less than significant.

Mitigation Measures. The above measures are proposed by WGSI as conditions of the project. With incorporation of these measures no further mitigation is required.