TORCH
OPERATING COMPANY
A Subsidiary of Torch Energy Advisors

December 29, 1999

Mr. Jeff Planck
California State Lands Commission
200 Oceangate, 12th Floor
Long Beach, CA 90802-4331

RE: Supplements and Addenda to Pt. Pedernales EIR/EIS

Dear Jeff:

Enclosed please find two copies of supplements and addenda to the Pt. Pedernales EIR/EIS. The first was prepared by AD Little for Unocal's gas plant application. The second was prepared by Santa Barbara County for Torch's gas plant application.

If you have any questions, please contact me at the letterhead address.

Sincerely,

John M. Deacon
Manager, ES&RC

Enclosures

Cc: Joan Barminski, MMS (w/enclosure)
Art Boehm, Nuevo (w/enclosure)
Samantha Kim, Environet (w/enclosure)
Kate Neiswinder (w/enclosure)

201 S. BROADWAY ORCUTT, CALIFORNIA 93455 TELEPHONE: 805.739.9111 FAX: 805.937.3030

County of Santa Barbara

RESOURCE MANAGEMENT DEPARTMENT

John Patton, Director Phil Overeynder, Assistant Director

October 15, 1993

To the Reader:

RE: Unocal HS&P Modifications Project
Final Supplemental Environmental Impact Report
SCH #92021083, Santa Barbara County #92-EIR-13

Enclosed is the Final Supplemental Environmental Impact Report (SEIR) for Unocal's proposed modifications to the Lompoc HS&P facility, Santa Maria Pump Station, and the Jim Hopkins Fee site. The document was prepared to comply with the requirements set forth by the California Environmental Quality Act (CEQA). The purpose of this document is to identify and assess potential adverse effects of the Unocal project on the environment, to indicate the manner in which those effects can be feasibly reduced or eliminated, and to identify alternatives to the project which could avoid or reduce significant impacts.

The Draft SEIR was released for public review from July 14, 1993 through August 30, 1993. A hearing to take public comments on the Draft SEIR was held on August 12, 1993.

Comments received on the Draft SEIR from state and local agencies, private individuals, and companies are presented in a separate section at the back of the document. Responses to the comments received are also included in the document, following the comment letters.

The Final SEIR will be presented to the Santa Barbara County Planning Commission on Thursday, November 4, 1993. This hearing will begin at 9:30 a.m. in the Lompoc City Council Chambers Hearing Room, 100 Civic Plaza, Lompoc, CA. At this public hearing, the Commission will consider certification of the document and will consider taking action on the Unocal Final Development Plan application. Notification of this public hearing will be published in local newspapers prior to the public hearing.

If you have any questions about this document or the hearing process please contact John Zorovich or Alice McCurdy at the Energy Division (805) 568-2040.

Sincerely,

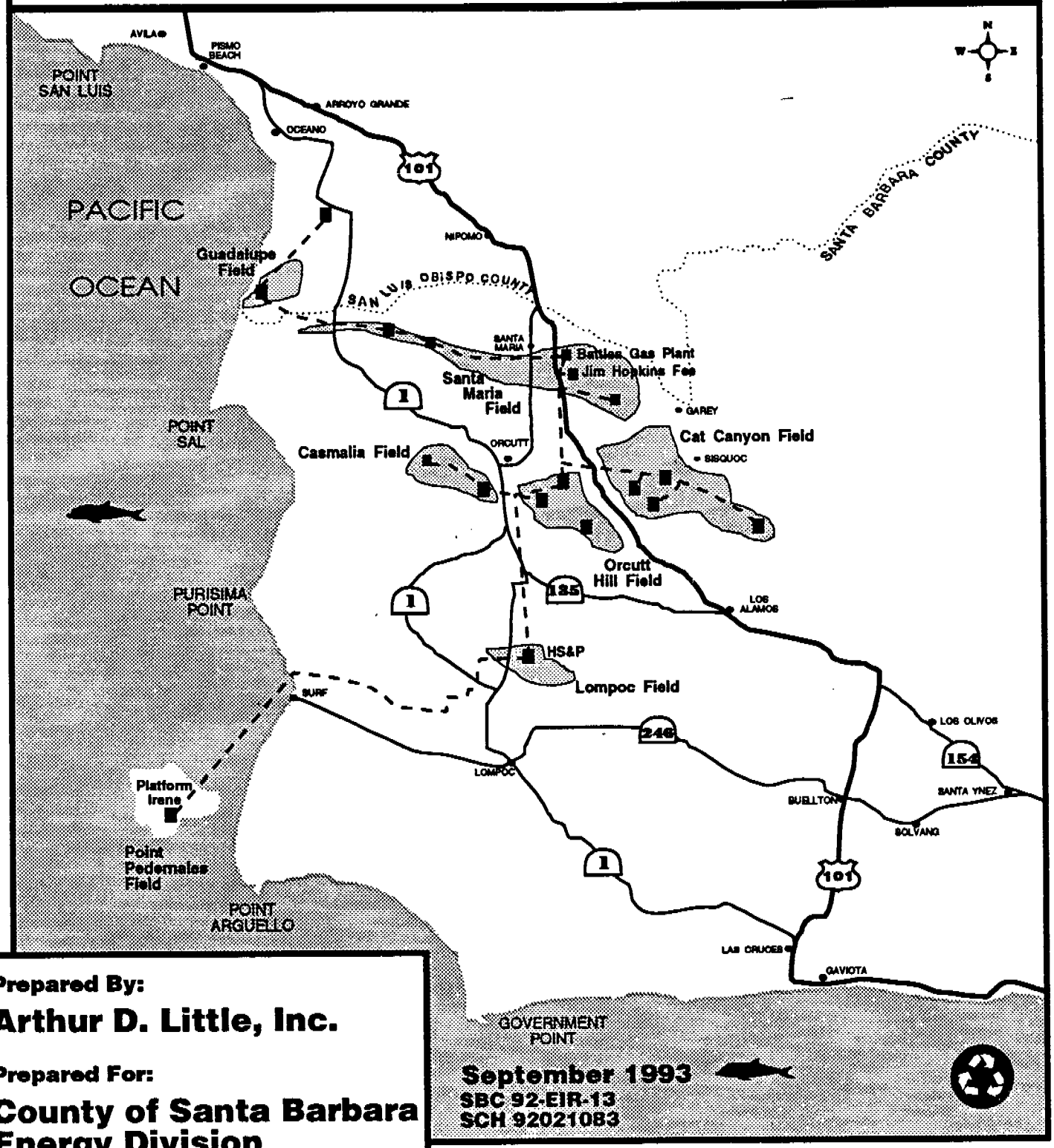
WILLIAM J. DOUROS
Deputy Director

UNOCAL\4WEIRCOV.LTR

Energy Division
1226 Anacapa Street, 2nd Floor, Santa Barbara, CA 93101
PHONE (805) 568-2040 FAX (805) 568-2522

UNOCAL Point Pedernales Project

Final Supplemental Environmental Impact Report



Prepared By:

Arthur D. Little, Inc.

Prepared For:

County of Santa Barbara
Energy Division

September 1993
SBC 92-EIR-13
SCH 92021083

Arthur D Little

Table Of Contents

Table Of Contents (Continued)

Table Of Contents (Continued)

List Of Tables

List Of Figures

Glossary

AIChE	American Institute Of Chemical Engineers
ANSI	American National Standards Institute
AOGERP	Area Oil and Gas Industry Emergency Response Plan
APCD	Air Pollution Control District
APCO	Air Pollution Control Officer
AQAP	Air Quality Attainment Plan
AQIA	Air Quality Impact Analysis
BACT	Best Available Control Technology
bbl	barrel
BLEVE	Boiling Liquid Expanding Vapor Explosion
bpd	barrels per day
BTU/SCF	British Thermal Units Per Standard Cubic Feet
CARB	California Air Resources Board
CEQA	California Environmental Quality Act
CFR	Code Of Federal Regulations
CO	Carbon monoxide
CO_2	Carbon dioxide
EIR	Environmental Impact Review
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
ERP	Emergency Response Plan
gpm	gallons per minute
H_2S	hydrogen sulfide
HazMat	Hazardous Material
HAZOP	Hazard And Operability Study
hp	horsepower
HS&P	Heating, Separating And Pumping Facilities
IDLH	Immediately Dangerous to Life and Health
IRI	Industrial Risk Insurers
JHF	Jim Hopkins Fee
kV	kilovolts
kVA	kilovolt-amperes
LOS	Level Of Service
LPG	Liquid Petroleum Gas
LTS	Low Temperature Separation
MCC	Motor Control Center
MMscfd	Million Standard Cubic Feet Per Day
Mscfd	Thousand Standard Cubic Feet Per Day
MMBTU/h	Million British Thermal Units Per Hour
NAAQS	National Ambient Air Quality Standards
NGL	Natural Gas Liquid
NNF	Normally No Flow
NO_2	Nitrogen Dioxide
NO_x	Nitrous Oxide

NOP	Notice Of Preparation
NSR	New Source Review
O_3	Ozone
OES	Office Of Emergency Services
Pb	Lead
PDT	Pacific Daylight Time
PHT	Peak Hour Trips
PIMA	Petroleum Industry Mutual Aid Agreement
PM_{10}	Suspended Particulate Matter Ten Microns Or Less In Diameter
ppm	parts per million
PSD	Prevention Of Significant Deterioration
psig	pounds per square inch
RMD	Resource Management Department
ROC	Reactive Organic Compound
ROG	Reactive Organic Gas
SEIR	Supplemental Environmental Impact Report
SIMQAP	Safety, Inspection, Maintenance And Quality Assurance Program
SLAMS	State And Local Air Monitoring Stations
SMPS	Santa Maria Pump Station
SMV	Santa Maria Valley
SO_2	Sulfur Dioxide
SoCal Gas	Southern California Gas Company
SSRRC	Systems Safety Reliability and Review Committee
TAC	Toxic Air Contaminants
TEG	Triethylene Glycol
TOG	Total Organic Gases
UVCE	Unconfined Vapor Cloud Explosion
XS Gas	excess gas

Table of Contents - Executive Summary

List of Tables

List of Figures

A. Introduction

The purpose of this executive summary is to provide the reader with a brief overview of the proposed Unocal modifications to the Point Pedernales Field development, the anticipated environmental effects, and the potential mitigation measures that could reduce the significant impacts associated with the project. This summary briefly describes the proposed project, alternatives, and the respective environmental consequences for each issue area. A similar discussion is provided for the cumulative analysis.

An important aspect of the cumulative analysis is the effect that this project, if built, would have on other north county gas producers who currently use the Battles Gas Plant. With the proposed project, the other producers would need to find other ways of handling their gas production or face shut-in of their fields. Some of the options that would be available to the other north county producers, in the event that the Battles Gas Plant is shut down, are discussed as part of the cumulative analysis.

The Supplemental Environmental Impact Report (SEIR) will be used by different agencies to make decisions on the proposed project, as required by the California Environmental Quality Act (CEQA). The reader should review the entire SEIR document and not rely exclusively on the executive summary as the sole basis for judgment. The SEIR is supplemented by a series of technical appendices which include data and discussions of the analytical methods used in the air quality and system safety issue areas. There are also a number of technical documentation files that provide the detail inputs and outputs for hazard analysis modeling. These are available at the County Energy Division.

In the remainder of this executive summary and the SEIR, impacts of the proposed project, alternatives and the cumulative effects have been classified using the categories listed below. The criteria for assigning impacts to these categories varies by issue area. Chapter 5, the environmental impact assessment chapter, discusses these criteria.

- Class I - Significant Adverse Impacts That Cannot Be Mitigated To Insignificant,
- Class II - Significant Impacts That Can Be Mitigated To Insignificant,
- Class III - Adverse But Insignificant Impacts, and
- Class IV - Beneficial Impacts.

Once divided into the above categories, impacts were further characterized as to the geographic extent of their significance (local *versus* regional) and as to their duration (long-term *versus*

short-term). These levels of characterization are shown, along with mitigation measures for each impact, in the Impact Summary Tables which are located in this document after the executive summary.

B. Background

This document is a Supplemental EIR to the Union Oil/Exxon Project Shamrock and Central Santa Maria Basin Areas Study EIS/EIR (ADL, 1985). The original EIS/EIR covered the environmental impacts associated with Unocal's Point Pedernales Offshore Oil And Gas Development Project (Figure S-1). This oil and gas development project, which has been in operation since 1987, involved the construction and operation of the following:

- An offshore platform (Platform Irene),
- A number of oil and gas pipelines, and
- A crude oil heating, separating and pumping facility (HS&P), located north of the City of Lompoc off Harris Grade Road.

As part of this original project, Unocal proposed to process the gas from Platform Irene at its existing gas processing facility, the Battles Gas Plant, located south of the city of Santa Maria on the east side of Highway 101. Unocal is now proposing to decommission the Battles Gas Plant, and to build a new gas plant at their HS&P facility that would process offshore gas from Platform Irene.

The original Point Pedernales Field Project's Final Development Plan (FDP) permit contained two conditions that addressed safety hazards at the Battles Gas Plant. The first condition, P-2, required the System Safety and Reliability Review Committee (SSRRC) to conduct a safety audit of the Battles Gas Plant prior to issuance of a land use permit for the HS&P facility. The P-2 Safety Audit identified a total of 75 deficiencies with regard to structural, electrical, and operational/process aspects of the plant. Unocal implemented all items identified in the P-2 Audit prior to starting up the HS&P facility.

The second condition, P-17, required the Battles Gas Plant to under go a detailed safety audit, conducted by the SSRRC, two years after startup of the HS&P. The purpose of the second condition was to bring the Battles Gas Plant up to current safety standards applicable to oil and gas facilities. Also, the condition required that Unocal implement all SSRRC's recommendations within three years of the audit. The safety audit, completed in July 1989, identified 272 recommendations that would need to be implemented in order to bring the Battles Gas Plant up to current standards, with respect to safety and fire protection. A review of the current status of the recommendations indicates that Unocal has met the intent of 232 of the recommendations (Chapter 3 provides more discussion on the outstanding recommendations).

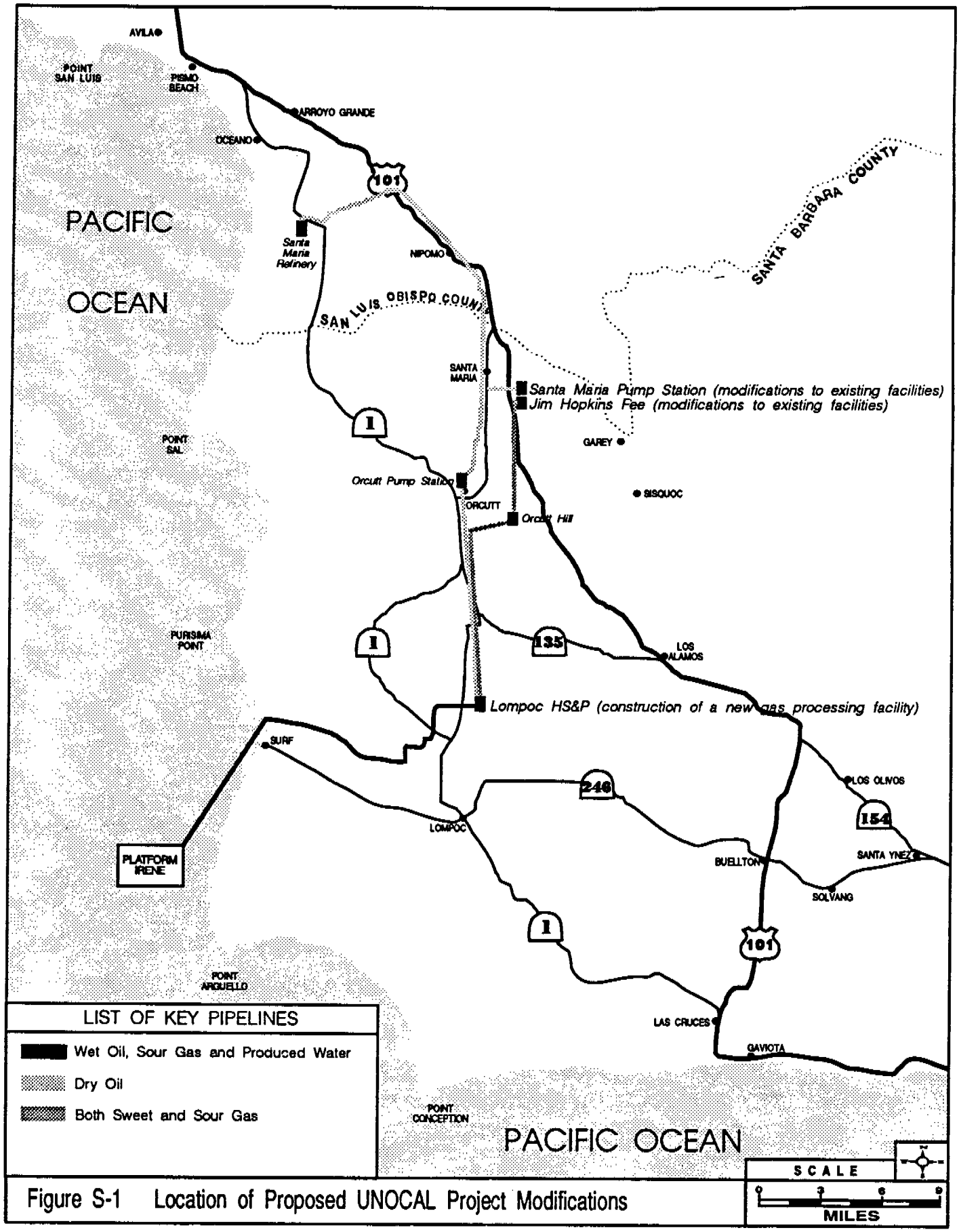


Figure S-1 Location of Proposed UNOCAL Project Modifications

Arthur D Little

In reviewing and evaluating the 1989 safety audit recommendations, Unocal determined that in order to comply with all the recommendations, the Battles Gas Plant would need to be extensively modified, and major pieces of equipment would need to be disassembled and relocated. Most of this effort is a result of the Industrial Risk Insurers (IRI) spacing recommendations for chemical process equipment. Unocal determined that the cost to comply with the remaining P-17 conditions would be more expensive than building a new, smaller gas plant to handle the Point Pedernales gas production. Faced with this economic fact, Unocal decided to pursue the construction of a new, smaller gas processing facility, and, after evaluating a number of options, decided to pursue permits for a new gas plant to be located at the existing HS&P.

The new gas plant at the HS&P site is the major focus of this SEIR. Since the proposed gas plant would result in the decommissioning of the Battles Gas Plant, a number of smaller changes are needed at other Unocal facilities in the north county. These changes are also addressed as part of this document.

In addition, the decommissioning of the Battles Gas Plant will adversely affect other north county oil and gas producers. All the affected producers would need to find other ways of handling their gas production. The document discusses the potential impacts associated with a number of options that other north county producers could pursue if the Battles Gas Plant were shut down.

C. Proposed Project Description

To support their offshore and onshore production activities within the north county, Unocal currently operates several oil and gas processing facilities. Unocal has proposed to modify three of these facilities, namely, the Heating, Separating and Pumping Facility (HS&P), Santa Maria Pump Station (SMPS) and Jim Hopkins Fee (JHF).

The proposed project sites are in the following areas: (1) the Heating, Separating and Pumping Facility is located at 3602 Harris Grade Road, approximately 2.7 miles northeast of the City of Lompoc; (2) the Santa Maria Pump Station is located adjacent to the Battles Gas Plant between Betteravia and Battles Roads approximately 0.5 miles east of U.S. 101; and (3) the Jim Hopkins Fee property in the Santa Maria Valley Field is located approximately one mile east of the Santa Maria Way/U.S. 101 junction. The relative locations of these facilities, along with other key north county facilities operated by Unocal, are shown in Figure S-1. These three areas and the associated proposed developments are discussed below.

Proposed Facility Additions To The HS&P

The modifications to the HS&P facility are being proposed to replace some of the gas processing currently done at the Battles Gas Plant. The gas facilities proposed for the HS&P would serve two major purposes. The first is to process offshore gas produced from the Point Pedernales Field. This gas would be processed for sale to SoCal Gas or used as fuel at the HS&P as needed.

The second is to compress excess gas for reinjection into a reservoir located at the Lompoc Field.

Unocal has designed the proposed HS&P gas processing facility to handle up to 6 million standard cubic feet per day (MMscfd) of sales gas and 1-2 MMscfd of onshore gas reinjection. The sales gas processing system would handle gas from only offshore sources. The reinjected gas would include onshore gas production in excess of field fuel demand and high CO_2 gas generated from sales gas processing. If there is not enough onshore gas available to meet fuel demand, then some of the sales gas would be routed to fuel. If there is not enough sales and fuel gas to meet fuel demand, then utility gas purchases would be required.

The main components of the newly proposed gas processing facilities at the HS&P are listed below.

- Sulfur Removal System,
- Carbon Dioxide (CO_2) Removal System,
- Dew Point Depression System (to remove hydrocarbon liquids and water),
- Compressors (to boost process gas pressures),
- Short connecting pipelines, and
- Additional electrical facilities.

The natural gas liquids (NGLs) generated at the proposed gas plant would be injected into the crude oil, which is shipped by pipeline from the HS&P to Unocal's Santa Maria Refinery. Any excess NGLs that can not be placed in the crude oil would be reinjected at the Lompoc Field. Therefore, there would be no trucking of NGLs from the proposed gas plant. A plot plan of the proposed facilities are shown in Figure S-2.

Santa Maria Pump Station Modifications

The Santa Maria Pump Station is located south of the City of Santa Maria adjacent to the Battles Gas Plant. Unocal is proposing to modify these facilities as part of this project. These modifications include the replacement of the fire protection system and the boilers used for crude oil heating. These modifications are needed since the Santa Maria Pump Station currently shares the fire protection system and boilers with the Battles Gas Plant. The decommissioning of the Battles Gas Plant would eliminate the ability to share these facilities.

The proposed fire protection system includes removal of the existing fire water tank (located within the same dike as an oil tank), installation of a new fire water tank and fire pump/engine, and a new fire water perimeter loop with additional fire hydrants. New fire protection equipment would be located near the northeast corner of the pump station. The new fire water piping would supply the existing foam system and monitors.

The proposed replacement boilers would have a combined heat input of 29 MMBTU/hr. The existing boilers, which serve both the Battles Gas Plant and the Santa Maria Pump Station, have a combined heat input of 45 MMBTU/hr.

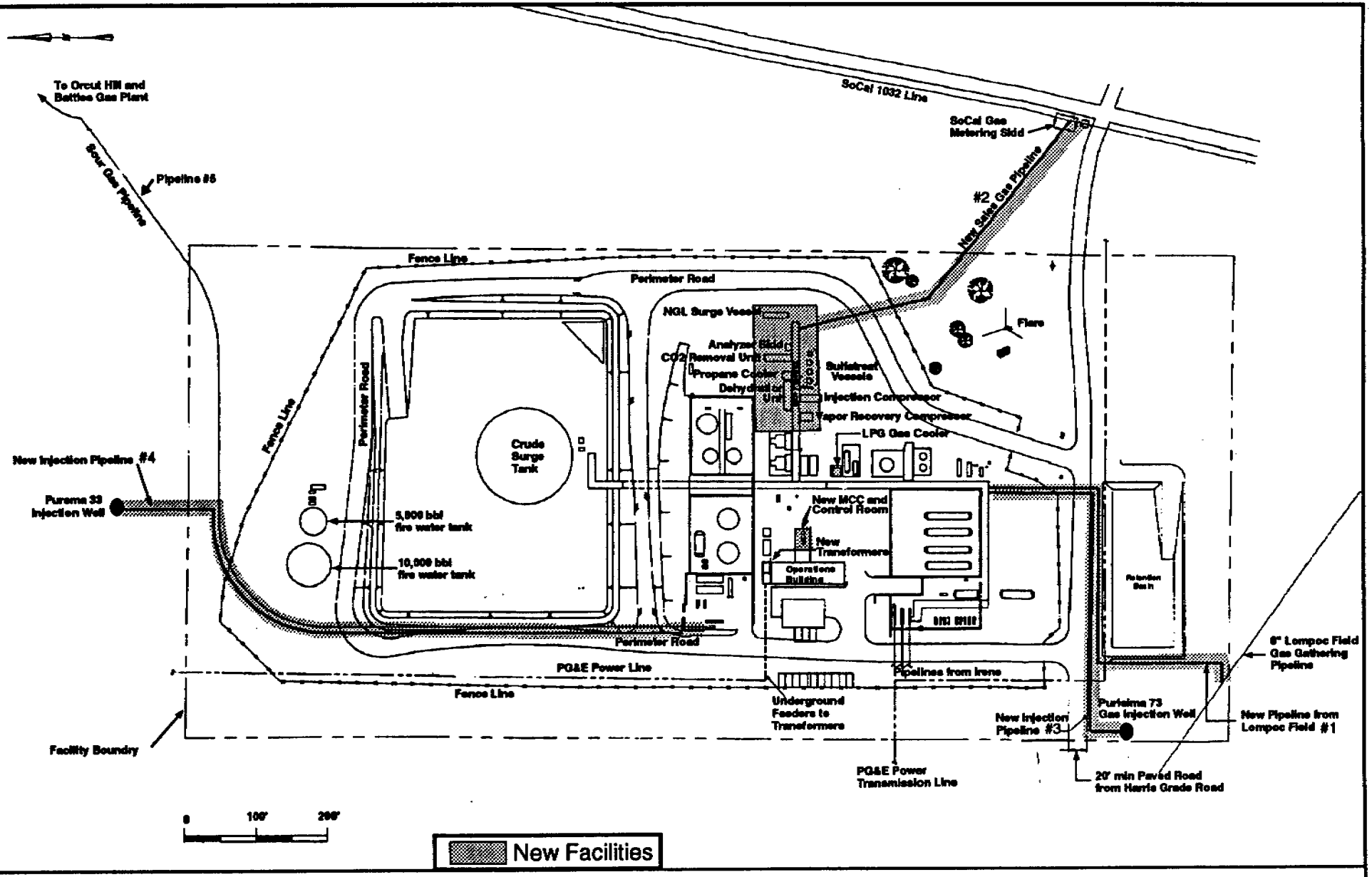


Figure S-2 Plot Plan For Existing and Proposed HS&P Facilities

The proposed steam supply (boiler system) would be located north of the existing heat exchangers. This would allow removal of all steam piping from the diked area surrounding the oil tanks. These boilers would be equipped with new low NO_x burners in accordance with Santa Barbara County Air Pollution Control District (SBCAPCD) guidelines. Boiler blowdown water as well as water used in water softener regeneration would be disposed of on site in a lined evaporation pond. Boiler blowdown water from the Battles Gas Plant is currently being added to injection wells for enhanced oil recovery.

Jim Hopkins Fee Modifications

The Jim Hopkins Fee site is located south of the City of Santa Maria and serves as a collection point for oil and gas production. As part of the proposed modifications, Unocal wishes to modify the operations at the Jim Hopkins Fee site to allow fuel gas to be shipped between their Orcutt Hill field and Jim Hopkins Fee. The existing gas pipeline between Jim Hopkins Fee and Orcutt Hill is designed to normally accommodate 2,000 ppm hydrogen sulfide and a pressure of 250 psig. With the proposed project, it is anticipated that fuel gas coming from Jim Hopkins Fee to Orcutt Hill would normally contain less than 796 ppm hydrogen sulfide at a pressure of less than 50 psig, while fuel gas coming from Orcutt Hill to Jim Hopkins Fee would normally contain 4 ppm hydrogen sulfide at a pressure of 25 psig. The direction of gas flow and characteristics would be based on fuel gas requirements at each facility.

Three pipeline changes would be required to accommodate the new flow of gas at Jim Hopkins Fee. First, a pipeline would be required to connect the existing Jim Hopkins Fee gas gathering pipeline to the existing Jim Hopkins Fee fuel gas pipeline. This would allow gas from the inlet gas separator and vapor recovery compressor to go through the refrigeration unit and to the fuel gas system. Second, the pipeline currently going to the South Intake of Battles Gas Plant would be isolated and idled. Finally, the existing fuel gas pipeline from Battles Gas Plant to Jim Hopkins Fee would be tied into the existing pipeline between Orcutt Hill and the Battles Gas Plant at the Santa Maria Way valve box.

A refrigeration skid would be used to cool the gas to 50°F and remove water. This would prevent liquid from accumulating in the pipelines and potentially causing corrosion. The refrigeration skid would be approximately ten feet by six feet by seven feet high, and use a 5 hp electric motor for refrigerant compression.

For additional protection against corrosion, oxygen and dew point monitors would be installed on the pipeline leaving Jim Hopkins Fee. If the oxygen level or dew point of the gas exceeds a preset limit, a valve would close and the flow of gas leaving Jim Hopkins Fee would be interrupted until the condition is corrected.

A gas flow meter (currently used to measure the amount of gas going to the south intake of Battles Plant from Jim Hopkins Fee) would be relocated to measure the amount of dehydrated gas from the refrigeration skid going to the Jim Hopkins Fee fuel gas distribution system.

D. Alternative Sites For The Proposed HS&P Gas Plant

As part of this SEIR, a screening/siting analysis was conducted to address potential alternative sites within the north county for the proposed gas plant. The use of a screening/siting analysis is required by Santa Barbara County's Comprehensive Plan Land Use Element. This element contains specific screening and siting criteria for gas processing facilities. These criteria were developed as part of the County's Siting Gas Processing Facilities Study (SBC, 1989). This study developed criteria for siting gas processing facilities in the midwestern and northwestern regions of Santa Barbara County, which includes the area of the proposed project. The screening and siting criteria developed in this study, and adopted as part of the Comprehensive Plan Land Use Element, were used in this analysis.

Six alternative sites for the proposed gas processing plant at the HS&P were identified. The six alternative sites evaluated as part of the alternative screening/siting analysis included:

- A site in the Orcutt Hill Field,
- A site in the Cat Canyon Field,
- The existing Battles Gas Plant, and
- Three sites in the Lompoc Field.

Figure S-3 shows the location of these sites. The first step in the analysis was to determine if the alternative sites were located in areas considered compatible with gas plants. This was done using the screening criteria developed in the North County Gas Sitting Study. As Figure S-4 shows, all of the alternative sites would be in areas compatible with gas plants. Next, each site was then evaluated against the 39 siting criteria developed in the North County Gas Siting Study. Figure S-5 provides a summary of the results of this siting analysis. As this figure shows, the proposed HS&P, Orcutt Hill and existing Battles Gas Plant sites have the highest degree of consistency with the siting criteria.

As a result of this analysis, the Orcutt Hill and the Battles Gas Plant sites were studied further in the SEIR. The Orcutt Hill site was evaluated because it represented the superior alternative site. The existing Battles Gas Plant was evaluated because it represented the No Project alternative and was the only alternative that would provide gas processing capacity for the other north county producers. The remaining sites were dropped from further consideration. The three Lompoc Field sites were dropped because they are contained within land that Unocal deeded to the State of California, which contains sensitive habitats. The Cat Canyon site was dropped due to problems with the routing of sour gas pipelines through urban areas. Chapter 3 provides additional information on the reasons for dropping these alternative sites.

E. Environmental Impacts And Mitigation Measures

The initial study for this project identified three issues where significant impacts could occur. These were air quality, public safety and fire protection/emergency response. In addition, the document also addressed noise and odor impacts as a result of comments during the workshops. Each of these issue areas is discussed below.

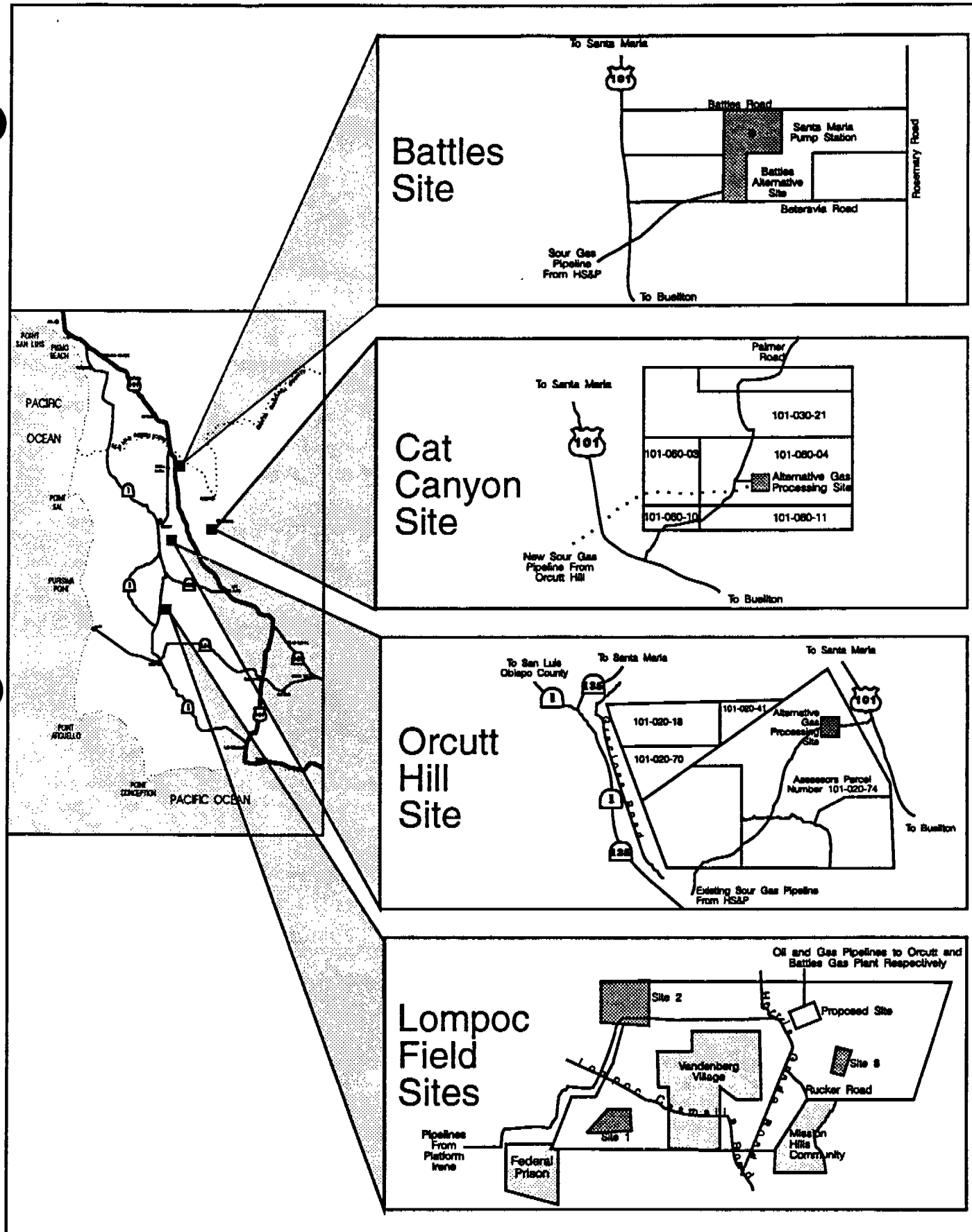


Figure S-3 Location of Alternative Sites for the Proposed HS&P Processing Plant

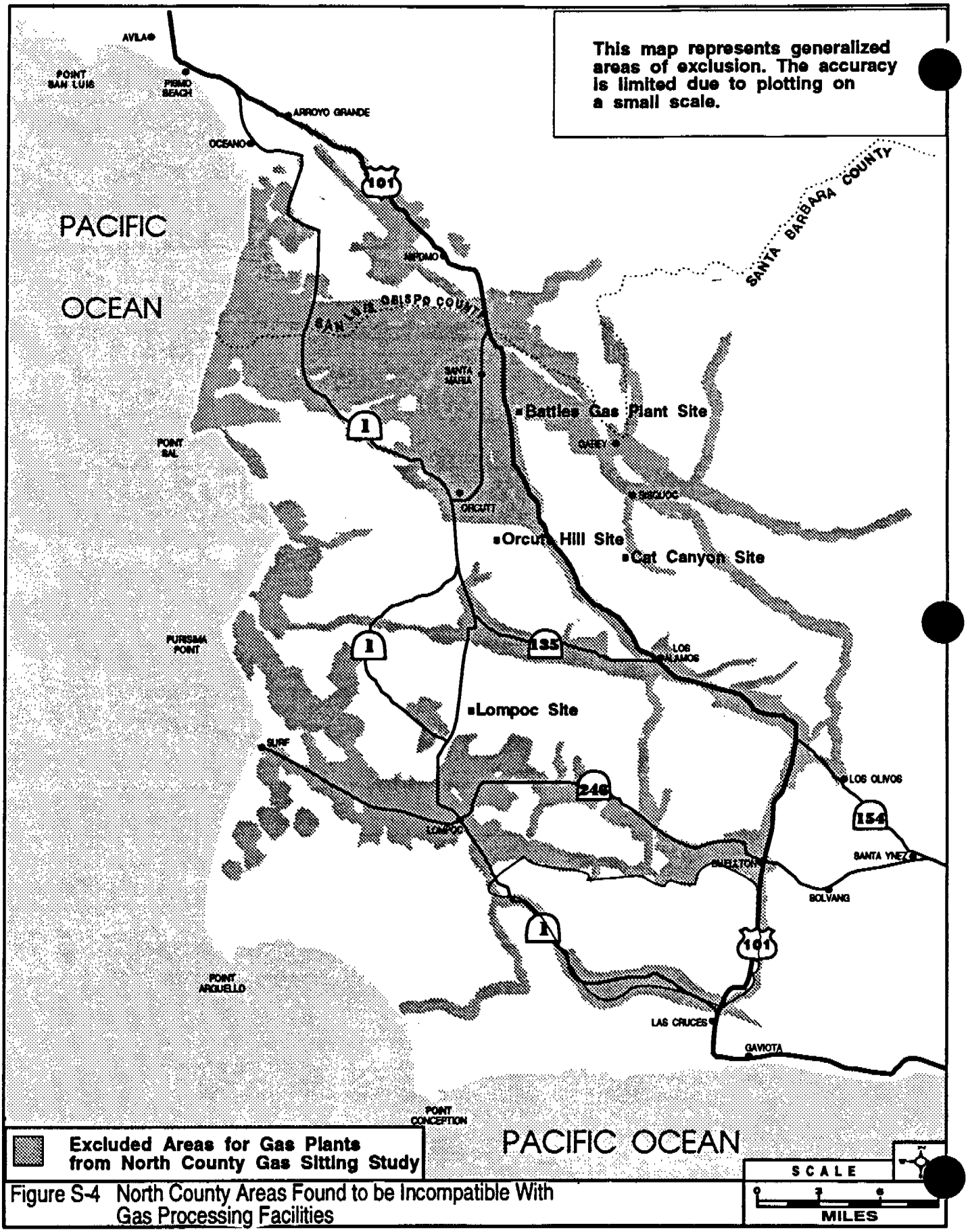


Figure S-4 North County Areas Found to be Incompatible With Gas Processing Facilities

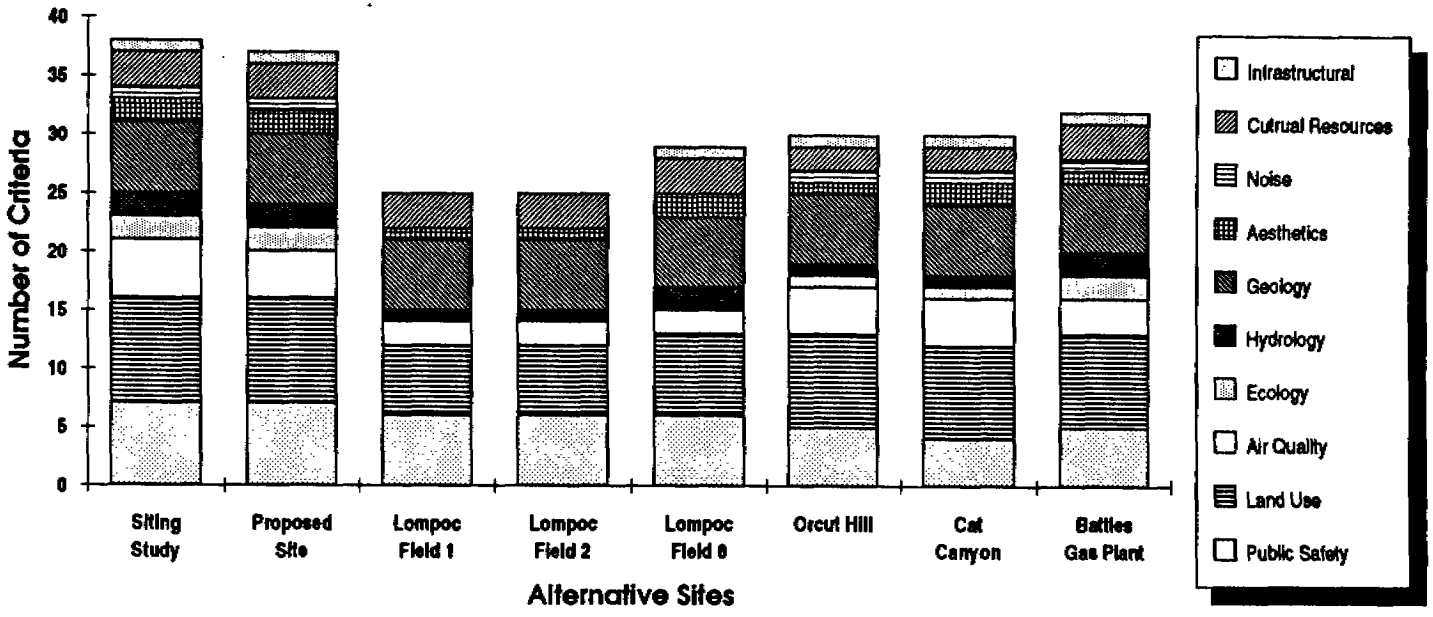


Figure S-5 Results of Alternative Screening Analysis

Air Quality/Odor

The significant air quality impacts and mitigation measures associated with the proposed project and alternative gas plant sites are briefly discussed below. The reader is referred to Section 5.1 for a more complete discussion of the air quality impacts and mitigation measures.

Proposed Project

Air quality impacts are projected to occur for construction and operation of the proposed project. During construction a significant, and unmitigable (Class I) impacts is projected to occur at all three sites due to an exceedence of the state 24-hr PM_{10} standard. It should be noted that the north county already exceeds the standard so any additional emissions are considered to be significant. Modeling has indicated that exceedence of state 1-hr NO_2 standard could occur during construction at the HS&P and SMPS sites, result in a significant but mitigable impact (Class II). See the impact summary tables at the end of the executive summary for a listing of the specific exceedences. The NO_x exceedences can be mitigated to a level of insignificance by the use of NO_x controls on construction equipment.

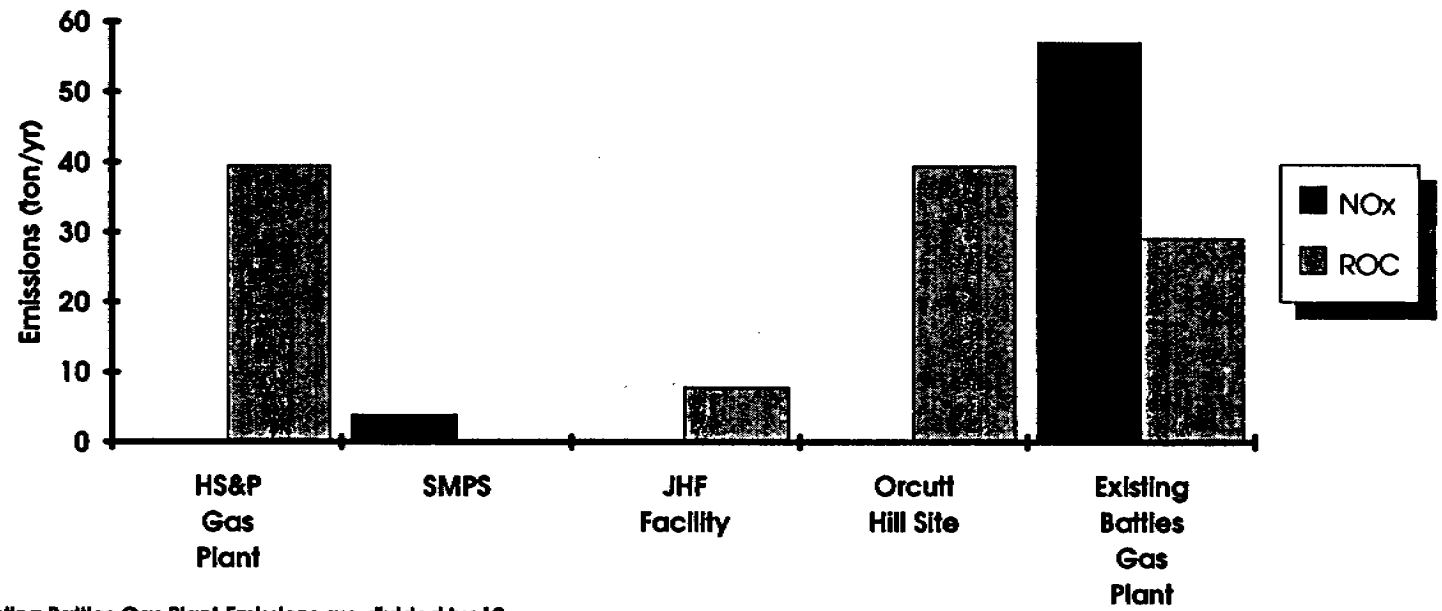
The operation of the proposed project would result in primarily ROC, H_2S and NO_x emissions. The operational emissions for the proposed project are shown in Figure S-6. The operation of the HS&P Gas Plant would result in only fugitive ROC and H_2S emissions. The ROC emissions are considered to be significant but mitigable (Class II), since they occur in an area that is in non-attainment for ozone. By implementing a fugitive inspection and maintenance (I&M) program and providing ROC offsets, these impacts can be reduced to a level of insignificance.

Operational emissions from the Santa Maria Pump Station would occur as a result of operating the boilers (see Figure S-6). The ROC and NO_x emissions are considered to be significant, but mitigable (Class II), given that the region is in non-attainment for ozone. These impacts can be reduced to a level of insignificance by offsetting the ROC and NO_x emissions, and by installing low NO_x burners on the boilers.

Operation of the Jim Hopkins Fee facilities would result in a small amount of fugitive ROC emissions. Given that the area is in non-attainment for ozone, these emissions are considered to be significant but mitigable (Class II). These impacts can be mitigated to a level of insignificance by implementing a fugitive I&M program, and offsetting the ROC emissions.

Alternative Gas Plant Sites

The air quality construction and operational impacts for the alternative site at Orcutt Hill would be expected to have similar impacts as that for the proposed HS&P Gas Plant. Construction would result in exceedences of the state 1-hr NO_2 standard, which is considered a significant but mitigable impact (Class II). In addition construction at the site would result in exceedence of the state 24-hr PM_{10} standard resulting in a significant and unmitigable impact (Class I). See the



Existing Battles Gas Plant Emissions are divided by 10.

Figure S-6 Summary of Operational Emissions for the Proposed Project and Alternative Gas Processing Sites

impact summary tables for a listing of the specific exceedences. The NO_x exceedence could be mitigated to a level of insignificance by the use of NO_x controls on the construction equipment.

The operation of a gas plant at the Orcutt Hill site would result in only ROC and H_2S emissions. The ROC emissions would be considered significant, but mitigable (Class II), since they would occur in an area that is in non-attainment for ozone. By implementing a fugitive inspection and maintenance (I&M) program and providing ROC offsets, these impacts can be reduced to a level of insignificance.

For the Battles Gas Plant alternative, construction at the site could result in exceedence of the state 1-hr NO_2 and state 24-hr PM_{10} standards. This would result in significant, but mitigable (Class II) air quality impacts for the NO_x emissions, and significant and unmitigable impacts (Class I) for the PM_{10} emissions. The construction emissions would be due to modifications required in order to comply with the outstanding P-17 audit recommendations. The majority of the construction emissions would be associated with the relocation of existing equipment, which would be required in order to meet the IRI spacing recommendations. The NO_x exceedence can be mitigated to a level of insignificance by the use of NO_x controls on construction equipment. The construction impacts could be avoided altogether by not requiring the facility to meet the IRI spacing guidelines.

The operational emissions for the Battles Gas Plant would be the same as for the existing facility.

System Safety

The significant system safety impacts and mitigation measures for the proposed project and alternative gas plant sites are briefly described below. A complete discussion of the system safety impacts and mitigation measures can be found in Section 5.2.

Proposed Project

The system safety analysis presented in this SEIR has addressed the potential impacts associated with various upsets that could occur at the proposed facilities. The significance of each upset was determined by estimating:

1. Likelihood of the upset occurring, and

2. Consequences of the upset, should it occur.

For each upset condition these two variables were plotted on the County's system safety significance matrix to determine the significance of the upset. Figure S-7 shows the location of the various upset scenarios for each facility on this matrix. All of the system safety impacts for the proposed project were found to be adverse but insignificant (Class III). This is primarily due to the fact that the majority of the upset scenarios would not have any offsite impacts. For the

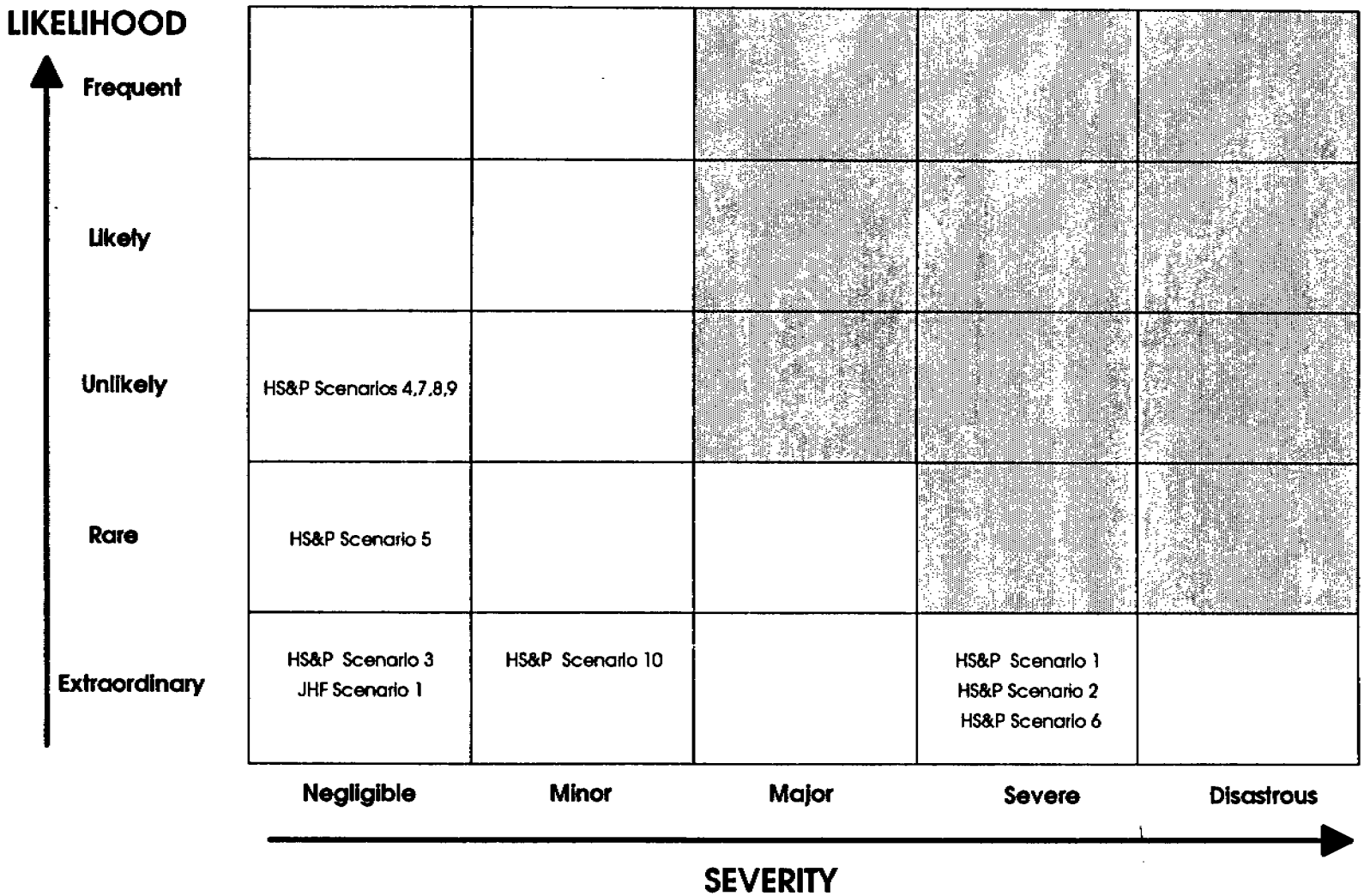


Figure S-7 Hazard Scenario Risk Ranking Matrix

few that do have offsite impacts, the conditional probability of these events occurring was determined to be extraordinary (less than one chance in a million).

At the HS&P, the major hazard scenarios are associated with a rupture of the sour gas pipeline between Platform Irene and the HS&P. This pipeline follows a mostly unpopulated route, but does have a few road crossings. However, the likelihood of anyone being injured from this event is less than one chance in a million. The site is also surrounded by Unocal-owned land and a 5,000 acre parcel that Unocal deeded to the state as a preserve. Figure S-8 shows the location of the site relative to the Unocal-owned land, the state preserve, and surrounding populated areas. This Unocal-owned land and the state preserve provides an excellent buffer zone for the HS&P site.

There are no system safety impacts associated with the modifications at the Santa Maria Pump station since the majority of the changes are to improve the fire water system at the site. For the Jim Hopkins Fee site the major hazards are associated with a potential release of propane from the refrigeration skid. However, this hazard zone is small and does not go offsite.

Alternative Gas Plant Sites

For the alternative gas plant site at Orcutt Hill, the safety impacts were found to be identical to that for the proposed HS&P Gas Plant, which were adverse but insignificant (Class III). In addition this site would require the use of the existing sour gas pipeline between the HS&P and the Orcutt site. The impacts of a release from this pipeline were found to be adverse but insignificant (Class III).

Continued use of the Battles Gas Plant with all of the P-17 recommendations met would result in significant and unmitigable impacts (Class I). As part of the cumulative analysis an offsite quantitative risk assessment (QRA) was done for the Battles Gas Plant with a modified set of safety upgrades (modified P-17). This QRA showed that the plant had a significant and unmitigable impact based upon the County's significance criteria. This QRA would also apply to the Battles Gas Plant with full P-17 compliance, because the remaining P-17 recommendations would not affect offsite risks. However, these recommendations would affect onsite risk levels. The relatively low levels of risks associated with the Battles Gas Plant are primarily a result of the low population density within 1,000 feet of the site. Should this population density change then the levels of offsite risks would increase.

Use of this site would also require that the sour gas pipeline between the HS&P and Battles continue to operate. This line passes in close proximity to populated areas along a four mile stretch of Bradley Road. A rupture of the pipeline in this area could result in significant but mitigable impacts (Class II). The impacts could be mitigated by installing a corrosion resistant liner within the existing pipeline along this four mile stretch or by installing a new pipeline. This would eliminate the potential for corrosion, and substantially improve the reliability of the pipeline.

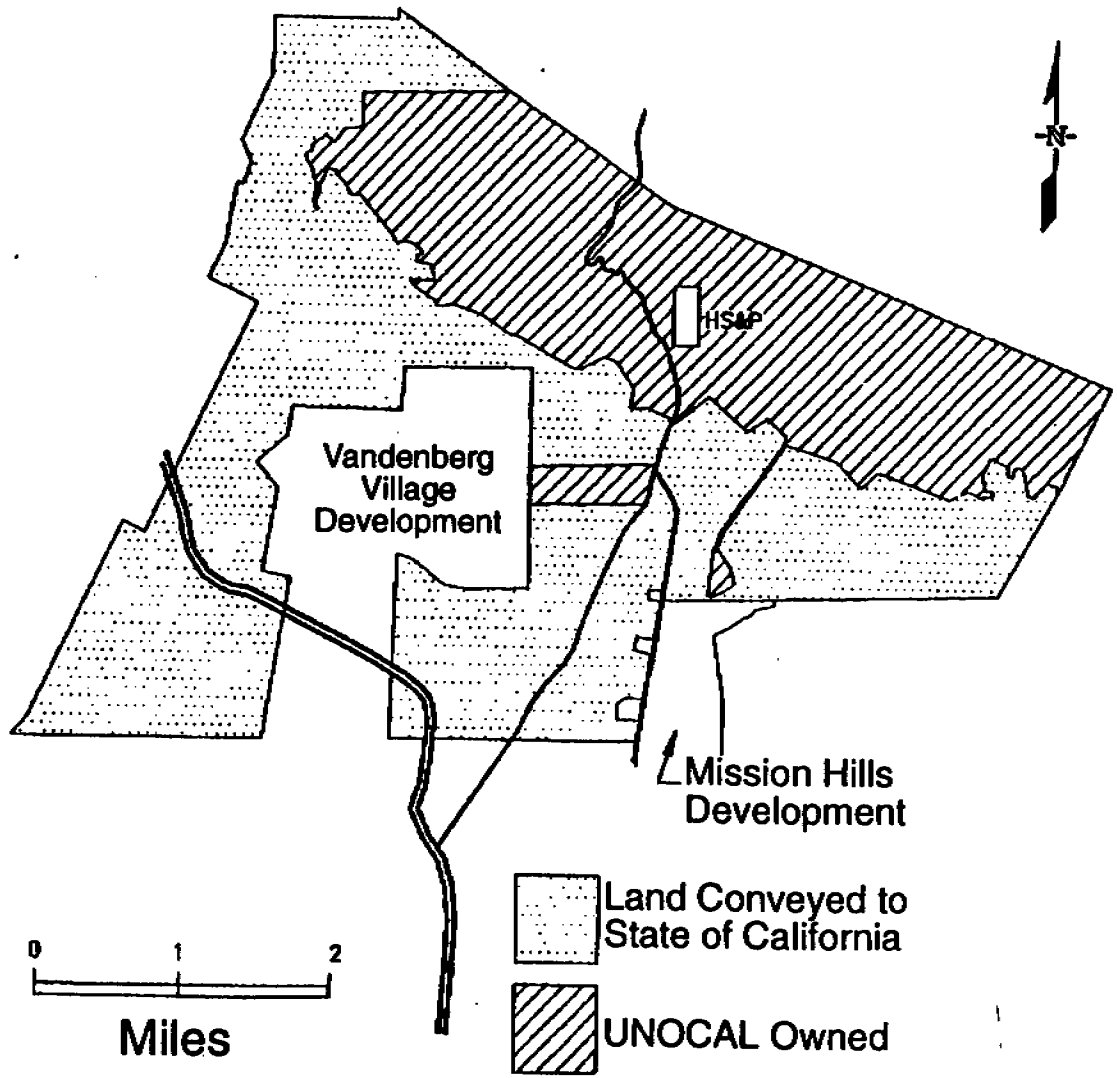


Figure S-8 Location of HS&P Site Relative to State Preserve

If the Battles Gas Plant continued to operate, the facility would have to be in compliance with a number of state and federal requirements regarding process safety. These include:

- The California Risk Management and Prevention Program (RMPP), which is administered by Santa Barbara County,
- The Occupational Safety and Health Administrations (OSHA) Process Safety Management (PSM) program, which is administered by the state, and
- The Environmental Protection Agency's Risk Management Plan (RMP), which was part of the 1992 Clean Air Act Amendments (CAAA).

While none of the above were requirements at the time of the P-17 audit, they all would serve to assure that the Battles Gas Plant was designed, operated, and maintained in a safe manner.

Fire Protection/Emergency Response

The impacts and mitigation measures for fire protection and emergency response are summarized below for the proposed project and the alternative gas plant sites. Section 5.3 provides a detailed discussion of these impacts and mitigation measures.

Proposed Project

All of the proposed projects were evaluated to determine the adequacy of the onsite fire protection capabilities as well as the adequacy of emergency response in the vicinity of the sites. The proposed HS&P Gas Plant was found to have adequate onsite fire protection capabilities, and therefore the impacts were considered adverse but insignificant (Class III). In terms of emergency response capabilities near the HS&P site, the Lompoc Fire Station was found to be close enough to the facility to provide quick emergency response. However, it should be noted that the County Fire Department, during emergency response drills at the existing HS&P facility, noted that they lack the five fire fighters needed to handle properly an emergency response (the station currently only has four fire fighters per shift). The addition of the proposed HS&P Gas Plant is not projected to exacerbate this lack of adequate response personnel at the Lompoc Station, and therefore the impacts associated with the adequacy of emergency response were found to be adverse, but insignificant (Class III). The HS&P site should be required to update their existing Emergency Response Plan (ERP) to cover the proposed gas plant.

For the Santa Maria Pump Station, the impacts on fire protection due to the adequacy of fire water was found to be adverse but insignificant (Class III). The new fire water tank can provide enough fire water for both the crude oil tank as well as the existing truck loading areas. In terms of emergency response, this site was found to have adequate response times and capabilities, and therefore the impacts were classified as adverse but insignificant (Class III). The Santa Maria pump station should be required to update their existing ERP to cover the proposed changes.

For the Jim Hopkins Fee Site, the adequacy of fire water supplies and delivery rate were found to be significant, but mitigable (Class II). This is due to the fact that this site does not currently have a formal fire protection system. This impact can be mitigated to a level of insignificance by installing a fire water system that would meet NFPA requirements. In terms of emergency response, this site was found to have adequate response times and capabilities, and therefore the impacts were classified as adverse but insignificant (Class III). The Jim Hopkins Fee site should be required to prepare an ERP for the new facilities.

It should be noted, that the lack of significant impacts on emergency response is primarily due to the extensive emergency response system that the County has in place. This is particularly true for the Area Oil and Gas Emergency Response Plan (AOGERP). Should the existing emergency response capabilities of the County diminish, then significant impacts could occur.

Alternative Gas Plant Sites

For the Orcutt Hill site no formal development plans have been prepared. Therefore, it was not possible to review fire protection adequacy. However, it has been assumed that if these sites were pursued, then adequate fire protection systems would be incorporated into their designs. As such the fire protection impacts were classified as adverse, but insignificant (Class III). In terms of emergency response, the site was found to have adequate response times and capabilities, and therefore the impacts were classified as adverse but insignificant (Class III). If the site were ever used, an ERP would need to be developed.

The Battles Gas Plant has undergone an extensive fire protection review as part of the P-17 Safety Audit. To date Unocal has met the intent of 61 of the fire safety recommendations. There are still 33 outstanding recommendations. Eleven of these are viewed as critical to providing adequate fire safety. Therefore, the impacts to fire protection are considered significant, but mitigable (Class II). The mitigation measures would involve implementing the eleven P-17 recommendations. If the eleven were implemented, the impacts to fire protection would be insignificant.

The existing Battles Gas Plant site is within ten miles of a county fire station, and therefore emergency response impacts would be considered adverse but insignificant (Class III).

It should be noted, that the lack of significant impacts on emergency response is primarily due to the extensive emergency response system that the County has in place. This is particularly true for the AOGERP. Should the existing emergency response capabilities of the County diminish, significant impacts could occur.

Noise

The impacts associated with noise were assessed for both the proposed HS&P Gas Plant as well as for the alternative sites. These impacts are summarized below.

Proposed Project

The operation of the proposed gas plant at the HS&P is not expected to increase ambient noise levels at any of the nearest sensitive receptors. From the HS&P facility, the closest impact areas are Vandenberg Village and the Mission Hills residential area. The noise impacts associated with the operation of the proposed HS&P Gas Plant are considered adverse but insignificant (Class III); and are dominated by the currently existing baseline noise levels.

Alternative Sites

The Orcutt Hill gas plant site would be expected to have the same noise levels as that calculated for the proposed project. Given the remote location of this site, noise impacts are considered to be insignificant (Class III). For the existing Battles Gas Plant there would be no new additional noise generating equipment. Therefore, there would be no increase in noise over the existing conditions at the site.

F. Cumulative Analysis

The cumulative analysis in the SEIR was divided into two parts. The first addressed the cumulative impacts associated with proposed or pending projects that were in the vicinity of the proposed project components. Since none of these cumulative projects were to be constructed during the same period as the proposed project, and given the limited operational impacts of the proposed project, all of these cumulative impacts were found to be insignificant.

The second part of the cumulative analysis addressed the potential indirect impacts to other north county oil and gas producers that would result from the decommissioning of the Battles Gas Plant. As previously mentioned, Unocal has proposed to decommission the Battles Gas Plant once the proposed project is constructed and operational. With this proposed change of gas processing from the Battles Gas Plant to the HS&P, onshore field gas streams normally treated (i.e., H_2S removed) at the Battles Gas Plant would no longer be treated. For most of the production fields in northern Santa Barbara County, gas is produced along with the oil (i.e., field gas); therefore, it is important for these producers to have an outlet for their gas.

North County Producers Currently Using the Battles Gas Plant

Table S.1 provides a list of the fields and operators that are currently using the Battles Gas Plant for processing sales gas. This table also provides the average daily production of gas that was sent to the Battles Gas Plant in 1991. The location of these fields is shown in Figure S-9. Approximately 10 MMscfd is processed at the Battles Gas Plant. The majority (~60 percent) of this was Unocal gas, as can be seen in Figure S-10. The remainder (~40 percent) is from other operators in the north county. These other operators would have no available outlet for their gas

4 mmscfd

Table S.1 Oil And Gas Production Fields Currently Using The Battles Gas Plant

Operator	Field	1991 Average Gas Production MCFD	Average Gas H_2S (PPM)	Average Gas CO_2 (Vol %)[1]	Prefered Processing Option
City Oil Corp.*	Orcutt	427	Sweet	15	Battles
Conway	Casmalia	56	Sweet	38	Battles
Conway	Santa Maria	36	2,400	9	Battles
Conway	Santa Maria	114	65	12	Battles
Crimson Partners	Santa Maria	6	1,000	10	Battles
Dominion Oil	Cat Canyon	58	Sweet	7	Battles
D&S Services/ SABA**	Cat Canyon	1,485	2,000	7	Battles
Geo Production***	Orcutt Hill	89	Sweet	15	Battles
Petrominerals	Santa Maria	7	Sweet	6	Battles
Petrominerals	Santa Maria	7	Sweet	3	Battles
Petrominerals****	Cat Canyon	17	500	10	Battles
Texaco	Orcutt	124	100	15	Battles
Unocal	Casmalia	649	5,500	38	Fuel Balancing
Unocal	Guadalupe	412	3,000	12	Fuel Balancing
Unocal	Lompoc	948	1,000	15	HS&P
Unocal	Orcutt	674	750	15	HS&P
Unocal Offshore	Point Pedernales	3,000	1,500	2	HS&P
Unocal	Santa Maria	940	1,000	10	Fuel Balancing
Vintage	Cat Canyon	412	2,000	7	Battles
Vintage	Santa Maria	657	1,000	10	Battles

Source: California Department Of Conservation, Division of Oil And Gas, 73rd Annual Report Of The State Of Oil And Gas Supervision. 1990, 1991, and surveys.

1 Some of these values are for the fields, and may not represent the actual leases.
* Sales to Battles through Vintage
** Was owned by Unocal in 1991. Purchased from Unocal in 1993.
*** Sales to Cities and Vintage then Battles
**** Is currently shut-in

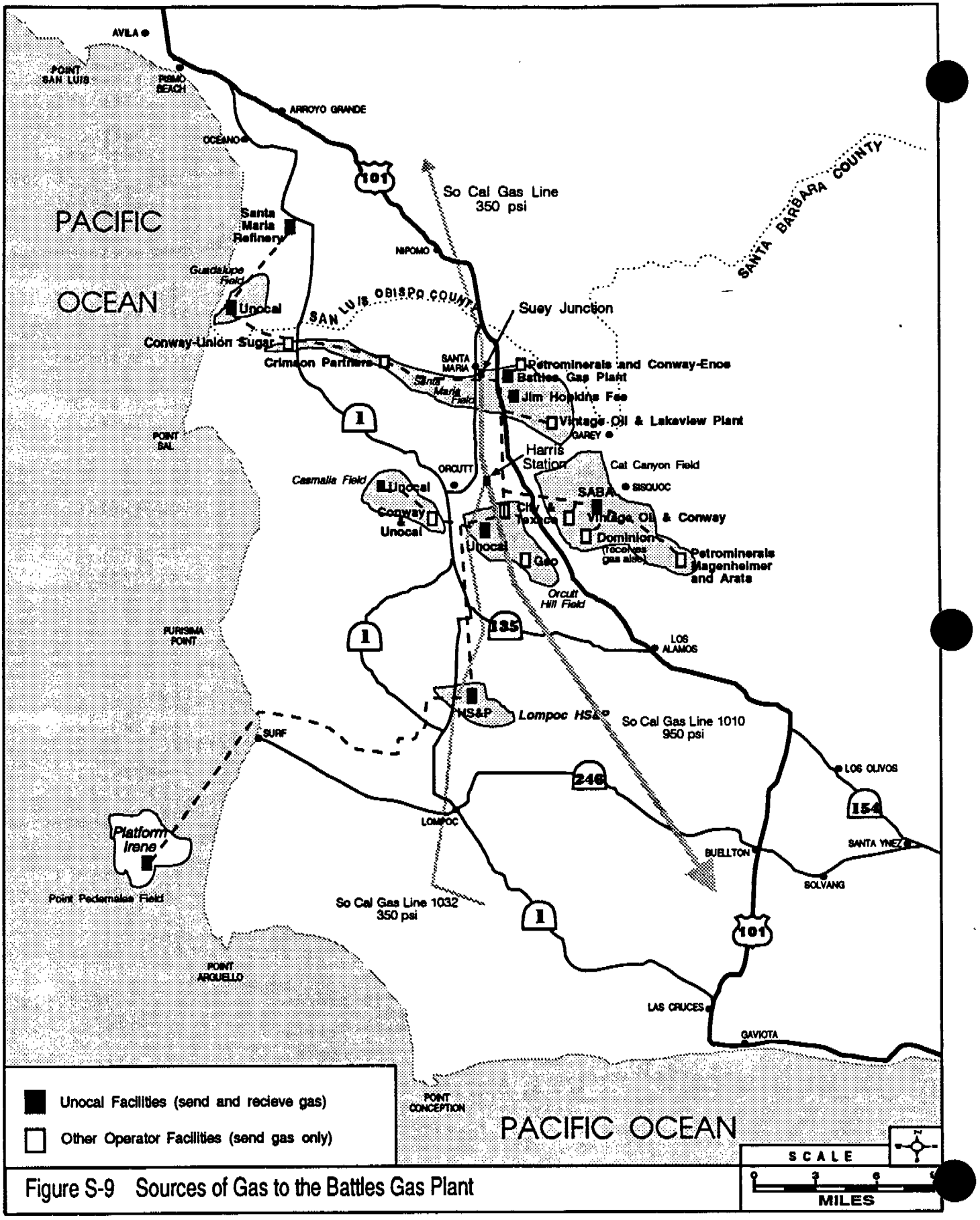
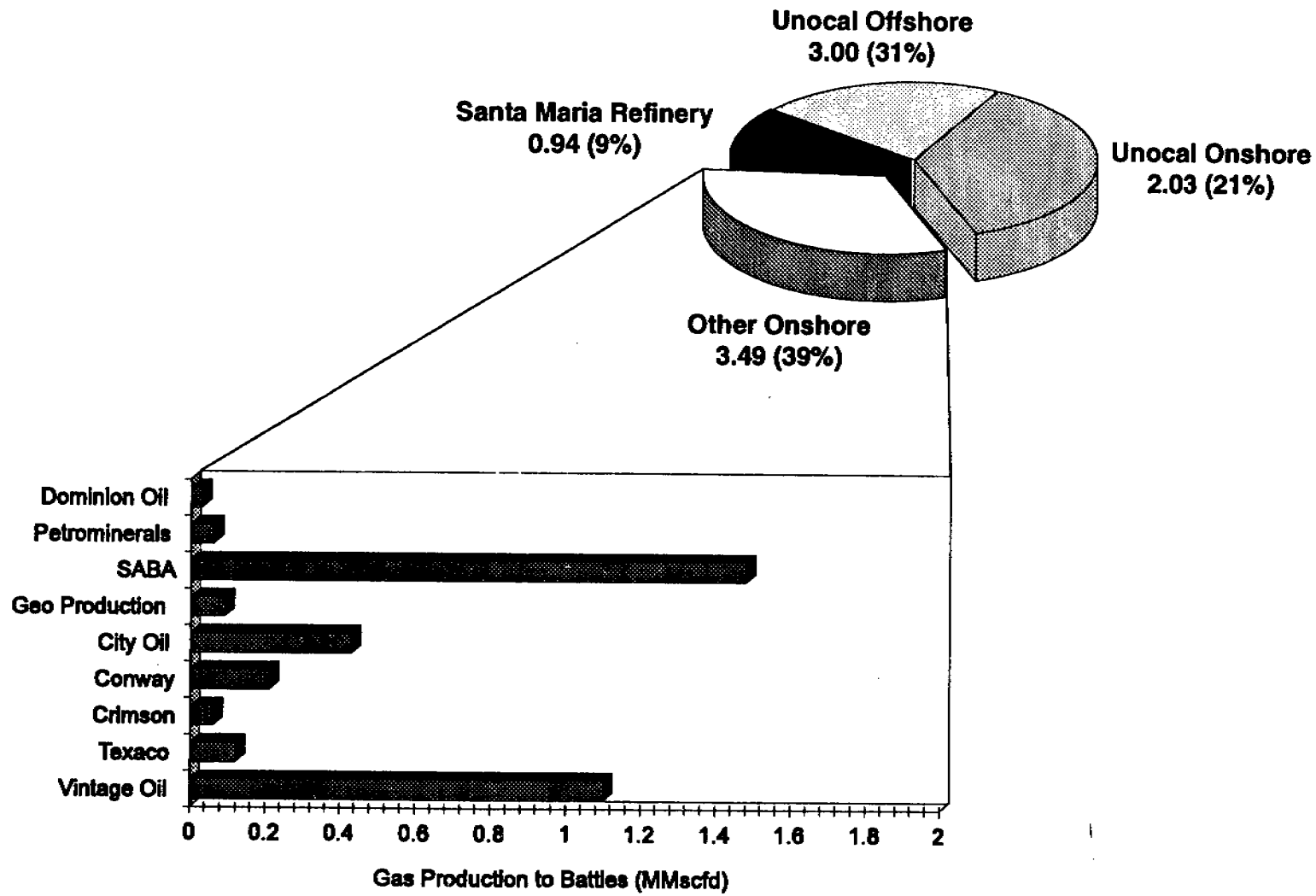


Figure S-9 Sources of Gas to the Battles Gas Plant



**SABA bought the Unocal Cat Canyon Leases in 1993.
*Numbers may not total due to Rounding

Figure S-10 Total Field Gas To Battles Gas Plant in 1991 (MMscfd)

production if the Battles Gas Plant is decommissioned. It should be noted that Unocal has recently sold their Cat Canyon and Gato Ridge holdings to SABA.

In order to determine what options might be pursued, a survey of north county oil and gas producers was conducted as part of this study. The survey collected data on other possible gas processing options as well as projected gas production over the next five years. Figure S-11 shows a plot of north county gas production that would go to the Battles Gas Plant over the next fifteen years. As this plot shows, the majority of the gas projected for production in the north county over the next fifteen years will be from non Unocal sources. If the Battles Gas Plant is decommissioned, as much as 6 MMscfd of gas would need to find other processing options or be shut-in.

Options For Other North County Gas Producers

As part of this study seven options were evaluated that could be pursued by the other producers in the event the Battles Gas Plant were decommissioned. The impacts of these options were evaluated to assess the possible cumulative effect on the north county if the proposed project is approved and constructed. Six of the options were evaluated to a programmatic level of detail. The seventh option, an expanded HS&P Gas Plant, was evaluated to a permit level of detail. Each of these options is discussed below, which is followed by a discussion of the potential impacts associated with each option.

Expanded HS&P Gas Processing Facility

This option would involve the construction and operation of a second gas plant at the HS&P site. The plant would be designed to handle 6 MMscfd of sour gas. Gas from the other operators would be collected at the existing Battles Gas Plant site and shipped via an existing pipeline to the HS&P site. The main components of this expanded sales gas processing facility are listed below.

- Sulfur Removal System,
- Carbon Dioxide (CO_2) Removal System,
- Dew Point Depression System (to remove hydrocarbon liquids and water),
- An NGL Stabilizer Tower,
- Raw NGL Storage and Truck Loading Facilities, and
- Sales Gas and Reinjection Compressors.

The gas plant would be designed to produce sales gas that could be transferred to SoCal Gas. The plant would have a similar design to the proposed HS&P Gas Plant but with some minor changes. Unlike the proposed HS&P gas plant, the expanded gas plant would need to have equipment to process, store and transport NGLs from the site. The plant would be equipped with a stabilizing tower that would be used to remove the propane from the NGL stream. The propane would be reinjected back into the sales gas stream. The remaining NGLs would be sent to storage bullets, and then trucked from the facility to an NGL processing facility in Kern

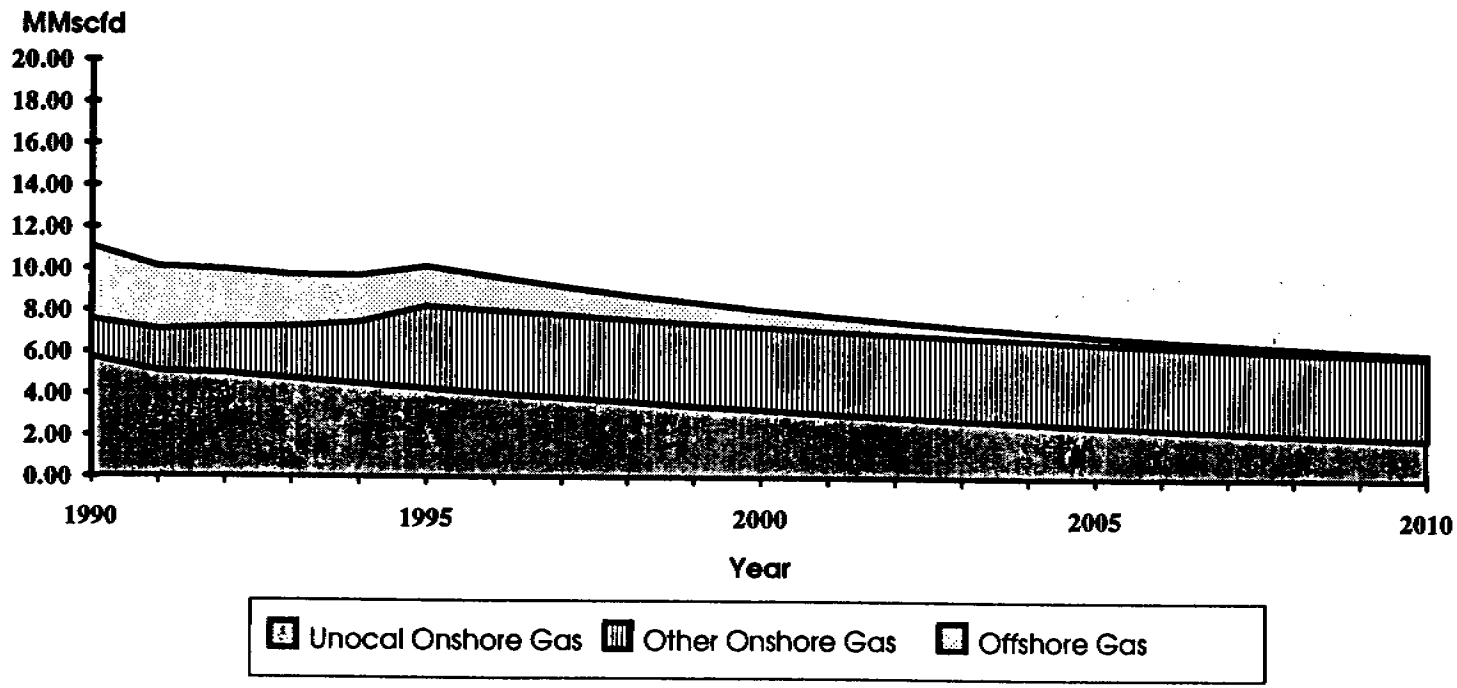


Figure S-11 Projected "Likely" Gas Production Rates That Would go to Battles

County for further processing. Up to five truck trips per week could be needed in order to move the raw NGLs from the site.

The CO_2 removed from the gas would be compressed and reinjected into one of Unocal's onsite reinjection wells. This option would also require the construction of a new sweet gas pipeline from the HS&P to the Battles Gas Plant in order to tie-in to the SoCal Gas Suey Junction station. This pipeline would need to operate at around 1,000 psig. Another alternative would be to use the existing SoCal Gas low pressure pipeline near the HS&P to move the gas to the SoCal Gas Harris Station. At this point compressors would be need to bring the gas up to around 900 psig for injection into the SoCal Gas transmission pipeline. While this option is technically feasible, the low pressure pipeline would need to be upgraded with new valves and some of the line might have to be replaced in order to handle the additional flow. Under this scenario, the gas compressors at the expanded HS&P Gas Plant would not be needed.

Battles Gas Plant with a Modified Set of Safety Conditions (Modified P-17)

Under this scenario, all the gas from fields that are not slated for processing at the proposed HS&P Gas Facility would continue to route their gas production to the existing Battles Gas Plant using the existing sour gas pipeline network. The Battles Gas Plant would undergo some additional changes, but would not be modified to comply with all of the P-17 recommendations. Based upon discussions with the County Fire Department, Building and Safety, and the Energy Division, a modified list of outstanding P-17 recommendations was developed that would need to be completed in order for the Battles Gas Plant to continue operating (see Table 4.5). This modified list of P-17 recommendations does not contain any of the equipment spacing recommendations, or the recommendation to install a closed vent system because none of these would improve offsite safety. Many of the outstanding recommendations regarding upgrading of the fire protection system have been replaced by a requirement to implement a fire protection system testing and maintenance program that assures a minimum fire water flow rate. In addition, improved access to the gas plant for fire fighting equipment would need to be implemented. This would require repairing the access road to the facility. Additional water sprays would need to be installed on the LPG and NGL storage tanks to reduce the potential for BLEVEs. Additional valving between vessels may be required at the plant in order to limit the loss of inventory in the event of an upset.

The existing gas pipeline distribution network in the north county would continue to be used.

Install H_2S Removal Equipment At Each Field Not Served By The Proposed HS&P Gas Plant

Another possible scenario for handling the fuel gas processing requirements would be to install H_2S removal equipment at each of the leases that would not be served by the proposed HS&P Gas Plant and that have high H_2S levels. Under this scenario, some leases would need to install an H_2S removal system for sweetening the gas prior to use as fuel gas. This type of facility could be skid mounted and include gas compressors, an H_2S removal system such as Sulfa-

Check, H-100, or SulfaTreat. These skids would typically be about ten feet wide and 20 feet long. Some fields may also require a refrigeration skid for dehydrating the gas. This would be similar to the refrigeration skid proposed for Jim Hopkins Fee.

Aside from Unocal, the largest producers in the north county are City Oil, D&S Services/SABA (formerly Unocal Cat Canyon) and Vintage. City Oil, D&S Services/SABA and Vintage are projected to produce about 4.7 MMscfd of gas by 1995 (based on surveys and phone interviews). This will constitute 90 percent of the projected non-Unocal production of companies currently depending on the Unocal Battles Facility. The City Oil production volume is currently sent to Battles through Vintage. The properties that Vintage purchased from Shell in 1991 include the Shell Lakeview Plant. This plant was originally built by Husky about 30 years ago and is designed to remove sulfur from a maximum of 3.5 MMscfd of fuel gas. It was used to provide fuel gas to lease operators and to provide fuel gas to Shell's cogeneration gas turbines. It was last used in 1988, and is currently shut down. The original design did not include CO_2 nor NGL recovery; therefore, in order to upgrade this facility for sales gas production, CO_2 removal, refrigeration, stabilization and NGL, storage and trucking facilities, at a minimum, would have to be added. In order to use this as a consolidated sales gas facility it would need to be essentially rebuilt.

Reinject Gas At Each Field Not Served By The Proposed HS&P Gas Plant

Under this option, the excess field gas would be reinjected back into a reservoir located at the field, and fuel gas could be scrubbed from the field gas or bought from SoCal Gas or another operator. This option would require that each field have a reinjection well and reinjection compressors. In addition fields might require the installation of H_2S and NGL removal equipment due to the high pressures required for reinjection.

In addition, the California Division of Oil & Gas (DOG) requires certain procedures and studies be conducted before allowing for reinjection. These include:

- A notice of intent to rework a well,
- A casing pressure test,
- A tracer survey,
- Cross section/contour maps, and
- A radius of review investigation.

These requirements are discussed more fully in the California Code of Regulations, Title 14, Chapter 4. Based upon these studies, the DOG would decide if reinjection would be allowed. Typically this review process requires one to two years. While this option might be available for some of the producers, it is unlikely that all of them could get permission to reinject gas.

Flare Gas At Each Field Not Served by the Proposed HS&P Gas Plant

The gas that is currently sent to Battles could also be flared. Flaring of the gas would require scrubbing of the gas to 796 ppm H_2S as per the SBCAPCD Rule 311. There are a number of

different types of flares that could be used, most being capable of handling up to many thousand cubic feet per day depending on the flare size. The simplest and most common type consists of an open vertical pipe and an ignition system. This type of flare, called an open pipe flare (OPF), is hooked up to the gas header and burns the gas with a visible flame. If visibility and noise are issues, an enclosed ground flare can be utilized where the gases are burned inside a larger pipe system. For gases that contain a lot of water or other liquids, a knockout drum may also be required. Flares with stainless steel tips and upper sections and air or fluidic seals are preferred for services where the flares will be running 24 hours per day (NAO Company).

As many as 20 flares could be built within the north county, if all producers decided to pursue this option. Some of these flares would need to be located within populated areas. This option does represent one of the least costly options for handling excess gas. There are currently at least seven flares operating within the north county. Any new flares would require permits from the APCD.

Generate Electricity At Each Field Not Served By The Proposed HS&P Gas Plant

If the gas is not sent to the Battles Facility, another scenario would be to produce electricity with the gas. One option for this scenario would be to purchase a system such as a Waukesha enginator system that comes skid mounted with a natural gas burning engine and an electrical generator. These systems can produce about 3 kW for each thousand cubic feet of gas produced per day (MCFD) depending on the quality of the gas. In addition, the fuel gas should be dry with H_2S less than 1,000 ppm and an octane rating above 118 (Waukesha specifications). This might require the addition of scrubbing facilities, if they do not already exist, to bring the H_2S down to the County standard of 796 ppm. In addition to the electrical generation systems, flares might have to be installed for periods of shut-down or emergencies, or the fields would need to shut-in.

In order to achieve the emission levels required by the SBCAPCD rules, the engines would have to be equipped with emission reduction technologies, such as a catalyst, pre-stratified charge, or use a lean burn engine such as the Waukesha lean burn GL series engine. The inclusion of a catalyst gives rise to poisoning concerns from the sulfur. The lean burn engines also require stable fuel characteristics. In addition, source testing and permitting would be required.

Shut-In Production At Fields Not Served By The Proposed HS&P Gas Plant

Many of the north county operators are small producers, and many of them may find that their only alternative is to shut-in their production. If one assumes all the fields that would not have access to the Battles Gas Plant shut-in, there would be a loss in oil production of approximately 1,800 Bbls/day. There would also be an estimated loss of approximately 40 direct jobs within the oil fields. This could translate into an indirect labor loss of about 120 jobs.

Impacts And Mitigation Measures Associated With Options For Other North County Producers

This section discusses the potential environmental impacts associated with each of the options described above. The expanded HS&P option was analyzed to a permit level of detail. The remainder of the options were evaluated to a programmatic level of detail. All of the impacts identified for these options are listed in the impact summary tables.

Expanded HS&P Gas Processing Facility

Potential impacts for this option were identified in three issue areas. Each of these are discussed below.

Air Quality/Odor

Air quality impacts are projected to occur for construction and operation of the expanded HS&P Gas Plant. During construction a significant, and unmitigable (Class I) impacts is projected to occur at all three sites due to an exceedence of the state 24-hr PM_{10} standard. It should be noted that the north county already exceeds the standard so any additional emissions are considered to be significant. Modeling has indicated that exceedence of state 1-hr NO_2 standard could occur during construction at the HS&P and SMPS sites, result in a significant but mitigable impact (Class II). See the impact summary tables at the end of the executive summary for a listing of the specific exceedences. The NO_x exceedences can be mitigated to a level of insignificance by the use of NO_x controls on construction equipment.

The operation of the expanded gas plant would result in primarily ROC, and H_2S emissions. The operational emissions for the expanded gas plant would be the same as that for the proposed project. These emissions are considered to be significant, since they occur in an area that is in non-attainment for ozone. By implementing a fugitive inspection and maintenance (I&M) program and providing ROC offsets, these impacts can be reduced to a level of insignificance (Class II).

System Safety

The major system safety impact identified for the expanded HS&P Gas Plant was a potential for a rupture of the sour gas pipeline from the Battles Gas Plant to the HS&P. This impact was found to be significant but mitigable (Class II). The impact could be mitigated to a level of insignificance by installing a pipeline liner along the four mile stretch of pipeline that follows Bradley Road. All of the other system safety impacts were found to be adverse but insignificant (Class III). The significance classifications of the system safety events for the expanded HS&P Gas Plant are shown in Figure S-12.

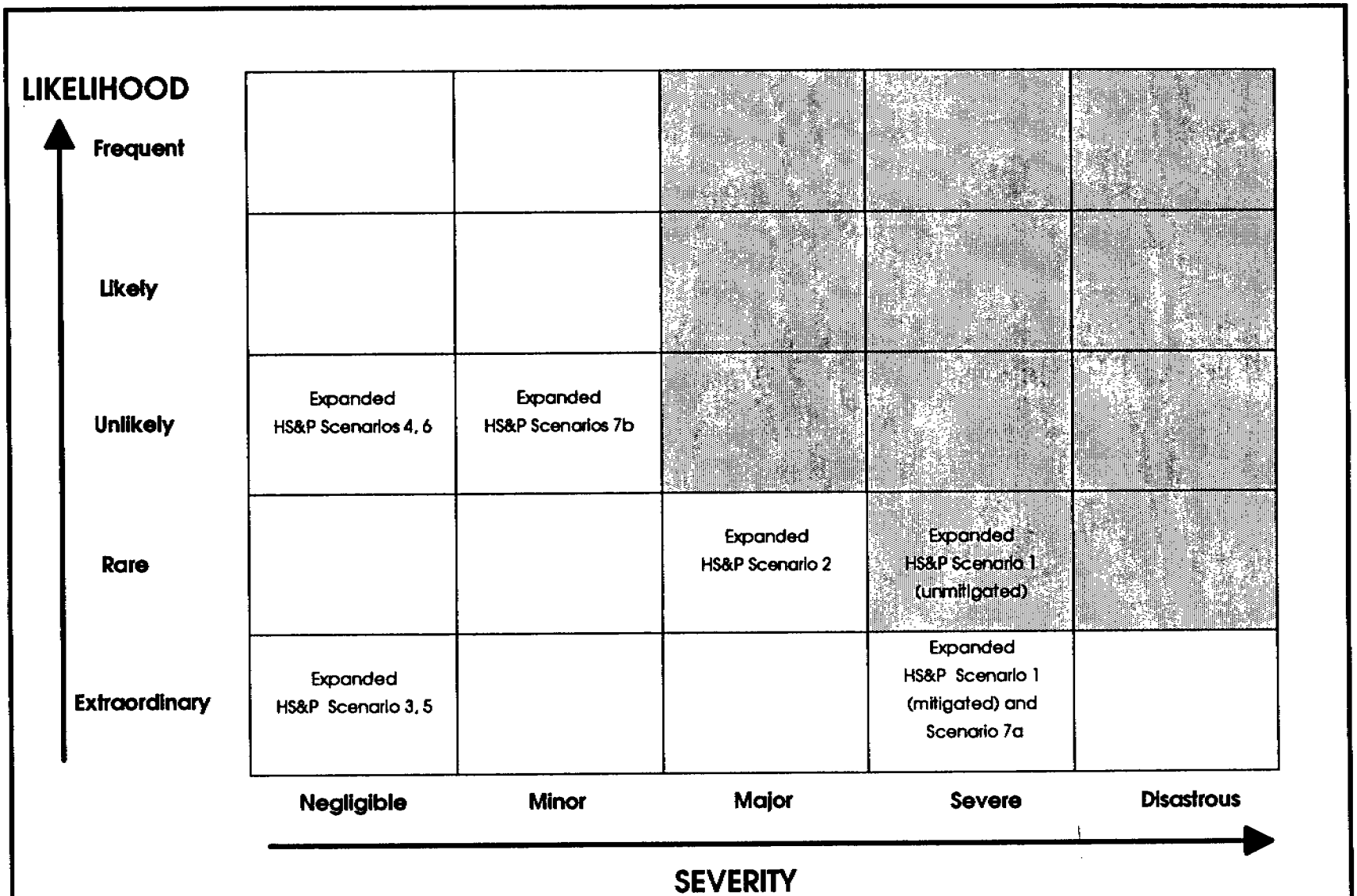


Figure S-12 Hazard Scenario Risk Ranking Matrix for Expanded HS&P Gas Plant

Fire Protection/Emergency Response

The existing HS&P fire water system has sufficient capacity to handle a new consolidated fuel gas plant. The equipment could be installed in space available at the existing facility, and the space is sufficient to meet IRI guidelines. Any new facility would need to have additional fire water monitors to cover the new equipment. Therefore, the impacts of fire water supplies on fire protection would be considered to be insignificant (Class III). Also, the location of the site is such that impacts to emergency response would be considered adverse but insignificant (Class III). It should be noted, that the lack of significant impacts on emergency response is primarily due to the extensive emergency response system that the County has in place. This is particularly true for the AOGERP. Should the existing emergency response capabilities of the County diminish, then significant impacts could occur.

Battles Gas Plant with a Modified Set of Safety Conditions (Modified P-17)

This section address the impacts associated with three issue areas.

Air Quality/Odor

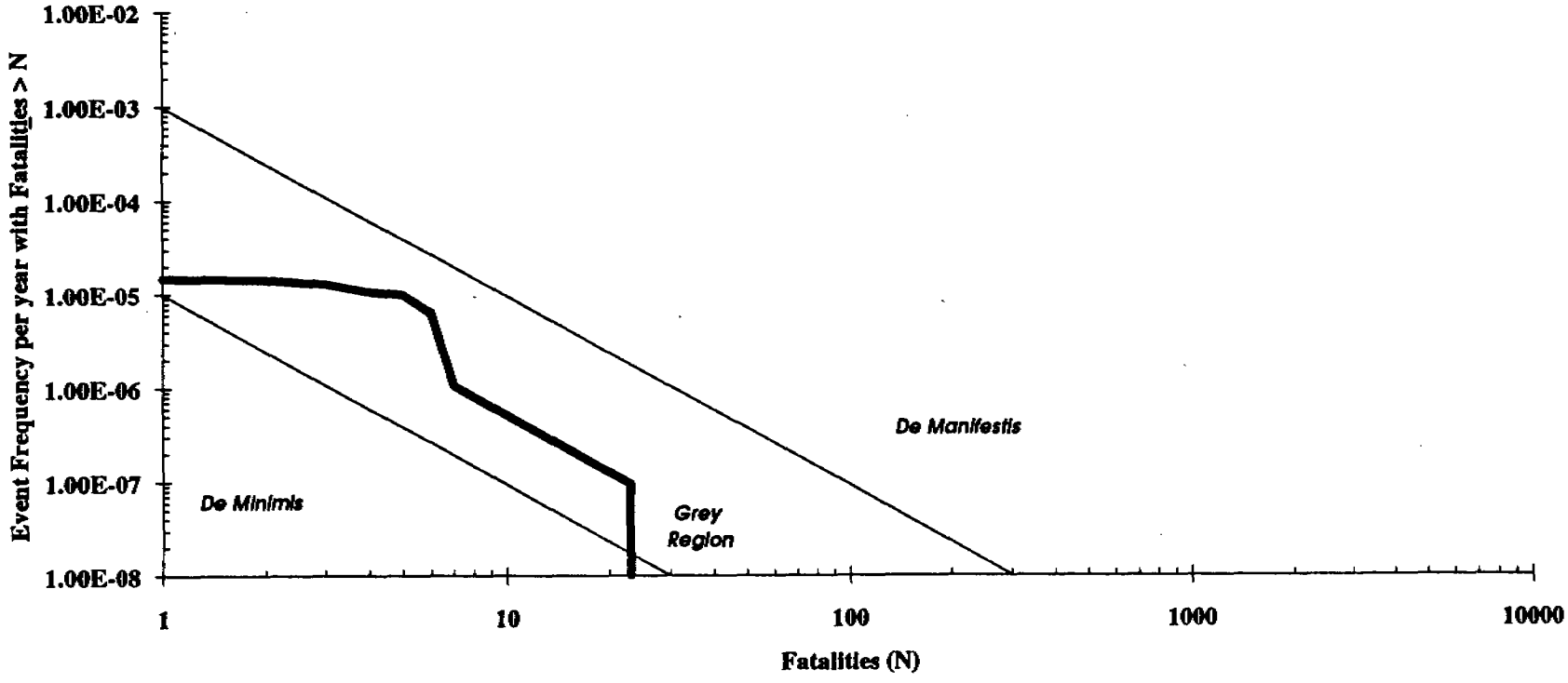
Since the Battles Gas Plant is an existing facility there would be no new air quality impacts.

System Safety

An offsite quantitative risk assessment (QRA) was conducted for this cumulative option. Figure S-13 shows the risk profile for the Battles Gas Plant with the modified P-17 conditions as discussed in Chapter 4 of this document. Based upon the County's significance criteria, the offsite impacts would be considered to be significant and unmitigable (Class I). However, based upon the SSRRC's proposed offsite risk guidelines the risk profile is contained almost entirely within the gray bottom portion in the De Minimis regions. For risks within the gray region, the SSRRC would evaluate the need for mitigation based upon a cost benefit analysis. The portion within the gray region is dominated by LPG and NGL hazards. The top part of the curve is primarily driven by the process piping that contains the liquefied LPGs and NGLs. The bottom portion of the curve is driven by LPG and NGL vessel failures and BLEVEs.

It should be noted that even with full P-17 compliance, the offsite risk profile for the Battles Gas Plant would not change from that shown for this modified P-17 case. This is due to the fact that the remaining P-17 recommendations would only affect onsite risk levels (see the Battles alternative section of this document for a further discussion of this).

One of the major risk reduction measure for the Battles Gas Plant would be to limit the volume of propane and butane storage to the maximum extent feasible. In addition a routine equipment inspection and maintenance program should be developed that assures equipment and piping integrity. Also, the current firewater testing and maintenance program should be continued on a regular basis.



Risk Profile is ploted on the county SSRRC's offsite risk graph.

Figure S-13 Risk Profile for Battles Gas Plant with a Modified Set of Safety Conditions (Modified P-17)

The relatively low level of offsite risk posed by the Battles Gas Plant is a result of the low density of people within a 1,000 feet of the facility. The population in this areas is limited to day time workers; there are no residential or large commercial or industrial sites within this area. However, if in the future this were to change, then the offsite level of risk would increase as the population within 1,000 feet of the plant increased. Therefore, limiting the future development of residential, or large commercial/industrial development within 1,000 feet of the facility would assure that the offsite risk levels associated with the plant would not increase.

Under this option portions of the existing sour gas pipeline network would continue to be used. Portions of this line pass populated areas, thereby making a leak or rupture of the line a potentially significant impact. In order to reduce the likelihood of a leak or rupture from the pipeline, the portions of the pipeline that are in populated areas should have a pipeline liner installed. This would reduce the potential impact to insignificant (Class II).

Fire Protection/Emergency Response

Based upon the modified P-17 recommendations the major fire protection issues associated with the Battles Gas Plant would be mitigated to insignificance. These include improving access to the facility, continuing regular testing of the firewater system to assure that minimum firewater flows are maintained, and limiting the amount of flammable material that could be released during a hazardous event. If all of the measures listed for the modified P-17 in Chapter 4 are done then the fire protection and emergency response impacts would be significant but mitigable (Class II).

Install H_2S Removal Equipment At Each Field Not Served By The Proposed HS&P Gas Plant

Potential impacts for this option were identified in three issue areas. Each of these are discussed below.

Air Quality

Limited gas processing facilities (i.e., H_2S removal) at each affected field would also have the potential to result in significant air quality impacts. Air quality impacts associated with construction would range from adverse but insignificant to significant but mitigable depending on the type and location of equipment installed at each field. Operation of the H_2S treatment facilities in each field would be similar to the impacts associated with the proposed equipment at JHF. Fugitive ROC emissions would result from the operation of the H_2S treatment facilities which could contribute to the regional O_3 standard violations and result in a significant adverse impact. If all the fields installed H_2S removal equipment the total emissions per year could be as high as 80 tons per year of ROC and 0.1 tons per year of SO_2. Given the low level of emissions and the fact that these would be spread out over as many as ten fields, emission offsets might not be required by the APCD, which would result in a significant and unmitigable impact (Class I).

System Safety

Limited gas processing facilities (i.e., H_2S removal) at each affected field could potentially offer the lowest system safety impacts. The hazards for an H_2S removal system would include loss of gas from the sulfur removal vessel or release of sour gas. Based upon the consequence modeling done for the proposed project, these types of sulfur removal systems would be expected to have hazard zones under 10 feet for H_2S and 26 feet for flammable vapors. Given the remote location of most of the oil fields these hazards would not be expected to go offsite. Therefore, the impacts would be considered adverse but insignificant (Class III).

Fire Protection/Emergency Response

Here again, it has been assumed that if these types of facilities were built, they would comply with the IRI and NFPA guidelines regarding spacing and fire water supplies respectively. Therefore, the impacts to fire protection would be considered insignificant (Class III). Given the limited size of this type of facility, they would not pose a significant fire hazard. However, these could be located in remote areas of the north county which could make emergency response to these sites difficult. Therefore, the emergency response impacts would be considered significant (Class I).

Reinject Gas At Each Field Not Served By The Proposed HS&P Gas Plant

Potential impacts for this option were identified in three issue areas. Each of these are discussed below.

Air Quality

Assuming that the injection compressors were run by fuel gas, the estimated emissions for these would be 16.4 tons per year of NO_x, and 13.5 tons per year of ROC (for the year 1995). This assumes that all gas not processed at the Battles Gas Plant is reinjected. The ROC and NO_x emissions which would result from the operation of the reinjection compressors could contribute to the regional O_3 standard violations and result in a significant adverse impact. Given that these emissions would be spread out over as many as 10 different locations, they would most likely not trigger the need for offsets per SBCAPCD rules. Therefore this impacts would be considered significant and unmitigable (Class I).

System Safety

Potential hazards associated with reinjection were assessed as part of the analysis of the proposed project. Results of this analysis indicated that maximum hazard zones associated with reinjection activities would not exceed 15 feet for flammable vapor and H_2S hazards. Given the remote location of most oil fields, these impacts would not be expected to extend off site.

Therefore, system safety impacts associated with reinjection of sour field gas would be adverse but insignificant (Class III). Gas reinjection would most likely require the refrigeration systems to remove the liquids from the gas prior to reinjection. The hazards associated with these systems would be similar to that for the proposed project at the JHF. Assuming the use of a propane refrigeration system, there is the potential for flammable vapor fires and explosions. hazard distances could be as great as 100 feet. Given the remote location of most of these sites, this would be considered an adverse but insignificant impact (Class III).

Fire Protection/Emergency Response

Here again, it has been assumed that if these types of facilities were built, they would comply with the IRI and NFPA guidelines regarding spacing and fire water supplies respectively. Therefore, the impacts to fire protection would be considered insignificant (Class III). Given the limited size of this type of facility, they would not pose a significant fire hazard. However, these could be located in remote areas of the north county which could make emergency response to these sites difficult. Therefore, the emergency response impacts would be considered significant (Class I).

Flare Gas At Each Field Not Served By The Proposed HS&P Gas Plant

Potential impacts for this option were identified in six issue areas. Each of these are discussed below.

Air Quality

Flaring of the excess gas at each field would have the potential to result in significant air quality impacts. Some sites would have to clean the gas to below 796 ppm H_2S, as per SBCAPCD Rule 311 (see H_2S removal above). Fugitive ROC emissions would result from the burning of the gas not used as field gas. Emissions of NO_x and ROC would be dependent on the flare types used (see Section 4.2.7). Assuming that all non-Unocal gas currently sent to the Battles Facility is flared, the emissions from these flares are estimated as follows. Emissions of NO_x would range from 49 tons per year for an assisted flare (steam or water injection) to 82 tons per year for an unassisted cascade-style flare. ROC emissions would range from 4 tons per year for the cascade style flare to 85 tons per year for the unassisted open pipe flare type. (These figures are for the year 1995.) The ROC and NO_x emissions which would result from the operation of the flares could contribute to the regional O_3 standard violations and result in a significant adverse impact. Given that these emission would be spread out over as many as 10 different locations, they would most likely not trigger the need for offsets per SBCAPCD rules. Therefore this impacts would be considered significant and unmitigable (Class I).

System Safety

The flaring scenario might require gas processing at sites that have gas H_2S levels above 796 ppm. These processing facilities would have similar safety impacts as the H_2S removal equipment scenario discussed above. In addition, flares would be installed at each lease or groups of leases. The results of consequence modeling are similar to those for the H_2S removal equipment discussed above and represent low system safety impacts. These again would be classified as adverse but insignificant (Class III).

Fire Protection/Emergency Response

It has been assumed that any facilities, such as H_2S removal equipment or flaring system, would comply with the IRI and NFPA guidelines regarding spacing and firewater supplies. Therefore, the impacts due to fire protection would be considered insignificant (Class III). However, since some of these facilities would be located in remote areas, emergency response at these sites would be difficult. Therefore, the emergency response impacts would be considered significant (Class I).

Visual Resources

In terms of visual impacts, the building of up to 20 flares within the north county could result in significant impacts to visual resources. Some of the production fields are located near populated areas and the flares used could be as high as 30 feet. They could also have exposed flames that would be visible at night. In order to mitigate this impact, enclosed flares could be used. This would only eliminate the visible flame portion of the impact. The tall flare structures would still exist. Therefore, visual impacts associated with flaring would be considered a significant impact that could not be mitigated (Class I).

Energy

In terms of energy the use of flaring would result in a significant loss of gas production from the north county (–6.0 MMscfd). This loss in energy production would be considered a significant impact that could not be mitigated (Class I).

Economics

As a result of flaring the gas there would be a significant loss of revenue for the north county gas producers. If all the gas was flared (6.0 MMscfd) this would result is a loss of revenue to the north county gas producers of around $3.0 million per year. This loss in jobs and revenue is not an environmental impact but is considered to be significant.

Generate Electricity At Each Field Not Served By The Proposed HS&P Gas Plant

Potential impacts for this option were identified in three issue areas. Each of these are discussed below.

Air Quality

Installation of natural gas burning engines and electrical generators would allow for the production of electricity at each affected site. This would have the potential for significant air quality impacts. The fuel would also have to be cleaned as per SBCAPCD Rule 311 before combustion. Emissions of NO_x would be two to three times higher than the flaring scenario discussed above, even with appropriate control technologies. If all the non-Unocal gas that is currently sent to the Battles Facility were instead used to produce electricity, NO_x emissions are estimated to range from 279 to 2,790 tons per year with or without catalysts, respectively; and ROC emissions are estimated to be 229 tons per year. (These figures are for the year 1995.) This scenario would also produce approximately 15 MW of electricity. The ROC and NO_x emissions which would result from the operation of the power generation units could contribute to the regional O_3 standard violations and result in a significant adverse impact. Given that these emissions would be spread out over as many as ten different locations, they would most likely not trigger the need for offsets per SBCAPCD rules. Therefore this impacts would be considered significant and unmitigable(Class I).

System Safety

The electrical generation scenario also would require gas processing at each site. The system safety impacts would be similar to the H_2S removal equipment scenario discussed above. Here again they would be considered adverse but insignificant (Class III).

Fire Protection/Emergency Response

It has been assumed that any facilities, such as H_2S removal equipment or an engine system, would comply with the IRI and NFPA guidelines regarding spacing and firewater supplies. Therefore, the impacts due to fire protection would be considered insignificant (Class III). However, since some of these facilities would be located in remote areas, emergency response at these sites would be difficult. Therefore, the emergency response impacts would be considered significant (Class I).

Shut-In Production at Fields Not Served by the Proposed HS&P Gas Plant

Potential impacts for this option were identified in four issue areas. Each of these are discussed below.

Air Quality

If all of the production not served by the proposed HS&P Gas Plant was shut-in, there would be a reduction in air emissions within the north county. Most of this reduction would come from internal combustion engines that run rod pumps. This would represent a beneficial impact to air quality (Class IV).

Fire Protection/Emergency Response

Since all of the field would be shut-in there would a net reduction in the demand for fire protection and emergency response within the north county. This would represent a beneficial impact (Class IV).

Energy

This option, which is the most likely given the current prices for oil and gas, would result in significant impacts to energy and economics. In terms of energy, there would be the loss of both the oil and gas. This could be as much as 6.0 MMscfd of gas and approximately 1,800 Bbls per day of oil. This loss in energy production would be considered a significant impact that could not be mitigated (Class I).

Economics

In terms of the economic impacts associated with this option there would not only be a loss of revenue from the oil and gas production (~$10.0 million per year), but also a loss of about 40 full time jobs. This would translate into a loss of as many as 120 indirect jobs. This loss in jobs and revenue from the oil and gas is not an environmental impact, but is considered to be significant.

G. Environmentally Superior Alternative

The determination of an environmentally superior alternative for this project is complicated. For both the project-specific and the cumulative scenarios, the issues weighted most heavily in the analysis of alternatives were system safety, air quality, and emergency response. At the project-specific level (i.e., when only the project's or an alternative's direct effects are considered), the proposed project is environmentally superior to all other alternatives due to its ample setback from urban development, limited distance required for sour gas transport, and the resultant low level of environmental impacts for plant construction and operation. Specifically, the construction and operation of a gas plant at the HS&P would result in only one significant, unavoidable impact, that of air pollutant emissions during construction. No significant offsite system safety impacts nor long-term air quality impacts would result from the operation of the

proposed project. By comparison, operation of an upgraded facility at the Battles Gas Plant would involve potentially significant public safety risks and significant, long-term air quality impacts. Relative to the other alternatives, the proposed project also maximizes compliance with the policies of the North County Siting Study.

The cumulative impact scenario considers the direct and indirect effects of constructing a gas plant at the HS&P and de-commissioning the Battles Gas Plant. Under this scenario, the selection of the environmentally superior alternative depends on what assumptions are made about the cause of the indirect effects; that is, what choices do the independent gas producers currently using the Battles Gas Plant make for their future gas production? Therefore, the determination of an environmentally superior alternative for the cumulative scenario involving the decommissioning of Battles is largely speculative. If it is assumed that affected independent producers would shut in or fuel balance, then the proposed project would remain the environmentally superior alternative. However, if all the producers are assumed to flare, reinject the gas that they produce, or construct cogeneration facilities, then the No Project Alternative (involving the operation of an upgraded Battles Gas Plant) could be environmentally superior, particularly with regard to emergency response and air quality. It should be noted that the system safety impacts for these options would be less than those for continued use of the Battles Gas Plant, however in reality, if the Battles Gas Plant were decommissioned, the independent producers would likely utilize a combination of the options discussed in the SEIR.

Although Unocal's proposed project contemplates the closure of the Battles Gas Plant, some third party could propose to continue operating the Battles Gas Plant rather than incur the indirect effects of shut-in or flaring. This option would require that the Battles Gas Plant be upgraded to meet the intent of Condition P-17 of the Point Pedernales Development Plan. This scenario would provide for the processing of Point Pedernales gas and some gas produced onshore at the HS&P, with most of the gas produced in the Santa Maria Valley and Cat Canyon fields being processed at a modified Battles Gas Plant. This alternative is evaluated in the SEIR as the first of two hypothetical gas processing scenarios for northern Santa Barbara County (Table 4.4 on page 4-16 et seq.). This HS&P/Modified Battles Alternative represents the environmentally superior alternative when the reasonable, worst-case cumulative impacts are considered. This alternative would avoid the potentially significant system safety and air quality impacts of indirect impacts such as flaring; it would minimize the distances over which sour gas is transported; and it would result in two gas plants which meet current safety requirements.

Impact Summary Tables
Table of Contents

CLASS I: SIGNIFICANT ENVIRONMENTAL IMPACTS WHICH CANNOT BE MITIGATED TO INSIGNIFICANCE

(IMPACTS WHICH MUST BE ADDRESSED IN A "STATEMENT OF OVERRIDING CONSIDERATION" IF THE PROJECT IS APPROVED (SECTION 10593), STATE EIR GUIDELINES)

ISSUE AREA/SOURCE	PROJECT PHASE	DESCRIPTION OF IMPACT	SCOPE	MITIGATION MEASURE	RESIDUAL IMPACT	P.P.C.R.*	P.D.R.**
Air Quality							
A. Proposed Project							
1. HS&P Gas Plant	C	2. Exceedance of the state 24-hr PM_{10} standard could occur during construction.	Local, short-term, around areas of construction.	1. Develop a dust control plan. (see AQ-1,2).	Significant	E-5, E-9	FSEIR/S 5.2 - 22
2. SMPS	C	2. Exceedance of the state 24-hr PM_{10} standard could occur during construction.	Local, short-term, around areas of construction.	1. Develop a dust control plan. (see AQ-1,2).	Significant	N/A	N/A
3. JHF	C	2. Exceedance of the state 24-hr PM_{10} standard could occur during construction.	Local, short-term, around areas of construction.	1. Develop a dust control plan. (see AQ-1,2).	Significant	N/A	N/A
B. Alternative HS&P Sites							
1. Orcutt Hill	C	2. Exceedance of the state 24-hr PM_{10} standard could occur during construction.	Local, short-term, around areas of construction.	1. Develop a dust control plan. (see AQ-1,2).	Significant	N/A	N/A

* P.P.C.R. - Previous Permit Condition Reference
** P.D.R. - Previous Document Reference
N/A Not covered in original Pt. Pedernales EIR/EIS
C Construction
O Operation

CLASS I: SIGNIFICANT ENVIRONMENTAL IMPACTS WHICH CANNOT BE MITIGATED TO INSIGNIFICANCE (CONTINUED)

ISSUE AREA/SOURCE	PROJECT PHASE	DESCRIPTION OF IMPACT	SCOPE	MITIGATION MEASURE	RESIDUAL IMPACT	P.P.C.R.*	P.D.R.**
2. Battles Gas Plant	C	2. Exceedance of the state 24-hr PM_{10} standard could occur during construction.	Local, short-term, around areas of construction.	1. Develop a dust control plan. (see AQ-1,2).	Significant	N/A	N/A
C. Potential Options for Other North County Producers							
1. Expanded HS&P Gas Plant	C	2. Exceedance of the state 24-hr PM_{10} standard could occur during construction.	Local, short-term, around areas of construction.	1. Develop a dust control plan. (see AQ-1,2).	Significant	N/A	N/A
2. Battles Gas Plant with a Modified P-17	C/O	none	---	---	---	N/A	N/A
3. H_2S Removal Equipment in Fields	O	1. ROC emissions in federal and state non-attainment areas for ozone and total project emissions could exceed County's significance threshold of 2.5 lbs per hour.	Regional, long-term.	1. Implement a fugitive I&M program.	Potentially Significant	N/A	N/A

* P.P.C.R. - Previous Permit Condition Reference
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CLASS I: SIGNIFICANT ENVIRONMENTAL IMPACTS WHICH CANNOT BE MITIGATED TO INSIGNIFICANCE (CONTINUED)

ISSUE AREA/SOURCE	PROJECT PHASE	DESCRIPTION OF IMPACT	SCOPE	MITIGATION MEASURE	RESIDUAL IMPACT	P.P.C.R.*	P.D.R.**
4. Reinject Gas	O	1. ROC and NO_x emissions in federal and state non- attainment areas for ozone and total project emissions could exceed County's significance threshold of 2.5 lbs per hour.	Regional, long-term.	1. Implement a fugitive I&M program. 2. Use Low-NO_x controls on reinjection compressors.	Potentially Significant	N/A	N/A
5. Flare Gas	O	1. ROC and NO_x emissions in federal and state non- attainment areas for ozone and total project emissions could exceed County's significance threshold of 2.5 lbs per hour.	Regional, long-term.	1. Use assisted, cascade type flares.	Potentially Significant	N/A	N/A
6. Electrical Generation	O	1. ROC and NO_x emissions in federal and state non- attainment areas for ozone and total project emissions could exceed County's significance threshold of 2.5 lbs per hour.	Regional, long-term.	1. Use Low-NO_x controls.	Potentially Significant	N/A	N/A
7. Shut-In Production	O	none	---	---	---	N/A	N/A

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** P.D.R. - Previous Document Reference
N/A Not covered in original Pt. Pedernales EIR/EIS
C Construction
O Operation

CLASS I: SIGNIFICANT ENVIRONMENTAL IMPACTS WHICH CANNOT BE MITIGATED TO INSIGNIFICANCE (CONTINUED)

ISSUE AREA/SOURCE	PROJECT PHASE	DESCRIPTION OF IMPACT	SCOPE	MITIGATION MEASURE	RESIDUAL IMPACT	P.P.C.R.*	P.D.R.**
System Safety							
A. Proposed Project							
1. HS&P Gas Plant	O	none	---	---	---	P-1, P-19	FEIR/S 5.11 - 28/37
2. SMPS	O	none	---	---	---	N/A	N/A
3. JHF	O	none	---	---	---	N/A	N/A
B. Alternative HS&P Sites							
1. Orcutt Hill	O	none	---	---	---	N/A	N/A
2. Battles Gas Plant	O	1. Based upon QRA the frequency of a fatality is greater than 1 x10-6/yr.	Local, long-term.	1. Implement safety upgrades associated with the modified P-17 recommendations.	Significant	N/A	N/A
C. Potential Options for Other North County Producers							
1. Expanded HS&P Gas Plant	O	none	---	---	---	N/A	N/A
2. Battles Gas Plant with a Modified P-17	O	1. Based upon QRA the frequency of a fatality is greater than 1 x10-6/yr.	Local, long-term.	1. Implement safety upgrades associated with the modified P-17 recommendations.	Significant	N/A	N/A

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O Operation

CLASS I: SIGNIFICANT ENVIRONMENTAL IMPACTS WHICH CANNOT BE MITIGATED TO INSIGNIFICANCE (CONTINUED)

ISSUE AREA/SOURCE	PROJECT PHASE	DESCRIPTION OF IMPACT	SCOPE	MITIGATION MEASURE	RESIDUAL IMPACT	P.P.C.R.*	P.D.R.**
3. H_2S Removal Equipment in Fields	O	none	---	---	---	N/A	N/A
4. Reinject Gas	O	none	---	---	---	N/A	N/A
5. Flare Gas	O	none	---	---	---	N/A	N/A
6. Electrical Generation	O	none	---	---	---	N/A	N/A
7. Shut-In Production	O	none	---	---	---	N/A	N/A

* P.P.C.R. - Previous Permit Condition Reference
** P.D.R. - Previous Document Reference
N/A Not covered in original Pt. Pedernales EIR/EIS
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O Operation

CLASS I: SIGNIFICANT ENVIRONMENTAL IMPACTS WHICH CANNOT BE MITIGATED TO INSIGNIFICANCE (CONTINUED)

ISSUE AREA/SOURCE	PROJECT PHASE	DESCRIPTION OF IMPACT	SCOPE	MITIGATION MEASURE	RESIDUAL IMPACT	P.P.C.R.*	P.D.R.**
Fire Protection/ Emergency Response							
A. Proposed Project							
1. HS&P Gas Plant	O	none	---	---	---	E-5, E-8	FEIR/S 5.2 - 22/25
2. SMPS	O	none	---	---	---	N/A	N/A
3. JHF	O	none	---	---	---	N/A	N/A
B. Alternative HS&P Sites							
1. Orcutt Hill	O	none	---	---	---	N/A	N/A
2. Battles Gas Plant	O	none	---	---	---	N/A	N/A
C. Potential Options for Other North County Producers							
1. Expanded HS&P Gas Plant	O	none	---	---	---	N/A	N/A
2. Battles Gas Plant with a Modified P-17	O	none	---	---	---	N/A	N/A
3. H_2S Removal Equipment in Fields	O	1. Potential lack of emergency response services within a reasonable time frame.	Regional, long-term.	1. Expand emergency response capabilities within the north county.	Potentially significant	N/A	N/A

* P.P.C.R. - Previous Permit Condition Reference
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O Operation

CLASS I: SIGNIFICANT ENVIRONMENTAL IMPACTS WHICH CANNOT BE MITIGATED TO INSIGNIFICANCE (CONTINUED)

ISSUE AREA/SOURCE	PROJECT PHASE	DESCRIPTION OF IMPACT	SCOPE	MITIGATION MEASURE	RESIDUAL IMPACT	P.P.C.R.*	P.D.R.**
4. Reinject Gas	O	1. Potential lack of emergency response services within a reasonable time frame.	Regional, long-term.	1. Expand emergency response capabilities within the north county.	Potentially significant	N/A	N/A
5. Flare Gas	O	1. Potential lack of emergency response services within a reasonable time frame.	Regional, long-term.	1. Expand emergency response capabilities within the north county.	Potentially significant	N/A	N/A
6. Electrical Generation	O	1. Potential lack of emergency response services within a reasonable time frame.	Regional, long-term.	1. Expand emergency response capabilities within the north county.	Potentially significant	N/A	N/A
7. Shut-In Production	O	none	---	---	---	N/A	N/A

* P.P.C.R. - Previous Permit Condition Reference
** P.D.R. - Previous Document Reference
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C Construction
O Operation

CLASS I: SIGNIFICANT ENVIRONMENTAL IMPACTS WHICH CANNOT BE MITIGATED TO INSIGNIFICANCE (CONTINUED)

ISSUE AREA/SOURCE	PROJECT PHASE	DESCRIPTION OF IMPACT	SCOPE	MITIGATION MEASURE	RESIDUAL IMPACT	P.P.C.R.*	P.D.R.**
Noise							
A. Proposed Project							
1. HS&P Gas Plant	O	none	---	---	---	N/A	N/A
2. SMPS	O	none	---	---	---	N/A	N/A
3. JHF	O	none	---	---	---	N/A	N/A
B. Alternative HS&P Sites							
1. Orcutt Hill	O	none	---	---	---	N/A	N/A
2. Battles Gas Plant	O	none	---	---	---	N/A	N/A

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* P.P.C.R. - Previous Permit Condition Reference
** P.D.R. - Previous Document Reference
N/A Not covered in original Pt. Pedernales EIR/EIS
C Construction
O Operation

CLASS I: SIGNIFICANT ENVIRONMENTAL IMPACTS WHICH CANNOT BE MITIGATED TO INSIGNIFICANCE (CONTINUED)

ISSUE AREA/SOURCE	PROJECT PHASE	DESCRIPTION OF IMPACT	SCOPE	MITIGATION MEASURE	RESIDUAL IMPACT	P.P.C.R.*	P.D.R.**
Energy							
A. Proposed Project							
1. HS&P Gas Plant	O	none	---	---	---	N/A	N/A
2. SMPS	O	none	---	---	---	N/A	N/A
3. JHF	O	none	---	---	---	N/A	N/A
B. Alternative HS&P Sites							
1. Orcutt Hill	O	none	---	---	---	N/A	N/A
2. Battles Gas Plant	O	none	---	---	---	N/A	N/A
C. Potential Options for Other North County Producers							
1. Expanded HS&P Gas Plant	O	none	---	---	---	N/A	N/A
2. New Gas Plant at Battles	O	none	---	---	---	N/A	N/A
3. H_2S Removal Equipment in Fields	O	none	---	---	---	N/A	N/A

* P.P.C.R. - Previous Permit Condition Reference
** P.D.R. - Previous Document Reference
N/A Not covered in original Pt. Pedernales EIR/EIS
C Construction
O Operation

CLASS I: SIGNIFICANT ENVIRONMENTAL IMPACTS WHICH CANNOT BE MITIGATED TO INSIGNIFICANCE (CONTINUED)

ISSUE AREA/SOURCE	PROJECT PHASE	DESCRIPTION OF IMPACT	SCOPE	MITIGATION MEASURE	RESIDUAL IMPACT	P.P.C.R.*	P.D.R.**
4. Reinject Gas	O	1. Loss of local supply of natural gas production.	Regional, long-term.	none	Significant	N/A	N/A
5. Flare Gas	O	1. Loss of local supply of natural gas production.	Regional, long-term.	none	Significant	N/A	N/A
6. Electrical Generation	O	none	---	---	---	N/A	N/A
7. Shut-In Production	O	1. Loss of local supply of natural gas and crude oil production.	Regional, long-term.	none	Significant	N/A	N/A

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* P.P.C.R. - Previous Permit Condition Reference
** P.D.R. - Previous Document Reference
N/A Not covered in original Pt. Pedernales EIR/EIS
C Construction
O Operation

CLASS I: SIGNIFICANT ENVIRONMENTAL IMPACTS WHICH CANNOT BE MITIGATED TO INSIGNIFICANCE (CONTINUED)

ISSUE AREA/SOURCE	PROJECT PHASE	DESCRIPTION OF IMPACT	SCOPE	MITIGATION MEASURE	RESIDUAL IMPACT	P.P.C.R.*	P.D.R.**
Visual							
A. Proposed Project							
1. HS&P Gas Plant	O	none	---	---	---	N/A	N/A
2. SMPS	O	none	---	---	---	N/A	N/A
3. JHF	O	none	---	---	---	N/A	N/A
B. Alternative HS&P Sites							
1. Orcutt Hill	O	none	---	---	---	N/A	N/A
2. Battles Gas Plant	O	none	---	---	---	N/A	N/A
C. Potential Options for Other North County Producers							
1. Expanded HS&P Gas Plant	O	none	---	---	---	N/A	N/A
2. New Gas Plant at Battles	O	none	---	---	---	N/A	N/A
3. H_2S Removal Equipment in Fields	O	none	---	---	---	N/A	N/A
4. Reinject Gas	O	none	---	---	---	N/A	N/A

* P.P.C.R. - Previous Permit Condition Reference
** P.D.R. - Previous Document Reference
N/A Not covered in original Pt. Pedernales EIR/EIS
C Construction
O Operation

CLASS I: SIGNIFICANT ENVIRONMENTAL IMPACTS WHICH CANNOT BE MITIGATED TO INSIGNIFICANCE (CONTINUED)

ISSUE AREA/SOURCE	PROJECT PHASE	DESCRIPTION OF IMPACT	SCOPE	MITIGATION MEASURE	RESIDUAL IMPACT	P.P.C.R.*	P.D.R.**
5. Flare Gas	O	1. Potential visual impacts due to flares as high as thirty feet and open flames.	Regional, long-term.	1. Use enclosed flares.	Potentially significant depending upon location.	N/A	N/A
6. Electrical Generation	O	none	---	---	---	N/A	N/A
7. Shut-In Production	O	none	---	---	---	N/A	N/A

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* P.P.C.R. - Previous Permit Condition Reference
** P.D.R. - Previous Document Reference
N/A Not covered in original Pt. Pedernales EIR/EIS
C Construction
O Operation

CLASS II: SIGNIFICANT ENVIRONMENTAL IMPACTS WHICH CAN BE MITIGATED TO INSIGNIFICANCE

(FINDINGS REQUIRE MITIGATION OR THAT MEASURES ARE INFEASIBLE MUST BE MADE IF PROJECT IS APPROVED (SECTION 15091), STATE EIR GUIDELINES)

ISSUE AREA/ SOURCE	PROJECT PHASE	DESCRIPTION OF IMPACT	SCOPE	MITIGATION MEASURE	RESIDUAL IMPACT	P.P.C.R.*	P.D.R.**
Air Quality							
A. Proposed Project							
1. HS&P Gas Plant	O	1. ROC emissions in federal and state non-attainment area for ozone, and total project emissions exceed the County's significance threshold of 2.5 lbs per hour.	Regional, long-term.	1. Provide ROC offsets. 2. Implement a fugitive I&M program.	Insignificant	E-5, E-6, E-10	FSEIR/S 5.2 - 22/25
	C	2. Exceedance of the state 1-hr NO_x standard could occur during construction.	Local, short-term, around areas of construction.	1. Use of 20 timing retard on diesel construction equipment. 2. Use of reformulated diesel fuel. 3. Use of high pressure fuel injectors on diesel equipment.	Insignificant	E-5, E-9	FSEIR/S 5.2 - 22

* P.P.C.R. - Previous Permit Condition Reference
** P.D.R. - Previous Document Reference
N/A Not covered in original Pt. Pedernales EIR/EIS
C Construction
O Operation

CLASS II: SIGNIFICANT ENVIRONMENTAL IMPACTS WHICH CAN BE MITIGATED TO INSIGNIFICANCE (CONTINUED)

ISSUE AREA/ SOURCE	PROJECT PHASE	DESCRIPTION OF IMPACT	SCOPE	MITIGATION MEASURE	RESIDUAL IMPACT	P.P.C.R.*	P.D.R.**
2. SMPS	O	1. ROC and NO_x emissions in federal and state non-attainment area for ozone, and total project emissions exceed the County's significance threshold of 2.5 lbs per hour.	Regional, long-term.	1. Provide ROC and NO_x offsets.	Insignificant	N/A	N/A
3. JHF	O	1. ROC emissions in federal and state non-attainment area for ozone, and total project emissions exceed the County's significance threshold of 2.5 lbs per hour.	Regional, long-term.	1. Provide ROC offsets.	Insignificant	N/A	N/A

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C Construction
O Operation

CLASS II: SIGNIFICANT ENVIRONMENTAL IMPACTS WHICH CAN BE MITIGATED TO INSIGNIFICANCE (CONTINUED)

ISSUE AREA/ SOURCE	PROJECT PHASE	DESCRIPTION OF IMPACT	SCOPE	MITIGATION MEASURE	RESIDUAL IMPACT	P.P.C.R.*	P.D.R.**
B. Alternative HS&P Sites							
1. Orcutt Hill	O	1. ROC emissions in federal and state non-attainment area for ozone, and total project emissions exceed the County's significance threshold of 2.5 lbs per hour.	Regional, long-term.	1. Provide ROC offsets. 2. Implement a fugitive I&M program.	Insignificant	N/A	N/A
	O	2. H_2S emissions in state non-attainment area for H_2S.	Local, long-term.	1. Implement a fugitive I&M program	Insignificant	N/A	N/A
	C	5. Exceedance of the state 1-hr NO_x standard could occur during construction.	Local, short-term, around areas of construction.	1. Use of 20 timing retard on diesel construction equipment. 2. Use of reformulated diesel fuel. 3. Use of high pressure fuel injectors on diesel equipment.	Insignificant	N/A	N/A

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CLASS II: SIGNIFICANT ENVIRONMENTAL IMPACTS WHICH CAN BE MITIGATED TO INSIGNIFICANCE (CONTINUED)

ISSUE AREA/ SOURCE	PROJECT PHASE	DESCRIPTION OF IMPACT	SCOPE	MITIGATION MEASURE	RESIDUAL IMPACT	P.P.C.R.*	P.D.R.**
2. Battles Gas Plant	C	5. Exceedance of the state 1-hr NO_x standard could occur during construction.	Local, short-term, around areas of construction.	1. Use of 20 timing retard on diesel construction equipment. 2. Use of reformulated diesel fuel. 3. Use of high pressure fuel injectors on diesel equipment. 4. Eliminate the need to meet IRI spacing.	Insignificant	N/A	N/A
	O	none since already in the baseline	---	---	---	N/A	N/A
3. Potential Options for Other North County Producers							
1. Expanded HS&P Gas Plant	O	1. ROC emissions in federal and state non-attainment area for ozone, and total project emissions exceed the County's significance threshold of 2.5 lbs per hour.	Regional, long-term.	1. Provide ROC offsets. 2. Implement a fugitive I&M program.	Insignificant	N/A	N/A
	C	4. Exceedance of the state 1-hr NO_x standard could occur during construction.	Local, short-term, around areas of construction.	1. Use of 20 timing retard on diesel construction equipment. 2. Use of reformulated diesel fuel. 3. Use of high pressure fuel injectors on diesel equipment.	Insignificant	E-5, E-9	FSEIR/S 5.2 - 22

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CLASS II: SIGNIFICANT ENVIRONMENTAL IMPACTS WHICH CAN BE MITIGATED TO INSIGNIFICANCE (CONTINUED)

ISSUE AREA/ SOURCE	PROJECT PHASE	DESCRIPTION OF IMPACT	SCOPE	MITIGATION MEASURE	RESIDUAL IMPACT	P.P.C.R.*	P.D.R.**
2. Battles Gas Plant with a Modified P-17	O	None since already in the baseline.	---	---	---	N/A	N/A
3. H_2S Removal Equipment in Fields	C/O	none	---	---	---	N/A	N/A
4. Reinject Gas	C/O	none	---	---	---	N/A	N/A
5. Flare Gas	C/O	none	---	---	---	N/A	N/A
6. Electrical Generation	C/O	none	---	---	---	N/A	N/A
7. Shut-In Production	C/O	none	---	---	---	N/A	N/A

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CLASS II: SIGNIFICANT ENVIRONMENTAL IMPACTS WHICH CAN BE MITIGATED TO INSIGNIFICANCE (CONTINUED)

ISSUE AREA/ SOURCE	PROJECT PHASE	DESCRIPTION OF IMPACT	SCOPE	MITIGATION MEASURE	RESIDUAL IMPACT	P.P.C.R.*	P.D.R.**
System Safety							
A. Proposed Project							
1. **HS&P Gas Plant**	C/O	none	---	---	---	P-1, P-19	FEIR/S 5.11 - 28/37
2. **SMPS**	C/O	none	---	---	---	N/A	N/A
3. **JHF**	C/O	none	---	---	---	N/A	N/A
B. Alternative HS&P Sites							
1. **Orcutt Hill**	C/O	none	---	---	---	N/A	N/A
2. **Battles Gas Plant**	O	1. Potential rupture of the sour gas pipeline from Battles to the HS&P.	Local, long-term in vicinity of Bradley Road.	1. Line this four mile section of pipe with a corrosion resistant liner or install a new line.	Insignificant	N/A	N/A
C. Potential Options for Other North County Producers							
1. **Expanded HS&P Gas Plant**	O	1. Potential rupture of the sour gas pipeline from Battles Battles to the HS&P.	Local, long-term in vicinity of Bradley Road.	1. Line this four mile section of pipe with a corrosion resistant liner.	Insignificant	N/A	N/A
2. **Battles Gas Plant with a Modified P-17**	O	none	---	---	---	N/A	N/A

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CLASS II: SIGNIFICANT ENVIRONMENTAL IMPACTS WHICH CAN BE MITIGATED TO INSIGNIFICANCE (CONTINUED)

ISSUE AREA/ SOURCE	PROJECT PHASE	DESCRIPTION OF IMPACT	SCOPE	MITIGATION MEASURE	RESIDUAL IMPACT	P.P.C.R.*	P.D.R.**
3. H_2S Removal Equipment in Fields	O	none	---	---	---	N/A	N/A
4. Reinject Gas	O	none	---	---	---	N/A	N/A
5. Flare Gas	O	none	---	---	---	N/A	N/A
6. Electrical Generation	O	none	---	---	---	N/A	N/A
7. Shut-In Production	O	none	---	---	---	N/A	N/A

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CLASS II: SIGNIFICANT ENVIRONMENTAL IMPACTS WHICH CAN BE MITIGATED TO INSIGNIFICANCE (CONTINUED)

ISSUE AREA/ SOURCE	PROJECT PHASE	DESCRIPTION OF IMPACT	SCOPE	MITIGATION MEASURE	RESIDUAL IMPACT	P.P.C.R.*	P.D.R.**
Fire Protection/Emergency Response							
A. Proposed Project							
1. HS&P Gas Plant	O	none	---	---	---	N/A	N/A
2. SMPS	O	none	---	---	---	N/A	N/A
3. JHF	O	1. Lack of adequate fire water system.	Local, long-term	1. Install a fire water system that meets the requirements of NFPA.	Insignificant	N/A	N/A
B. Alternative HS&P Sites							
1. Orcutt Hill	O	none	---	---	---	N/A	N/A
2. Battles Gas Plant	O	1. Lack of adequate fire protection system	Local, long-term	1. Implement the modified P-17 recommendations.	Insignificant	N/A	N/A
C. Potential Options for Other North County Producers							
1. Expanded HS&P Gas Plant	O	none	---	---	---	N/A	N/A
2. Battles Gas Plant with a Modified P-17	O	1. Lack of adequate fire protection system	Local, long-term	1. Implement the modified P-17 recommendations.	Insignificant	N/A	N/A

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CLASS II: SIGNIFICANT ENVIRONMENTAL IMPACTS WHICH CAN BE MITIGATED TO INSIGNIFICANCE (CONTINUED)

ISSUE AREA/ SOURCE	PROJECT PHASE	DESCRIPTION OF IMPACT	SCOPE	MITIGATION MEASURE	RESIDUAL IMPACT	P.P.C.R.*	P.D.R.**
3. H_2S Removal Equipment in Fields	O	none	---	---	---	N/A	N/A
4. Reinject Gas	O	none	---	---	---	N/A	N/A
5. Flare Gas	O	none	---	---	---	N/A	N/A
6. Electrical Generation	O	none	---	---	---	N/A	N/A
7. Shut-In Production	O	none	---	---	---	N/A	N/A

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CLASS II: SIGNIFICANT ENVIRONMENTAL IMPACTS WHICH CAN BE MITIGATED TO INSIGNIFICANCE (CONTINUED)

ISSUE AREA/ SOURCE	PROJECT PHASE	DESCRIPTION OF IMPACT	SCOPE	MITIGATION MEASURE	RESIDUAL IMPACT	P.P.C.R.*	P.D.R.**
Noise							
A. Proposed Project							
1. HS&P Gas Plant	C/O	none	---	---	---	N/A	N/A
2. SMPS	C/O	none	---	---	---	N/A	N/A
3. JHF	C/O	none	---	---	---	N/A	N/A
B. Alternative HS&P Sites							
1. Orcutt Hill	C/O	none	---	---	---	N/A	N/A
2. Battles Gas Plant	C/O	none	---	---	---	N/A	N/A

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CLASS II: SIGNIFICANT ENVIRONMENTAL IMPACTS WHICH CAN BE MITIGATED TO INSIGNIFICANCE (CONTINUED)

ISSUE AREA/ SOURCE	PROJECT PHASE	DESCRIPTION OF IMPACT	SCOPE	MITIGATION MEASURE	RESIDUAL IMPACT	P.P.C.R.*	P.D.R.**
Traffic Circulation							
A. Proposed Project							
1. HS&P Gas Plant	C	1. Traffic impacts on Harris Grade Road during construction.	Local, short-term.	1. Restrict parking to existing HS&P site. 2. Applicant shall repair all damage to public roads caused by any project-related construction activities. 3. Applicant shall reduce the height of existing vegetation 200 feet south of the entrance to the HS&P Facility prior to construction. 4. Truck trips associated with hauling of excess site soils shall occur outside peak traffic periods, and shall be limited to between 8:30 AM and 4:00 PM.	Insignificant	O-1, O-3	FSEIR/S 5.10 - 18/19
2. SMPS	C/O	none	---	---	---	N/A	N/A
3. JHF	C/O	none	---	---	---	N/A	N/A

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CLASS II: SIGNIFICANT ENVIRONMENTAL IMPACTS WHICH CAN BE MITIGATED TO INSIGNIFICANCE (CONTINUED)

ISSUE AREA/ SOURCE	PROJECT PHASE	DESCRIPTION OF IMPACT	SCOPE	MITIGATION MEASURE	RESIDUAL IMPACT	P.P.C.R.*	P.D.R.**
Biology							
A. Proposed Project							
1. **HS&P Gas Plant**	C	1. Potential Impacts to Oak Trees during construction.	Local, long-term, in vicinity of pipeline corridors.	1. All oak trees shall be avoided to the maximum extent feasible. 2. An oak tree protection and replacement plan shall be prepared by the applicant (see B-2.) 3. Prior to startup, the applicant shall post a bond or other security agreement approved by the County to ensure that all landscaping and revegetation programs are completed to the County's specifications.	Insignificant	H-11	FSEIR/S 5.6 - 4/9

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CLASS II: SIGNIFICANT ENVIRONMENTAL IMPACTS WHICH CAN BE MITIGATED TO INSIGNIFICANCE (CONTINUED)

ISSUE AREA/ SOURCE	PROJECT PHASE	DESCRIPTION OF IMPACT	SCOPE	MITIGATION MEASURE	RESIDUAL IMPACT	P.P.C.R.*	P.D.R.**
	C	2. Potential damage to biological resources due to exposure to polluted runoff.	Local, short-term, in vicinity of construction.	1. Sedimentation, silt and grease traps shall be installed in paved areas to act as filters to minimize pollution reaching downstream habitats. 2. Washing of equipment contaminated with concrete, paint or other materials shall be allowed only in areas where polluted water and materials can be contained for subsequent removal from the site.	Insignificant	H-1	FSEIR/S 5.6 - 28/29
2. SMPS	C	none	---	---	---	N/A	N/A
3. JHF	C	none	---	---	---	N/A	N/A

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O Operation

CLASS III: OTHER ENVIRONMENTAL IMPACTS WHICH ARE ADVERSE BUT NOT SIGNIFICANT

ISSUE AREA/ SOURCE	PROJECT PHASE	DESCRIPTION OF IMPACT	SCOPE	MITIGATION MEASURE	RESIDUAL IMPACT	P.P.C.R.*	P.D.R.**
Air Quality							
A. Proposed Project							
1. HS&P Gas Plant	C/O	none	---	---	---	E-5, E-8	FEIR/S 5.2 - 22/25
2. SMPS	C/O	none	---	---	---	N/A	N/A
3. JHF	C/O	none	---	---	---	N/A	N/A
B. Alternative HS&P Sites							
1. Orcutt Hill	C/O	none	---	---	---	N/A	N/A
2. Battles Gas Plant	C/O	none	---	---	---	N/A	N/A
3. Potential Options For Other North County Producers							
1. Expanded HS&P Gas Plant	O	none	---	---	---	N/A	N/A
2. New Gas Plant at Battles	O	none	---	---	---	N/A	N/A

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CLASS III: OTHER ENVIRONMENTAL IMPACTS WHICH ARE ADVERSE BUT NOT SIGNIFICANT

ISSUE AREA/ SOURCE	PROJECT PHASE	DESCRIPTION OF IMPACT	SCOPE	MITIGATION MEASURE	RESIDUAL IMPACT	P.P.C.R.*	P.D.R.**
3. H_2S Removal Equipment in Fields	O	none	---	---	---	N/A	N/A
4. Reinject Gas	O	none	---	---	---	N/A	N/A
5. Flare Gas	O	none	---	---	---	N/A	N/A
6. Electrical Generation	O	none	---	---	---	N/A	N/A
7. Shut-In Production	O	none	---	---	---	N/A	N/A

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CLASS III: OTHER ENVIRONMENTAL IMPACTS WHICH ARE ADVERSE BUT NOT SIGNIFICANT

ISSUE AREA/ SOURCE	PROJECT PHASE	DESCRIPTION OF IMPACT	SCOPE	MITIGATION MEASURE	RESIDUAL IMPACT	P.P.C.R.*	P.D.R.**
System Safety							
A. Proposed Project							
1. HS&P Gas Plant	O	1. Potential for BLEVE of propane vessel.	Local, long-term.	none	Insignificant	P-1, P-2	FSEIR/S 5.11-28/32
	O	2. Potential for Propane refrigeration system leak.	Local, long-term.	none	Insignificant	P-1, P-2	FSEIR/S 5.11-28/32
	O	3. Potential for Rupture of compressor discharge line.	Local, long-term.	none	Insignificant	P-1, P-2	FSEIR/S 5.11-28/32
	O	4. Potential for BLEVE of NGL vessel.	Local, long-term.	none	Insignificant	P-1, P-2	FSEIR/S 5.11-28/32
	O	5. Potential for rupture of low pressure/ temperature NGL line.	Local, long-term.	none	Insignificant	P-1, P-2	FSEIR/S 5.11-28/32
	O	6. Potential for rupture of high pressure/ temperature NGL line.	Local, long-term.	none	Insignificant	P-1, P-2	FSEIR/S 5.11-28/32
	O	7. Potential for sour gas release from SulfaTreat vessel.	Local, long-term.	none	Insignificant	P-1, P-2	FSEIR/S 5.11-28/32

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ISSUE AREA/ SOURCE	PROJECT PHASE	DESCRIPTION OF IMPACT	SCOPE	MITIGATION MEASURE	RESIDUAL IMPACT	P.P.C.R.*	P.D.R.**
	O	8. Potential for release of sour gas from Platform Irene to HS&P gas pipeline.	Local, long-term.	none	Insignificant	P-1, P-2	FSEIR/S 5.11-28/32
2. SMPS	O	none	---	---	---	N/A	N/A
3. JHF	O	1. Potential for BLEVE of propane receiver.	Local, long-term.	none	Insignificant	N/A	N/A
B. Alternative HS&P Sites							
1. Orcutt Hill	O	1. Potential for BLEVE of propane vessel.	Local, long-term.	none	Insignificant	N/A	N/A
	O	2. Potential for propane refrigeration system leak.	Local, long-term.	none	Insignificant	N/A	N/A
	O	3. Potential for rupture of compressor discharge line.	Local, long-term.	none	Insignificant	N/A	N/A
	O	4. Potential for BLEVE of NGL vessel	Local, long-term.	none	Insignificant	N/A	N/A
	O	5. Potential for rupture of low pressure/ temperature NGL line.	Local, long-term.	none	Insignificant	N/A	N/A
	O	6. Potential for rupture of high pressure/ temperature NGL line.	Local, long-term.	none	Insignificant	N/A	N/A

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ISSUE AREA/ SOURCE	PROJECT PHASE	DESCRIPTION OF IMPACT	SCOPE	MITIGATION MEASURE	RESIDUAL IMPACT	P.P.C.R.*	P.D.R.**
	O	7. Potential for sour gas release from SulfaTreat vessel.	Local, long-term.	none	Insignificant	N/A	N/A
	O	8. Potential for release of sour gas from Platform Irene to Orcutt Hill gas pipeline.	Local, long-term.	none	Insignificant	N/A	N/A
2. Battles Gas Plant	O	1. Potential for release of sour gas from Platform Irene to HS&P gas pipeline.	Local, long-term.	none	Insignificant	N/A	N/A
	O	2. Potential for release of sour gas from leak in sour gas pipeline from HS&P to Battles Gas Plant	Local, long-term.	none	Insignificant	N/A	N/A
3. Potential Options for Other North County Producers							
1. Expanded HS&P Gas Plant	O	1. Potential for BLEVE of propane vessel.	Local, long-term.	none	Insignificant	N/A	N/A
	O	2. Potential for propane refrigeration system leak	Local, long-term.	none	Insignificant	N/A	N/A
	O	3. Potential for BLEVE of NGL vessel.	Local, long-term.	none	Insignificant	N/A	N/A

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ISSUE AREA/ SOURCE	PROJECT PHASE	DESCRIPTION OF IMPACT	SCOPE	MITIGATION MEASURE	RESIDUAL IMPACT	P.P.C.R.*	P.D.R.**
	O	4. Potential for sour gas release from SulfaTreat vessel.	Local, long-term.	none	Insignificant	N/A	N/A
	O	5. Potential for raw NGL storage tank BLEVE.	Local, long-term	none	Insignificant	N/A	N/A
	O	6. Potential for raw NGL truck loading line failure.	Local, Long-term	none	Insignificant	N/A	N/A
	O	7. Potential for release of sour gas from leak in sour gas pipeline from Battles to the HS&P.	Local, long-term.	none	Insignificant	N/A	N/A
2. Battles Gas Plant with modified P-17	O	1. Potential for release of sour gas from Platform Irene to HS&P Gas Plant.	Local, long-term.	none	Insignificant	N/A	N/A
	O	2. Potential for release of sour gas from leak in sour gas pipeline from Battles Gas Plant to HS&P	Local, long-term.	none	Insignificant	N/A	N/A
3. H_2S Removal Equipment In Fields	O	1. Potential for sour gas release from SulfaTreat vessel.	Local, long-term.	none	Insignificant	N/A	N/A

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ISSUE AREA/ SOURCE	PROJECT PHASE	DESCRIPTION OF IMPACT	SCOPE	MITIGATION MEASURE	RESIDUAL IMPACT	P.P.C.R.*	P.D.R.**
4. Reinject Gas	O	1. Potential for rupture of compressor discharge line.	Local, long-term.	none	Insignificant	N/A	N/A
5. Flare Gas	O	1. Potential for sour gas release from SulfaTreat vessel.	Local, long-term.	none	Insignificant	N/A	N/A
6. Electrical Generation	O	1. Potential for sour gas release from SulfaTreat vessel.	Local, long-term.	none	Insignificant	N/A	N/A
7. Shut-In Production	O	none	---	---	---	N/A	N/A

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ISSUE AREA/ SOURCE	PROJECT PHASE	DESCRIPTION OF IMPACT	SCOPE	MITIGATION MEASURE	RESIDUAL IMPACT	P.P.C.R.*	P.D.R.**
Fire Protection/Emergency Response							
A. Proposed Project							
1. HS&P Gas Plant	O	1. Impact of upset on County Emergency Response.	Regional, long-term.	1. Prepared update to Emergency Response Plan (ERP) for facilities.	Insignificant	P-3, P-8	---
2. SMPS	O	1. Impact of upset on County Emergency Response.	Regional, long-term.	1. Prepared update to Emergency Response Plan (ERP) for facilities.	Insignificant	P-3	N/A
3. JHF	O	1. Impact of upset on County Emergency Response.	Regional, long-term.	1. Prepared Emergency Response Plan (ERP) for facilities.	Insignificant	P-10	N/A
B. Alternative HS&P Sites							
1. Orcutt Hill	O	1. Impact of upset on County Emergency Response.	Regional, long-term.	1. Prepared update to Emergency Response Plan (ERP) for facilities.	Insignificant	N/A	N/A
2. Battles Gas Plant	O	1. Impact of upset on County Emergency Response.	Regional, long-term.	1. Prepared update to Emergency Response Plan (ERP) for facilities.	Insignificant	N/A	N/A

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ISSUE AREA/ SOURCE	PROJECT PHASE	DESCRIPTION OF IMPACT	SCOPE	MITIGATION MEASURE	RESIDUAL IMPACT	P.P.C.R.*	P.D.R.**
3. Potential Options for Other North County Producers							
1. Expanded HS&P Gas Plant	O	1. Impact of upset on County Emergency Response.	Regional, long-term.	1. Prepared update to Emergency Response Plan (ERP) for facilities.	Insignificant	N/A	N/A
2. Battles Gas Plant with a Modified P-17	O	1. Impact of upset on County Emergency Response.	Regional, long-term.	1. Prepared Emergency Response Plan (ERP) for facilities.	Insignificant	N/A	N/A
3. H_2S Removal Equipment in Fields	O	none	---	---	---	N/A	N/A
4. Reinject Gas	O	none	---	---	---	N/A	N/A
5. Flare Gas	O	none	---	---	---	N/A	N/A
6. Electrical Generation	O	none	---	---	---	N/A	N/A
7. Shut-In Production	O	none	---	---	---	N/A	N/A

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ISSUE AREA/ SOURCE	PROJECT PHASE	DESCRIPTION OF IMPACT	SCOPE	MITIGATION MEASURE	RESIDUAL IMPACT	P.P.C.R.*	P.D.R.**
Noise							
A. Proposed Project							
1. HS&P Gas Plant	O	1. Potential for noise impacts to areas immediately adjacent to the facility.	Local, long-term.	Prepare a noise reduction plan for the HS&P facility to address night time noise levels.	Insignificant	N/A	N/A
2. SMPS	O	1. Potential for noise impacts to areas immediately adjacent to the facility.	Local, long-term.	none	Insignificant	N/A	N/A
3. JHF	O	1. Potential for noise impacts to areas immediately adjacent to the facility.	Local, long-term.	none	Insignificant	N/A	N/A
B. Alternative HS&P Sites							
1. Orcutt Hill	O	1. Potential for noise impacts to areas immediately adjacent to the facility.	Local, long-term.	none	Insignificant	N/A	N/A
2. Battles Gas Plant	O	1. None since already in the baseline.	---	---	---	N/A	N/A

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C Construction
O Operation

CLASS III: OTHER ENVIRONMENTAL IMPACTS WHICH ARE ADVERSE BUT NOT SIGNIFICANT

ISSUE AREA/ SOURCE	PROJECT PHASE	DESCRIPTION OF IMPACT	SCOPE	MITIGATION MEASURE	RESIDUAL IMPACT	P.P.C.R.*	P.D.R.**
Visual							
A. Proposed Project							
1. HS&P Gas Plant	O	1. Potential for night time glare in the Lompoc Valley due to facility lighting.	Local, long-term	Update the existing lighting plan for the HS&P facility, and reduce the night time glare to the maximum extent feasible.	Insignificant	L-2	N/A
2. SMPS	O	none	---	---	---	N/A	N/A
3. JHF	O	none	---	---	---	N/A	N/A

* P.P.C.R. - Previous Permit Condition Reference
** P.D.R. - Previous Document Reference
N/A Not covered in original Pt. Pedernales EIR/EIS
C Construction
O Operation

CLASS IV: BENEFICIAL IMPACTS

SOURCE	DESCRIPTION OF IMPACT	SCOPE
Air Quality		
A. Proposed Project With All Other Producers In The North County Shutting In Production		
1. HS&P	1. Substantial reduction in air emissions associated with gas processing due to the removal and shutdown of the Battles Gas Plant. 2 Substantial reduction in air emissions due to other operators shutting in production	Regional, long-term.
2. SMPS	none	---
3. JHF	none	---
B. Alternative Sites With All Other Producers In The North County Shutting In Production		
1. Orcutt Hills	1. Substantial reduction in air emissions associated with gas processing due to the removal and shutdown of the Battles Gas Plant.	Regional, long-term.
System Safety		
A. Proposed Project With All Other Producers In The North County Shutting In Production		
1. HS&P	1. Elimination of the use of the sour gas pipeline from the HS&P to the Battles Gas Plant. 2. Elimination of the need to truck LPGs from the Battles Gas Plant.	Local, long-term.
2. SMPS	1. Substantial upgrading of fire fighting equipment at the pump station.	Local, long-term.
3. JHF	none	---
B. Alternative Sites With All Other Producers In The North County Shutting In Production		
1. Orcutt Hills	1. Elimination of the use of the sour gas pipeline from the Orcutt Hills to the Battles Gas Plant. 2. Elimination of the need to truck LPGs from the Battles Gas Plant.	Regional, long-term.

* P.P.C.R. - Previous Permit Condition Reference
** P.D.R. - Previous Document Reference

CLASS IV: BENEFICIAL IMPACTS (CONTINUED)

SOURCE	DESCRIPTION OF IMPACT	SCOPE
Fire Protection/Emergency Response		
A. Proposed Project With All Other Producers In The North County Shutting In Production		
1. HS&P	1. Elimination of potential demand on fire protection and emergency response services within the north county as a result of other operators shutting in production.	Regional, long-term.
2. SMPS	none	---
3. JHF	none	---
B. Alternative Sites With All Other Producers In The North County Shutting In Production		
1. Orcutt Hills	1. Elimination of potential demand on fire protection and emergency response services within the north county as a result of other operators shutting in production.	Regional, long-term.

* P.P.C.R. - Previous Permit Condition Reference

** P.D.R. - Previous Document Reference

1.0 Introduction/Background

This document is a supplement to the Union Oil/Exxon Project Shamrock and Central Santa Maria Basin Areas Study EIS/EIR (ADL, 1985). The original EIS/EIR covered the environmental impacts associated with Unocal's Point Pedernales Offshore Oil And Gas Development Project (Figure 1-1). This oil and gas development project, which has been in operation since 1987, involved the construction and operation of the following:

- An offshore platform (Platform Irene),
- A number of oil and gas pipelines, and
- A crude oil heating, separating and pumping facility (HS&P), located just north of the City of Lompoc off of Harris Grade Road.

As part of this project, Unocal proposed to process the gas from Platform Irene at its existing gas processing facility located east of the City of Santa Maria on the east side of Highway 101 (the Battles Gas Plant). Unocal is now proposing to decommission the Battles Gas Plant, and wishes to build a new gas plant at their HS&P facility to process the offshore gas from Platform Irene.

The remainder of this chapter has been divided into three parts. The first discusses the purpose of this document, the second part discusses the contents of the document, and the third part provides some background on the existing Point Pedernales project, and the need for the proposed modifications.

1.1 Statement Of Purpose

The SEIR evaluated the potential environmental impacts associated with construction and operation of three proposed modifications to Unocal facilities in northern Santa Barbara County. These modifications, which are shown in Figure 1-2, include:

- Construction and operation of a new gas processing facility at the existing Heating, Separating, and Pumping (HS&P) facility;
- Modifications to the Santa Maria Pump Station (SMPS) which include the addition of fire fighting equipment and the construction and operation of steam boilers; and
- Construction and operation of a gas dehydration facility at the Unocal Jim Hopkins Fee (JHF) property.

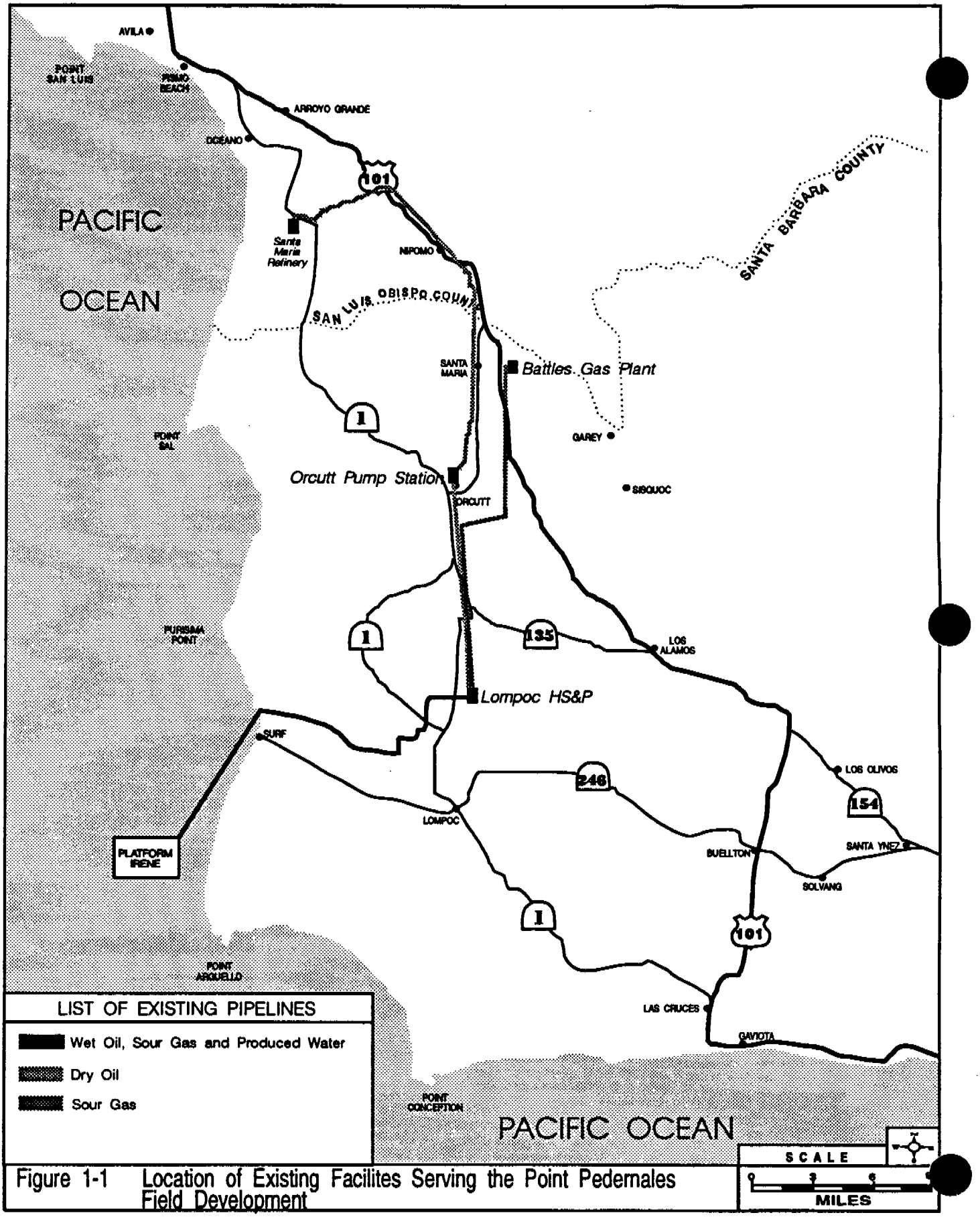


Figure 1-1 Location of Existing Facilites Serving the Point Pedernales Field Development

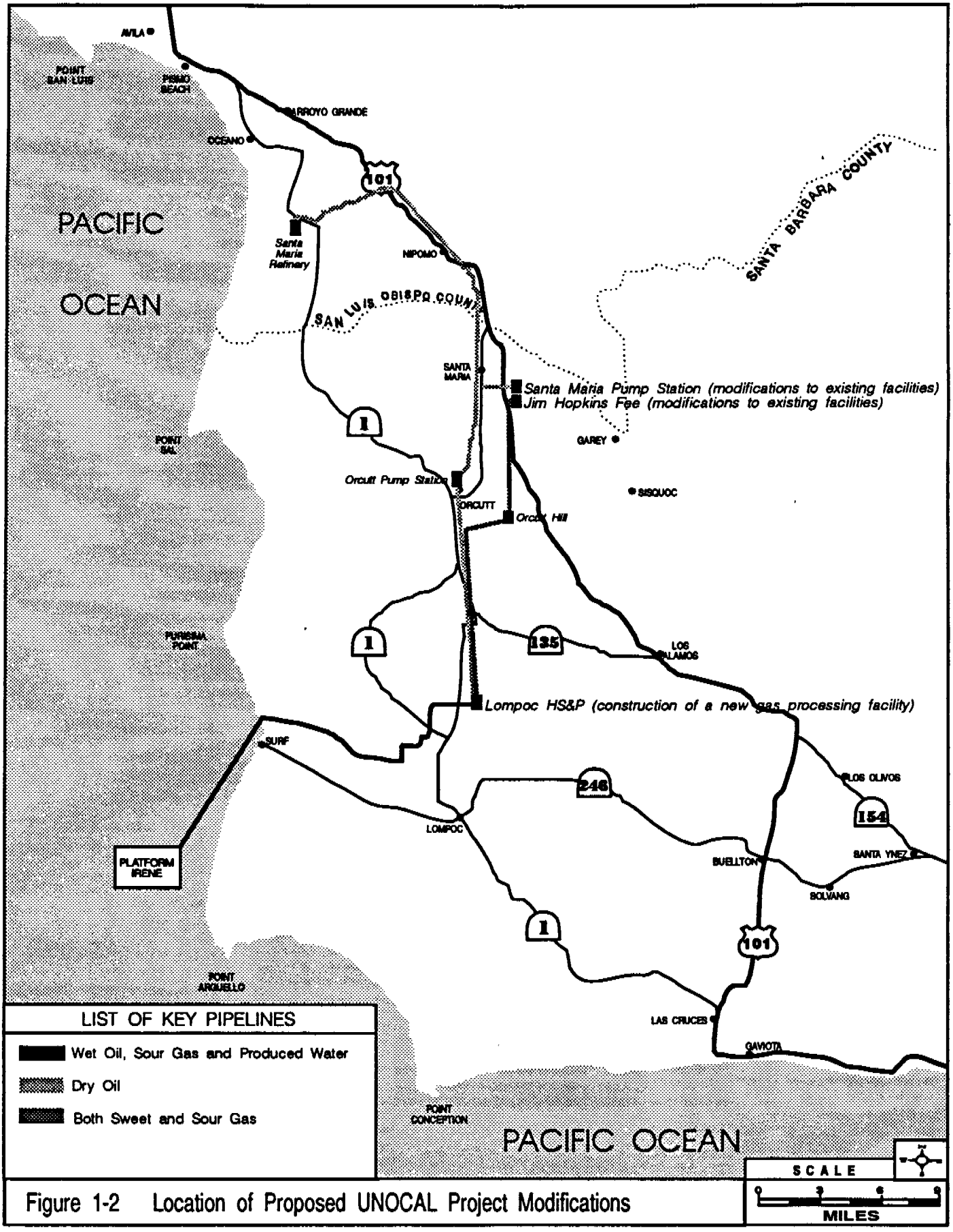


Figure 1-2 Location of Proposed UNOCAL Project Modifications

Arthur D Little

The purpose of this SEIR is to identify the project's significant effects on the environment, to indicate the manner in which such significant effects can be mitigated or avoided, and to identify alternatives to the project which avoid or reduce these impacts. The SEIR is an informational document for use by the County of Santa Barbara, other agencies, and the general public in their consideration and evaluation of the environmental consequences associated with implementation of the proposed project.

This SEIR serves as a supplement to the Union Oil Project/Exxon Project Shamrock and Central Santa Maria Basin Area Study EIS/EIR (1985) (SCH #84062703; SBC # 84-EIR-7).

Sections 15162(a)(1), (a)(3)(A), and (a)(3)(B) of the California Environmental Quality Act (CEQA) Guidelines require that an additional EIR be prepared if:

- Subsequent changes are proposed in the project which will require important revisions of the previous EIR;

- New information of substantial importance to the project becomes available which was not known at the time the previous EIR was certified as complete; or

- New information shows that the project will have one or more significant effects not discussed previously, or that previously examined effects will be substantially more severe than shown in the EIR.

The original EIR/EIS evaluated the impacts associated with a future gas processing facility at the Lompoc HS&P site. This analysis was done as part of the area study for the Central Santa Maria Basin. Therefore, many of the impacts identified in the original EIS/EIR for the hypothetical area study gas plant are similar to those for the proposed project. Also the proposed project is being pursued by Unocal as a means of complying with Condition P-17 of the Point Pedernales Project Final Development Plan (see Section 1.3 of this Chapter for a further discussion of P-17). For these reasons, this document is considered to be a supplement to 84-EIR-7.

Section 15163 of the CEQA Guidelines sets forth the following requirements for Supplemental Environmental Impact Reports:

- The supplement to the EIR need contain only the information necessary to make the previous EIR adequate for the project as revised.

- A supplement to an EIR shall be given the same kind of notice and public review as is given to a draft EIR under Section 15087.

- A supplement to an EIR may be circulated by itself without recirculating the previous draft or final EIR.

- When the agency decides whether to approve the project, the decision-making body shall consider the previous EIR as revised by the supplemental EIR. A finding under Section 15091 shall be made for each significant effect shown in the previous EIR as revised.

1.2 SEIR Contents

This SEIR has been prepared in accordance with the state and county administrative guidelines established to comply with the CEQA of 1970, as amended. Section 15151 of the State CEQA Guidelines provides the following standards for EIR adequacy:

> *"An Environmental Impact Report should be prepared with a sufficient degree of analysis to provide decision-makers with information which enables them to make a decision which intelligently takes account of environmental consequences. An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in light of what is reasonably feasible. Disagreement among experts does not make an EIR inadequate, but the EIR should summarize the main points of disagreement among the experts. The courts have looked not for perfection; but for adequacy, completeness, and a good faith effort at full disclosure."*

In compliance with CEQA guidelines, the County of Santa Barbara, as the Lead Agency, prepared an Initial Study for the proposed project (Appendix A), and solicited public agency comments through distribution of a Notice Of Preparation (Appendix B). The Initial Study and comments received in response to the Notice Of Preparation (NOP) were the basis of the technical focus of this SEIR.

This SEIR is divided into twelve major sections:

Executive Summary - Provides an overview of the project, and a summary of the major impacts identified in the analysis. A summary of the alternatives and cumulative analyses is also provided.

Impact Summary Tables - Provides a summary of the identified impacts by significance class, and where applicable provides a summary of proposed and/or recommended mitigation measures.

1.0 **Introduction/Background**- Provides the Statement of Purpose for the document, and some background on the need for the proposed project, as well as some information on the original EIS/EIR, to which this document is a supplement.

2.0 **Project Description** - Identifies the project applicant, presents and discusses project objectives, project location and specific project characteristics.

3.0 **Alternative Screening/Siting Analysis** - Describes the alternative sites for the proposed gas plant at the HS&P. This analysis followed the screening and siting analysis guidelines for north county gas processing facilities. These guidelines were developed as part of the County's Gas Processing Facility Siting Study (SBC, 1990), and have been amended to the County's Comprehensive Plan.

4.0 **Cumulative Projects Descriptions** - The cumulative analysis contained in this document covers two parts. The first part addresses the cumulative impacts of reasonably foreseeable projects located in the vicinity of the proposed project that have either been proposed or are in their permitting stages. These reasonable foreseeable projects are described in this chapter. The second part addresses the effects that the proposed project could have on other oil and gas production fields that currently use the Battles Gas Plant. The analysis evaluates a number of scenarios that could be used by the effected fields to handle the gas that would no longer be processed at the Battles Gas Plant. This Chapter provides a description of these various scenarios. The actual cumulative analysis is presented in Chapter 5.0.

5.0 **Analysis Of Environmental Issues** - Describes the existing conditions found on the project site and vicinity and assesses the potential environmental impacts that may be generated by implementation of the proposed project. These potential project impacts are compared to Resource Management Department "Thresholds Of Significance" in order to determine the severity of the direct and indirect impacts. Mitigation measures, intended to reduce significant, adverse impacts to insignificant levels, are proposed where feasible (Class II impacts). Those impacts which cannot be eliminated or mitigated to insignificant levels are also identified (Class I impacts). This Chapter also assesses the environmental impacts associated with the alternative sites that passed the screening analysis presented in Chapter 3.0. In addition, cumulative impacts are assessed for both the reasonable foreseeable projects, as well as for the existing oil and gas production facilities that will be effected by the proposed project.

6.0 **Consistency With Applicable Plans And Policies** - Addresses the consistency of the proposed project with applicable policies from the County Comprehensive Plan and Zoning Ordinances (Article III).

7.0 **Growth Inducing Impacts** - Identifies the spatial, economic, or population growth impacts that may result from development of the proposed project, and provides a policy consistency analysis.

8.0 **Significant Irreversible Environmental Changes** - Describes any changes to the existing environment which are irreversible in nature, such as use of nonrenewable resources or commitment of future generations to similar land uses.

9.0 **Short-Term Use Of The Environment *vs* Maintenance Of Long-Term Productivity** - Describes the long-term effects of the project which narrow beneficial uses or eliminate future options of the area.

10. **Response to Comments** - This chapter provides copies of all the comments received on the Public Draft, as well as a copy of the public hearing transcript. The chapter also provides responses to all of the comments received.

1.3 Background

The proposed project would involve modifications to Unocal's gas processing system in the north county. In particular, the project would change the location of gas processing for the Point Pedernales Field gas. The Point Pedernales oil and gas field lies in Federal waters about three to five miles west of Point Pedernales. Figure 1-1 shows the location of the field. Unocal submitted an application to the County of Santa Barbara and the Minerals Management Service to develop this oil and gas field back in 1983. The Development consisted of the following:

- Platform Irene, a 72-slot drilling and production platform,
- One subsea power cable to provide electrical power to the platform,
- Three pipelines for moving oil, gas and produced water, from the platform to the HS&P,
- A new Heating, Separating and Pumping (HS&P) facility located just north of the City of Lompoc,
- A oil pipeline from the HS&P to Unocal's Orcutt Pump Station located near the town of Orcutt, and
- Use of the existing Battles Gas Plant for processing Point Pedernales gas.

Figure 1-1 shows the location of these project components. In 1985 the Point Pedernales Development Project was approved, and in April 1987 it began operating.

The project's Final Development Plan (FDP) permit contained two conditions that addressed safety hazards at the Battles Gas Plant. The first condition, P-2, required the System Safety and Reliability Review Committee (SSRRC) to conduct a safety audit of the Battles Gas Plant prior to issuance of a land use permit for the HS&P facility. The P-2 Safety audit identified a total of 75 deficiencies with regard to structural, electrical, and operations/process aspects of the plant. Unocal implemented all the items identified in the P-2 audit prior to starting up the HS&P.

The second condition, P-17, required the Battles Gas Plant to undergo a detailed safety audit, conducted by the SSRRC, two years after startup of the HS&P. The purpose of this condition was to bring the Battles Gas Plant up to current safety standards applicable to oil and gas facilities. The condition also required that Unocal implement all of the Committee's recommendations within three years of the audit. The safety audit resulted in 272 recommendations that would have needed to be implemented in order to bring the Battles Gas Plant up to current standards with respect to safety and fire protection.

In reviewing and evaluating the safety audit recommendations, Unocal determined that in order to comply with all of them, the Battles Gas Plant would need to be extensively modified, and major pieces of equipment would need to be disassembled and relocated. Faced with this major undertaking, Unocal decided that it was in Unocal's best interest to pursue the construction of a new smaller gas processing facility in a more remote location. Unocal evaluated a number of options, and finally decided on pursuing permits for a new gas plant to be located at the existing HS&P. It is this proposed project that is evaluated in this SEIR.

2.0 Project Description

2.1 Introduction/Background

To support their offshore and onshore production activities, Unocal currently operates several oil and gas facilities which are located throughout the north county. Unocal would like to modify three of these facilities, namely, the Heating, Separating and Pumping Facility (HS&P), Santa Maria Pump Station (SMPS) and Jim Hopkins Fee (JHF).

The proposed project sites are in the following areas: (1) the Heating, Separating and Pumping Facility is located at 3602 Harris Grade Road, approximately 2.7 miles northeast of the City of Lompoc; (2) the Santa Maria Pump Station is located adjacent to the Battles Gas Plant between Betteravia and Battles Roads approximately 0.5 miles east of U.S. 101; and (3) the Jim Hopkins Fee property in the Santa Maria Valley Field is located approximately one mile east of the Santa Maria Way/U.S. 101 Junction. The relative locations of these facilities along with other key north County facilities operated by Unocal are shown in Figure 2-1.

The intent of this project is to comply with part of Condition P-17 of the Point Pedernales Project Final Development Plan (see Section 1.3 for more information on the P-17 condition). These three areas and the associated proposed developments are discussed below.

2.2 Heating, Separating And Pumping Facilities (HS&P)

The main function of the HS&P facility is to separate the oil and water (known as dehydration) produced at Platform Irene. The dry oil is then sent to the Santa Maria Refinery for processing while the produced water is injected in the Lompoc Field for disposal. During this separating process, associated gas is produced and is currently transported to the Battles Gas Plant in Santa Maria for processing.

2.2.1 Existing HS&P Facilities

Limited gas processing is already performed as a part of the Point Pedernales Project. Produced gas from Platform Irene is compressed after which hydrocarbon liquids and water are removed before the gas is shipped to the HS&P via an 8" gas pipeline. At the HS&P, the produced gas goes through a scrubber to remove any additional hydrocarbon liquids that condense out of the gas prior to transportation to the Battles Gas Plant for final processing.

Associated gas is also liberated from the oil during the dehydration process at the HS&P. This gas is presently sent through a series of compressors, coolers and scrubbers to remove hydrocarbon liquids and water. The gas is then passed through a triethylene glycol (TEG) unit

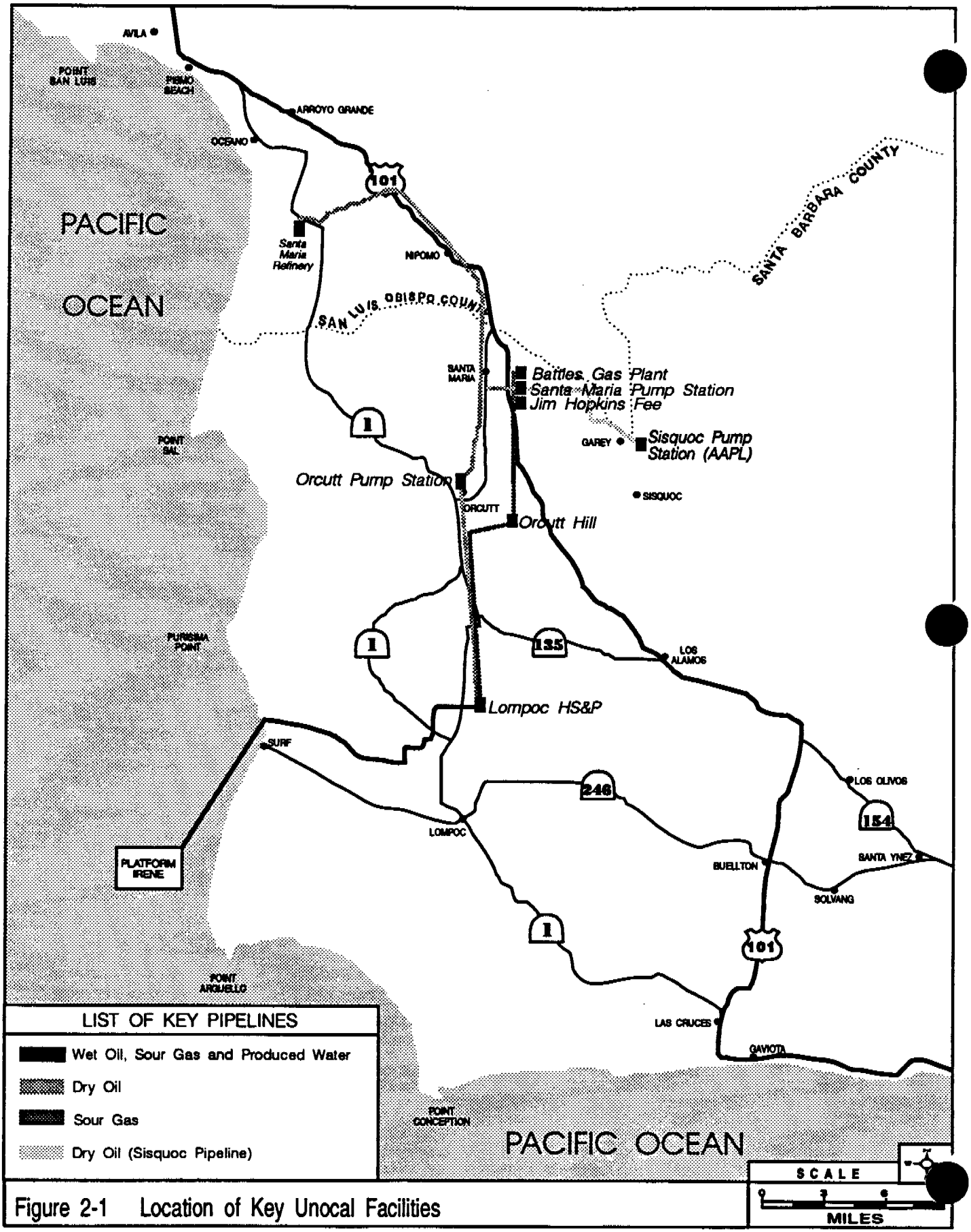


Figure 2-1 Location of Key Unocal Facilities

to remove additional water before it is combined with the produced gas from Platform Irene. An existing H_2S removal system is designed to sweeten approximately 1.0 MMscfd of the Point Pedernales gas for use as fuel at the HS&P but is currently not operational or permitted by the APCD. Therefore, all produced and associated gas is transported to the Battles Gas Plant, through an existing pipeline network, for final processing. A block flow diagram of the existing HS&P gas handling system is shown in Figure 2-2. The produced gas from Platform Irene is shown as Stream 1 and the additional gas liberated from the oil is shown as Stream 2.

2.2.2 Proposed Facility Additions To The HS&P

The modifications to the HS&P facility are focused on the addition of a new gas plant. The gas facilities proposed for the HS&P would serve two major purposes. The first is to process offshore gas produced from the Point Pedernales Unit. This gas would be processed for sale to SoCal Gas or used as fuel at the HS&P as needed. The second is to compress excess gas for reinjection into a reservoir located at the Lompoc Field.

Unocal has designed the proposed HS&P gas processing facility to handle up to 6 MMscfd of sales gas and 1-2 MMscfd of onshore gas reinjection. Estimates of gas production from other operator's fields are discussed in Chapter 4.0, Cumulative Projects Description.

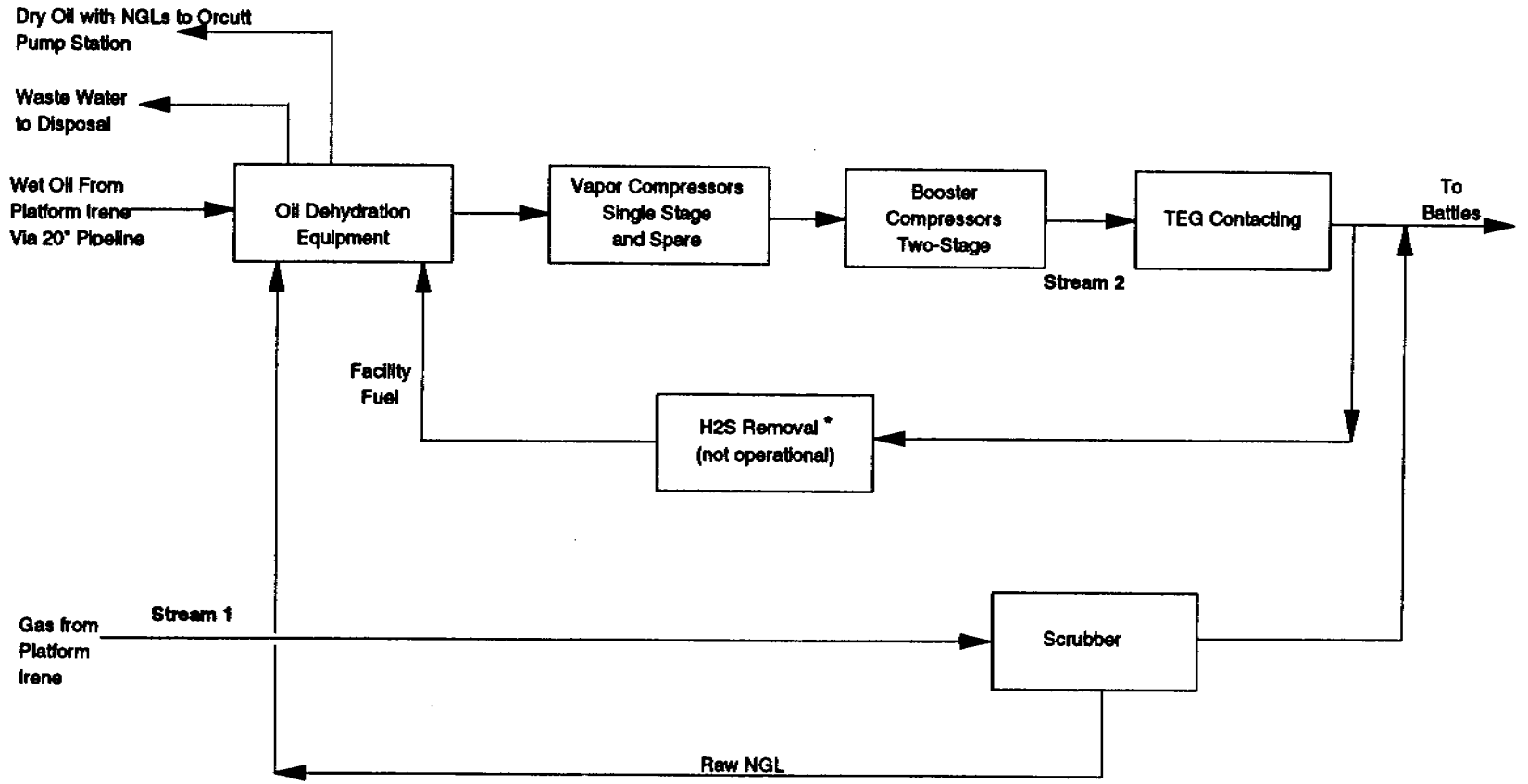
Figure 2-3 provides an estimate of the volumes of gas which are currently projected to be handled by the various parts of the proposed gas facilities, which include:

- Sales Gas Processing, and
- Gas Reinjection.

The sales gas processing system would handle only gas from offshore sources. The reinjected gas would include onshore gas production in excess of field fuel demand and high CO_2 gas generated from sales gas processing. If there is not enough onshore gas available to meet fuel demand, then some of the sales gas would be routed to fuel. If there is not enough sales and fuel gas to meet fuel demand, then utility gas purchases would be required.

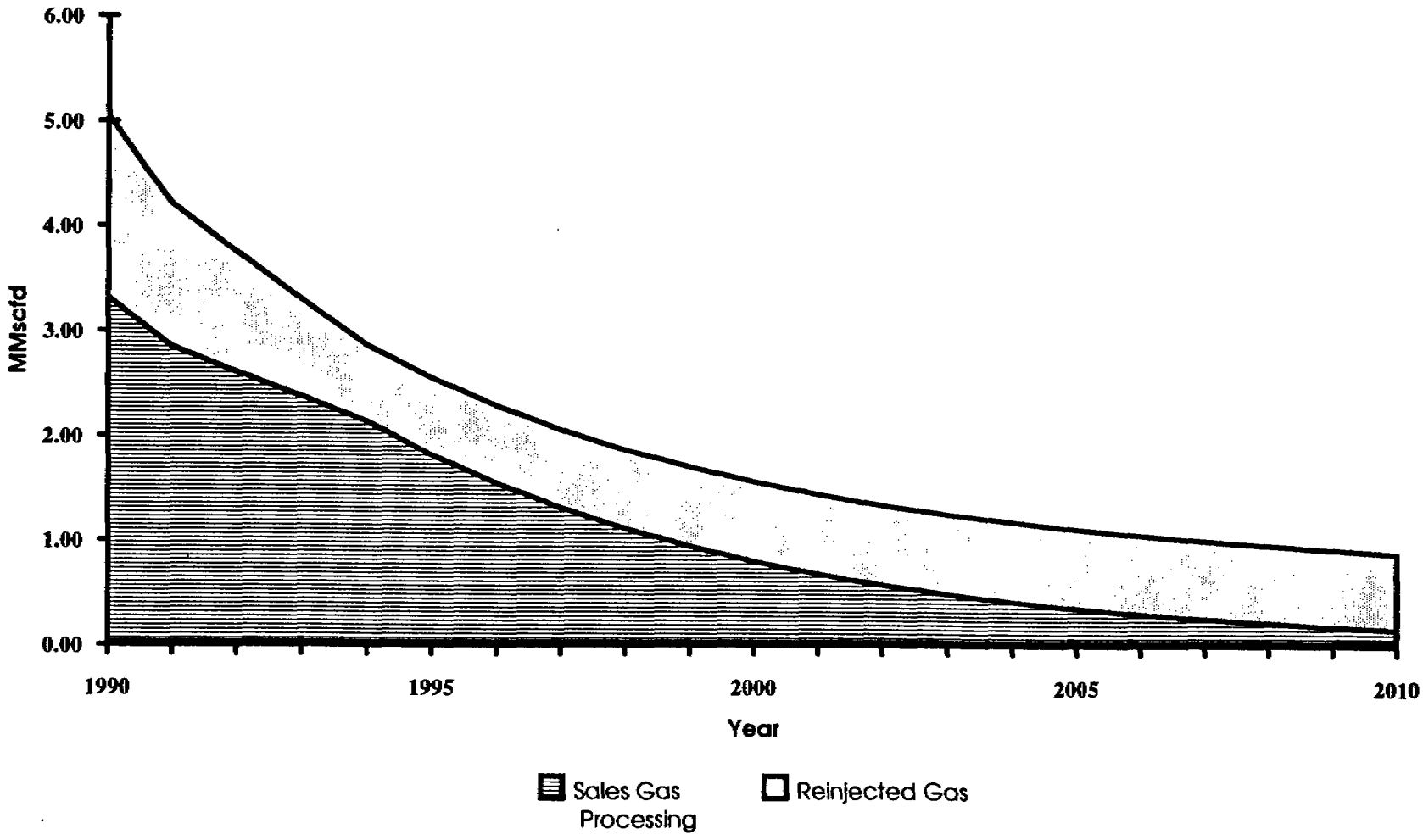
The main components of the newly proposed gas processing facilities at the HS&P are listed below and are discussed in the subsequent sections as indicated.

- Sulfur Removal System (Section 2.2.2.1),
- Carbon Dioxide (CO_2) Removal System (Section 2.2.2.2),
- Dew Point Depression System (to remove hydrocarbon liquids and water) (Section 2.2.2.3),
- Compressors (to boost process gas pressures) (Section 2.2.2.4),



* Equipment does not have a Permit to Operate (PTO) from the Santa Barbara Air Pollution Control District.

Figure 2-2 Block Flow Diagram of Existing HS&P Gas Handling System



Source: Application to Modify Final Development Plan 85-DP-71, Unocal, August 1991

Figure 2-3 Anticipated Gas Processing Volumes for the Proposed HS&P Gas Plant

- Short connecting pipelines (Section 2.2.2.5), and
- Additional electrical facilities (Section 2.2.2.6).

A plot plan showing the location of the proposed and existing equipment is shown in Figure 2-4.

There would be as many as four gas streams entering the facility and up to three gas streams exiting the gas processing plant, depending on the various flow rates.

The following describes the four gas streams entering the proposed gas processing plant:

- ***Stream 1*** - Point Pedernales gas separated from produced fluids on Platform Irene would be compressed on the platform using existing compressors and sent through the 8" gas pipeline to the HS&P at 500 psig. The pipeline currently operates at an average pressure of approximately 300 psig with a H_2S content of 800 ppm. The pipeline can operate at a maximum pressure of 600 psig, and 4,000 ppm H_2S.
- ***Stream 2*** - Produced gas liberated from the oil at the HS&P would be compressed to 500 psig using existing booster compressors.
- ***Stream 3*** - Gas from the Lompoc and Northwest Lompoc fields would be gathered at 5 psig, sent to the HS&P and compressed to as high as 1,600 psig for injection using a compressor which would be relocated from the Lompoc Field (shown as Pipeline #1 in Figure 2-4).
- ***Stream 4*** - If more gas is gathered at the Orcutt Hill field than is required for fuel, excess onshore gas would be transported to the HS&P at 100 psig via a portion of the 6" pipeline currently used to transport gas from the HS&P to the Battles Gas Plant (shown as Pipeline #5 in Figure 2-4).

The following describes the three gas streams exiting the gas processing plant:

- ***Stream 5*** - Treated sales gas would be transported at 450 psig through a new 4" pipeline tie-in to a Southern California Gas Company (SoCal Gas) Line. The tie-in point to SoCal Gas is approximately 200 feet outside the HS&P facility boundary. The flow rate is expected to be as high as 5 to 6 MMscfd depending on the amount of gas that SoCal Gas can accept into this distribution pipeline (shown as Pipeline #2 in Figure 2-4).
- ***Stream 6*** - Should the Orcutt Hill field require more gas for fuel than it gathers, sweet dehydrated gas from the HS&P would be transported to Orcutt Hill using an existing 6" line between the HS&P and the Battles Gas Plant. This line would operate at approximately 100 psig. This is the same line as stream #4. This pipeline can operate in two directions depending upon the fuel gas needs at Orcutt Hill. The pipeline currently moves sour gas (up to 4,000 ppm H_2S) at a pressure of 250-350 psig (shown as Pipeline #5 in Figure 2-4).

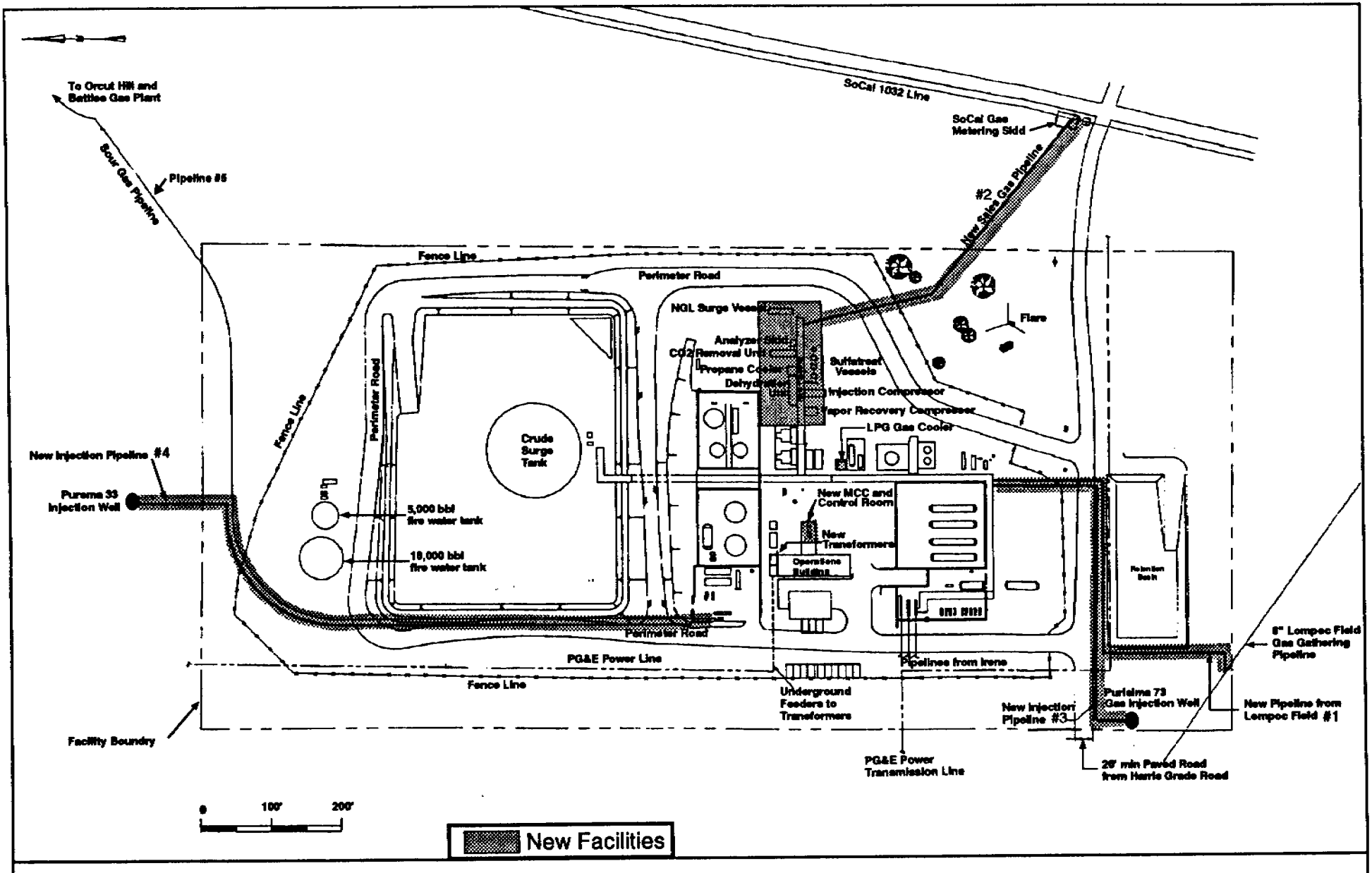


Figure 2-4 Plot Plan For Existing and Proposed HS&P Facilities

- *Stream 7* - Excess NGLs that cannot be blended with the crude oil, and excess gas that cannot be processed for fuel or sale would be transported at 1,600 psig through one of two new 3" pipeline tie-ins to nearby injection wells in the Lompoc field. As Figure 2-4 shows, one of the injection wells is located within the Lompoc HS&P Facility boundary and the other is located approximately 100 feet outside the facility boundary (shown as Pipelines #3 and 4 in Figure 2-4).

Figure 2-5 is a block flow diagram showing where the above streams are located and how gas would be routed through the proposed gas processing facilities.

In addition, gas from the Lompoc and the Northwest Lompoc (Arklee Fee and Section "A" of the Jesus Maria Lease) fields would be gathered directly to the HS&P. This would idle 8,800 feet of high pressure 6" sour gas pipeline currently used to transport gas from the Lompoc compressor to its juncture with the gas pipeline leaving the HS&P. The pipeline to be idled traverses land recently conveyed by Unocal to the State of California.

2.2.2.1 Sulfur Removal System

A sulfur removal system, utilizing a chemical called SulfaTreat, would be added to the facility to reduce the H_2S content of the gas to less than 4 ppm. The system is designed to treat gas at a maximum rate of 6.0 MMscfd with a maximum inlet H_2S concentration of 4,000 ppm. The Platform Irene gas currently has a H_2S content of about 800 ppm. The two sources of gas to be treated are the produced gas from Platform Irene, and the solution gas which evolves during the oil separation and treating processes which occurs at the HS&P. This solution gas principally comes from the inlet separator, heater treaters, free water knockout, natural gas liquid (NGL) surge drum and the vapor recovery system.

The SulfaTreat facilities consist of a series of four vessels each filled with SulfaTreat granules which remove essentially all the H_2S, carbonyl sulfide, and mercaptans from the gas. The first three vessels are the primary sulfur removal vessels while the fourth is considered a trim or guard vessel to prevent H_2S from getting into the sales gas pipeline. The three primary H_2S removal vessels are eight feet in diameter and approximately 20 feet in length while the trim vessel is 6 feet in diameter and 20 feet in length. All four vessels are designed to withstand maximum pressures and temperatures of 500 psig and 300°F, respectively. Only one vessel is required to be in operation to provide the necessary sulfur removal with two vessels being spares. For this reason, each of the first three vessels is provided with a bypass to allow for SulfaTreat change-out of the individual vessels. All four vessels are provided with a clean out area and water drainage sump which allows for the change-out and removal of the SulfaTreat material.

To bring SulfaTreat into the facility and to remove spent SulfaTreat, the number of anticipated change-outs per year is expected to be 33 with an associated 132 truck trips. SulfaTreat is used for selectively removing hydrogen sulfide gas, mercaptan and other sulfur containing compounds found in natural gas. It is non-toxic and non-hazardous in both the unreacted and spent form. The spent SulfaTreat would be used as a fertilizer, or disposed of in a landfill.

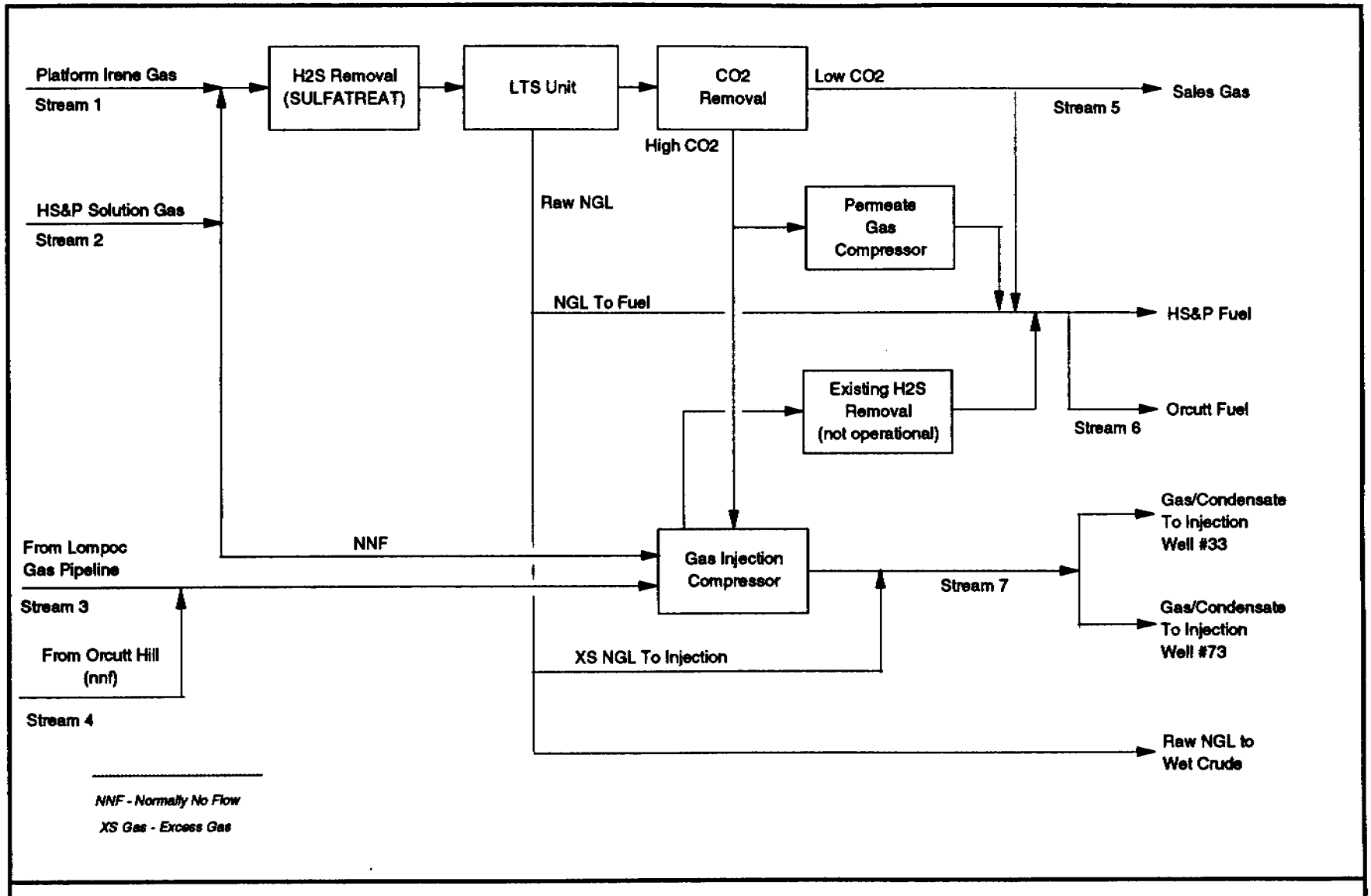


Figure 2-5 Block Flow Diagram of Proposed Gas Processing Facilities at HS&P

2.2.2.2 Carbon Dioxide Removal System

The sweet gas coming from the Sulfur Removal Unit would enter a permeable membrane system for CO_2 removal. The CO_2 removal process creates two gas streams that need to be handled separately. These streams consist of:

- Residue gas, which is the sales quality gas that emerges as a result of the CO_2 removal process. It exits at 500 psig and contains less than 3 percent CO_2.

- Permeate gas, which is the by-product of the CO_2 removal process and does not meet sales gas specifications. It is at 5 psig and contains about 50 percent CO_2, but also contains methane, nitrogen and small amounts of heavier hydrocarbons. The gas would have a heating value of about 600 Btu/SCF.

The permeate can be used as fuel by combining it with other hydrocarbons (e.g., natural gas liquids or sales gas) to raise its heating value from about 600 to more than 850 Btu/SCF. If some permeate remains beyond what is required for fuel, it would be sent to the first stage of the onshore gas compressor, combined with Gas Stream 7, and re-injected into one of the two reinjection wells in the Lompoc field.

2.2.2.3 Dew Point Depression System

The dew point depression system would use low temperature separation (LTS) to separate water and hydrocarbon liquids from the gas. The LTS unit, located downstream of the CO_2 Removal System, is necessary to cool the gas to meet the SoCal Gas sale requirement for water and hydrocarbon dew point.

The system would include several heat exchangers, a propane refrigeration system, a glycol injection system, LTS vessel, and pumps for liquid handling. The heat exchangers and the propane refrigeration system, including a propane receiver, would be used to cool the gas to the design temperature to meet the water and hydrocarbon dewpoint requirements. Glycol would be injected into the gas stream before it is cooled in order to prevent condensed water from freezing when the temperature drops below 32°F. The existing glycol system at the HS&P is adequately sized to accommodate additional gas processing and would be converted for use in this service. The LTS vessels would separate the hydrocarbon liquids, water, glycol and gas. The water and glycol would go to the existing glycol regenerator and the hydrocarbon liquids would be pumped to several destinations.

Natural gas liquids (NGLs) removed from gas streams would go to the NGL surge vessel. From there the NGLs would be blended with the oil, fuel gas and sales gas as needed. If vapor pressure restrictions on the oil and dew point restrictions on the gas streams prevent blending of all of the hydrocarbon liquids with the other process streams, the remainder would be injected into a nearby well in the Lompoc field. The hydrocarbon liquids can go to all of these destinations simultaneously. By injecting the excess hydrocarbon liquids, no NGL storage or trucking would be required.

2.2.2.4 Process Gas Compressors

The existing associated gas handling system at the HS&P would continue to operate as it does currently. That system includes single-stage vapor recovery compressors and two-stage booster compressors. Both compressors have backups that provide 100 percent spare capacity at current process rates. These compressors are operated as follows:

- The vapor recovery compressors gather gas at less than 0 psig from atmospheric tanks and low-pressure vessels and compress it to 35 psig.

- The booster compressor gathers gas at 35 psig from the vapor recovery compressor and from the other process vessels and compresses it to 500 psig. The discharge from this compressor (Stream 2) is then combined with gas liberated from the oil at Platform Irene (Stream 1).

In addition, three new compressors would be required to handle the proposed gas streams at the HS&P Gas Processing Facility. All compressors would be driven by electric motors. These compressors would be operated as follows:

- The permeate-to-fuel compressor would be a single-stage 100 hp rotary vane compressor to boost 1 MMscfd of gas from 5 psig to 50 psig for use as fuel.

- The additional vapor recovery compressor would be a single-stage 100 hp compressor to boost 1 MMscfd of gas from 0 psig to 35 psig.

- The Lompoc compressor would be relocated from the Lompoc field to the HS&P. It is a four-stage 800 hp compressor with the capacity to compress 1-2 MMscfd from 0 psig to 1600 psig. This compressor would be used to compress excess gas to injection pressure.

2.2.2.5 Pipeline Tie-Ins

Four new pipeline tie-ins would be required for the proposed project. Two of the pipeline tie-ins would be entirely within the 22.5 acre boundary of the HS&P Facility (pipelines 1 & 3), while the other two would require short pipelines to extend beyond the boundary of the existing facility (pipelines 2 & 4). Figure 2-4 shows the location of these pipelines. A description of these tie-ins is as follows:

- Pipeline 1 would connect the Lompoc field gas gathering pipeline to the relocated gas gathering compressor at the HS&P. (Stream 3 in Figure 2-5)

- Pipeline 2 would connect the new gas processing equipment to the SoCal Gas sales line. (Stream 5 in Figure 2-5)

- Pipeline 3 would connect the injection compressor and NGL injection pumps to injection well Purisima #73. (Stream 7 in Figure 2-5)

- Pipeline 4 would connect the injection compressor and NGL injection pumps to injection well Purisima #33. (Stream 7 in Figure 2-5)

Under normal operations, Pipelines 1 and 2 would be in service while Pipelines 3 and 4 would not be used. In the event that injection is required, Pipeline 3 would be used with Pipeline 4 acting as a backup.

2.2.2.6 Electrical Facilities

The existing HS&P facility currently has one 12.47 kV to 480 volt transformer, which is the plant electrical distribution system voltage. The new process equipment would require an additional 12.47 kV to 480 volt transformer to handle approximately 1500 kVA of small and medium size electric motor loads, and one 12.47 kV to 4.16 kV transformer to handle approximately 1200 kVA of large electric motor loads.

A new Motor Control Center (MCC) would be required to house all new electrical switch gear and circuitry required for the new equipment. The new MCC building would be constructed adjacent to the existing office (see Figure 2-4). New duct banks would be constructed to intersect existing manways to allow access to electrical wiring in the plant. No onsite power generation is currently required at this facility, and none is planned as part of the proposed processing facilities.

2.2.3 Construction Of New HS&P Facilities

Construction of the new facilities would occur within the 22.5 acre HS&P facility in an undeveloped area east of the existing process units (Figure 2-4). The construction would take approximately 26 weeks to complete, according to the construction schedule as shown in Figure 2-6 and would follow these steps:

1. Reroute the fence, road, and drainage ditch and grade the area.

2. Install the foundations for process equipment, skids, and new building.

3. Set the process equipment and skids.

4. Fabricate and install process piping.

5. Fabricate new MCC and control building.

6. Install and connect all instrumentation and complete electrical work.

7. Paint all new equipment and facilities.

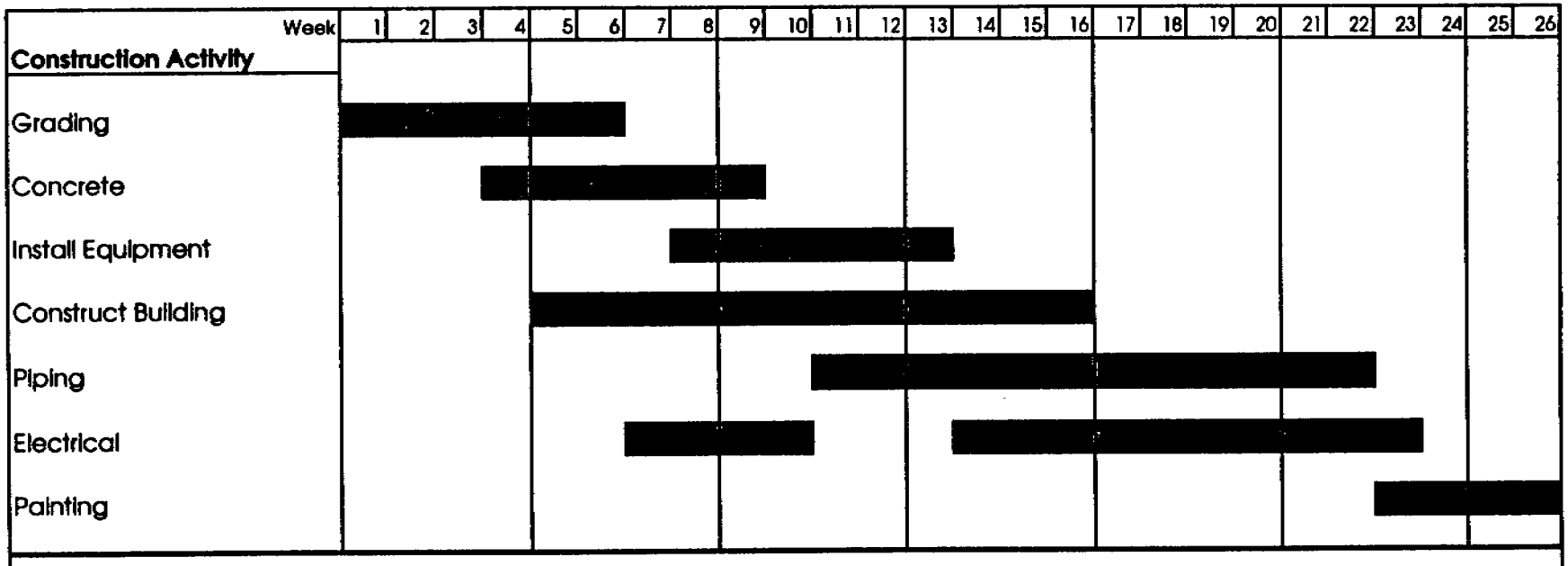


Figure 2-6 Construction Schedule for Proposed Modifications at the HS&P Facility

Construction would begin with the setting of rough grading stakes for the new road and channel, and for the expanded pad area. The grading stakes would be set using existing site control points and based upon previously established horizontal coordinates and a vertical datum. The site would be graded according to the grading plan. Areas that would be heavily loaded would be over-excavated and compacted in six inch lifts. After compaction, the final grade would be established. There would be no blasting of rock or earth. Water trucks would be used during the grading phase of construction to mitigate dust. Portions of the existing six-foot high chain link fence would be relocated to enclose the new expansion.

Foundations would be constructed of steel reinforced concrete and, with the exception of the pipe rack, would all be designed as spread footings. The pipe rack would be supported with pilings. All foundations and civil works would be designed using appropriate Uniform Building Code criteria and Unocal recommended practices.

The gas processing equipment would be fabricated elsewhere and trucked to the site. The majority of the equipment would be skid mounted. All equipment would be set with a crane, then grouted to the foundation.

The new motor control center and control room addition to the existing operations building would be constructed concurrently with the equipment and piping installation. The building would be constructed in accordance with the Uniform Building Code.

Interconnecting piping would be fabricated on site and installed after the equipment is set and the pipe rack complete. The piping would be designed to conform with ANSI Code B31.3 and API RP-14C. All pressure piping two inches in diameter and larger would be joined by welding. One inch and smaller piping would be screwed in place. Any water used for hydrotesting would be fresh water. Once hydrotesting is complete, the water would be spread on the ground for dust control at the site. The offsite pipeline connections would be fabricated and installed at this time. The pipelines would conform to ANSI Code B31.4 or B31.8 as applicable.

After the new MCC is completed, and concurrently with the piping, the electrical switch gear and power control wiring would be installed. After the piping has been completed, the instrumentation would be installed and connected. The electrical design and construction would conform to the National Electrical Code.

The final phase of construction would be the painting of all new facilities. Equipment built offsite would be painted by the manufacturer prior to being delivered. The color of all new equipment would match the color of the existing facility.

Currently, and for these modifications, access to the site would continue to be via Harris Grade Road directly west of the facility.

2.2.3.1 Site Drainage

The lower end of the existing channel empties into a natural drainage channel at the south end of the site. A portion of the existing drainage channel to the west of the site would be regraded to conform to the alignment of the new access road. The channel would be lined with gunite to prevent erosion.

Rainwater would be removed from the expanded pad areas via concrete swales which outlet into an existing catch basin and would then be piped into an existing retention basin. Prior to draining any water from the retention basin, it would be checked for contaminants.

2.2.3.2 Grading And Soils

Two preliminary soils studies have been made and the following steps are proposed to ensure a stable site.

1. All areas proposed for the location of roads or equipment would be excavated and recompacted in accordance with the final soils report. The expected depth of excavation and recompaction is 4 feet below final grade with a 90+ percent compaction.

2. According to the soils report, compaction would reduce permeability by a factor of 10,000.

3. Soil borings have not identified any clay layers or other vertically impermeable strata which would create perched water zones.

4. The slopes above the equipment pad areas would be gunite-coated to prevent erosion.

2.2.4 Operation Of The New HS&P Gas Processing Facilities

The previously described facilities have been designed to accommodate the maximum expected gas processing flow rates, but actual flow rates may vary considerably. This equipment has also been designed to handle the highest expected flow rate H_2S and CO_2 concentrations and highest molecular weight gas; however, the future flow rates and gas composition are unknown, and depending on how these factors vary, some of the equipment previously described may not be required. Specifically, CO_2 removal may not be part of the final project. Should that be the case, equipment associated with those processes would not be installed. This equipment is designed to be additive, so that if it is required in the future, it could be added. However, all potential aspects of the project have been considered as part of the environmental review in either the project specific impact assessment or the cumulative project impact assessment.

2.3 Santa Maria Pump Station

The Santa Maria Pump Station is located south of the City of Santa Maria adjacent to the Battles Gas Plant. Unocal is proposing to modify these facilities as part of this project.

2.3.1 Existing Facilities

Crude oil is transported through the Santa Maria Pump Station by pipeline. Incoming lines are from the Bell Pump Station, the Sisquoc Pump Station, and other smaller sources delivered to the truck unloading rack. At present, the majority of the incoming crude oil is from the Bell Pump Station. The truck unloading rack line is idle, and the Sisquoc line became operational in late 1992. All of the crude oil is shipped via one outgoing line to the Summit Pump Station and then on to Unocal's Santa Maria Refinery (see Figure 2-1).

This facility is operated 24 hours/day. A single daytime station operator divides his time between this station and Summit Station in Arroyo Grande.

The existing Santa Maria Pump Station was designed for a pumping capacity of 40,000 bpd of crude oil. The station has four electric motor driven mainline pumps. The original design called for three oil/steam heat exchangers with a total oil heating capacity equal to the station's pumping capacity of 40,000 bpd. The third exchanger was not installed, however, and is in storage at the pump station.

Unocal's Santa Maria Pump Station and Unocal's Battles Gas Plant are located on adjacent parcels on property along Battles Road in Santa Maria. These two facilities exist and operate separately, except for the following: Santa Maria Pump Station has no independent means of steam generation or fire protection. Steam used for heating crude oil is now supplied by boilers located at the Battles Gas Processing Plant. Basic fire protection is also supplied by Battles (including fire water tank and emergency fire pump). In addition to the fire protection supplied by Battles, Santa Maria Pump Station is equipped with a foam system and monitors for protection of the oil storage tanks. A plot plan of the existing facilities is shown in Figure 2-7.

The elimination of Battles Gas Plant leaves Santa Maria Station in need of a steam supply and fire protection. These two systems, which need to be on line by the time the Battles Gas Plant is decommissioned, are described below.

2.3.2 Proposed Additions To The Santa Maria Pump Station

The proposed fire protection system includes removal of the existing fire water tank (located within the same dike as an oil tank), installation of a new fire water tank and fire pump/engine, and a new fire water perimeter loop with additional fire hydrants. New fire protection equipment would be located near the northeast corner of the pump station. The new fire water piping would supply the existing foam system and monitors.

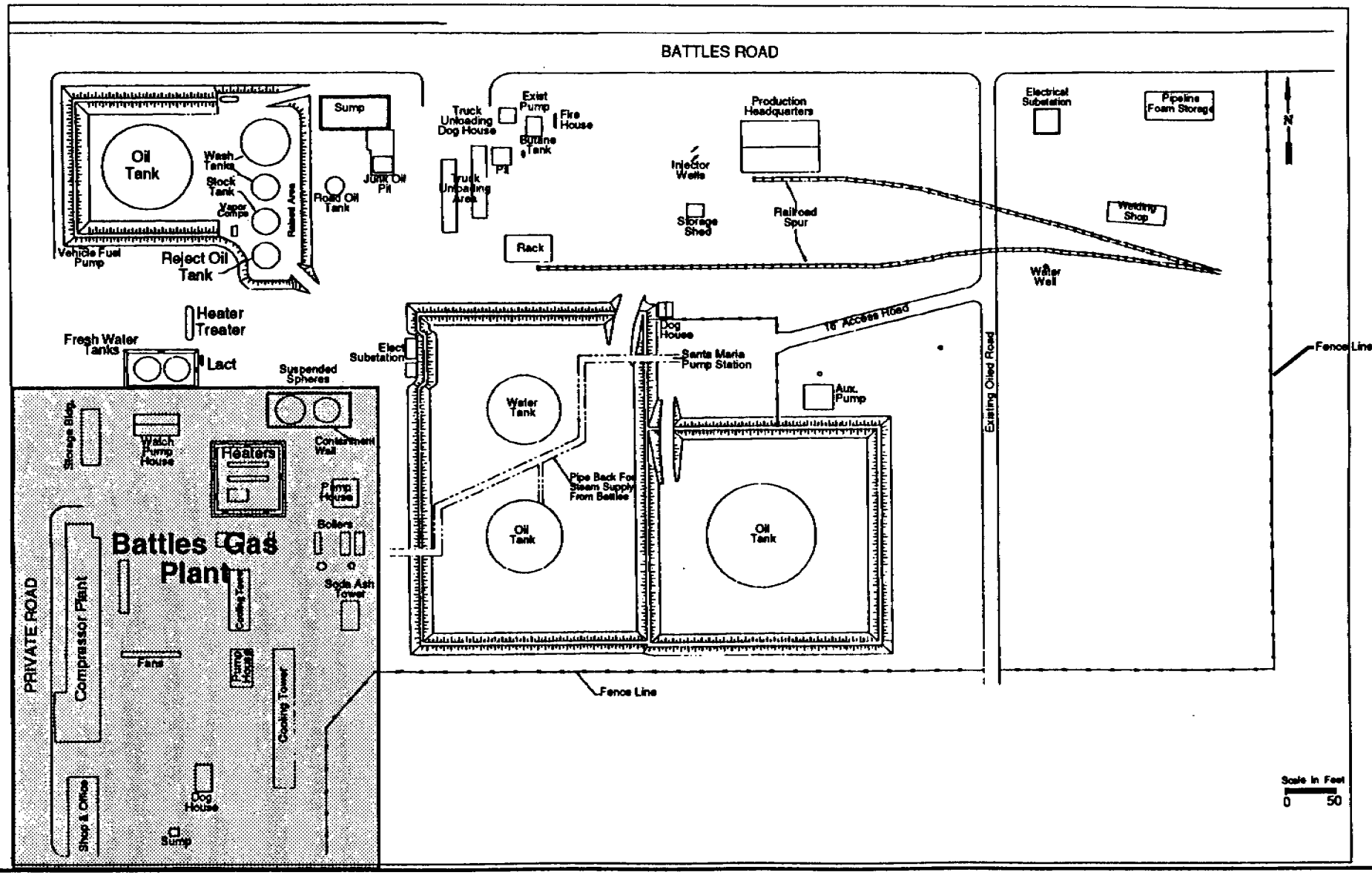


Figure 2-7 Plot Plan of Existing Facilities at the Santa Maria Pump Station

The proposed replacement boilers would have a combined heat input of 29 MMBtu/hr. The existing boilers, which serve both the Battles Gas Processing Plant and the Santa Maria Pump Station, have a combined heat input of 45 MMBtu/hr.

The proposed steam supply (boiler system) would be located north of the existing heat exchangers. This would allow removal of all steam piping from the diked area surrounding the oil tanks. These boilers would be equipped with new low NO_x burners in accordance with APCD guidelines. Boiler blowdown water as well as water used in water softener regeneration would be disposed of on site in a lined evaporation pond. Boiler blowdown water from Battles is currently being added to injection wells for enhanced oil recovery. The plot plan for the proposed modifications at the Santa Maria Pump Station are shown in Figure 2-8.

2.3.2.1 Fire Water Tank

The proposed tank size is 420,000 gallons, which would be used for both fire protection and boiler feed water reserve. Boiler feed water pumps would take suction at a tank elevation such that boilers can not deplete the water level below the 360,000 gallon mark. Fire protection reserve would be a minimum of 360,000 gallons and boiler feedwater reserves would be a minimum of 10,000 gallons. This would provide a minimum of 4 hours of fire water at a flow rate of 1,500 gpm. The most likely tank dimensions are 55 feet diameter by 24 feet height. The tank would be prefabricated, bolted steel construction with galvanize coating. The proposed location for new water tank would be near the northeast corner of pump station.

2.3.2.2 Fire Pump

A new horizontal split case type fire pump (diesel fueled) with a discharge capacity of 1,500 gpm would be installed to meet fire fighting requirements. Line pressure would be maintained by an electric jockey pump that would switch on at 125 psi and off at 150 psi.

2.3.2.3 Fire Water Loop

A fire water loop would be used to encircle the entire pump station and would be configured roughly as a figure eight. The upper loop would encircle the truck unloading area and proposed boiler equipment. The lower loop would encircle the pumping area and oil storage tanks. Fire hydrants are to be positioned on loop with no more than 300 feet between adjacent hydrants and would be spaced from equipment per IRI spacing recommendations. Perimeter piping would be 8" diameter and lateral piping to the existing foam system and monitors would be 6" diameter. All piping would be underground.

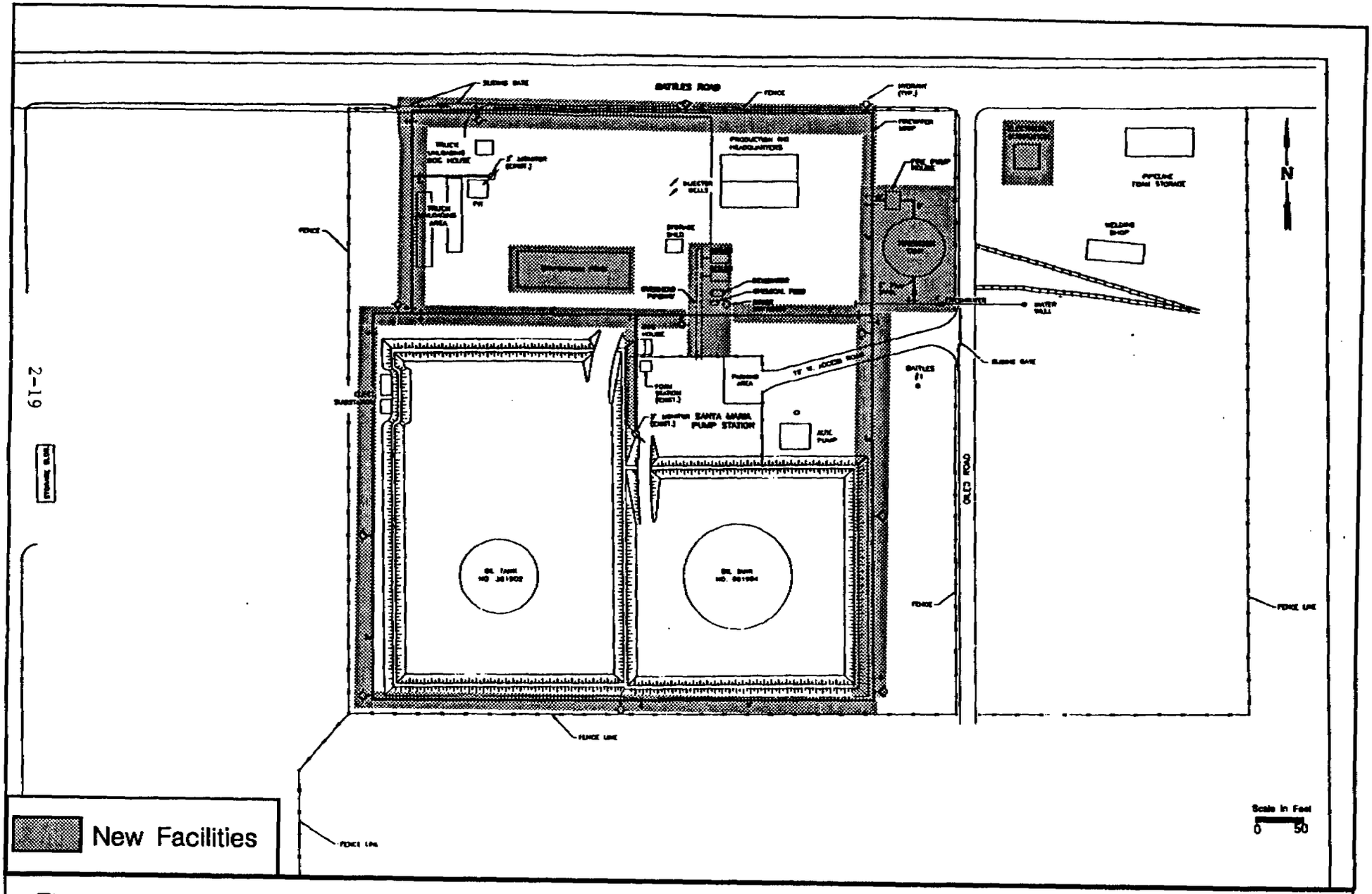


Figure 2-8 Plot Plan of Proposed Modifications to the Santa Maria Pump Station

2.3.2.4 Boilers and Associated Equipment

Unocal has two boilers (one each from the Santa Paula and Ventura pump stations) that would be refurbished with low NO_x control technology and relocated to Santa Maria. These boilers have a combined total capacity of 29 MMBtu/hr heat input. Boiler control systems would be upgraded to microprocessor based Honeywell controllers that are consistent with boiler controllers used at other Unocal pump stations in this area. The new boiler equipment would be located north of the existing heat exchangers. This eliminates steam piping in the diked area and allows for the shortest distance between boilers and heat exchangers.

Additional equipment that would be associated with the boilers includes a triplex water softener system, chemical storage tanks with injection pumps (for oxygen removal and corrosion inhibition), a deaerating hot well, evaporation pond, and some pumps. In addition, 1,000 feet of 6" gas line will be installed to connect the boilers to the SoCal Gas supply line. The system will also include 140 feet of 10" overhead steam piping.

Chemicals would be injected into boiler feed water stream at two separate points. This chemical treatment is necessary to prevent corrosion in boilers.

Boiler blowdown water and water used in regeneration of water softener would be stored in an evaporation pond on site. Pond dimensions would be 40 feet wide, 120 feet long and 4 feet deep. The pond dikes are to be 3 feet above grade, and the pond will be cut one foot below grade. The proposed pond location is north of Tank 391901 (Tank 391901 is existing water tank that is to be removed). The pond would be lined and covered with a net to prevent birds from entering.

2.3.3 Construction Of Santa Maria Pump Station Facilities

The Santa Maria Pump Station construction activities would take place over a sixteen week period. Major construction activities include the installation of the new water tank, boilers and associated piping, construction of the evaporation pond, and installation of the fire fighting equipment and associated piping. A new chain link fence also would be installed around the entire SMPS facility.

A peak work force of about 20 to 25 workers would be required during construction of the SMPS modifications. Unocal estimates a total of about 24 vehicle trips per day to and from the project site during construction. Construction is expected to last approximately sixteen weeks. Equipment used would include: two or three backhoes, concrete delivery trucks, a dump truck and a bulldozer.

Some demolition of equipment would be required to support this proposed project. Demolition activities would include the removal of the following equipment:

1. The existing fire water tank,

2. All steam piping from the diked area surrounding the oil tank, and

3. Railroad spurs and loading rack,

The construction and demolition schedule is shown in Figure 2-9.

2.3.4 Operation Of Santa Maria Pump Station Facilities

Following the construction, the operation of the pump station would be similar to the way it is operated today except that it would now have an independent means of steam generation and fire protection. The pump station would continue to be remotely operated from the Santa Fe Springs Control Center, 24 hours/day. In addition, a single, onsite operator will work at the site three daytime shifts per week.

2.4 Jim Hopkins Fee

The Jim Hopkins Fee site is located south of the City of Santa Maria and serves as a collection point for oil and gas production.

2.4.1 Existing Facilities

The Jim Hopkins Fee in the Santa Maria Valley (SMV) field produces approximately 200 bpd of oil and 50 Mscfd of gas. Gas from the nine producing wells currently passes through an inlet gas separator, is commingled with gas from the tank battery vapor recovery compressor, and is transported through the SMV South Gas Gathering System to the "South Intake" of the Battles Gas Plant. The closure of the Battles Gas Plant would alter the way the Jim Hopkins Fee is operated. The present configuration is shown in Figure 2-10.

2.4.2 Design Of Facilities

The existing gas pipeline between Jim Hopkins Fee and Orcutt Hill currently carries 1,500 - 2,000 ppm hydrogen sulfide gas at a pressure of 250 psig. With the proposed project, it is anticipated that the pipeline will contain less than 300 ppm hydrogen sulfide and operate at a pressure of 50 psig or less.

In addition to the existing equipment at Jim Hopkins Fee, future operations would use the following equipment: additional piping and valves, a refrigeration skid, dew point and oxygen monitors, and a fuel gas meter (Figure 2-11).

Three pipeline changes would be required to accommodate the new flow of gas at Jim Hopkins Fee. First, a pipeline would be required to connect the existing Jim Hopkins Fee gas gathering pipeline to the existing Jim Hopkins Fee fuel gas pipeline. This would allow gas from the inlet

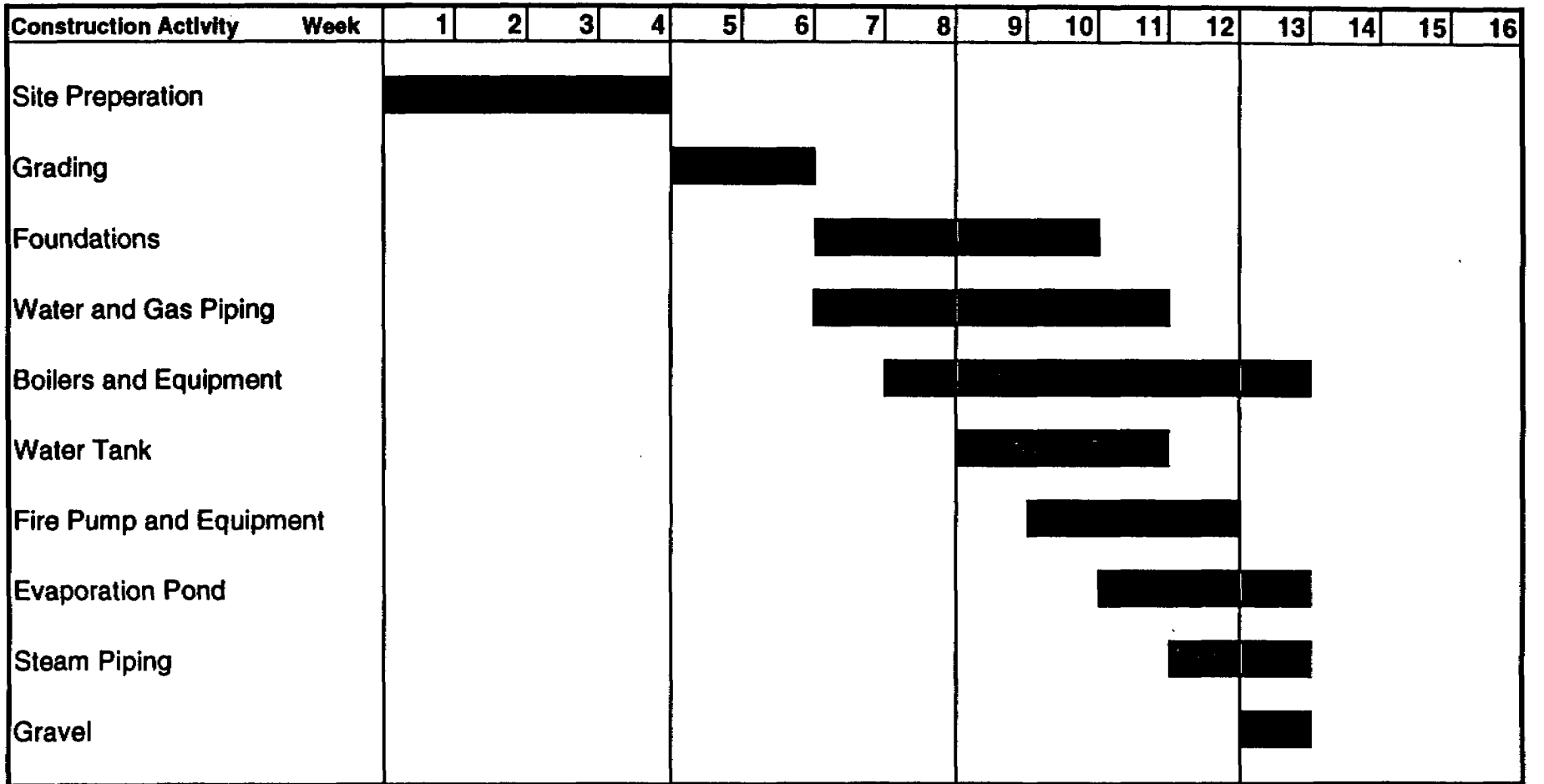


Figure 2-9 Construction Schedule for the Proposed Santa Maria Pump Station Modifications

Demolition, fence and clean up would occur after the decommissioning of the Battles facility

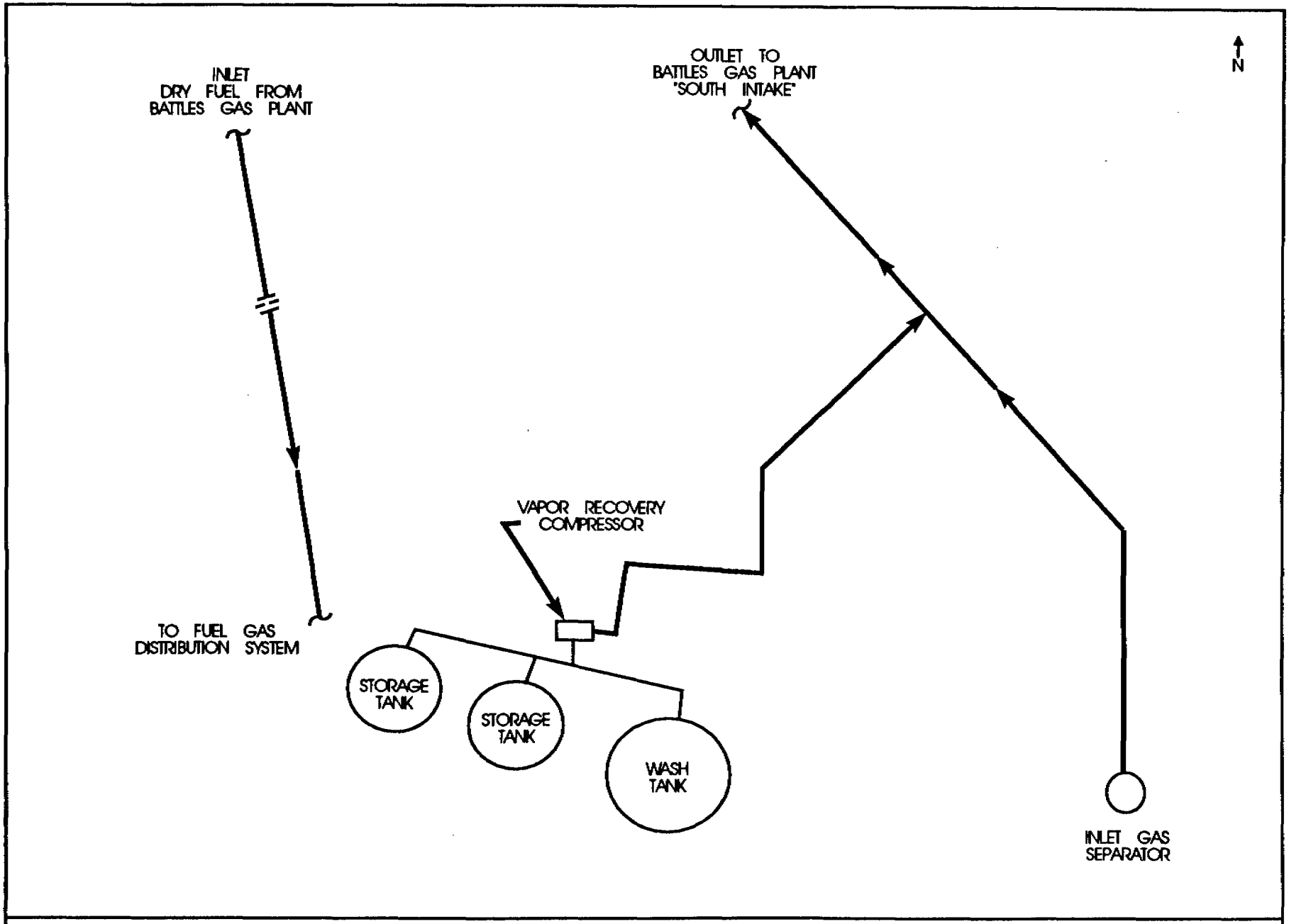


Figure 2-10 Plot Plan of Existing Jim Hopkins Fee Tank Battery and Gas Handling Facilities

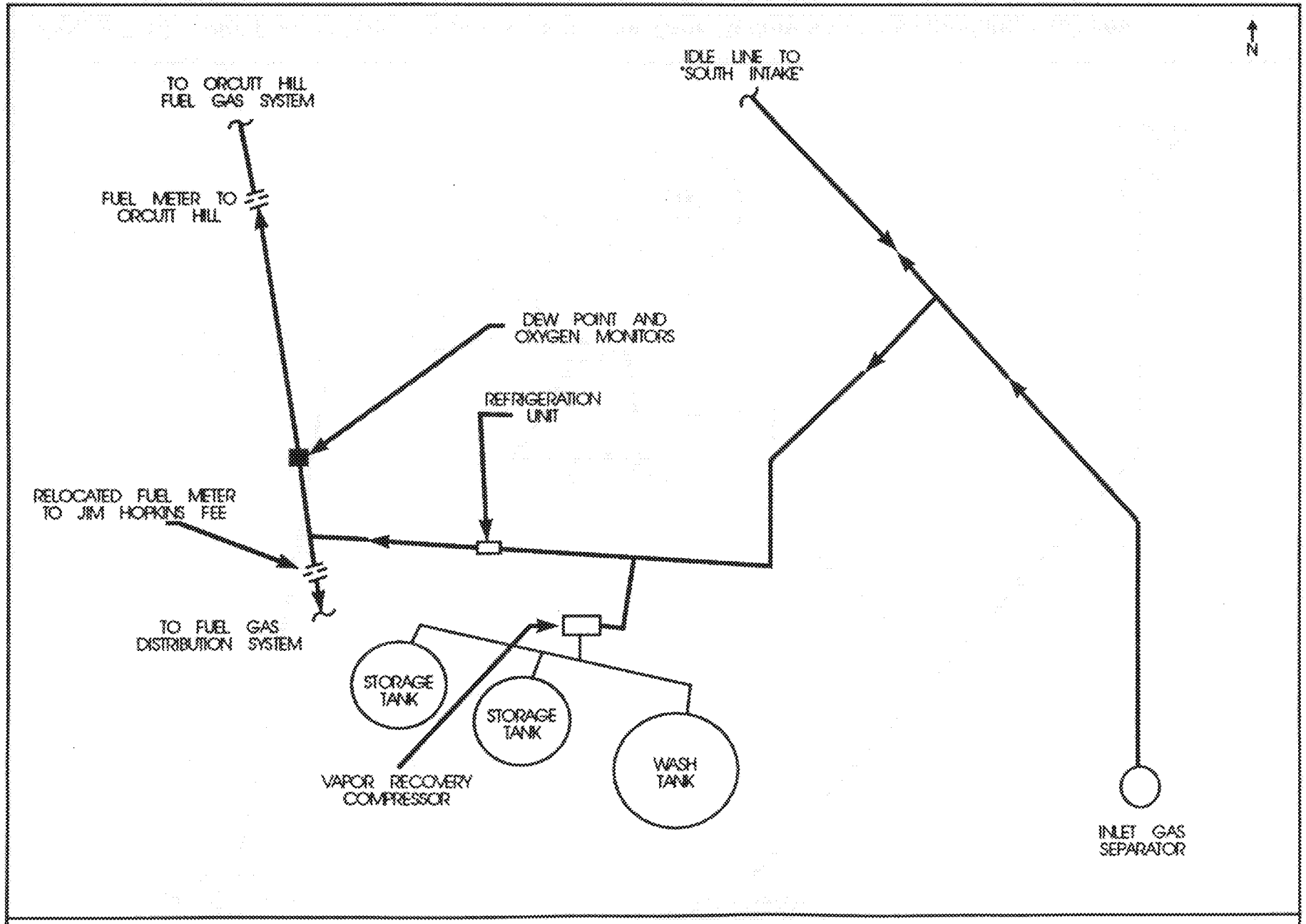


Figure 2-11 Plot Plan of Proposed Modifications to the Jim Hopkins Fee Tank Battery and Gas Handling Facilities

gas separator and vapor recovery compressor to go through the refrigeration unit and to the fuel gas system. Second, the pipeline currently going to the South Intake of Battles Gas Plant would be isolated and idled. Finally, the existing fuel gas pipeline from Battles Gas Plant to Jim Hopkins Fee would be tied into the existing pipeline between Orcutt Hill and the Battles Gas Plant at the Santa Maria Way valve box.

A refrigeration skid would be used to cool the gas to 50°F and remove water. This would prevent liquid from accumulating in the pipelines and potentially causing corrosion. The refrigeration skid would be approximately ten feet by six feet by seven feet high and use a 5 hp electric motor for refrigerant compression. A block flow diagram of the proposed refrigeration skid is shown in Figure 2-12.

For additional protection against corrosion, oxygen and dew point monitors would be installed on the pipeline leaving Jim Hopkins Fee. If the oxygen level or dew point of the gas exceeds a preset limit, a valve would close and the flow of gas leaving Jim Hopkins Fee would be interrupted until the condition is corrected.

A gas flow meter (currently used to measure the amount of gas going to the South Intake of Battles Plant from Jim Hopkins Fee) would be relocated to measure the amount of dehydrated gas from the refrigeration skid going to the Jim Hopkins Fee fuel gas distribution system.

2.4.3 Construction Of Facilities

The construction would occur within the Jim Hopkins Fee site close to the existing compressor. The construction would last approximately ten weeks and would consist of the following activities:

1. Grading the area immediately surrounding the new skid;

2. Install the foundation for the new process skid;

3. Set the refrigerated dehydration unit skid;

4. Fabricate and install process piping;

5. Install and connect all instrumentation and electrical; and

6. Painting all new equipment and facilities.

The area below the skid would be over-excavated and then compacted. After compaction, final grade would be completed. There would be no blasting of rock or earth.

The foundation is to be constructed of steel reinforced concrete and would be designed to the Uniform Building Code Seismic Zone 4.

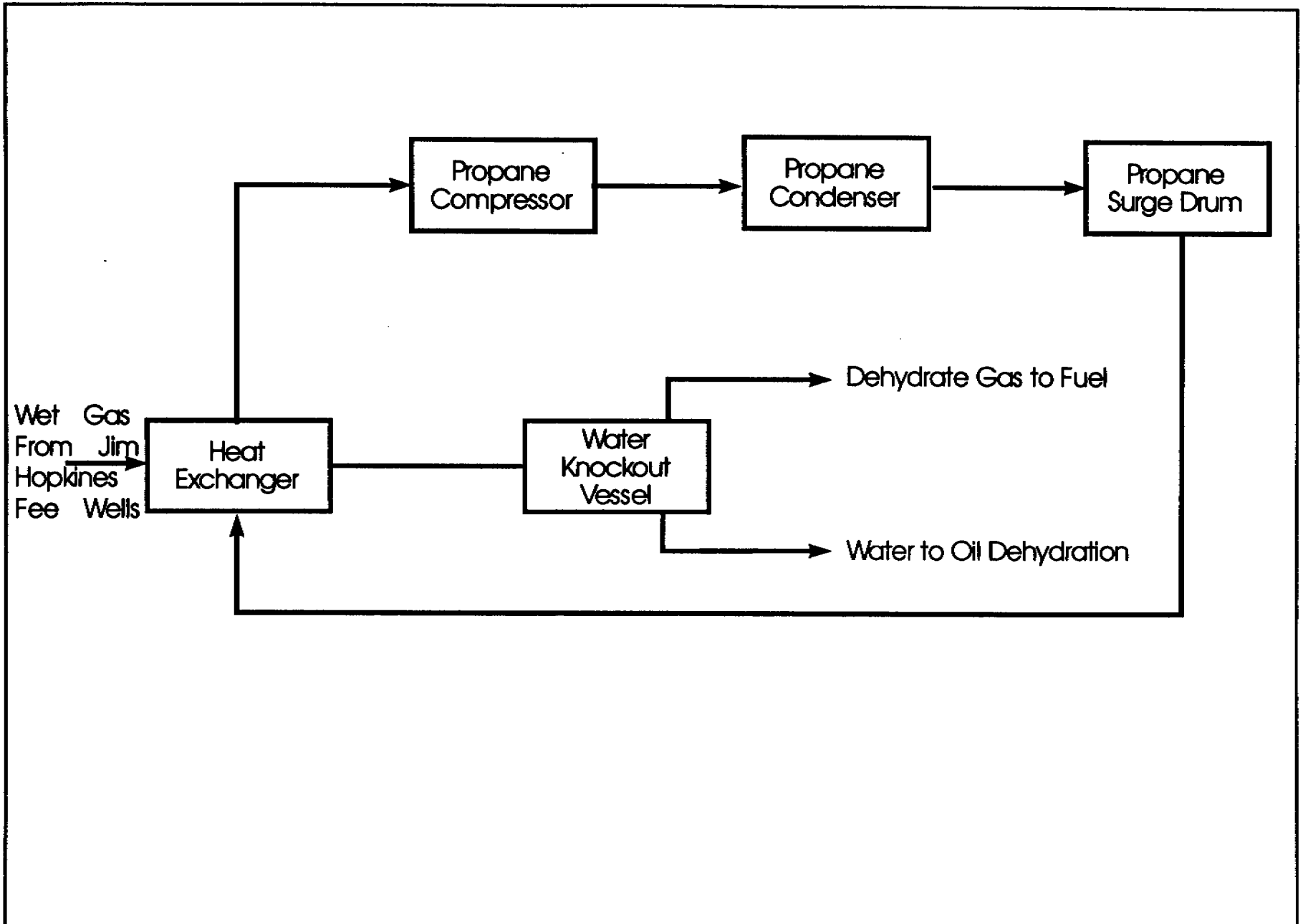


Figure 2-12 Block Flow Diagram of Jim Hopkins Fee Refrigeration Unit

The equipment would be fabricated offsite and trucked to the site. The majority of the equipment would be associated with the skid mounted refrigerated dehydration unit. The dehydration unit would be set with a crane then grouted to the foundation.

The interconnecting piping would be fabricated onsite, and installed after the equipment is set. The piping would be designed to conform with the ANSI Code B31.3. All pressure piping two inches and above in diameter would be welded. Fresh water used for hydrotesting and following testing would be used for dust control at the site.

After the new dehydration skid and associated piping have been installed, the electrical switchgear and power and control wiring would be installed. Next, the instrumentation would be installed and connected with the electrical design and construction, conforming to the National Electrical Code.

The final phase of construction would be the painting of all the constructed facilities. Any equipment built offsite would be painted by the manufacturer prior to being delivered. The color of all new equipment would match the tan color of the existing facility.

From the start of construction, the time required for final mechanical completion is estimated to be ten weeks. The construction schedule is shown in Figure 2-13.

2.4.4 Operation Of Facilities

After the Battles Gas Plant is shutdown, gas from Jim Hopkins Fee would be dehydrated and used on the property as fuel for the pumping units and the tank heater (used to aid in the separation of produced oil from water). The amount of gas produced from Jim Hopkins Fee is approximately equal to the amount of gas required for fuel. If produced gas exceeds the fuel requirement, the excess gas would be sent to Orcutt Hill through a segment of the existing Offshore/Onshore South Gas Gathering System. If Jim Hopkins Fee requires more fuel gas than it can produce, fuel gas can be sent from Orcutt Hill through the same line.

2.5 Decommissioning And Abandonment Of The Battles Gas Plant

While the decommissioning and abandonment of the Battles Gas Plant is not explicitly part of this application, the proposed modifications are being pursued by Unocal in order to allow the Battles Gas Plant to be shut down. As discussed in the background section of Chapter 1.0, Unocal has received a two year time extension for compliance with permit condition P-17, in order to permit and construct the proposed project. Once the proposed modification projects are complete and operational, Unocal is proposing to decommission and abandon the Battles Gas Plant.

It is projected that the proposed projects would need to operate for about six months prior to decommissioning the Battles Gas Plant. Therefore, there would be a three to six month period where the proposed facilities and the Battles Gas Plant would be operating simultaneously. This

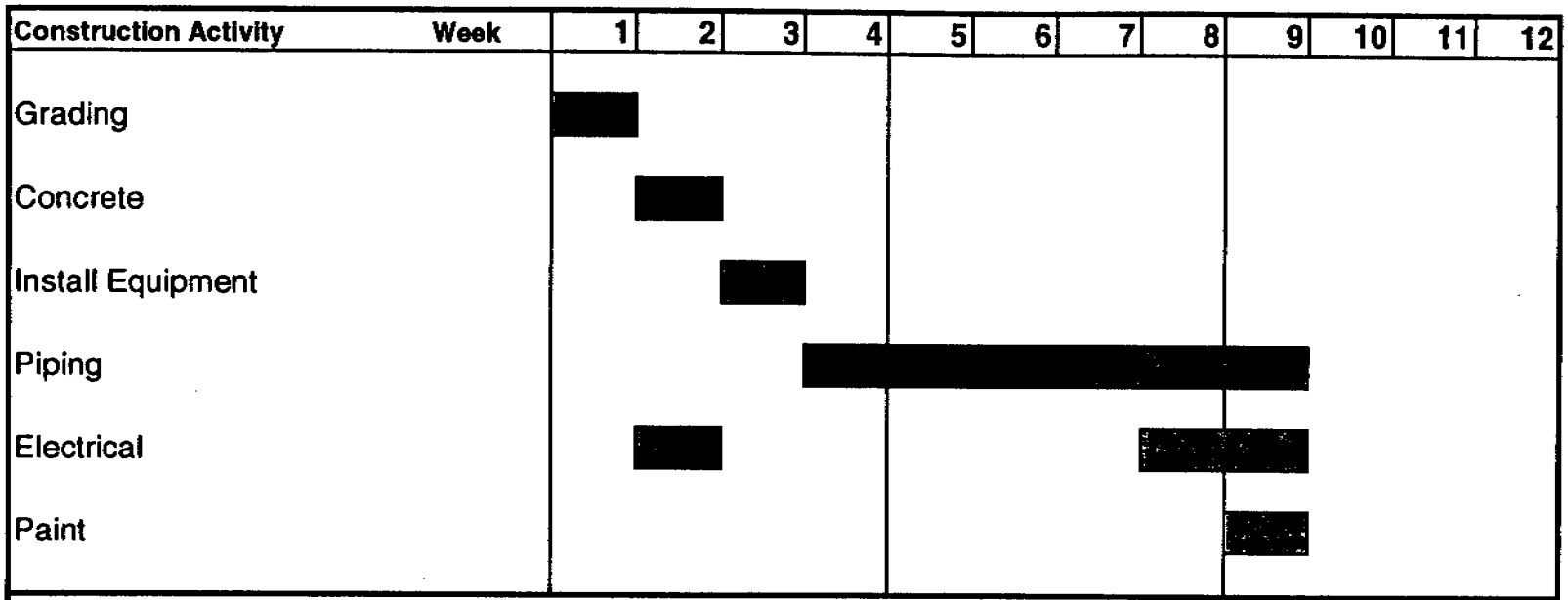


Figure 2-13 Construction Schedule for Proposed Modifications to the Jim Hopkins Fee Site

overlap period is needed in order to assure that the new facilities are operating properly. During this period of simultaneous operation the volume of gas being processed at the Battles Gas Plant would be about half of the current throughput, since the Point Pedernales field gas would be processed at the proposed HS&P Gas Plant instead of the Battles Gas Plant. Given the current time extension allowed for the Battles Gas Plant operation, this overlap would not be possible. Therefore, an additional time extension for operation of the Battles Gas Plant would be required if simultaneous operation were to occur.

3.0 Project Alternatives Description/Screening And Siting Analysis

This chapter presents a description and analysis of the alternative gas processing sites for the proposed project. The discussion has been broken-down into four main sections. The first part provides a description of the alternative sites; the second part provides a screening/siting analysis of the alternative sites; the third presents a comparative discussion of the alternative sites; and the fourth provides the rationale for some of the alternative sites dropped from further consideration.

Alternatives to the Santa Maria Pump Station and Jim Hopkins Fee sites have not been addressed in this document since the proposed modifications are required to support existing operations at these sites due to the proposed abandonment and decommissioning of the Battles Gas Plant. Under the No Project Alternative these modifications would not be needed.

The use of an alternative screening analysis to limit the number of alternatives to the project is supported by CEQA Section 15126(d) - Alternatives To The Proposed Action. This section states:

> *"Describe a range of reasonable alternatives to the project, or to the location of the project, which could feasibly attain the basic objectives of the project, and evaluate the comparative merits of the alternatives. If there is a specific proposed project or a preferred alternative, explain why the other alternatives were rejected in favor of the proposal if they were considered in developing the proposal."*

The use of an alternative screening analysis provides the detailed explanation of why other alternatives were rejected from further analysis, and assures that only the environmentally preferred alternatives which could meet the project's objectives, are evaluated and compared in the EIR.

The use of a screening/siting analysis is also required by Santa Barbara County's Comprehensive Plan Land Use Element. This element contains specific screening and siting criteria for gas processing facilities. These criteria were developed as part of the County's Siting Gas Processing Facilities Study (SBC, 1989). This study developed criteria for siting gas processing facilities in the midwestern and northwestern regions of Santa Barbara County, which includes the area of the proposed project. The screening and siting criteria developed in this study, and adopted as part of the Comprehensive Plan Land Use Element, have been used in this alternatives analysis.

3.1 Description Of Alternative Sites for the HS&P Gas Plant

Seven alternative sites for the proposed gas plant at the HS&P have been identified. A brief description of each of the alternative sites is provided below. Table 3.1 provides a summary of the characteristics for each of the alternative sites.

3.1.1 Battles Gas Plant Site (i.e., The No Project Alternative)

With this alternative, none of the proposed projects would be built, and all gas would continue to be processed at the Battles Gas Plant located near the City of Santa Maria (see Figure 3-1), northeast of the intersection of Betteravia Road and Highway 101. The Battles Gas Plant, which is owned and operated by Unocal, is presently responsible for all gas processing in northern Santa Barbara County and southern San Luis Obispo County. The design capacity for the Battles Gas Plant is 30 MMscfd of produced gas, with current throughput at 9-10 MMscfd. The five saleable products leaving the Battles Gas Plant are sales gas, fuel gas, propane, butane, and natural gasoline.

In order to continue using the Battles Gas Plant for gas processing, it has been assumed that Unocal would have to comply with permit condition P-17, which required the Battles Gas Plant to undergo a safety audit. The purpose of this audit was to bring the Battles Gas Plant up to compliance with the current safety standards applicable to oil and gas facilities. The audit, which was completed in July 1989, contained a total of 272 recommendations. Reviewing these recommendations, it appears that Unocal has met the intent of 232 recommendations. This conclusion is based upon information provided by both the County and Unocal. Table 3.2 provides a list of the recommendations that are considered to be outstanding. It should be noted that this list of outstanding recommendations was developed as part of the SEIR, with input from the County Fire Department, Building and Safety, and the Energy Division.

The list in Table 3.2 was used to develop the No Project Alternative, which assumed that the Battles Gas Plant would be upgraded to comply with these outstanding recommendations. It has been estimated that approximately 20 months would be necessary to comply with the outstanding recommendations. The majority of this time is needed to deal with the equipment spacing recommendations and the replacement of the cooling tower. Actual construction activities would require approximately 16 weeks to complete, and as many as 100 workers would be needed. Also, during this time, the gas plant would be shut down. During the shutdown period, all gas processed at the Battles Gas Plant would be shut-in, flared or reinjected.

Nine of the 272 recommendations relate to equipment spacing. The audit recommended that all equipment spacing meet IRI spacing recommendations. IRI spacing is only a recommendation of insurers, and is not required by any codes. It should also be noted that the new oil and gas processing facilities on the south coast of Santa Barbara do not meet IRI spacing recommendations. If the spacing recommendations were dropped, the time required to comply with the remaining recommendations would be approximately six months, and the facility would not require an extended shutdown period.

Table 3.1 Summary Of General Engineering Data And Environmental Siting Constraints For Alternative Sites For The Proposed HS&P Gas Processing Plant

Item	Proposed Site	Lompoc Field Site 1	Lompoc Field Site 2	Lompoc Field Site 8
A. Engineering/Design				
• **Gas Plant Capacity**	6.0 MMscfd of sales gas 2 MMscfd of reinjection	6.0 MMscfd of sales gas 2 MMscfd of reinjection	6.0 MMscfd of sales gas 2 MMscfd of reinjection	6.0 MMscfd of sales gas 2 MMscfd of reinjection
• **Length of Sour Gas Pipeline from Platform Irene to the Gas Processing site**	12 miles offshore 10 miles onshore	12 miles offshore 6 miles onshore	12 miles offshore 8 miles onshore	12 miles offshore 10 miles onshore
• **Length of new offsite pipelines required**	100 feet for gas reinjection 200 feet for sales gas line to SoCal Gas.	3 miles for gas reinjection 3 miles for sales gas line to SoCal Gas. 3 miles for NGLs 0.5 miles for tie-in to sour gas line from Platform Irene.	1 mile for gas reinjection 1 mile for sales gas line to SoCal Gas. 1 mile for NGLs 500 feet for tie-in to sour gas line from Platform Irene.	0.5 miles for gas reinjection .25 miles for sales gas line to SoCal Gas. 0.5 miles for tie-in to sour gas line from Platform Irene. 0.5 miles for NGLs.
• **Method of handling LPG/NGL by-products**	LPGs and NGLs would be blended with the crude oil at the HS&P. Excess LPG/NGLs will sent to a reinjection well.	LPGs and NGLs would be blended with the crude oil at the HS&P. Excess LPG/NGLs will sent to a reinjection well.	LPGs and NGLs would be blended with the crude oil at the HS&P. Excess LPG/NGLs will sent to a reinjection well.	LPGs and NGLs would be blended with the crude oil at the HS&P. Excess LPG/NGLs will sent to a reinjection well.
• **Distance to nearest population center**	1.0 mile to Vandenberg Village and 1.5 miles to Mission Hills Community.	0.25 miles to Vandenberg Village.	0.5 miles to Vandenberg Village.	0.5 miles to Mission Hills Community.
• **Existing land use at the site**	Oil heating, separating and pumping.	Grazing. Site is within the land conveyed to the State of California.	Crops. Site is within the land conveyed to the State of California.	Crops. Site is within the land conveyed to the State of California.

Table 3.1 Summary Of General Engineering Data And Environmental Siting Constraints For Alternative Sites For The Proposed HS&P Gas Processing Plant (Continued)

	Proposed Site	Lompoc Field Site 1	Lompoc Field Site 2	Lompoc Field Site 8
• **Infrastructure requirements for the site**	No additional infrastructure is required at the site.	Site would require that an access road be built off of the Lompoc-Casmalia Road. Site would also need electrical and water utilities.	Site would require that an access road be built off of the Lompoc-Casmalia Road. Site would also need electrical and water utilities.	No additional infrastructure is required at the site.
• **Effect on Point Pedernales field production**	none	none	none	none
B. Environmental Siting Constraints				
• **Air quality attainment status of site area**	The area is currently in non-attainment for the federal and state ozone standards, the 24 hr PM_{10} standard.	The area is currently in non-attainment for the federal and state ozone standards, the 24 hr PM_{10} standard.	The area is currently in non-attainment for the federal and state ozone standards, the 24 hr PM_{10} standard.	The area is currently in non-attainment for the federal and state ozone standards, the 24 hr PM_{10} standard.
• **Potential population areas impacted by odor**	none	Vandenberg Village	Vandenberg Village	Mission Hills Community.
• **Biologically sensitive areas potentially impacted by offsite pipelines**	Coastal Live Oakland basket grass	Coastal Live Oak, Burton Mesa Chaparral, and basket grass.	Coastal Live Oak, Burton Mesa Chaparral, and basket grass.	Coastal Live Oak, Burton Mesa Chaparral, and basket grass.
• **Availability of water supplies**	Adequate water supplies available at the site from Unocal wells.	Additional groundwater wells may be required for use of this site.	Additional groundwater wells may be required for use of this site.	Adequate water supplies available at the site from Unocal wells.
• **Extent of alterations to natural terrain**	none. Plant will be built inside the existing facility.	Minimal, since site is on flat terrain and has been previously disturbed.	Minimal, since site is on flat terrain and has been previously disturbed.	Minimal, since site is on flat terrain and has been previously disturbed.
• **Site avoids slopes 20% or greater**	yes. Site is on level terrain.	yes. Site is on level terrain.	yes. Site is on level terrain.	yes. Site is on level terrain.
• **Distance site is visible from major roadways**	Site is visible for about 0.2 miles of Harris Grade Road.	Site is visible for 0.5 miles along Lompoc-Casmalia Road.	Site is visible for 0.6 miles along Lompoc-Casmalia Road.	Site is not visible from public roads.

Table 3.1 Summary of General Engineering Data and Environmental Siting Constraints for Alternative Sites for the Proposed HS&P Gas Processing Plant (Continued)

Item	Cat Canyon Site	Orcutt Hill Site	Battles Site (i.e., no project)	Gas Reinjection at Platform Irene
A. Engineering/Design				
• Gas Plant Capacity	6.0 MMscfd of sales gas 2 MMscfd of reinjection	6.0 MMscfd of sales gas 2 MMscfd of reinjection	6.0 MMscfd of sales gas	6 MMscfd reinjection.
• Length of Sour Gas Pipeline from Platform Irene to the Gas Processing site (miles)	12 miles offshore 28 miles onshore	12 miles offshore 22 miles onshore	12 miles offshore 30 miles onshore.	0 miles
• Length of new offsite pipelines required (miles)	Up to 2 miles depending upon the location of reinjection wells within the field. Up to 1 mile depending upon the location of a suitable SoCal Gas pipeline tie-in	Up to 2 miles depending upon the location of reinjection well within the field. Up to 0.5 miles depending upon the location of a suitable SoCal Gas pipeline tie-in..	none	none
• Method of handling LPG/NGL by-products	LPGs and NGLs would be blended with the crude oil at the Cat Canyon site and moved by pipeline. Excess LPG/NGLs will sent to a reinjection well.	LPGs and NGLs would be blended with the crude oil at the Orcutt Hill site and moved by pipeline Excess LPG/NGLs will sent to a reinjection well.	LPGs would be stored on site and trucked out of the plant. At peak capacity plant would require about 2 truck trips per day. NGLs would be blended with the crude oil at the Santa Maria Pump Station and moved by pipeline.	reinjection

Table 3.1 Summary Of General Engineering Data And Environmental Siting Constraints For Alternative Sites For The Proposed HS&P Gas Processing Plant (Continued)

	Proposed Site	Lompoc Field Site 1	Lompoc Field Site 2	Lompoc Field Site 8
• **Potential areas impacted by noise**	None.	Vandenberg Village	Vandenberg Village	Mission Hills Community.
• **Potential for impacts to cultural resources**	Limited due to the fact that the site is previously disturbed, and the only offsite construction is for 300 feet of pipeline.	Limited for the site due to the fact that the site has been previously disturbed. Minimal for the pipeline corridor since the existing corridor from platform Irene to the HS&P would be used.	Limited for the site due to the fact that the site has been previously disturbed. Minimal for the pipeline corridor since the existing corridor from platform Irene to the HS&P would be used.	Limited for the site due to the fact that the site has been previously disturbed. Minimal for the pipeline corridor since an existing pipeline corridor runs between this site and the HS&P.
• **Availability of emergency services**	The nearest emergency response is the County's Lompoc 51 station. The next nearest station is in Buellton 20 minutes away.	The nearest emergency response is the County's Lompoc 51 station. The next nearest station is in Buellton 20 minutes away.	The nearest emergency response is the County's Lompoc 51 station. The next nearest station is in Buellton 20 minutes away.	The nearest emergency response is the County's Lompoc 51 station. The next nearest station is in Buellton 20 minutes away.

Table 3.1 Summary of General Engineering Data and Environmental Siting Constraints for Alternative Sites for the Proposed HS&P Gas Processing Plant (Continued)

Item	Cat Canyon Site	Orcutt Hill Site	Battles Site (i.e., no project)	Gas Reinjection at Platform Irene
• Distance to nearest population center	12 miles to Orcutt and 15 miles to Los Alamos. Potential agricultural workers within 3 miles.	6 miles to Orcutt with potential agricultural workers within 1 mile.	Within 2 miles of Santa Maria, and potential agricultural workers within 600 feet. Other business activities with 1000 feet.	NA
• Existing land use at the site	Oil development and gas compression	Oil development and gas compression	Gas processing and oil storage and pumping.	NA
• Infrastructure requirements for the site	No additional infrastructure is required at the site.	No additional infrastructure is required at the site.	No additional infrastructure is required at the site.	A new subsea power cable from Surf to the platform might be required. Additional deck space might have to be added to the platform in order to provide space for the reinjection compressors.
• Effect on Point Pedernales field production	none	none	none	Potentially significant loss in oil production. Temporary loss of all gas production.
B. Environmental Siting Constraints				
• Air quality attainment status of site area	The area is currently in non-attainment for the federal and state ozone standards, the 24 hr PM_{10} standard, and the H_2S standard.	The area is currently in non-attainment for the federal and state ozone standards, the 24 hr PM_{10} standard, and the H_2S standard.	The area is currently in non-attainment for the federal and state ozone standards, the 24 hr PM_{10} standard, and the H_2S standards.	Area is in non-attainment for the federal and state ozone standards.
• Potential areas impacted by odor	none	none	none	none

Table 3.1 Summary of General Engineering Data and Environmental Siting Constraints for Alternative Sites for the Proposed HS&P Gas Processing Plant (Continued)

Item	Cat Canyon Site	Orcutt Hill Site	Battles Site (i.e., no project)	Gas Reinjection at Platform Irene
• Biologically sensitive areas potentially impacted by offsite pipelines	Coastal Live Oak	Coastal Live Oak	none	none
• Availability of water supplies	Additional groundwater wells may be required for use of this site.	Additional groundwater wells may be required for use of this site.	Adequate water supplies form existing Battles Gas Plant.	Adequate water supplies available from desal unit on platform.
• Extent of alterations to natural terrain	Minimal, since site is on flat terrain and has been previously disturbed.	Minimal, since site is on flat terrain and has been previously disturbed.	none. Plant will be built inside the existing facility.	NA
• Site avoids slopes 20% or greater	yes. Site is on level terrain.	yes. Site is on level terrain.	yes. Site is on level terrain.	NA
• Distance site is visible from major roadways	Site is not visible from public roads.	Site is not visible from public roads.	Site is visible for about 1 mile of Highway 101.	NA
• Potential areas impacted by noise	none	none	Surrounding agricultural workers as well as others working in the vicinity around the plant.	none
• Potential for impacts to cultural resources	Limited for the site due to the fact that the site has been previously disturbed. Potentially significant for the pipeline corridor given the length of pipeline that may be needed.	Limited for the site due to the fact that the site has been previously disturbed. Potentially significant for the pipeline corridor given the length of pipeline that may be needed..	none	none

Table 3.1 Summary of General Engineering Data and Environmental Siting Constraints for Alternative Sites for the Proposed HS&P Gas Processing Plant (Continued)

Item	Cat Canyon Site	Orcutt Hill Site	Battles Site (i.e., no project)	Gas Reinjection at Platform Irene
• Availability of emergency services	The nearest emergency response is the County's Lompoc 51 station. The next nearest station is in Buellton 20 minutes away.	The nearest emergency response are the County's Los Alamos 24 and the Sisquoc 23 stations Both are within 10 minutes of the site.	The nearest emergency response are the City of Santa Maria Stations 1,2 and 3. All are within 5 minutes of the site. The Santa Barbara County Airport station 21 is also about 10 minutes away from the site.	NA

Source: Data for the Lompoc sites are from the original Point Pedernales EIS/EIR (ADL, 1985). Data for the other sites from the North County Gas Processing Facility Siting Study (SBC, 1990), the Master Environmental Assessment for Onshore Oil and Gas Facilities in Santa Barbara County (SBC, 1990), and the UNOCAL Application to Modify FDP (85-DP-71), (UNOCAL, 1991).

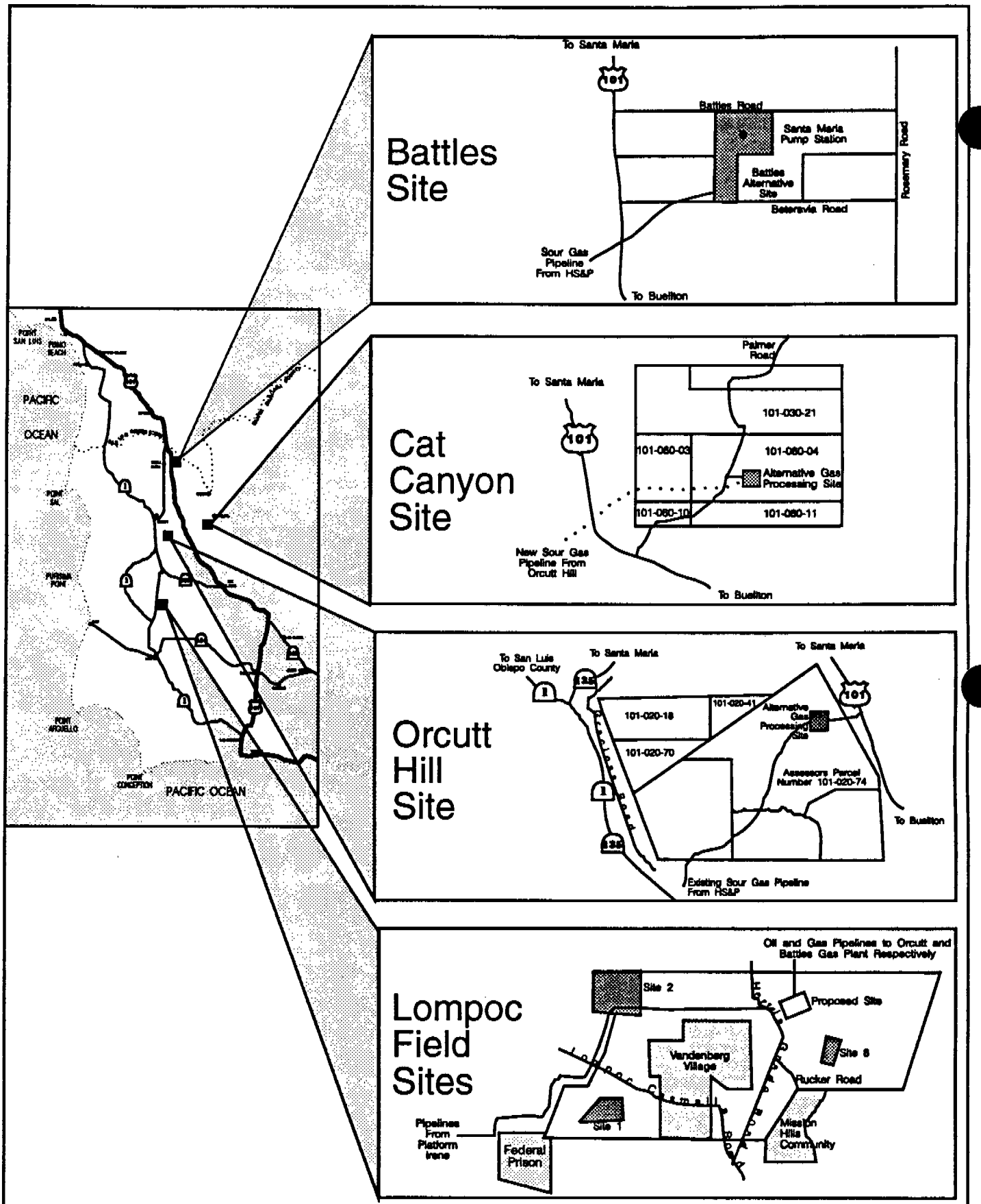


Figure 3-1 Location of Alternative Sites for the Proposed HS&P Processing Plant

Table 3.2 Outstanding P-17 Audit Issues For The Battles Gas Plant

Item No.	Comment No.	Description Of Audit Comment
S&P 2	A.2	Cooling tower - analyze and make changes per UBC standards for all loads.
S&P 6	B.4	Vertical Vessels (Hazardous or Corrosive) - provide analysis of all piping connections.
S&P 11	C.4	Vertical Vessels (Others) - provide analysis of all piping connections.
S&P 13	D	Flare Scrubber - complete seismic analysis of structure and equipment.
S&P 32	P.1	Process piping - submit "as-built" P&IDs.
S&P 37	S.1	Relief system - install closed system piped to flare.
S&P 39	S.3	Relief System - modify flare knock-out piping to remove pockets and FSV's.
F&H 2	II.A.1.B	The 30,000 bbl fire water tank is in a dike with an oil tank.
F&H 3	II.A.1.C	Fire water tank needs review for compliance with NFPA 22 and 20.
F&H 13	II.A.3.I	Fire pump - too close to truck unloading rack, needs fire protection.
F&H 15	II.A.4.A	Fire mains - unlined steel, expect deterioration. More isolation valves.
F&H 16	II.A.4.B	Fire mains - laterals to hydrants and monitors should be at least 6".
F&H 18	II.A.4.D	Fire mains - laterals should be valved.
F&H 19	II.A.5	Fire hydrants - appv'd, 300' perimeter & plant interior, flow tested.
F&H 21	II.A.7	Hose reels - full coverage w/ 100 ft hoses, foam near flammable liquids.
F&H 23	II.A.9	Water spray systems - inadequate, provide for LPG bullets, spheres, etc.
F&H 24	II.B.1	More gas detectors are needed at LPG bullets, racks, comp. shed & cont. room.
F&H 28	II.B.5	The SCADA system is not state-of-the-art.
F&H 35	II.B.12	Flame detectors should view all flammable liquid areas.
F&H 38	II.C.3	Fireproofing - supports of all fired heaters elevated above grade.
F&H 39	II.C.4	Fireproofing - supports of vessels with significant liquid hold-up.

Table 3.2 Outstanding P-17 Audit Issues For The Battles Gas Plant (Continued)

Item No.	Comment No.	Description Of Audit Comment
F&H 40	II.C.5	Fireproofing - pipe rack supports and/or supports for elevated pipes.
F&H 41	II.D	Control room should be blast-resistant, pressurized & easily escapable.
F&H 45	II.H.1	Spacing - lean oil to: 1. Control room (3' *vs* 100'), 2. Comp (21' *vs* 100').
F&H 46	II.H.2	Spacing - bullets to loading areas (55-75' *vs* 100').
F&H 50	II.H.6	Spacing - bullets to cooling tower: 237' *vs* 250' (IRI)
F&H 51	II.H.7	Spacing - LPG loading to control room: 195 (existing) *vs* 200' (IRI).
F&H 52	II.H.8	Spacing - cooling tower to process equipment: 15' *vs* 100' (IRI & NFPA).
F&H 53	II.H.9	Spacing - offices to compressors: 37' (existing) *vs* 100' (IRI)
F&H 56	II.H.12	Spacing - fire pumps to truck loading; 50' (existing) *vs* 150' (IRI).
F&H 58	II.H.14	Spacing - process equipment to control room: 15' *vs* 50' (IRI).
F&H 59	II.H.15	Spacing - process towers to loading area: 165' *vs* 200' (IRI).
F&H 62	II.I	Pig receiver leaking H_2S; detector didn't activate - upgrade receiver.
F&H 64	II.K	Large amounts of exposed asbestos are present on-site.
F&H 67	II.N	Thermally activated valves are needed on LPG tanks and spheres.
F&H 69	II.P	Cooling tower - dry comp. present fire hazard & spacing (15') too close.
F&H 71	II.Q.2	All large or critical process pumps should be equipped with double seals.
F&H 71	II.U	Notwithstanding ownership, there are 3 off-site exposures/hazards.
F&H 71	II.Y.1	Truck loading racks - review shut-off valves, are they present?
F&H 84	II.Z	Certain foot accessways for employees do not seem safe as in new plant.

It should also be noted that if Unocal continued to operate the Battles Gas Plant, as many as seven of the outstanding recommendations would have to be met as part of the OSHA Process Safety Management regulation, the California Risk Management And Prevention Program regulation, as well as the Risk Management Plan regulation that is part of the 1992 Clean Air Act Amendments.

If the Battles Gas Plant continued to operate, then the proposed modifications to the Santa Maria Pump Station and the Jim Hopkins Fee site would not need to be undertaken. Use of this alternative would also continue to provide all the north county gas producers with a facility for processing gas. None of the other alternatives sites would provide the necessary capacity for the other north county gas producers. The major engineering/design and environmental constraints for these sites is given in Table 3.1.

3.1.2 Lompoc Field Sites

Three sites were identified within this property, and were alternative sites evaluated as part of the original Point Pedernales Field Development EIR/EIS (1985). The location of each of these sites is shown in Figure 3-1. The major engineering/design and environmental constraints for these sites are given in Table 3.1. Each of these sites is described below.

Site 1 is on the western edge of the Lompoc Field and is located about 0.25 miles from Vandenberg Village. The site has been used for grazing and is now part of the land that Unocal conveyed to the State of California as a preserve. Construction of the Gas Plant at this site would be similar to that for the proposed site except a new road would need to be built and water and power lines would need to be installed. Approximately 20 acres of this site would need to be developed for the gas plant. Approximately 200 workers would be needed for construction at this site, and construction would take about 12 months to complete. Access to the site would be from Lompoc Casmalia Road just north of Vandenberg Village. Use of this site would require that new pipelines be built to the site for gas from Platform Irene and for gas from the Lompoc Field. Approximately seven miles of new pipeline would be required. Once constructed, the operational activities would be identical to that for the proposed project. All NGLs generated at the facility would be blended with the crude at the HS&P with any excess being reinjected.

Site 2 is on the northwest corner of the Lompoc Field Property. This site was used for dry-farming and yielded one to two crops per year. The site is now part of the land that Unocal conveyed to the State of California as a preserve. Like Site 1, this site would require the construction of new utilities and water lines. Access to this site would also be from Lompoc Casmalia Road and a new access road would need to be constructed. Approximately 3.5 miles of new gas pipelines would need to be constructed for the Platform Irene gas, the Lompoc Field Gas, sales gas, and for moving NGLs to crude oil blending at the HS&P. Construction at this site would require about 12 months to complete with a peak work force of 200 people. Here again, once constructed, the gas plant would have identical operational and maintenance activities as the proposed project.

Site 8 is located in the Lompoc Field Property one-half mile north of the Mission Hills housing area and one-half mile east of Rucker Road. This site was the primary alternative site evaluated in the original Point Pedernales Field EIR/EIS (1985). The site was used for agricultural purposes but has available water and power. This site is also now part of the land Unocal conveyed to the State of California as a preserve. Use of this site for a gas processing facility would require about 12 months to complete with a work force of approximately 160 people. The existing gas pipeline from Platform Irene to the HS&P would need to be extended approximately one-half of a mile in order to get the gas to this site. Pipelines from the Lompoc field already exist at this site. Approximately 1.5 miles of additional pipelines would need to be constructed to accommodate reinjection, sales gas, and NGLs. Once constructed, the operational and maintenance activities would be identical to that for the proposed project. NGLs would be moved from the site to the HS&P for blending with crude. Excess NGLs would be reinjected.

3.1.3 Cat Canyon Field Property

This field is located south of the City of Santa Maria and east of Orcutt just off Highway 101 (see Figure 3-1). D&S Industrial Services, Inc. currently operates oil and gas production activities within this field, and there exists enough space to construct a new gas processing facility. The field is owned by SABA. Table 3.1 provides the major engineering/design and environmental constraint data developed for this site. It has been assumed that any new gas processing facility at this site would be built adjacent to the existing gas compression facility (assessors parcel number 101-060-04). Use of this area would require that a 20 acre site be developed. The field has existing power and water utilities, and is a previously disturbed area. Construction of a new gas processing plant at this site would require ten months to complete with a work force of about 160 workers. An existing sour gas pipeline could be used to transport gas from Orcutt Hills to Cat Canyon. An additional two to three miles of pipeline construction could be required in order to handle the reinjection activities and for tie-in to the SoCal Gas pipeline. NGLs would be blended with the Cat Canyon crude oil. Excess NGLs would be reinjected. Once constructed, the new gas facility would have identical operational and maintenance requirements as that for the proposed project. However, it should be noted that Unocal no longer operates this field.

3.1.4 Orcutt Hill Field Property

This property, which is owned by Unocal is located south of the City of Santa Maria, near the town of Orcutt, just west of Highway 101. The property is currently used for oil and gas production activities and is considered a disturbed site. The location of this site is shown in Figure 3-1. Table 3.1 provides the main engineering/design and environmental constraint data developed for the site. The site has electric power and water available. It has been assumed that any new gas processing facility at this site would be built adjacent to the existing gas compression facility (assessors parcel number 101-020-74). Construction of a new gas processing facility would require about ten months to complete, with a peak work force of approximately 160 workers. As much as three miles of new pipelines must be constructed for use of this site. First, there would be a new sales gas pipeline for tie-in to SoCal Gas.

Additional reinjection pipelines would also need to be built. The length would depend upon the location of the reinjection well. Once constructed, the gas facility would have identical operational and maintenance requirements to that of the proposed project. NGLs would be blended with the Orcutt Hill crude. Excess NGLs would be reinjected.

3.1.5 Reinject Gas On Platform Irene

With this alternative, gas production at Platform Irene would be reinjected back into the reservoir. Unocal would need to find suitable injector wells in the Point Pedernales Field in order to use this alternative. If these wells could be found, the gas from the production wells on Platform Irene would be compressed up to about 2,000 psig, using electric compressors, and then reinjected. The existing compressor system might be capable of handling the reinjection. If not, new gas reinjection compressors would need to be installed which would require about 500 square feet of space. The reinjection would require about 850 hp; this amount of power is available from the existing subsea power cable. The sour gas pipeline that currently runs from Platform Irene to the HS&P facility might need to be used to transport HS&P facility gas back to Platform Irene for injection. Table 3.1 provides the main engineering/design and environmental constraint data developed for the platform.

3.2 Alternative Screening/Siting Analysis

As discussed at the beginning of this chapter, an alternative screening/siting analysis was used to screen the alternative sites to the proposed project. This analysis followed the guidelines laid out in the County's "Siting Gas Processing Facilities" report (SBC, 1990, amended 1991). This report lays out a four step process for identifying the most appropriate site for a gas processing facility. The four steps included:

1. Identify issues pertinent to locating a gas processing facility in the study area,

2. Screen the study area to remove large tracts and corridors determined to be incompatible for gas processing,

3. Develop siting criteria to identify and compare candidate sites, and

4. Apply the siting criteria and rank the relative merits of each site during project environmental review.

The first three steps of this process were completed as part of the Gas Processing Facility Siting Study. The last step has been conducted as part of this alternatives analysis.

3.2.1 Study Area Screening Analysis

The Gas Processing Siting study developed a set of ten screening criteria that were used to identify areas within the north county that would not be suitable for gas processing facilities. Table 3.3 lists the ten screening criteria. These screening criteria were exclusionary, and designed to eliminate easily identifiable land uses, quality view sheds, and sensitive environments that are incompatible with gas processing facilities. Using these ten screening criteria, the study developed a map of the north county that showed the areas not considered suitable for gas processing facilities (see the "Gas Processing Siting" study for the basis and results of the screening analysis). Figure 3-2 shows the areas of north county that were considered incompatible with gas processing facilities. The figure also shows the location of the seven alternative sites evaluated as part of this project. As the figure shows, all of the alternative sites would be considered acceptable for gas processing facilities. Given the fact that none of the alternative sites can be eliminated based upon the ten screening criteria, all the sites must be evaluated using the Gas Processing Facility Siting Criteria.

3.2.2 Alternative Siting Analysis

The "Gas Processing Facility Siting" study developed a set of 38 siting criteria which were more specific in detail than the screening criteria. These siting criteria were designed to assist in developing the relative merits of alternative candidate sites. The siting criteria have been applied to the seven alternative sites identified as part of this SEIR. Table 3.4 presents the results of the siting analysis. As recommended in the County's Gas Processing Siting study, the sites have been ranked based on their relative merits and a qualitative understanding of trade-offs involved between one site and another. For each alternative site a simple marking has been used to indicate whether a site meets the particular criterion. A "+" symbol has been used for yes, and a "-" symbol has been used for no. In order to determine whether a particular site meets the various criterion, data from a number of sources were used. Table 3.1 summarizes the major data elements for each site. For the Lompoc Field sites, the Battles site and the Platform Irene site data from the original Point Pedernales EIR/EIS was used. For the Cat Canyon and Orcutt Hill sites data from the Gas Processing Facility Siting Study (SBC, 1989) and the Master Environmental Assessment for Onshore Oil/Gas Development Study (SBC, 1990) were used. The results of the siting analysis for each site are discussed below.

Proposed Site

The proposed site has been included in this analysis to assist the reader in comparing the relative advantages and disadvantages of the proposed site vis-a-vis the alternative sites. A review of Table 3.4 shows that the proposed site would be considered inconsistent with only one of the siting criterion. The site would be inconsistent with criterion AQ-4 since the site is located in an areas that is in non-attainment for ozone and PM_{10}. It should be noted however, that all of the alternative sites are considered inconsistent with this criterion.

- Excluding -

Table 3.3 Screening Criteria From The Siting Gas Processing Facilities Study

1)	Land Use:	Exclude areas and sites within the urban area boundary lines as defined in the Santa Barbara County Comprehensive Plan, and within the urban reserve lines and village reserve lines as defined in the San Luis Obispo County General Plan and Local Coastal Plan.
2)	Land Use:	Exclude sites in or adjacent to existing and planned park and recreational areas as designated by the California State Parks System and in each county's general plan.
3)	Land Use:	Exclude prime agricultural land and soils. Exclude open space and conservation easements.
4)	Land Use:	Exclude airport approach and clear zones as defined in Section 35-247, Article III, Chapter 35 of the Santa Barbara County Code and the Oceano County Airport Land Use Plan of San Luis Obispo County, and the clear and accident potential zones as defined in the Air Installation Compatible Use Zone Study for Vandenberg Air Force Base.
5)	Land Use:	Exclude sites that impinge upon military missions and operations.
6)	Air Quality:	Exclude Class I areas and Class I impact areas.
7)	Ecology:	Exclude the Nipomo Dunes complex for gas processing.
8)	Hydrology:	Exclude areas subject to 100-year flooding.
9)	Aesthetics:	Exclude scenic travel corridors along state-designated scenic highways.
10)	Aesthetics:	Exclude scenic travel corridors located along proposed scenic highways.

Taken from the Siting Gas Processing Facilities Study (Santa Barbara County, 1990).

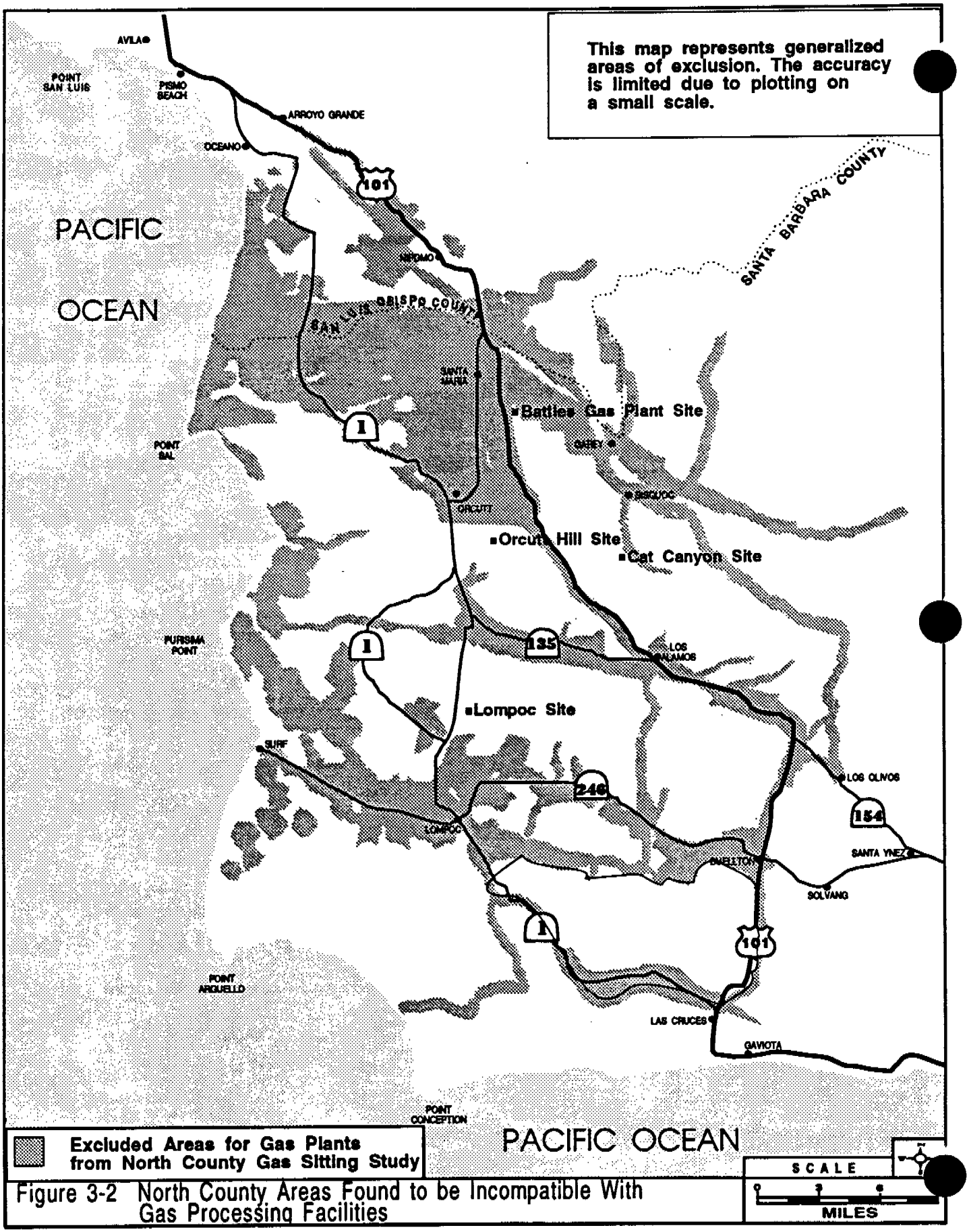


Figure 3-2 North County Areas Found to be Incompatible With Gas Processing Facilities

Table 3.4 Alternative Siting Criteria Matrix

Criteria Code	Siting Criteria	Proposed Project Site	Lompoc Field Site 1	Lompoc Field Site 2	Lompoc Field Site 8	Cat Canyon Site	Orcutt Hill Site	Battles Site (i.e., no project)	Gas Reinjection at Platform Irene
PS-1	***PUBLIC SAFETY:*** Site provides a sufficient buffer from a population that cannot be quickly evacuated to safety or effectively sheltered in place from a potential hazard.	+	-	-	-	+	+	+	+
PS-2	***PUBLIC SAFETY:*** Site is relatively close to production sites to avoid routing offsite raw gas pipelines through or near populated areas and to reduce the length of onshore gas pipelines.	+	+	+	+	-	-	-	+
PS-3	***PUBLIC SAFETY:*** Site avoids under-road pipeline casings to the maximum extent feasible.	+	+	+	+	-	-	-	+
PS-4	***PUBLIC SAFETY:*** Site avoids routing sales gas pipelines through or near urban and other populated areas to the maximum extent feasible.	+	+	+	+	-	+	+	+
PS-5	***PUBLIC SAFETY:*** Site is sufficiently close to oil processing, oil storage, upgrading, refining and/or pipeline facilities to accommodate blending of heavier gas liquids with crude oil.	+	+	+	+	+	+	+	+
PS-6	***PUBLIC SAFETY:*** Site avoids introducing truck transportation of hazardous materials on county or city roadways of high risk, considering the level of population exposure to potential hazards. .	+	+	+	+	+	+	+	+
PS-7	***PUBLIC SAFETY:*** Site is close to the Southern Pacific railway if large volumes of hazardous materials are to be shipped via rail.	+	+	+	+	+	+	+	+
LU-1	***LAND USE:*** Site is not adjacent to existing and planned urban areas as defined by urban area boundary lines in the Santa Barbara County Comprehensive Plan and as defined by urban and village reserve lines in the San Luis Obispo County General Plan and Local Coastal Plan.	+	+	+	+	+	+	+	+
LU-2	***LAND USE:*** Site avoids gas pipeline routes through or close to an urban area boundary line as defined in the Santa Barbara County Comprehensive Plan and an urban reserve or village reserve line as defined in the San Luis Obispo County General Plan and Local Coastal Plan.	+	+	+	+	-	+	-	+

Table 3.4 Alternative Siting Criteria Matrix (Continued)

Criteria Code	Siting Criteria	Proposed Project Site	Lompoc Field Site 1	Lompoc Field Site 2	Lompoc Field Site 8	Cat Canyon Site	Orcutt Hill Site	Battles Site (i.e., no project)	Gas Reinjection at Platform Irene
LU-3	*LAND USE:* Site is not in or adjacent to existing and planned park, recreational areas and scenic trails as designated by the California State Parks System and in each county's general plan.	+	+	+	+	+	+	+	+
LU-4	*LAND USE:* Site is not a agricultural or open-space preserve.	+	-	-	-	+	-	+	+
LU-5[+]	*LAND USE:* Site is not in the Coastal Zone, unless facility qualifies as a Coastal-Dependent Industry and meets the requirements of Section 30260 of the Coastal Act, or qualifies as a Coastal-Related Industry and is found to be consistent with the Coastal Act and the Local Coastal Program.	+	+	+	+	+	+	+	+
LU-6[+]	*LAND USE:* Site is not inconsistent with the California Coastal Act and the applicable Local Coastal Program.	+	+	+	+	+	+	+	+
LU-7	*LAND USE:* Site avoids locations on Vandenberg Air Force Base, unless such location is environmentally superior, and does not impinge upon current or planned military operations.	+	+	+	+	+	+	+	+
LU-8	*LAND USE:* Site is located on existing oil field that may provide a highly compatible land-use environment for gas processing.	+	-	-	+	+	+	+	+
LU-9[*]	*LAND USE:* Site is an existing consolidated oil and/or gas processing, storage, upgrading, refining or transportation facilities unless there is an environmentally superior or significantly safer alternative.	+	-	-	-	+	+	+	+
AQ-1	*AIR QUALITY:* Site is in an area with low baseline air pollutant concentrations.	+	+	+	+	+	+	-	+
AQ-2	*AIR QUALITY:* Site will not create odor impacts on adjacent or downwind neighbors, considering prevailing winds.	+	-	-	-	+	+	-	+

[+] None of the proposed sites are within the Coastal Zone. Therefore, all sites are considered to be consistent with these criteria.

[*] Sites were considered consistent with this criterion if the site has existing oil and/or gas processing/handling equipment. This would include crude dehydration/separation facilities, gas compression, etc.

Table 3.4 Alternative Siting Criteria Matrix (Continued)

Criteria Code	Siting Criteria	Proposed Project Site	Lompoc Field Site 1	Lompoc Field Site 2	Lompoc Field Site 8	Cat Canyon Site	Orcutt Hill Site	Battles Site (i.e., no project)	Gas Reinjection at Platform Irene
AQ-3	*AIR QUALITY:* Site affords sufficient dispersion of pollutants (a concern primarily for inert pollutants whose impacts are localized).	+	-	-	-	+	+	+	+
AQ-4	*AIR QUALITY:* If within attainment areas, located in area with greater availability of increment.	-	-	-	-	-	-	+	-
AQ-5	*AIR QUALITY:* Within non attainment areas, located in sub-area with availability of offsets within a 15-mile radius of the project. Within both attainment and non attainment areas, located in area with lower air quality impacts relative to air quality standards.	+	+	+	+	+	+	+	+
E-1	*ECOLOGY:* Site avoids significant unmitigable impacts of new offsite pipeline to biologically sensitive areas.	+	-	-	-	-	-	+	+
E-2	*ECOLOGY:* Site avoids known biological sensitivity including, but not limited to, environmentally sensitive habitats, wetlands, habitat areas containing or known to contain in previous biological surveys species listed as threatened, endangered, or rare, proposed ecological and scientific preserves.	+	-	-	-	+	+	+	+
H-1	*HYDROLOGY:* Site has a water supply sufficient enough to meet the needs of the gas processing facility without resultant impacts to groundwater resources, surface water resources, aquatic biota, or other existing users.	+	+	+	+	+	+	+	+
H-2	*HYDROLOGY:* Site provides a sufficient buffer from watercourses (i.e., flood channels, stream corridors) in order to minimize impacts from increased runoff, sedimentation, biochemical degradation, or thermal pollution.	+	+	+	+	+	+	+	+
G-1	*GEOLOGY:* Site is 200 feet or more from active or potentially active fault lines.	+	+	+	+	+	+	+	+
G-2	*GEOLOGY:* Site avoids slopes 20 percent or greater.	+	+	+	+	+	+	+	+
G-3	*GEOLOGY:* Site require little alteration to the natural terrain.	+	+	+	+	+	+	+	+

Table 3.4 Alternative Siting Criteria Matrix (Continued)

Criteria Code	Siting Criteria	Proposed Project Site	Lompoc Field Site 1	Lompoc Field Site 2	Lompoc Field Site 8	Cat Canyon Site	Orcutt Hill Site	Battles Site (i.e., no project)	Gas Reinjection at Platform Irene
G-4	*GEOLOGY:* Site is characterized by relatively dense and impermeable soils which would provide a sufficiently adequate measure of natural protection from accidental spill or geological hazard.	+	+	+	+	+	+	+	+
G-5	*GEOLOGY:* Site is characterized by mechanically stable soils.	+	+	+	+	+	+	+	+
G-6	*GEOLOGY:* Site has been screened for paleontological resources and identified impacts can be mitigated to insignificance.	+	+	+	+	+	+	+	+
A-1	*AESTHETICS:* Site avoids ridgeline development.	+	+	+	+	+	-	+	+
A-2	*AESTHETICS:* Site has low scenic quality and visibility, evaluated according to public visibility and quality of scenic viewshed.	+	-	-	+	+	+	-	+
N-1	*NOISE:* Site avoids noise impacts to sensitive areas (e.g., hospitals, residential areas, churches, schools).	+	-	-	-	+	+	+	+
CR-1	*CULTURAL RESOURCES:* Site avoids areas with topographic characteristics that suggest a reasonable likelihood of clusters of cultural resources (e.g., ridgelines, confluence of streams, etc.).	+	+	+	+	-	-	+	+
CR-2	*CULTURAL RESOURCES:* Site avoids areas with known concentrations of Native American sensitive resources to the maximum extent feasible.	+	+	+	+	+	+	+	+
CR-3	*CULTURAL RESOURCES:* Site is not near a "unique" archaeological or cultural resource.	+	+	+	+	+	+	+	+
IF-1	*INFRASTRUCTURAL & EMERGENCY SERVICES:* Site has an adequate infrastructural and emergency services base, is relatively remote from populated areas, and is located at an onshore oil field.. .	+	-	-	+	+	+	+	-

Lompoc Field Site 1

This site was found to be potentially inconsistent with 12 of the siting criteria. Of major concern was the site's inconsistency with criterion PS-1, which addresses the site's location relative to populated areas, since it is within 0.25 miles of Vandenberg Village. This distance could also lead to possible odor problems at Vandenberg Village (criterion AQ-2). The site is also inconsistent with a number of the land use criteria. In particular, the site is part of the land Unocal conveyed to the State of California (criterion LU-4) and would not be considered an existing oil and/or gas processing site (criterion LU-9). Use of the site would also require that additional offsite pipelines be constructed, which could impact sensitive biological resources (criterion E-1). The site also does not currently have any infrastructure (criterion IF-1), and would be visible from Lompoc-Casmalia Road (criterion A-2).

Lompoc Field Site 2

This site was found to be potentially inconsistent with 12 of the siting criteria. The concerns with this site are the same as that discussed for Lompoc Field Site 1. The site is also part of the land Unocal conveyed to the State of California, making it inconsistent with criterion LU-4.

Lompoc Field Site 8

This site was found to be potentially inconsistent with nine of the siting criteria. Many of the concerns for this site are similar to that for the Lompoc Field sites 1 and 2. The site is relatively close to the Mission Hills residential area and therefore would not be considered consistent with criterion PS-1. The site does have available infrastructure, and therefore would be considered consistent with criterion IF-1. This site would not be considered a consolidated site, and therefore would not be consistent with criterion LU-9. The site is also part of the land Unocal conveyed to the State of California, making it inconsistent with criterion LU-4.

Cat Canyon Site

This site was found to be potentially inconsistent with seven of the siting criteria. The major areas of concern with the use of this site would be the need to ship the sour gas from Platform Irene through the HS&P to the Cat Canyon site. This would involve the operation of a sour gas pipeline from the Orcutt Hill Compressor Plant site to the Cat Canyon site, thereby increasing the length of sour gas pipeline transmission for Point Pedernales gas. This pipeline would also need to cross Highway 101. As such this site would be considered inconsistent with siting criteria PS-2, PS-3, PS-4 and LU-2. (Depending upon the length of pipeline construction required for reinjection and sales gas, impacts to biologically sensitive habitat and cultural resources could occur making the site potentially inconsistent with criteria E-1 and CR-1.) Additional water wells may be needed for use on this site which could be inconsistent with criterion H-23.

Orcutt Hill Site

This site was found to be potentially inconsistent with seven of the siting criteria. Use of this site would require that the existing sour gas pipeline from the HS&P to Orcutt Hill continue in operation. Therefore, this site would not be considered consistent with criterion PS-2. Also, the sour gas pipeline from the HS&P to Orcutt Hill crosses Highway 135, thereby making the site inconsistent with criterion PS-3. Depending upon the length of pipeline construction required for reinjection and sales gas, impacts to biologically sensitive habitat and cultural resources could occur making the site potentially inconsistent with criteria E-1 and CR-1. Additional water wells may be needed for use on this site which could be inconsistent with criterion H-23. The site is also located on a ridge line which could make the site potentially inconsistent with criterion A-1. The site is also in an agricultural preserve, making it inconsistent with criterion LU-4.

Battles Site

The Battles site was found to be inconsistent with six of the siting criteria. The site was found to be inconsistent with two of the public safety criteria (PS-2,3). The continued use of the site would require that sour gas from Point Pedernales continue moving between the HS&P and Battles. As stated above, this pipeline route does cross Highway 135 and Highway 101. Also, the pipeline route is in very close proximity to the Santa Maria urban area as defined in the County's Comprehensive Plan, which makes it inconsistent with criteria LU-1 and LU-2. This site is also located in the middle of an agricultural/light industrial area which makes this site inconsistent with criterion LU-8. The site is also inconsistent with two of the air quality criteria (AQ-1,4). Inconsistency with the first criterion is a result of the site's close proximity to the Santa Maria urban area. Inconsistency with the third criterion is driven by the fact that the north county is in non-attainment for a number of ambient air quality standards. It should be noted, however, that all sites discussed in this document are considered inconsistent with criterion AQ-4.

Reinjection On Platform Irene

This alternative was found to be inconsistent with only two of the siting criteria. This is primarily due to the fact that the siting criteria were developed to evaluate onshore gas processing sites and did not attempt to address offshore sites. The alternative would not be consistent with the infrastructure criterion (IF-1) since the platform may not currently have adequate infrastructure to handle the addition of gas reinjection compressors. As discussed above, considerable construction might be required to accommodate reinjection compressors, as well as the potential addition of a second electrical power cable from Surf to the Platform.

3.3 Discussion of Siting Analysis Results

This part of the chapter presents a comparative summary of the siting analysis results for the various alternative sites. Each of the major issue areas affecting the alternative sites are discussed below.

3.3.1 Public Safety

Two of the alternative sites (Site 1 and 2) located within the Lompoc Field Property would offer an advantage over the other alternative sites given the fact that they are closer to the Point Pedernales Field Production. Use of any of the Lompoc Field sites would eliminate the need to move sour gas from the HS&P Facility to the other sites that are further north. In addition the Lompoc Field sites would also eliminate a sour gas pipeline road crossing at Highway 135. This crossing would be needed for all of the other alternative sites. In the case of the Cat Canyon site an additional road crossing would be required at Highway 101. Use of the Lompoc Field sites and the Orcutt Hill site would avoid the need to route the sales gas pipeline near urban areas.

In summary, the use of gas reinjection on Platform Irene represents the only alternative site that is consistent with all of the system safety criteria. In terms of onshore sites, the Orcutt Hill site appears to represent the best alternative given its remote location and its relative proximity to the Point Pedernales Field. Therefore, reinjection on Platform Irene and the Orcutt Hill site are considered the environmentally preferred sites from a public safety perspective.

3.3.2 Land Use

In terms of the land use criteria, the Orcutt Hill site and gas reinjection at Platform Irene are the only two alternatives that are consistent with all of the land use criteria. The Battles site is the only alternative site that would be considered in close proximity to an urban areas as defined by the County's Comprehensive Plan. Both the Battles and Cat Canyon sites would require gas pipelines that run close to urban areas. The Lompoc Field sites 1, 2 and 8 are all part of the area with biologically sensitive habitat that Unocal conveyed to the State of California. Therefore, use of these sites would not achieve consolidation of existing oil and gas processing operations and could adversely impact the biologically sensitive habitat that has been conveyed to the State.

In summary, the Orcutt Hill site and the use of gas reinjection on Platform Irene represent the only alternative sites that are consistent with all of the land use criteria. Therefore, these are considered the environmentally preferred alternatives from a land use perspective.

3.3.3 Air Quality

A review of Table 3.3 shows that none of the alternative sites are consistent with all of the air quality siting criteria. All of the sites are considered inconsistent with criterion AQ-3 since all the sites are in a non-attainment area. The Lompoc Field sites 1, 2 and 8 have the potential to create odor problems for nearby neighbors. For the Lompoc Field sites 1 and 2, odors could affect Vandenberg Village. For Lompoc Field site 8, odors could impact the Mission Hills neighborhood.

In summary, the Cat Canyon and Orcutt Hill sites as well as the alternative of gas reinjection on Platform Irene provide the highest level of consistency with the air quality criteria. Therefore, these three alternatives are considered environmentally preferred from an air quality perspective.

3.3.4 Other Issue Areas

With regard to the other issue areas covered as part of the siting criteria, all of the alternative sites have similar rankings. In terms of ecology, the use of Lompoc Field Sites 1, 2 and 8 could result in impacts to biologically sensitive areas due to pipeline construction. In particular, impacts could occur to Burton Mesa Chaparral and Coast Live Oaks.

The Lompoc Field Sites 1 and 2 and the Battles site would have significant visual impacts along scenic view sheds. Both of the Lompoc Field sites would be visible from approximately 0.5 mile stretches of Highway 1, and the Battles site would be visible for approximately 1 mile along a stretch of Highway 101. All of the other alternative sites would be consistent with the aesthetics criterion.

The Lompoc Field Sites 1 and 2 are the only sites that would require construction of extensive infrastructure in order to use these sites. Neither of these sites have any infrastructure available, and therefore would require that both electric power and water lines be installed into the sites. Both sites would also require the construction of a new access road in order to use the sites. For the gas reinjection alternative on Platform Irene additional power cables would need to be installed from Surf to the platform in order to provide adequate power to run the offshore gas compressors.

In summary, the Cat Canyon, Orcutt Hill and Battles sites provide the highest level of consistency with these other issue area criteria. Therefore, these sites are considered the preferred sites in terms of these other issue areas.

3.3.5 Siting Analysis Conclusions

Based upon a review of the information presented above, none of the three alternative sites in the Lompoc Field appear to offer any environmental advantage over the proposed project site and are part of the biological sensitive habitats that Unocal conveyed to the State of California.

(This land could be held by the State as an ecological preserve.) In fact, these sites have distinct environmental disadvantages over the proposed site which include public safety, land use, ecological, and infrastructure issues. Therefore these sites have been dropped from further consideration. Section 4.4 of this chapter provides more information on the reasons for dropping these alternative sites.

The Cat Canyon site also does not appear to offer an environmental advantage over the proposed project due to its location relative to the sour gas production from Platform Irene. Use of this alternative would require that the sour gas from Platform Irene be moved from the HS&P to Orcutt and then to the Cat Canyon site via an existing sour gas pipeline. Also a new feeder pipeline for sales gas would need to be constructed, as well as reinjection lines Therefore, this alternative site has been dropped from further consideration (see Section 3.4 for more information on the reasons for dropping this alternative).

The Orcutt Hill site does not appear to offer any environmental advantages over the proposed project. As with the Cat Canyon site, this site is more removed from the location of the gas production than the proposed site. However, given the fact that this site appears to offer some environmental advantages over the other alternative sites, it has been analyzed in the remainder of this SEIR.

Continued use of the existing Battles site does offer the environmental advantage that it is already a "disturbed" site. In addition, the site offers advantages for processing gas from onshore fields in northern Santa Barbara County (see Chapter 4 for more discussion on cumulative issues). However, this site is in close proximity to urban areas as defined in the County's Comprehensive Plan; and is considerably more removed from the location of the Point Pedernales gas production than is the proposed site. This site also has higher visual impacts than the proposed site. Because this alternative represents the no project alternative and offers some cumulative advantages, it has not been dropped from further consideration and is analyzed throughout the remainder of this document.

Gas reinjection on Platform Irene does offer a number of environmental advantages over the proposed project. In particular, it might eliminate the need to use the existing sour gas pipeline for the Platform to the HS&P, although this line might be needed to transport gas back to Irene for injection. In addition, it would reduce onshore operational air emissions. However, the potential impact on recoverable oil reserves, and the availability of suitable reinjection wells is unknown at this time. The feasibility of this alternative is considered speculative until such time as a gas reinjection study of the Point Pedernales reservoir is conducted. Given this fact, this alternative has been dropped from further consideration. Section 3.4 of this chapter provides more discussion on the reasons for dropping this alternative from further consideration.

3.4 Alternative Sites Not Considered For Further Analysis

The follow sections present a summary of the reasons for dropping various alternative sites from further consideration.

Lompoc Field Site 1 - This site is part of a biologically sensitive area that Unocal conveyed to the State. The site would require that new water and power lines be constructed as well as a new access road. The site is within 0.25 miles of Vandenberg Village and would have high visual impacts for 0.5 miles of the Lompoc-Casmalia Road. Use of this site would result in air quality emissions higher than the proposed project for both construction and operation resulting from the need to build additional support facilities which, if the proposed site were used, would be provided by the current HS&P Facilities. The site would not be consistent with Siting Criterion #16 of the Gas Siting Study, which requires consolidation of oil and gas processing, storage and transportation facilities unless there is an environmentally superior or significantly safer site. Also, approximately six miles of new pipeline would need to be constructed in order to use this site. Use of the site would also have potentially high biological impacts due to construction of pipelines, roadways, utilities, and processing plant.

Lompoc Field Site 2 - This site is part of a biologically sensitive area that Unocal conveyed to the State. This site is also inconsistent with the Siting Criteria regarding consolidation of oil and gas facilities. Potential impacts to biological resources could be high due to the 3.5 miles of new pipeline construction required, along with the impacts associated with bringing electrical and water utilities to the site. Use of the site would also require a new road to be built. Air quality impacts from this site would be higher than for the proposed project for both construction and operation due to the need to build additional support facilities which, if the proposed site were used, would be provided by the existing HS&P Facilities. Visual impacts would be high for 0.6 miles along the Lompoc-Casmalia Road.

Lompoc Field Site 8 - This site is part of a biologically sensitive area that Unocal conveyed to the State. This site is also inconsistent with Siting Criterion #16 regarding consolidation and is 0.5 miles away from the Mission Hills neighborhood. Use of this site would require about two miles of new pipeline be constructed. Air impacts for this site would be greater than that for the proposed project for both construction and operation due to the need to build additional support facilities which, if the proposed site were used, would be provided by the existing HS&P Facilities.

Cat Canyon Site - This site was dropped from further consideration in part because it would require the sour gas to be transported across U.S. Highway 101. In addition, use of this site would also result in higher air quality impacts due to construction and operation due to the need to build additional support facilities which, if the proposed site were used, would be provided by the existing HS&P facilities. It should be noted that while this site may not offer environmental advantages over the proposed site for offshore gas, this site may very well represent a suitable site for processing gas produced in the Cat Canyon area.

Gas Reinjection On Platform Irene - While this alternative might eliminate the entire sour gas pipeline from Platform Irene to the HS&P and on to Battles, use of this alternative could substantially reduce the amount of oil and gas that could be recovered from the Point Pedernales Field. The major issue that affects the use of this alternative is the effect that gas reinjection would have on the offshore reservoir. Analysis of the downhole pressure surveys from wells on Platform Irene have indicated that the primary drive mechanism for the reservoir is supplied by a large underlying aquifer rather than a dissolved solution gas. As such, use of gas reinjection into

the reservoir could result in a loss of production from the reservoir due to the creation of a gas cap, which could make a larger portion of the oil unrecoverable and thereby shorten the productive life of the field. Until such time as a gas reinjection feasibility analysis is completed and approved by the Minerals Management Service, this alternative is considered speculative and, therefore, does not require further analysis as defined by CEQA.

4.0 Cumulative Projects Descriptions

The California Environmental Quality Act (CEQA), in Section 15355 of the guidelines, defines "cumulative impacts" as two or more individual effects that, when considered together, are either considerable or compound other environmental impacts. These cumulative impacts are the changes in the environment that result from the incremental impact of development of a proposed project and other past, current and reasonably foreseeable projects. For example, the traffic impacts of two projects in close proximity may prove to be insignificant when analyzed separately but could have a significant impact when the impacts of the projects are analyzed together. While these projects may be unrelated, their combined (i.e. - cumulative) impacts are significant, because the projects are located nearby each other.

Another type of cumulative impact could occur if the construction and operation of a proposed project impacted other projects (i.e., indirect impacts), even if they were not located nearby. For example, the construction of an oil pipeline that feeds a refinery could cause impacts at the refinery no matter how far away it was. This type of cumulative impact analysis is required by CEQA to provide a reasonable forecast of future environmental conditions which can more accurately gauge overall project effects.

The remainder of the cumulative project description chapter has been divided into two parts. The first covers a list of the approved and pending oil and other development projects in the vicinity of the proposed project. The second part provides a description of the existing onshore oil and gas production fields that could be indirectly impacted by the decommissioning of the Battles Gas Plant. The decommissioning would impact the way in which oil and gas production field operators handle their gas. In order to assess the potential indirect impacts associated with the decommissioning of the Battles Gas Plant, a number of scenarios have been developed covering a range of option that operators could pursue for handling their excess gas. Many of these scenarios address the issue of consolidation of gas processing facilities, which is a County policy.

This chapter provides only a description of the cumulative projects and scenarios. The impacts associated with these projects and scenarios are discussed in Chapter 5.0, Analysis of Environmental Issues.

4.1 Approved And Pending Projects

A list of all approved and pending oil and other development projects located in the general vicinity of the proposed project was assembled using information from the Santa Barbara County Resource Management Department and the Cities of Lompoc and Santa Maria. Table 4.1 provides a list of the specific details of these projects, and Figure 4-1 shows their location relative to the proposed project.

Table 4.1 Cumulative Projects List

Location	Map No.*	Project	Approximate Location
City of Santa Maria	1	1,183 residential units total	West of Highway 101/South of Santa Maria Way
	2	43,140 sq. ft. commercial total	West of Highway 101/South of Santa Maria Way
Santa Barbara County	3	1,571 residential units total	West of Highway 101/South of Santa Maria Way
	4	306,134 sq. ft. commercial total	West of Highway 101/South of Santa Maria Way
City of Lompoc	5	13 residential units total	NW corner E Central Ave. and N "D" St.
	6	43 residential units total	SE corner W Central Ave. and N "V" St.
	7	121 residential units total	SW corner W Central Ave. and N "O" St.
	8	86 residential condo units total	S side E Ocean Ave. Between S 7th St. and Hwy. 1
	9	176 residential units total	NW corner W Ocean Ave. and N "R" St.
	10	48 residential units total for seniors	NE corner Cypress Ave. and S 5th St.
	11	71 residential units total	NE corner of W North Ave. and N "V" St.
	12	121 residential units total	SE Corner Hwy. 1 and Lompoc-Casmalia Rd.
	13	41,003 sq. ft. commercial and industrial total	SE corner "R" St. and Laurel Ave.
	14	106,000 sq. ft. commercial total	Central Ave. Between "O" St. and "L" St.
	15	52,000 sq. ft. retail and commercial total	NE corner N "H" St. and Central Ave.
	16	60,000 sq. ft. for community college	155 acre site at the intersection of Lompoc-Casmalia Road and N "H" St.

* Map numbers correspond to those shown in Figures 4-1 and 4-2.

All of the cumulative projects identified were non-oil related development projects. The goal was to identify projects which were to be constructed in the vicinity of the proposed project. The complete list of individual projects in the cities of Santa Maria, Lompoc and adjoining Santa Barbara County areas are listed in Table 4.1, and shown in Figure 4-1. Figure 4-2 shows the

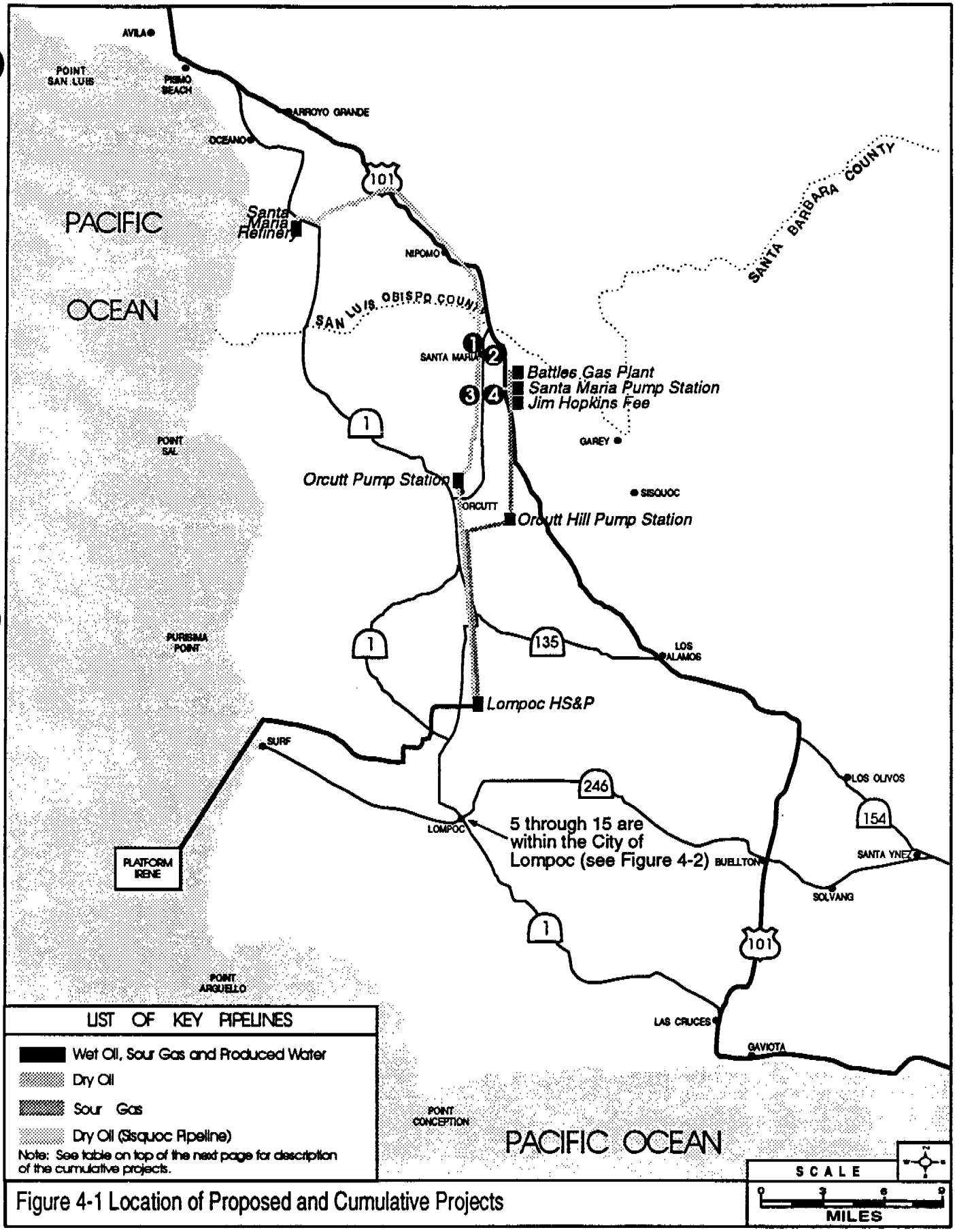
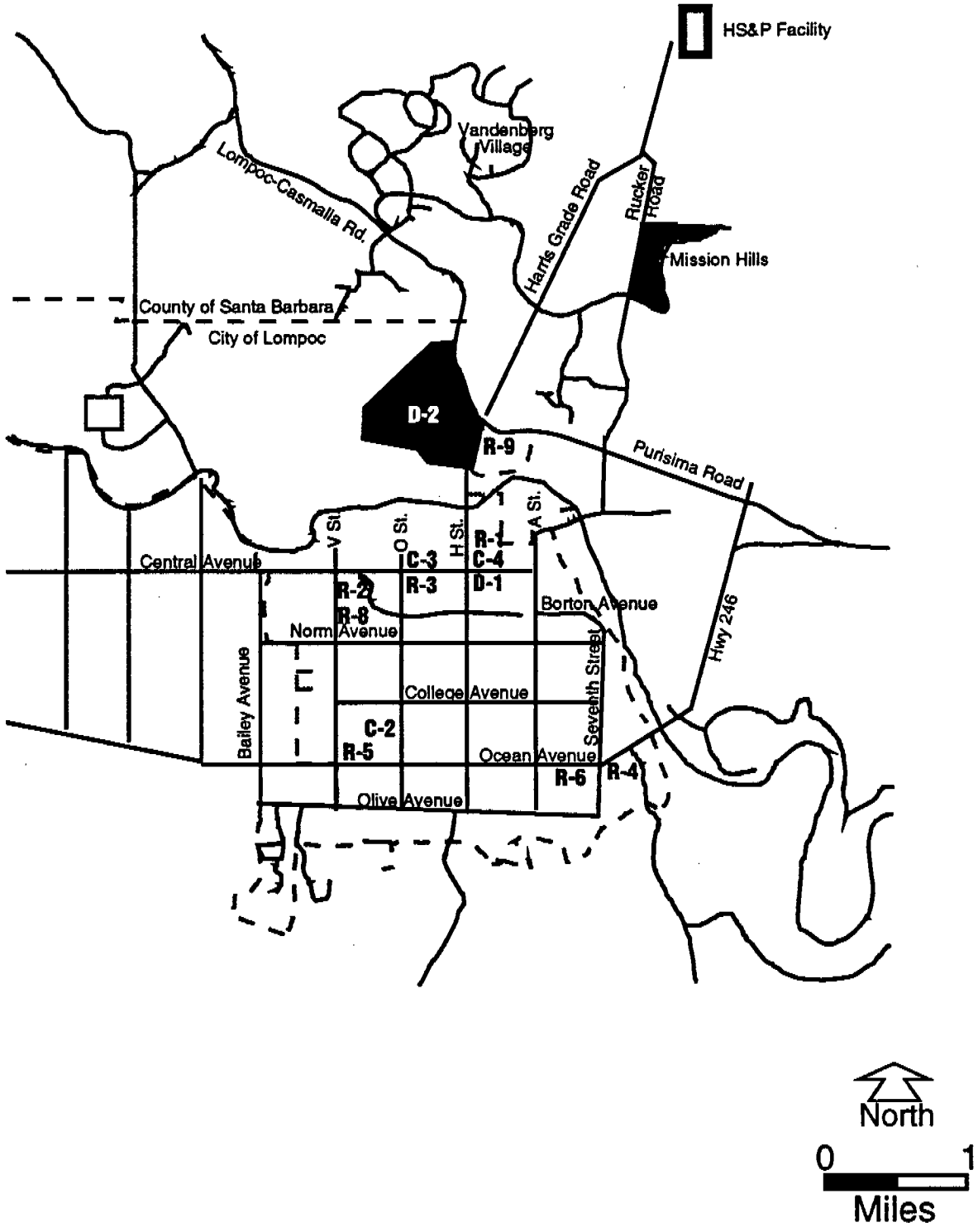


Figure 4-1 Location of Proposed and Cumulative Projects



See Table 4.1 for the list of cumulative projects of this map.

Figure 4-2 Cumulative Project Location Map

location of the cumulative projects within the City of Lompoc. The cumulative analysis also addressed the proposed expansion in the City of Santa Maria's sphere of influence.

The cumulative effects of all these projects on various resources within the project areas are addressed in Chapter 5, Analysis of Environmental Issues.

4.2 Other North County Gas Producers Potentially Affected by the Closure of the Battles Gas Plant

As discussed in the introduction/background chapter, Unocal is planning to remove the Battles Gas Plant once the proposed project is constructed and operational. With this proposed change of gas processing from the Battles Gas Plant to the HS&P, onshore field gas streams normally treated (i.e., H_2S removed) at the Battles Gas Plant for use as fuel gas in the fields or sold as sales gas would no longer be treated. The first part of this section provides information on the existing gas processing system used in the north county. The second part describes a number of possible options that could be pursued by other oil and gas field operator once the Battles Gas Plant is decommissioned. It should be noted that this list of options is not considered to be all inclusive. Other options could exist for these producers. The options evaluated here were selected based upon input from the independent north county gas producers, and provide a wide range of possible gas processing options.

4.2.1 Existing Gas Processing System

For most of the production fields in northern Santa Barbara County, gas is produced along with the oil (i.e., field gas). There are three options available for handling this gas which include:

- Using the gas as fuel within the field to run compressors, well pumps, heater, etc. This type of gas is called fuel gas.
- Selling the gas to another party for use outside the oil field such as Southern California Gas Company (SoCal Gas). This type of gas is known as sales gas.
- Reinjecting the gas into a reinjection well located within the oil field. This is called reinjected gas.

Table 4.2 provides an estimate of the daily gas production from the fields located within northern Santa Barbara County that process gas at Battles. This data is for 1991, and shows that these fields produced an average of 10.3 MMscfd. This information was gathered from a variety of sources. Information was taken from Unocal's application for this project, the "Annual Review of California Oil & Gas Production", surveys that were distributed to northern Santa Barbara County Producers and a workshop that was held February 5, 1993 in Santa Maria. The surveys solicited information such as estimated future production, current method of gas sales or disposal, existing gas processing capabilities and preferred options if Battles is shut down.

About half of the surveys were returned. The workshop solicited information from the various north county producers who could be affected by the closure of the Battles Gas Plant.

Table 4.2 Oil And Gas Production Fields Currently Using The Battles Gas Plant

Operator	Field	1991 Average Gas Production MCFD	Average Gas H_2S (PPM)	Average Gas CO_2 (Vol %)[1]
City Oil Corp.*	Orcutt	427	Sweet	15
Conway	Casmalia	56	Sweet	38
Conway	Santa Maria	36	2,400	9
Conway	Santa Maria	114	65	12
Crimson Partners	Santa Maria	6	1,000	10
Dominion Oil	Cat Canyon	58	Sweet	7
D&S Services/ SABA**	Cat Canyon	1,485	2,000	7
Geo Production***	Orcutt Hill	89	Sweet	15
Petrominerals	Santa Maria	7	Sweet	6
Petrominerals	Santa Maria	7	Sweet	3
Petrominerals****	Cat Canyon	17	500	10
Texaco	Orcutt	124	100	15
Unocal	Casmalia	649	5,500	38
Unocal	Guadalupe	412	3,000	12
Unocal	Lompoc	948	1,000	15
Unocal	Orcutt	674	750	15
Unocal Offshore	Point Pedernales	3,000	1,500	2
Unocal	Santa Maria	940	1,000	10
Vintage	Cat Canyon	412	2,000	7
Vintage	Santa Maria	657	1,000	10

Source: California Department Of Conservation, Division of Oil And Gas, 73rd Annual Report Of The State Of Oil And Gas Supervision. 1990, 1991, and surveys.

1 Some of these values are for the fields, and may not represent the actual leases.
* Sales to Battles through Vintage
** Was owned by Unocal in 1991. Purchased from Unocal in 1993.
*** Sales to Cities and Vintage then Battles
**** Is currently shut-in

The major gas producers in the north county are Unocal and Vintage Oil. A number of smaller operators also produce gas in the north county. Figure 4-2 shows the location of north county oil and gas operations that currently rely on the Battles Gas Plant for field gas processing. Each of these operations and their relationship with the Battles Gas Plant are discussed below.

Unocal Operations - Unocal has oil and gas operations in most of the oil fields in the north county. Unocal sends most of its field gas production to the Battles Gas Plant for processing using an extensive network of gas pipelines which include gathering lines that bring the field gas to the Battles Gas Plant, and fuel gas lines that take processed gas back out to the fields for use as fuel (see Figure 4-3). Unocal uses a major portion of their field gas for fuel gas, with any excess being sold to SoCal Gas. Unocal processes gas at the Battles Gas Plant from all the fields listed in Table 4.2. Figure 4-4 shows the volumes of field gas that were processed at the Battles Gas Plant in 1991. The figure shows that approximately 80 percent of the gas processed at the Battles Gas Plant is from Unocal, with 31 percent being from Platform Irene. Unocal also purchases gas from other operators for processing at the Battles Gas Plant. Unocal recently sold all its producing leases in Cat Canyon to SABA, operated by D&S Industrial Services.

Vintage Oil - Vintage Oil recently purchased Shell Western Exploration & Production, Inc. (SWEPI) Clark Avenue and West Cat Canyon leases. Vintage Oil has operations in the Cat Canyon and Santa Maria oil and gas fields that rely on gas processing at the Battles Gas Plant. Figure 4-4 shows that in 1991, Vintage Oil sent 1.07 MMscfd of gas to the Battles Gas Plant for processing. Vintage sends field gas to the Battles Gas Plant for sweetening (i. e., removal of H_2S) from their operations in the Cat Canyon and Santa Maria Fields. This field gas is transported to the Battles Gas Plant via the Unocal pipeline network. Vintage Oil does not receive back any sweet fuel gas from Battles. Vintage Oil does have some limited field gas sweetening capabilities at their Cat Canyon and Santa Maria Fields.

Conway - Conway has oil and gas operations in the Santa Maria, Cat Canyon and Casmalia Fields. Figure 4-4 shows that in 1991 Conway sent 0.21 MMscfd of gas to the Battles Gas Plant for processing. This gas was transported through the Unocal gas pipeline network. Conway does receive back sweet fuel gas from Battles at its Cat Canyon lease.

Dominion Oil - Dominion Oil has operations in the Cat Canyon Field. In 1991 they sent 0.058 MMscfd of field gas to the Battles Gas Plant for processing (see Figures 4-3 and 4-4). This gas is sent via the Unocal pipeline network. Currently Dominion Oil receives sweet fuel gas back from the Battles Gas Plant.

D&S Services/SABA - SABA has operations in the Cat Canyon Field. These properties were purchased from Unocal in 1993. They are expected to continue sending gas to Battles. In 1991, these fields produced approximately 1.48 MMscfd.

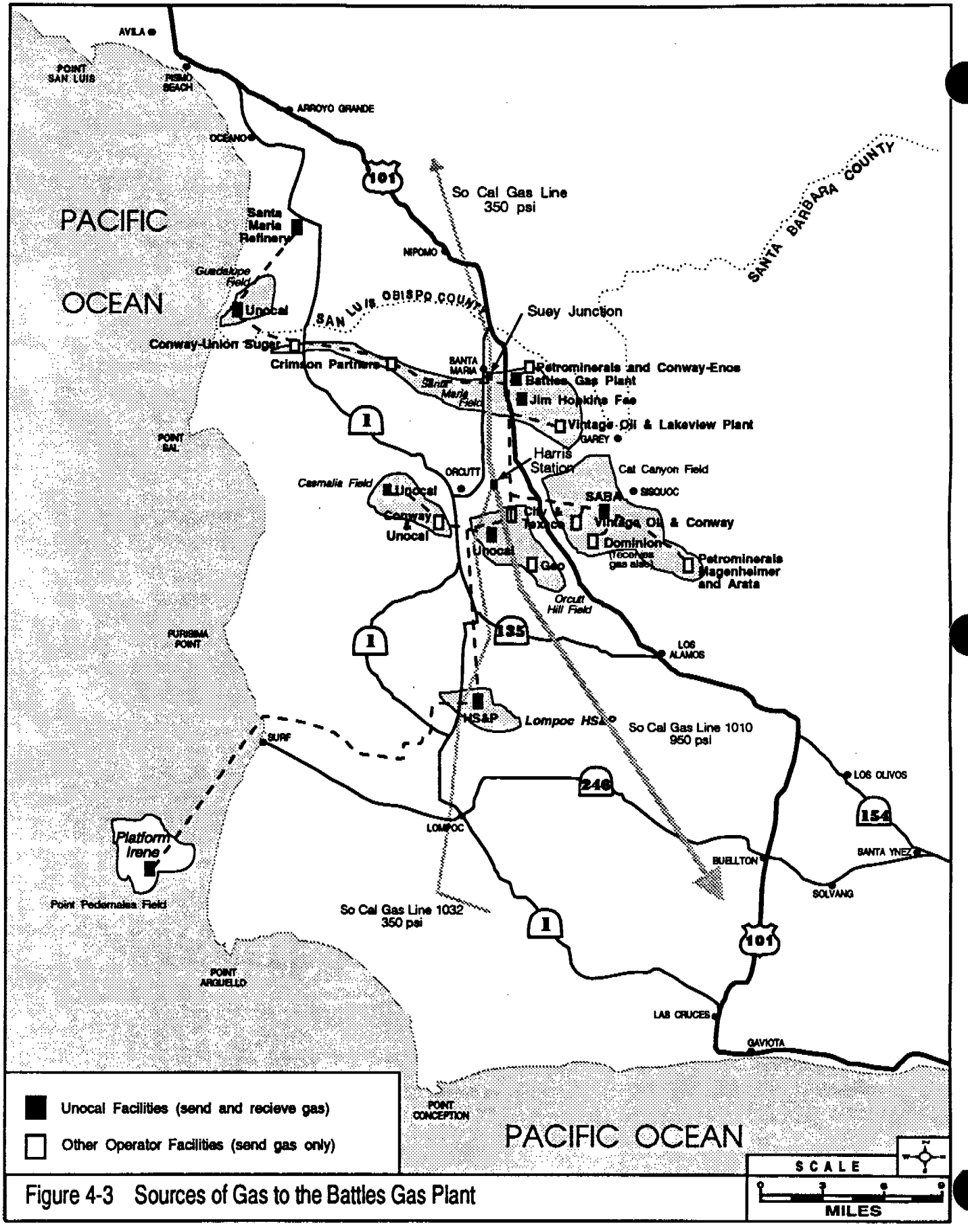
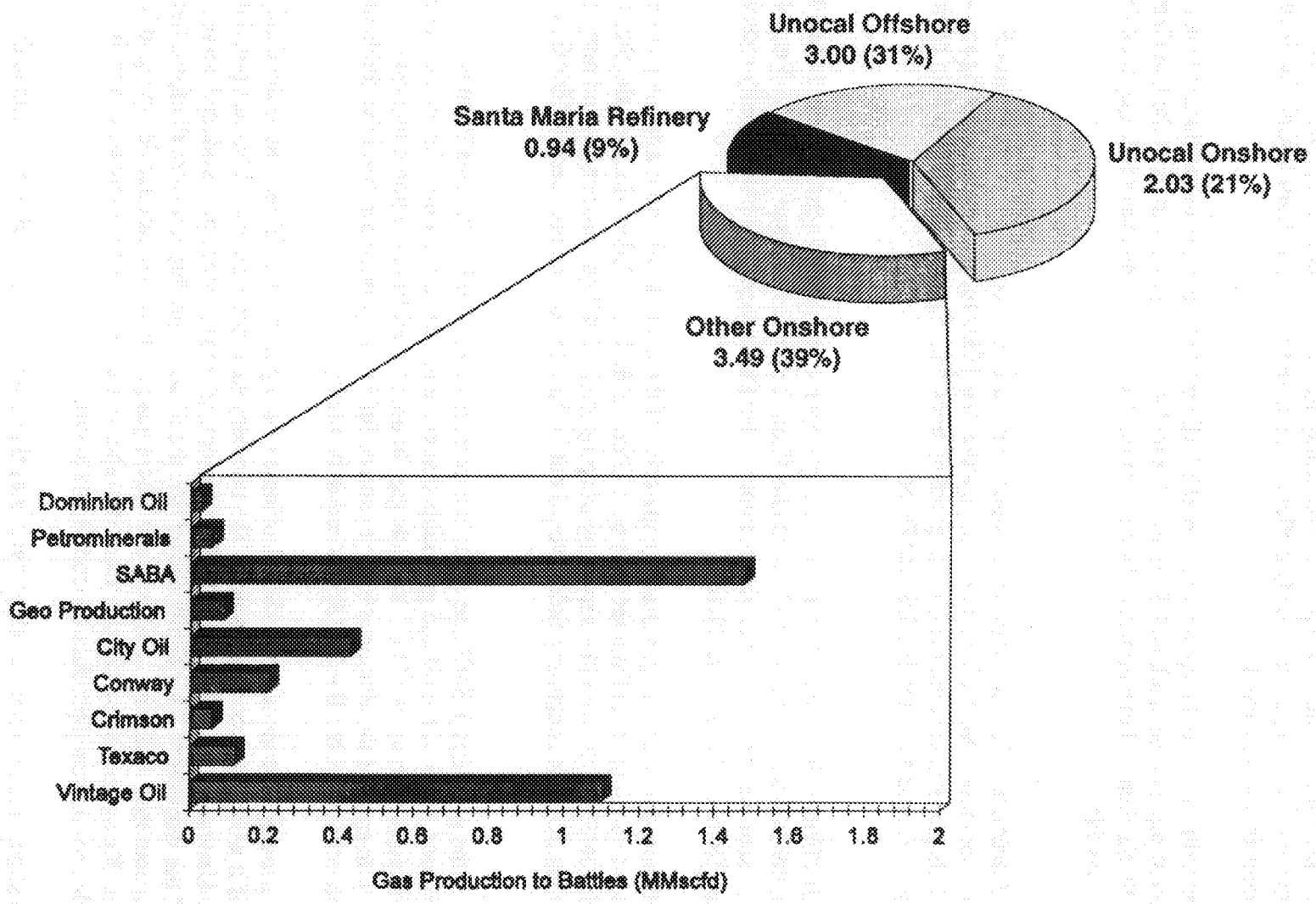


Figure 4-3 Sources of Gas to the Battles Gas Plant



**SABA bought the Unocal Cat Canyon Leases in 1993.
*Numbers may not total due to Rounding

Figure 4-4 Total Field Gas To Battles Gas Plant in 1991 (MMscfd)

Texaco - Texaco has oil and gas operations in the Orcutt Hill Field. In 1991 they sent 0.12 MMscfd of field gas via the Unocal pipeline network to the Battles Gas Plant for processing (see Figures 4-3 and 4-4). Texaco has fuel gas sweetening operation at their fields, and only processes the excess gas at the Battles Gas Plant. Purchased sweet gas from SoCal Gas is used to meet excess fuel gas demand.

Petrominerals - In 1991 Petrominerals sent 0.32 MMscfd of field gas to the Battles Gas Plant via the Unocal pipeline network (see Figures 4-3 and 4-4). This gas came from the Cat Canyon and Santa Maria Fields. Petrominerals does not currently receive any sweet fuel gas back from the Battles Gas Plant.

Crimson Partners - Crimson Partners have oil and gas operations in the Santa Maria Field. In 1991 they sent 0.006 MMscfd of gas to the Battles Gas Plant for processing (see Figures 4-3 and 4-4). This gas was sent via the Unocal pipeline network. Crimson Partners do not currently receive any sweet gas from the Battles Gas Plant.

Geo Production - Geo Production has oil and gas operations in the Orcutt Hill field. In 1991 they sent 0.089 MMscfd of gas to the Battles Gas Plant for processing (see Figures 4-3 and 4-4). This gas was sent via the Unocal pipeline network. Geo Production does not currently receive any gas back from the Battles Gas Plant.

With the proposed project, the gas from the majority of these fields will no longer be processed at the Battles Gas Plant. Gas from the Lompoc, Orcutt Hill, Point Pedernales, and the South Santa Maria (JHF) fields would be served by the proposed HS&P gas processing and reinjection facilities. Gas from the remaining fields would not be handled by the proposed HS&P Gas Plant.

Therefore, if the proposed HS&P Gas Plant is constructed, and the Battles Gas Plant is decommissioned, most of the oil and gas fields that currently use the Battles Gas Plant would have to find alternative ways of treating their gas. In order to address the potential impacts associated with each of these options a projection of future gas production from the fields that currently process gas at the Battles facility had to be made.

Figure 4-5 provides the most likely annual volume of the gas that would be sent to the Battles Gas Plant if it were not decommissioned. The numbers have been generated based upon data provide by Unocal in their application for this project, the independent gas produced survey results and the workshop. This figure shows that the offshore production from Platform Irene is expected to continue declining, and Unocal onshore gas production continues declining at its current rate. However, the production from the other onshore operators increases over time, primarily due to increased production from Vintage Oil.

Figure 4-6 shows the estimated peak gas volumes that could be sent to Battles. This high estimate includes the assumption that Unocal's production does not decline, and that Vintage Oil will continue to develop and produce existing and new wells at their current rate. As part of this

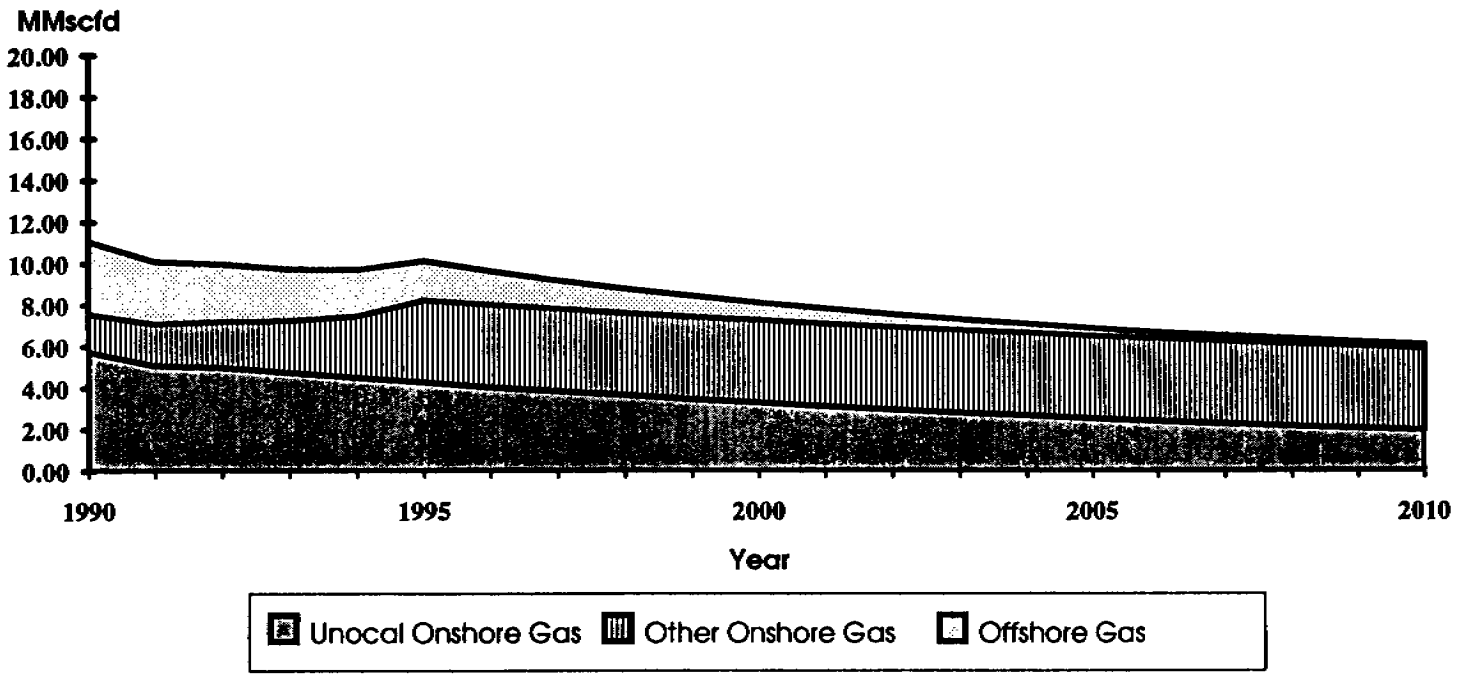


Figure 4-5 Projected "Likely" Gas Production Rates That Would Go To Battles

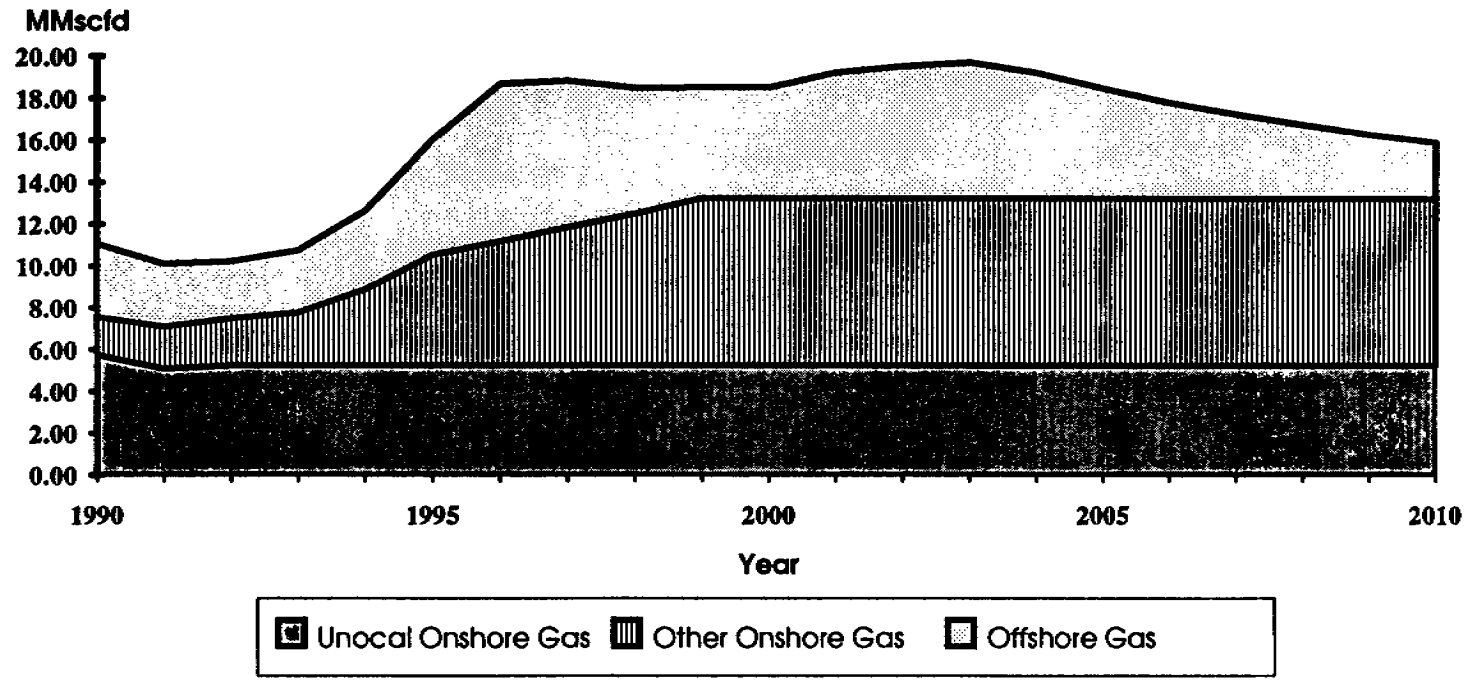


Figure 4-6 Projected "Peak" Gas Production Rates That Would Go To Battles

projection, it has been assumed that an additional platform would be added to the Point Pedernales development in 1998. Vintage is currently in the process of reworking some wells that were purchased from Shell. The extent of their production increase will be a function of economics as well as other factors. In the peak gas production scenario (Figure 4-6), it is assumed that they will increase production from a current level of about 1.07 MMscfd to about 4.7 MMscfd in 1998. All the other fields are assumed to continue production at their current levels. Enhanced oil recovery was not evaluated given the projected crude oil prices over the next ten years.

Based upon discussions with the north county gas operators, and the projection of future crude oil prices through the year 2000, the peak gas volume estimates shown in Figure 4-6 are considered speculative at best, and are therefore not addressed further as part of this document. The remaining cumulative analysis and associated impacts have been based upon the data provided in Figure 4-5, which represents the most "likely" gas production volumes for the north county.

Combining this production scenario with the possible processing options for north county operators listed above, an estimate of the potential environmental impacts associated with each option has been discussed in Chapter 5 of this document for each major issue area. These discussions have been provided to a programmatic level of detail except for the expanded HS&P option, which has been addressed to a permit level of detail.

4.2.2 Other Gas Processing Options Available To North County Producers Currently Using the Battles Gas Plant

As part of this SEIR, a survey was conducted of the north county gas producers to identify what options they might pursue if the Battles Gas Plant were decommissioned and abandoned. The survey asked the producers to provide first, second and third choices for handling their gas production. Table 4.3 lists the responses to the survey. The majority of the producers identified the continued use of an upgraded Battles Gas Plant as their primary option. The other major options identified were flaring, electrical generation and shut-in. It is interesting to note that only two operators other than Unocal chose to use an expanded HS&P Gas Plant.

Based upon these survey results and additional input from the County and Unocal, a list of seven possible options for the other north county gas producers were evaluated in this SEIR. These included:

- An Expanded HS&P Gas Plant,
- The Battles Gas Plant with a Modified P-17,
- Gas Sweetening (i.e., H_2S removal) in the field,
- Gas Reinjection,
- Flaring,
- Electrical Generation, and
- Well Shut-In.

Table 4.3 North County Operator Preferred Gas Processing Options Survey Results

Operator	Field	PREFERRED PROCESSING OPTIONS		
		First	Second	Third
City Oil	Orcutt	Continue at Upgraded Battles	Flaring	Restart Cities Gas Plant
Conway	Casmalia	Continue at Upgraded Battles	Flaring	Electrical Generation
Conway	Cat Canyon	Shut-in	Flaring	Electrical Generation
Conway	Santa Maria - US	Continue at Upgraded Battles	Flaring	Electrical Generation
Conway	Santa Maria - Enos	Continue at Upgraded Battles	Flaring	Electrical Generation
Crimson	Santa Maria	Continue at Upgraded Battles	Flaring	Electrical Generation
Dominion Oil	Cat Canyon	Continue at Upgraded Battles	Flaring	Electrical Generation
D&S Services/SABA*	Cat Canyon	Continue at Upgraded Battles	Flaring	Electrical Generation
Geo Production	Orcutt Hill	Continue at Upgraded Battles	Flaring	Restart Cities Gas Plant
Petromineral Corp.	Santa Maria - Hancock	Continue at Upgraded Battles	Flaring	Electrical Generation
Petromineral Corp.	Cat Canyon	Continue at Upgraded Battles	Flaring	Electrical Generation
Texaco	Orcutt	Continue at Upgraded Battles	Flaring	HS&P New Facility
Unocal	Casmalia	Fuel Balancing	Upgraded Battles	Flaring
Unocal	Guadalupe	Fuel Balancing	Upgraded Battles	Flaring
Unocal	Lompoc	HS&P New Facility	Upgraded Battles	Flaring
Unocal	Orcutt	HS&P New Facility	Upgraded Battles	Flaring
Unocal	Point Pedernales	HS&P New Facility	Upgraded Battles	Flaring
Unocal	Santa Maria	Fuel Balancing	Upgraded Battles	Flaring
Vintage	Cat Canyon	Continue at Upgraded Battles	Flaring	Electrical Generation
Vintage	Santa Maria	Continue at Upgraded Battles	Flaring	Electrical Generation

* SABA purchased Unocal's Cat Canyon holdings in 1993.

The expanded HS&P option was evaluated to a permit level of detail. The remainder of the options were analyzed to a programmatic level of detail. The expanded HS&P option was analyzed to a permit level of detail to assist in determining if the HS&P site was suitable as a consolidated site. While it is true that onshore gas production currently going to the Battles Gas Plant will most likely not go to the HS&P for economic reasons, the site may be used in the future for additional offshore production from the central and northern Santa Maria Basins. It should be noted that there are other options that could be pursued by north county gas producers if Unocal goes ahead with the proposed HS&P Gas Plant.

Using the results of the survey, two hypothetical gas processing scenarios were developed for the north county. These scenarios are listed in Table 4.4, and provide a hypothetical gas processing option by the various fields and operators. The first case assumes that Unocal builds the proposed HS&P Gas Plant and the remainder of the north county gas production goes to the Battles Gas Plant with a modified P-17. The second case assumes that Unocal builds the proposed HS&P Gas Plant, all the other producers flare their gas, and Unocal does fuel balancing at their other fields.

The remainder of this chapter provides descriptions of each of these options. The impacts associated with each option are discussed in Chapter 5.0. Impacts are provided for each option separately as well as for the various hypothetical scenarios provided in Table 4.4.

4.2.2.1 Expanded HS&P Gas Plant

Under this scenario, a second sales gas processing train would be added to the proposed HS&P Gas Plant in order to handle the additional gas production from north county producers that currently use the Battles Gas Plant. Based upon the data shown in Figure 4-5, the additional gas processing facility would need to be sized to handle 6.0 MMscfd. This cumulative option has been analyzed to a permit level of detail in the document.

Facility Description

Figure 4-7 provides a simplified block flow diagram of this hypothetical consolidated fuel gas processing facility. The additional equipment for fuel gas processing could be accommodated within the existing HS&P facility boundaries (see Figure 4-8).

The main components of this expanded sales gas processing facility are listed below.

- Sulfur Removal System,
- Carbon Dioxide (CO_2) Removal System,
- Dew Point Depression System (to remove hydrocarbon liquids and water),
- An NGL Stabilizer Tower,
- Raw NGL Storage and Truck Loading Facilities, and
- Sales Gas and Reinjection Compressors.

Table 4.4 Hypothetical Gas Processing Scenarios for the North County

Operator	Field	Hypothetical Scenarios	
		First	Second
City Oil	Orcutt	Continue at Upgraded Battles	Flaring
Conway	Casmalia	Continue at Upgraded Battles	Flaring
Conway	Cat Canyon	Continue at Upgraded Battles	Flaring
Conway	Santa Maria	Continue at Upgraded Battles	Flaring
Conway	Santa Maria	Continue at Upgraded Battles	Flaring
Crimson	Santa Maria	Continue at Upgraded Battles	Flaring
Dominion Oil	Cat Canyon	Continue at Upgraded Battles	Flaring
Geo Production	Orcutt Hill	Continue at Upgraded Battles	Flaring
Petromineral Corp.	Santa Maria	Continue at Upgraded Battles	Flaring
Petromineral Corp.	Cat Canyon	Continue at Upgraded Battles	Flaring
Petromineral Corp.	Cat Canyon	Continue at Upgraded Battles	Flaring
Texaco	Orcutt	Continue at Upgraded Battles	Flaring
Unocal	Casmalia	Continue at Upgraded Battles	Fuel Balancing
D&S Services/SABA*	Cat Canyon	Continue at Upgraded Battles	Flaring
Unocal	Guadalupe	Continue at Upgraded Battles	Fuel Balancing
Unocal	Lompoc	HS&P New Facility	HS&P New Facility
Unocal	Orcutt	HS&P New Facility	HS&P New Facility
Unocal	Point Pedernales	HS&P New Facility	HS&P New Facility
Unocal	Santa Maria	Continue at Upgraded Battles	Fuel Balancing
Vintage	Cat Canyon	Continue at Upgraded Battles	Flaring
Vintage	Santa Maria	Continue at Upgraded Battles	Flaring

* Unocal sold this field to SABA in 1993.

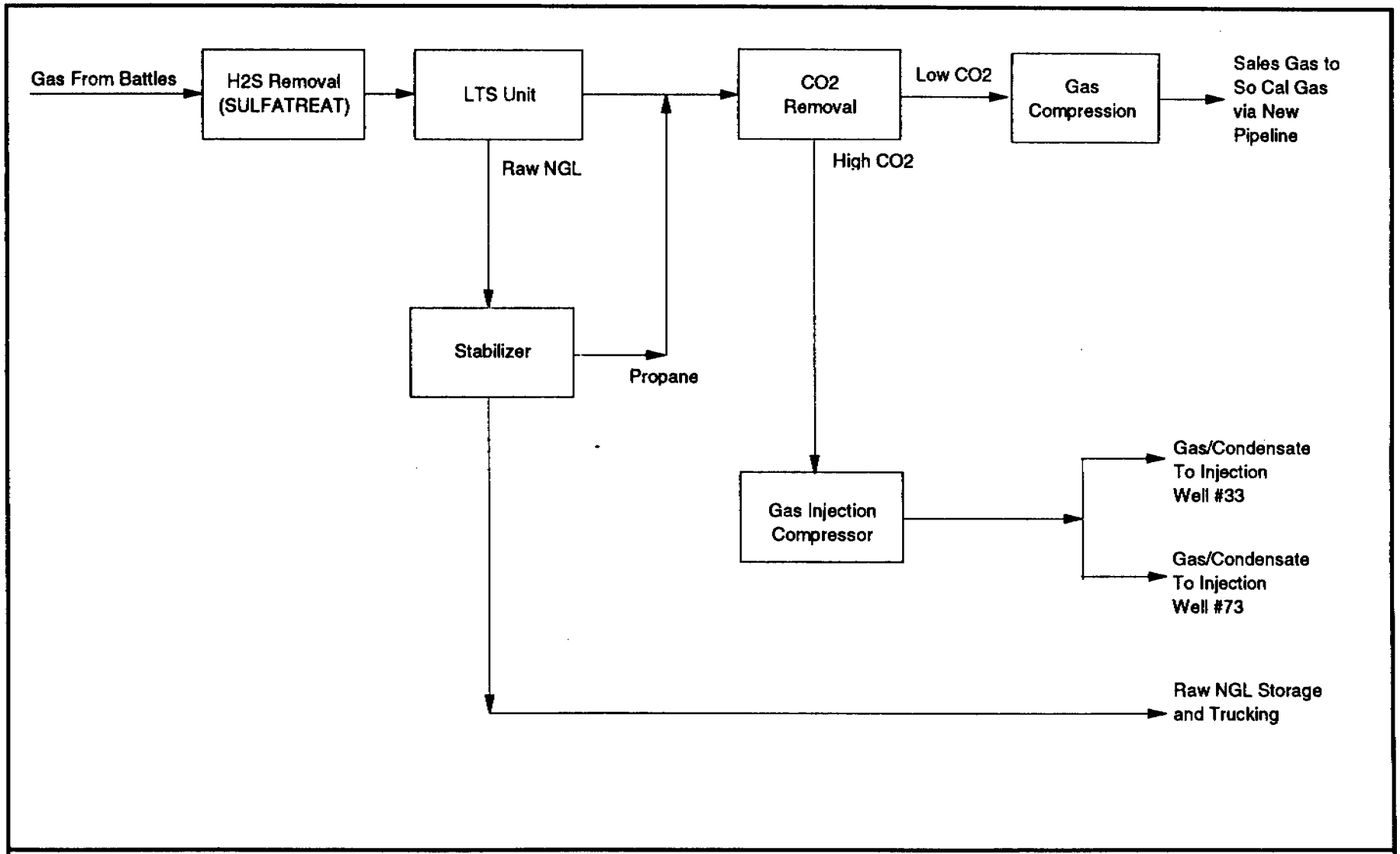


Figure 4-7 Block Flow Diagram of Expanded Gas Processing Facilities at HS&P

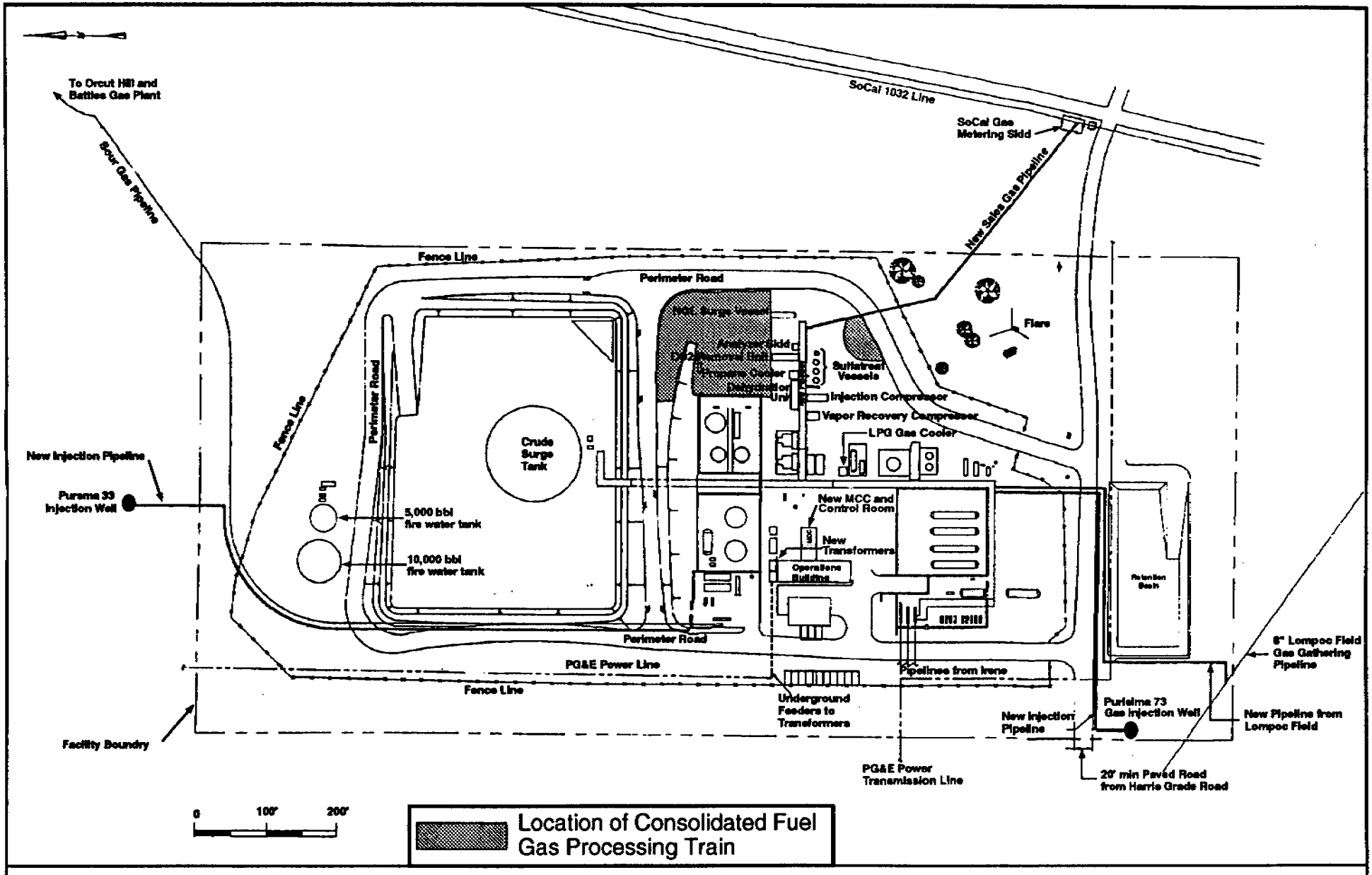


Figure 4-8 Plot Plan For Hypothetical Consolidated Fuel Gas Procesing Facility at HS&P

Each component is discussed below.

Sulfur Removal System - A sulfur removal system, utilizing a chemical called SulfaTreat, would be added to the facility to reduce the H_2S content of the gas to less than 4 ppm. The system would be designed to treat gas at a maximum rate of 6.0 MMscfd, with a maximum inlet H_2S concentration of 4,000 ppm. The SulfaTreat facilities would consist of a series of four vessels each filled with SulfaTreat granules which would remove essentially all the H_2S, carbonyl sulfide, and mercaptans from the gas. The first three vessels are the primary sulfur removal vessels; the fourth vessel is considered a "trim," or guard, vessel to prevent H_2S from getting into the sales gas pipeline. The three primary H_2S removal vessels would be eight feet in diameter and approximately 20 feet high, and the trim vessel is 6 feet in diameter and 20 feet high. All four vessels would be designed to withstand maximum pressures and temperatures of 500 psig and 300°F, respectively (operating conditions of 200 psi and 150°F). Only one vessel is required to be in operation to provide the necessary sulfur removal, the two vessels are spares. For this reason, each of the first three vessels is provided with a bypass to allow for a SulfaTreat change-out of the individual vessels. All four vessels are provided with a clean-out area and a water drainage sump which allows for the change-out and removal of the SulfaTreat material.

To bring SulfaTreat into the facility and to remove spent SulfaTreat, the number of anticipated change-outs per year is expected to be 66, with an associated 264 truck trips. SulfaTreat is used for selectively removing hydrogen gas, mercaptan and other sulfur containing compounds found in natural gas. It is non-toxic and non-hazardous in both the unreacted and spent form. The spent SulfaTreat would be used as a fertilizer, or disposed of in a landfill.

Dew Point Depression System - The dew point depression system would use Low Temperature Separation (LTS) to separate water and hydrocarbon liquids from the gas. The LTS unit, located downstream of the SulfaTreat unit, is necessary to cool the gas to meet the SoCal Gas sale requirement for water and hydrocarbon dew point.

The system would include several heat exchangers, a propane refrigeration system, a glycol injection system, LTS vessel, and pumps for liquid handling. The heat exchangers and the propane refrigeration system, including a propane receiver, would be used to cool the gas to the design temperature to meet the water and hydrocarbon dewpoint requirements. Glycol would be injected into the gas stream before it is cooled in order to prevent condensed water from freezing when the temperature drops below 32°F. The existing glycol system at the HS&P is probably not sized to accommodate additional gas processing and would have to be expanded for use in this service. The LTS vessels would separate the hydrocarbon liquids, water, glycol and gas.

Natural gas liquids (NGLs) removed from gas streams would go to the NGL surge vessel. From there the NGLs would be pumped to a stabilization tower for processing.

Carbon Dioxide Removal System - The gas coming from the LTS unit would enter a permeable membrane system for CO_2 removal. The CO_2 removal process creates two gas streams that need to be handled separately. These streams consist of:

- Residue gas, which is the sales quality gas that emerges as a result of the CO_2 removal process. It would exit at 500 psig and contains less than 3 percent CO_2.

- Permeate gas, which is the by-product of the CO_2 removal process and does not meet sales gas specifications. It is at 5 psig and contains about 50 percent CO_2, but also contains methane, nitrogen and small amounts of heavier hydrocarbons. The gas would have a heating value of about 600 BTU/SCF.

The permeate can be used as fuel by combining it with other hydrocarbons (e.g., natural gas liquids or sales gas) to raise its heating value from about 600 to more than 850 BTU/SCF. If some permeate remains beyond what is required for fuel, it would be sent to compression for reinjection into on of the existing Unocal reinjection wells.

NGL Stabilization System - The NGLs from the LTS unit would be sent to the stabilization tower, which would be about 40 feet high and 6 feet in diameter. This tower would be used to strip out any propane from the NGL stream. The propane would then be combined with the sale gas stream leaving the CO_2 removal system. The remaining NGLs would be sent to storage at the site.

NGL Storage and Truck Loading - The raw NGLs from the stabilizing unit would be sent to two 20,000 gal storage bullets located at the HS&P site. These vessels would be used to store the raw NGLs prior to shipment from the facility. Associated with the storage bullets would be a truck loading rack that would be used to load the raw NGLs onto trucks for shipment to the Kern County area for further processing. Given the composition of the north county gas and the 6.0 MMscfd throughput, it is estimated that as many as five truck trips per week would be needed to move the raw NGL product out of the facility.

Gas Compression- The expanded HS&P gas plant would need to provide gas compression for the CO_2 stream that would need to be reinjected, and might also need gas compression for their sales gas stream.

Unocal currently plans to sell their gas not used as fuel gas to the Southern California Gas Company (SoCal Gas). The gas would be added to the SoCal Gas distribution line 1032, which services the Lompoc area. During the winter months, when gas demand is high, this distribution system could easily handle the Unocal product; but, during the summer months, SoCal Gas indicates that amounts in excess of 5 MMscfd could not be used in this distribution network. Any excess gas would have to be added to the SoCal Gas system at their high pressure transmission line 1010 which is shown in Figure 4-3.

Because of these SoCal Gas limitations, a new sweet gas pipeline would have to be built between the HS&P and the Battles Gas Plant to tie into the SoCal Gas Suey Junction for moving the expanded gas plant's sales gas. With this scenario, sour gas from the various fields would be collected and shipped to the HS&P using the existing sour gas pipeline that runs between the HS&P and the Battles Gas Plant site. Once the gas was processed, the sweet gas would be compressed and sent to SoCal Gas via the new sweet gas pipeline. Under this scenario, sales gas compressors would need to be added at the HS&P to boost the gas to 1,000 psig.

Another alternative would involve using the SoCal Gas line 1032 as a feeder to line 1010, by adding a series of compressors and regulators at the Harris Station (see Figure 4-3). SoCal Gas indicated that although this is technically feasible, line 1032 is an older line and would require upgrades to piping and valves to handle the additional flow.

Construction of Expanded HS&P Gas Plant

Construction of the new facilities would occur within the 22.5 acre HS&P Facility in an undeveloped area east of the existing oil process units and north of the proposed gas processing facility (Figure 4-8). The construction would take approximately 26 weeks to complete, according to the construction schedule as shown in Figure 4-9 and would follow these steps:

1. Install the foundations for process equipment, skids, and new building.
2. Set the process equipment and skids.
3. Fabricate and install process piping.
4. Fabricate additional motor control center (MCC) and control building.
5. Install and connect all instrumentation and complete electrical work.
6. Paint all new equipment and facilities.

Foundations would be constructed of steel reinforced concrete and, with the exception of the pipe rack, would all be designed as spread footings. The pipe rack would be supported with pilings. All foundations and civil works would be designed using appropriate Uniform Building Code criteria.

The gas processing equipment would be fabricated elsewhere and trucked to the site. The majority of the equipment would be skid mounted. All equipment would be set with a crane, then grouted to the foundation.

The new motor control center and control room would be constructed concurrently with the equipment and piping installation. The building would be constructed in accordance with the Uniform Building Code.

Interconnecting piping would be fabricated on site and installed after the equipment is set and the pipe rack complete. The piping would be designed to conform with ANSI Code B31.3. All pressure piping two inches in diameter and larger would be joined by welding. Two inches and smaller piping would be screwed in place. Any water used for hydrotesting would be fresh water. Once hydrotesting is complete, the water would be spread on the ground for dust control at the site. The offsite pipeline connections would be fabricated and installed at this time. The pipelines would conform to ANSI Code B31.4 or B31.8 as applicable.

After the new MCC is completed, and concurrently with the piping, the electrical switch gear and power control wiring would be installed. After the piping has been completed, the instrumentation would be installed and connected. The electrical design and construction would conform to the National Electrical Code.

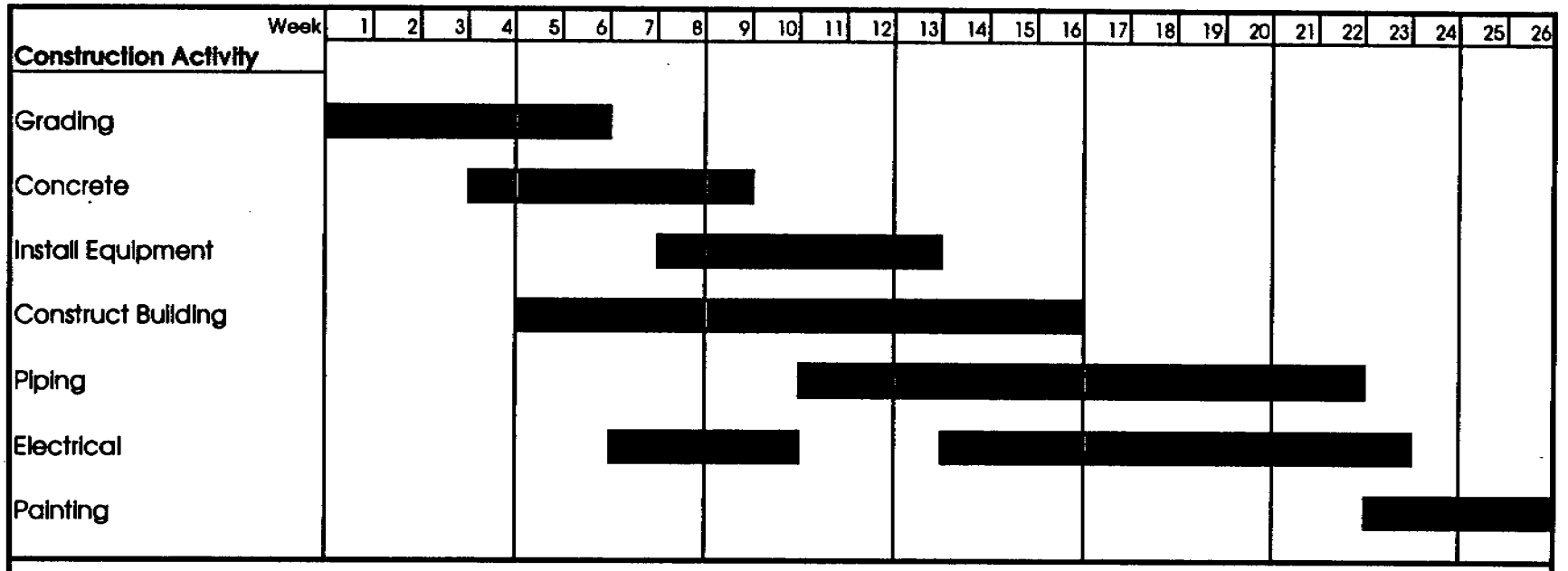


Figure 4-9 Construction Schedule for the Expanded Gas Plant at the HS&P Facility

The final phase of construction would be the painting of all new facilities. Equipment built offsite would be painted by the manufacturer prior to being delivered. The color of all new equipment would match the color of the existing facility.

Currently, and for these modifications, access to the site would continue to be via Harris Grade Road directly west of the facility.

Facility Operation

The previously described facilities have been designed to accommodate the most likely expected gas processing flow rates, but actual flow rates may vary considerably. This equipment has also been designed to handle the highest expected flow rate H_2S and CO_2 concentrations and highest molecular weight gas; however, the future flow rates and gas composition are unknown. As shown in Figure 4-6, it is possible that higher gas production volumes could occur within the north county, but is considered speculative at best that these types of production volumes will occur within the next 10 to 20 years given the projected price of crude oil.

Operation of this facility would require 15 people full time, and would include operators, maintenance workers, and engineers. This number of workers would be lower if Unocal operated the expanded facility, but it has been assumed for this analysis that an independent third party would be responsible for operating the facility.

4.2.2.2 Battles Gas Plant with a Modified P-17

Under this scenario, gas from most of the fields that are not slated for processing at the proposed HS&P Gas Facility would continue to route their gas production to the existing Battles Gas Plant using the existing sour gas pipeline network. The Battles Gas Plant would undergo some additional changes to meet the intent of Condition P-17, but would not be modified to comply with all of the original P-17 recommendations. Based upon discussions with the County Fire Department, Building and Safety and the Energy Division, a modified list of outstanding P-17 recommendations was developed that would need to be completed in order for the Battles Gas Plant to continue operating (see Table 4.5). This modified list of P-17 recommendations does not contain any of the equipment spacing recommendations, or the recommendation to install a closed vent system since these would not affect offsite safety. Many of the outstanding recommendations regarding upgrading of the fire protection system have been replaced by a requirement to implement a fire protection system testing and maintenance program that assures a minimum fire water flow rate. In addition, improved access to the gas plant for fire fighting equipment would need to be implemented. This would require improving the access road to the facility. Additional water sprays would need to be installed on the LPG and NGL storage tanks to reduce the potential for BLEVEs. Additional valving between vessels may be required at the plant in order to limit the loss of inventory in the event of an upset.

Table 4.5 Battles Gas Plant Recommendations for a Modified P-17

Item No.	Description of Recommendations	Comments
S&P 2	Cooling Tower - analyze and make changes per UBC standards for all loads.	Unocal has stated that it might be possible to replace the cooling tower with propane refrigeration units currently located at other sites.
S&P 6	Vertical Vessels (Hazardous or Corrosive) - provide analysis of all piping connections.	This measure would be addressed by OSHA 1910, and the California RMPP.
S&P 11	Vertical Vessels (Others) - provide analysis of all piping connections.	This measure would be addressed by OSHA 1910, and the California RMPP.
S&P 13	Flare Scrubber - complete seismic analysis of structure and equipment.	This measure would be addressed by OSHA 1910, and the California RMPP.
S&P 32	Process Piping - submit "as-built" P&IDs.	This measure would be addressed by OSHA 1910, and the California RMPP.
S&P 39	Relief System - modify flare knock-out piping to remove pockets and FSV's.	This measure would be addressed by OSHA 1910, and the California RMPP.
F&H 3	Fire water tank needs review for compliance with NEPA 22 and 20.	This is currently being reviewed by the County Fire Department.
F&H 23	Water Spray Systems - inadequate, provide for LPG bullets, spheres, etc.	Need to reduce the potential for BLEVEs.
N/A	Improve access to the facility for fire fighting equipment.	Improve the access road to the facility.
N/A	Maintain fire protection system based upon minimum fire flow.	Conduct routine testing of the fire water system.
N/A	Improve field gas pipeline safety.	Install corrosion resistant pipeline liner along portions of the pipeline that are near populated areas.
N/A	Combine the fire protection system for SMPS with the Battles Gas Plant.	
N/A	Limit inventory loss in the event of an upset.	Review the need for additional valves on vessels that could serve to limit inventory loss in the event of an upset.
N/A	Limit throughput to 6.0 MMscfd of onshore gas.	Expected peak production from fields currently processing their gas at the Battles Gas Plant.

In terms of the cooling tower, Unocal has stated that it may be possible to replace the cooling tower with propane refrigeration units that Unocal has at other facilities. Once these were installed, the cooling tower could be removed.

The portions of the field gas pipeline system in close proximity to populated areas would need to be improved. This could be accomplished by installing corrosion-resistant liners in the pipeline. This is discussed further in Chapter 5.0 under the No Project Alternative. The final requirement would be to combine the fire protection systems for the SMPS with the Battles Gas Plant.

Implementing these recommendations would require four to six months and would require the gas plant to be shut down for a few days to a month.

This scenario would allow current users of the Battles Gas Plant to continue having their gas processed at the plant. The plant could continue to be operated by Unocal, or could be operated by another party.

The environmental and safety analysis for this cumulative gas processing option has been based upon a number of assumptions. The first is that Battles Gas Plant would only process gas from existing onshore production fields, and that the throughput of the facility would be limited to 6.0 MMscfd of gas with an maximum H_2S content of 4,000 ppmV. The second assumption was the land use within 1,000 feet of the Battles Gas Plant would remain the same as it is today. This assumption was important in developing the quantitative risk assessment (QRA) for the facility, since it limits the population around the facility to what exists today.

Chapter 5.0 contains a detailed offsite quantitative risk assessment (QRA) of the Battles Gas Plant and assumes that all of the recommendations listed above are implemented. It should be noted that this risk profile would be identical for the No Project Alternative, which assumes full compliance with P-17, since the outstanding recommendations would not affect offsite risks, but just serve to reduce onsite risk levels.

4.2.2.3 Install H_2S Removal Equipment At Each Lease Not Served By The Proposed HS&P Gas Plant

Another possible scenario for handling the fuel gas processing requirements would be to install H_2S removal equipment at each of the leases that would not be served by the proposed HS&P Gas Plant that have high H_2S contents. Under this scenario, some of the leases would need to install an H_2S removal system for sweetening the gas prior to use as fuel gas. This type of facility could be skid mounted and might include gas compressors and an H_2S treating system such as Sulfa Check, SulfaTreat, or H-100. These skids would typically be about ten feet wide and 20 feet long. Some fields may also require a refrigeration skid for dehydrating the gas. This would be similar to the refrigeration skid proposed for Jim Hopkins Fee. Figure 4-10 shows a simplified block flow diagram of this type of system. With this scenario, a condensate removal system would not be needed since the gas does not have to be transported long distances.

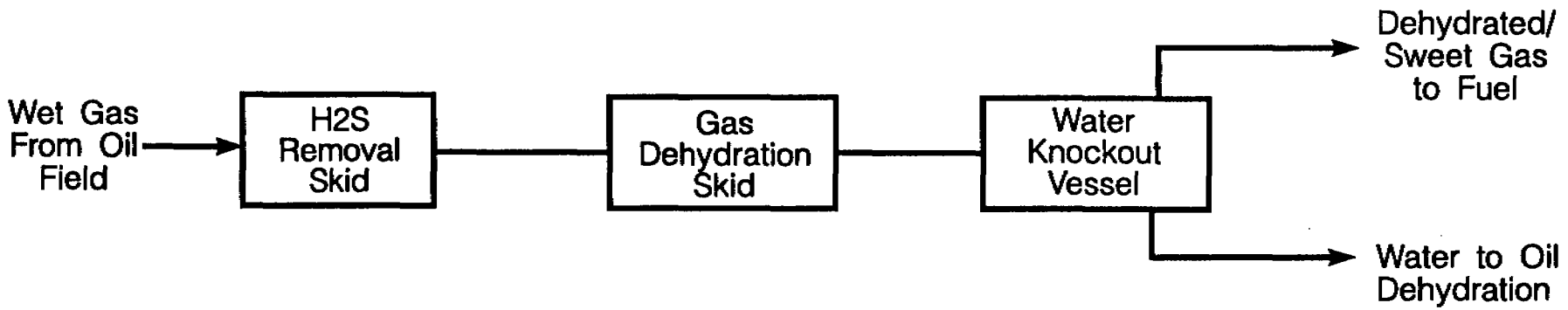


Figure 4-10 Block Flow Diagram of Field Located Fuel Gas Processing System

Instead the NGLs would remain in the gas and be burned as part of the fuel gas. Field gas in excess of fuel demand would have to be reinjected into a reinjection well or flared. NGLs removed from the reinjected gas could be added to the fuel gas.

Aside from Unocal, the largest producers in the north county are City Oil, D&S Services/SABA, and Vintage. City Oil, SABA, and Vintage are projected to produce about 4.7 MMCFD of gas by 1995 (based on surveys and phone interviews). This will constitute 90 percent of the projected non-Unocal production of companies currently depending on the Unocal Battles Facility. The City Oil production volume is currently sent to Battles through Vintage. The properties that Vintage purchased from Shell in 1991 include the Shell Lakeview Plant. This plant was originally built by Husky about 30 years ago and is designed to remove sulfur from a maximum of 3.5 MMscfd of fuel gas. It was used to provide fuel gas to lease operators and to provide fuel gas to Shell's cogeneration gas turbines. It was last used in 1988, and is currently shut down. This facility could be upgraded for the cleaning of the field gas to produce fuel gas and sales gas. The original design did not include CO_2 handling or an NGL removal system; therefore, in order to upgrade this facility for sales gas production, CO_2 removal, refrigeration, stabilization, and NGL storage and trucking facilities would have to be added. The existing pipeline(s) between the Lakeview Plant and the Battles Facility, which currently exist to connect the Vintage properties with Battles, could be used to tie the Lakeview Plant into the sales gas system. The Lakeview Plant is situated about five miles south-east of Battles. The restart of the Lakeview Plant for general gas processing would in essence require building a new gas plant.

4.2.2.4 Reinject Gas At Each Field Not Served By The Proposed HS&P Gas Plant

Under this scenario, the excess field gas would be reinjected back into a reservoir located at the field, and fuel gas could be scrubbed from the field gas or bought from SoCal Gas or another operator. This option would require that each lease have a reinjection well and reinjection compressors (see Figure 4-11). There is currently one reinjection well among the Battles users. Gato Corporation currently reinjects about 0.23 MMscfd at their Gato Ridge lease and is the only independent that reinjects gas. One drawback to this option would be the temporary loss of a natural gas supply, which would not be consistent with the state and federal energy polices. However, the gas could possibly be recovered at a later date. The reinjection compressors would be similar to those described in Chapter 2.0 for the proposed project except they would be gas fired engines. In addition, flares have to be installed for periods of shutdown or emergencies. Due to the possible high pressure levels required for some injection wells (2,000 psi), special procedures would have to be conducted to deal with the NGLs and the H_2S. NGLs that drop out of the gas at these pressures could be added to the fuel gas stream or trucked. Depending upon the H_2S concentration in the gas, H_2S might have to be scrubbed to prevent H_2S corrosion.

In addition, the California Division of Oil & Gas requires certain procedures and studies be conducted before allowing for reinjection. These include:

- A notice of intent to rework a well,
- A casing pressure test,
- A tracer survey,

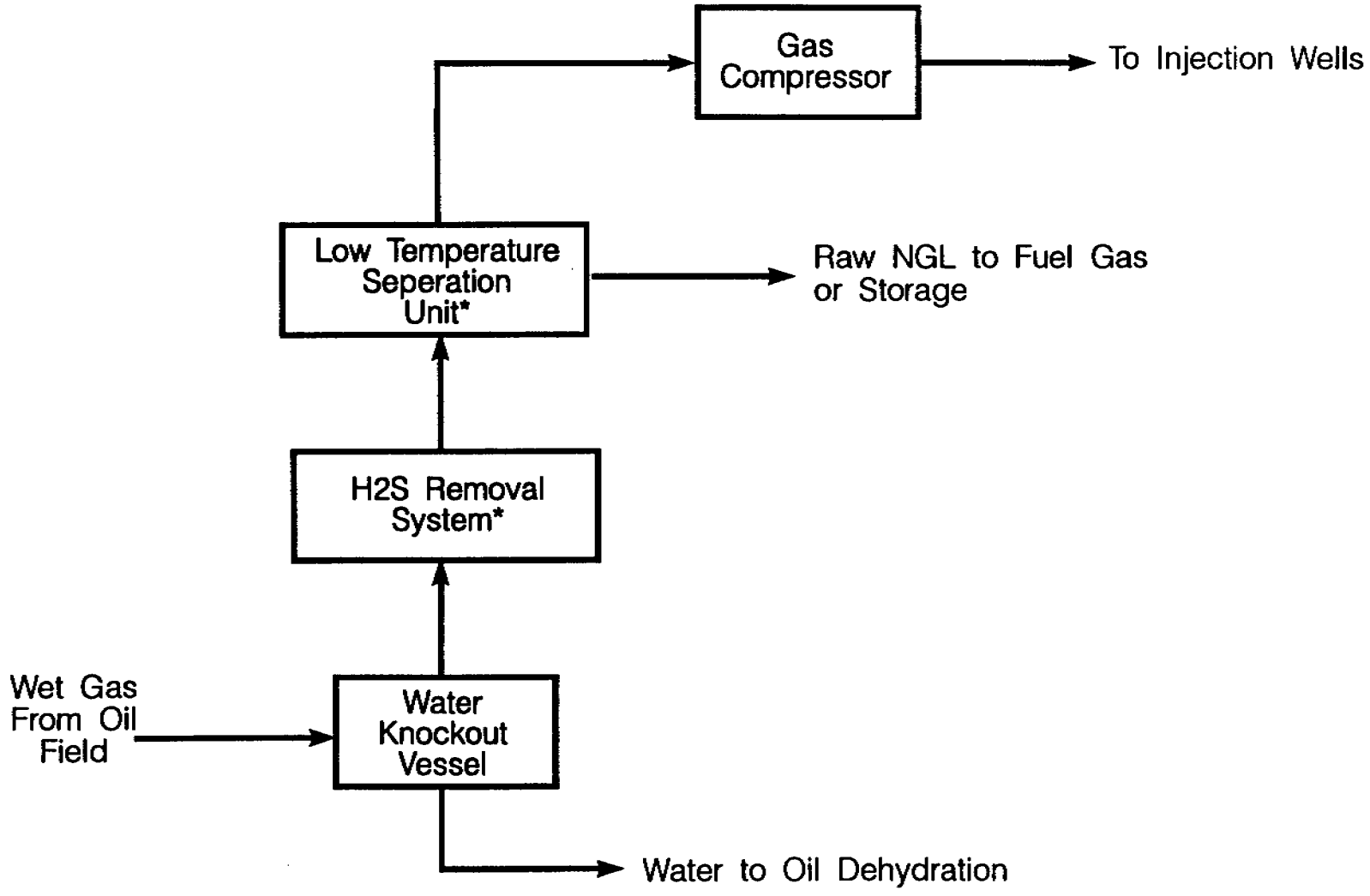


Figure 4-11 Simplified Block Flow Diagram for Oil Field Gas Reinjection System

- Cross section/contour maps, and
- A radius of review investigation.

These requirements are discussed more fully in the California Code of Regulations, Title 14, Chapter 4. It should also be noted that not all oil and gas production fields have geologic zones capable of taking high pressure gas. This is why a gas reinjection feasibility analysis must be developed prior to the California Division of Oil & Gas granting permission to reinject gas.

Another option would involve cooperation between the different lease operators and utilization of the current fuel gas distribution system. Some of the leases currently produce gas that is sweet enough to be burned without scrubbing. This sweet gas could be collected and distributed through the existing distribution system to the remaining operators as fuel gas. Any "sour gas" would have to be reinjected or scrubbed for additional fuel gas. Some distribution systems could be utilized to allow for a consolidated reinjection well and associated compressors, thereby minimizing the need to rework wells.

4.2.2.5 Flaring Gas at Each Field Not Served by the Proposed HS&P Gas Plant

The gas that is currently sent to Battles could also be flared. Flaring of the gas would require scrubbing of the gas to 796 ppm H_2S as per the SBCAPCD Rule 311. There are a number of different types of flares that could be used, most being capable of handling up to many million cubic feet per day depending on the flare size. The simplest and most common type of flare, called an open pipe flare (OPF), is hooked up to the gas header and burns the gas with a visible flame. If visibility and noise are issues, an enclosed ground flare can be utilized where the gases are burned inside a larger pipe system. For gases that contain a lot of water or other liquids, a knockout drum may also be required. Flares with stainless steel tips and upper sections and air or fluidic seals are preferred for services where the flares will be running 24 hours per day (NAO specs).

Flares also can produce smoke. In order to reduce the smoke, steam or air can be injected into the flare. This requires the addition of steam nozzles or air blowers. In the case of steam, steam must also be present, and although smokeless and steamless flares are available, steam could be generated through the use of cogeneration. The burning of the gas associated with the flares also gives rise to emission concerns. A different type of flare, a Cascade Flow Control Flare (CFCF) or a Dual Chamber enclosed flare can reduce reactive organic compounds (ROC) emissions while the use of steam injection can reduce NO_x emissions. Some flare manufacturers, for example, NAO or Kaldair, has developed specific low emission cascade style flares which have been used in areas where emissions are a priority.

4.2.2.6 Generate Electricity At Each Field Not Served By The Proposed HS&P Gas Plant

If the gas is not sent to the Battles Facility, another scenario would be to produce electricity with the gas. One option for this scenario would be to purchase a system such as a Waukesha

enginator system that comes skid mounted with a natural gas burning engine and an electrical generator. These systems can produce about 3 kW for each thousand cubic feet of gas produced per day (MCFD) depending on the quality of the gas. In addition, the fuel gas might have to be dry with H_2S less than 1,000 ppm and an octane rating above 118. This would require the addition of scrubbing facilities, if they do not already exist, to bring the H_2S down to the County standard of 796 ppm. In addition to the electrical generation systems, flares would have to be installed or the gas wells shut down for periods of engine shut-down or emergencies.

In order to achieve the emissions levels required by the SBCAPCD rules, the engines would have to be equipped with a catalyst or use other satiable control technologies. The inclusion of a catalyst gives rise to poisoning concerns from the sulfur and possible halides. The lean burn engines also require stable fuel characteristics. In addition, source testing and permitting would be required.

Electrical generation through the use of fuel cells has also been mentioned. The use of fuel cells produces very little emissions and operates with efficiencies near 50 percent. Fuel cells require that the gas be very clean of sulfur and halides. A process to produce this type of gas from landfill gas is currently being investigated by Fuel Cell International Corporation on behalf of the US EPA.

The production of electricity may require tying into the PG&E grid system if the electricity is not used on site. Contacts with PG&E indicate that they have a developed set of rules and guidelines that must be followed for this. Electricity amounts as low as 10 kW can be tied into the grid system. The guidelines require that specific types of protective relays and other equipment be used, which constitute an investment in equipment that may not be economically viable. Rates paid at this time are in the 3.0 cents per kW-hr range, but vary particularly for sources less than 100 kW.

4.2.2.7 Shut-In Oil And Gas At Fields Not Served By The Proposed HS&P Gas Plant

This represents one of the most probable scenarios given the current economic conditions for oil and gas production. Given that many of the north county operators are small producers without access to capital to pursue other alternatives, many of them may find that their only alternative is to shut-in their production. If one assumes that all the fields that would no longer have access to the Battles Gas Plant were to shut-in, there would be a loss in oil production of 550 Bbls/day. There would also be an estimated loss of approximately 20 direct jobs within the oil fields. This could translate into an indirect labor loss of about 60 jobs.

5.0 Analysis Of Environmental Issues

The initial study for this project identified three issues where significant impacts could occur. These included air quality, public safety and fire protection. During the workshops on the Draft SEIR, additional concerns were raised regarding noise and odors. Odor has been addressed as part of air quality, and a separate section has been added for noise. For each issue area, the following discussions are provided:

- Existing Conditions

- Proposed Project
  - Impacts
  - Mitigation Measures
  - Residual Impacts

- Alternative HS&P Site
  - Impacts
  - Mitigation Measures
  - Residual Impacts

- Expanded HS&P Gas Plant
  - Impacts
  - Mitigation Measures
  - Residual Impacts

- Cumulative Impacts
  - Cumulative Projects
  - Gas Processing Options for Other North County Producers

- Mitigation Requirements/Recommendations

- Mitigation Monitoring Plan

The impact analyses have been developed based upon the information provided in Chapters 1 through 4. A number of appendices have been included in the document which contain backup for some of the analyses. Additionally two technical documentation files have been prepared to cover the hazards analysis modeling for the proposed project and the expanded HS&P, the air modeling and the Battles Gas Plant hazards analysis modeling. These are available from the Santa Barbara County Energy Division upon request.

5.1 Air Quality

This section discusses potential air quality impacts associated with the proposed modification project. Information is presented below which outlines the significance criteria used to quantify potential impacts, AQAP consistency, potential cumulative impacts, and proposed mitigation measures.

5.1.1 Existing Conditions

5.1.1.1 General Weather And Climate

The north coast area of Santa Barbara County has a Mediterranean climate characterized by mild winters when most rainfall occurs, and warm, dry summers. The climate is controlled primarily by the combination of the Pacific high pressure system over the ocean to the west, thermal contrasts between land and the adjacent ocean, and topographical factors.

During spring and summer, fog and low clouds often form in the layer of marine air over the ocean. This fog also develops along the coast and inland valleys during the evening. Fog usually lifts and low clouds evaporate as the land areas are warmed during the morning. Afternoons are characterized by fair skies, cool temperatures, and a sea breeze. Extratropical storms are diverted to the north, and precipitation occurs infrequently when tropical moisture is transported into the region.

The Pacific high pressure system weakens and migrates southward during winter. During this season, three weather regimes generally prevail: (1) periods of low clouds/fog associated with dominance of the Pacific High; (2) periods of clear skies, cool nights, and warm days associated with continental flow; and (3) periods of variable cloudiness, shifting and gusty winds, and precipitation associated with extratropical storms. The sea breeze is typically northwesterly throughout the year. During the summer months, these northwesterly winds are stronger and persist later into the night. At night, the sea breeze subsides, and air adjacent to the surface cools resulting in light land breezes. This land/sea breeze cycle combined with local topography greatly influences the direction and speed of winds throughout the county.

Annual precipitation in the region varies widely over relatively short distances within the region, mainly because of topographic effects. The long-term average annual total precipitation along the north coast is about 12 inches, but on the mountain tops, totals are nearer 30 inches. Temperature variations are also greatly influenced by topography, including distance from the ocean, local elevation and degree of exposure. Maximum summer temperatures along the coast average about 70°F, and minimum winter temperatures average around 40°F.

5.1.1.2 Meteorology And Air Quality

Air quality is greatly influenced by meteorological conditions such as surface and upper air wind speed and direction, atmospheric stability and sunlight. This is especially the case for photochemical pollutants such as ozone. A brief discussion of prevailing meteorological conditions in Santa Barbara County follows.

Winds

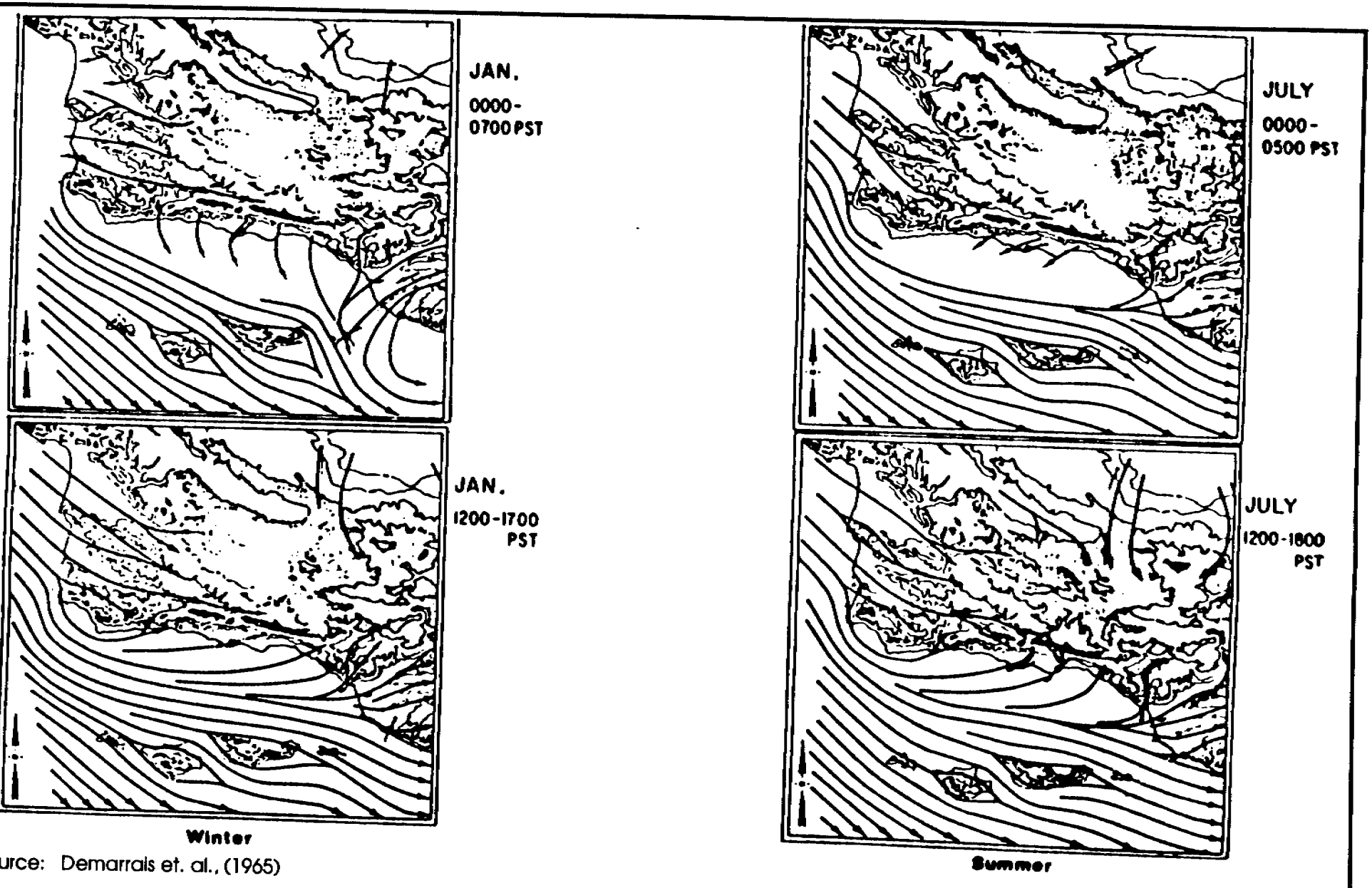
Local winds are affected by the position and intensity of the Pacific High Pressure System, the degree of differential heating between the inland areas of California and the ocean, topography, and time of day. The change in orientation of the coastline at Point Conception and the east-west configuration of the mountains along the south coast have a marked influence on winds in the region. The interaction of these features with the prevailing northwesterly airflow results in a coastal wind regime characterized by relatively strong northwesterly winds along the north coast by day with light drainage winds at night, and relatively light afternoon sea breezes along the south coast with downslope winds at night.

The streamline analyses of DeMarrais et al (1965) provide a characterization of the prevalent horizontal transport of air over the region during the daytime and nighttime hours for the months of January, April, July and October. Figure 5-1 depicts the daytime and nighttime streamline analyses for winter and summer seasons based on the results of DeMarrais. It is evident that the generally northwesterly air flow associated with the Pacific High is significantly modified by interaction with the terrain and the diurnal cycle of heating and cooling. The sea breeze flow that typically develops during the day in summer is assisted by rising air over the elevated terrain and by valley winds. During the night, a land breeze may develop as a result of the local land-sea temperature differences and descending air caused by radiation cooling. Wind roses for the Lompoc HS&P site and the Battles Gas Plant site are presented in Figures 5-2 and 5-3, respectively.

Upper level winds can also play an important role in the air quality of Santa Barbara County. These winds are routinely measured at Vandenberg Air Force Base (AFB) at 0400 PDT and 1600 PDT. The winds at 1,000 ft and 3,000 ft are generally from the north or northwest throughout the year. Occurrences of southerly and easterly winds are most frequent in winter, especially in the morning. Upper level winds from the southeast are infrequent during the summer months, though these are the upper wind directions that are usually associated with high ozone concentrations.

Atmospheric Stability And Mixing Height

Atmospheric stability has an important influence on air quality because it affects atmospheric mixing. In general, greater turbulence and mixing are possible as the atmosphere becomes less stable. The mixing height, measured from the ground upward, is the height of the atmospheric layer in which convection and mechanical turbulence promote mixing. Good ventilation and



Source: Demarrais et. al., (1965)

Figure 5-1 Typical Regional Wind Flow: Winter and Summer

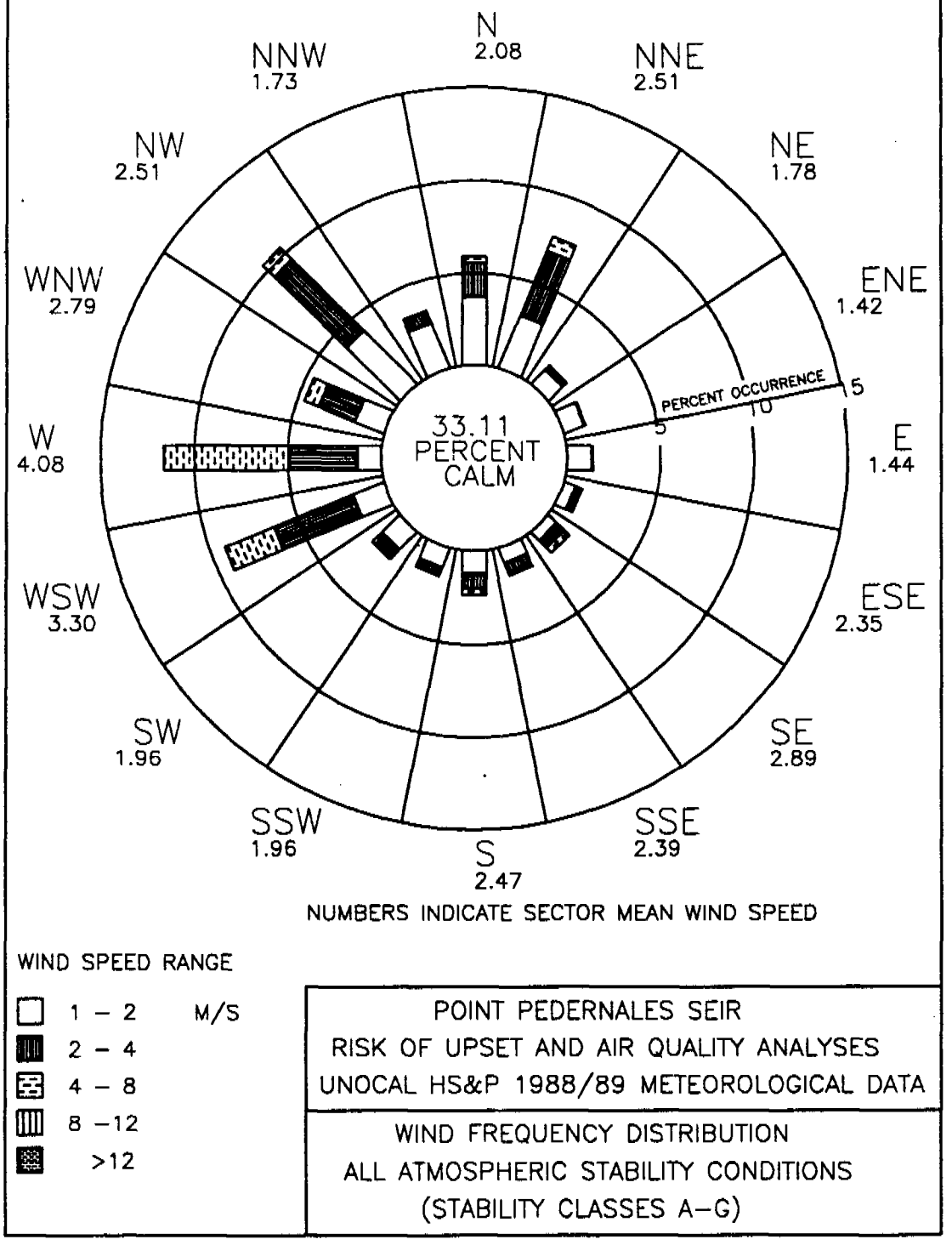


Figure 5-2 Lompoc (UNOCAL HS&P) Wind Frequency Distribution

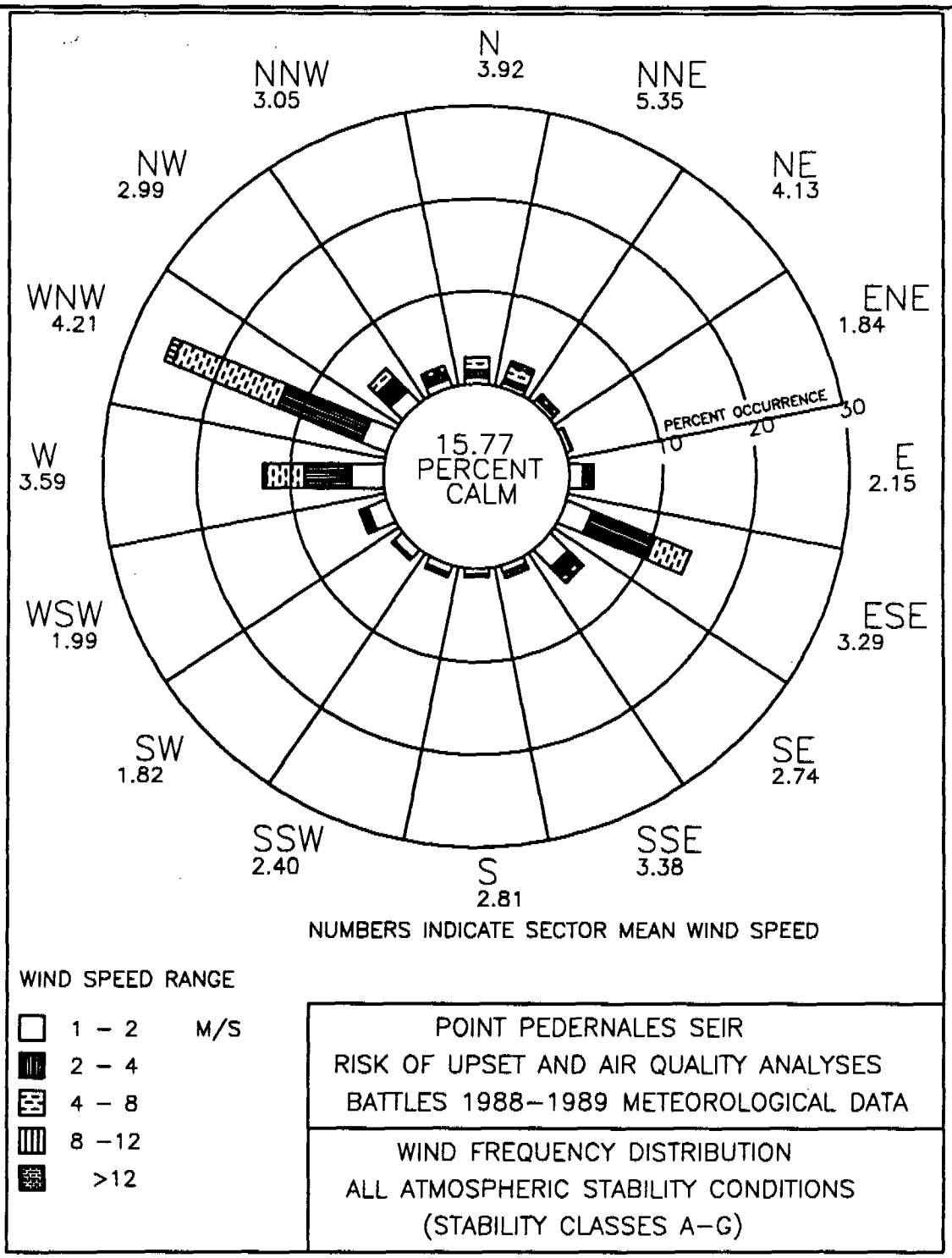


Figure 5-3 Santa Maria (Battles Gas Plant) Wind Frequency Distribution

dispersion result from a high mixing height, unstable conditions, and moderate to high wind speeds within the mixed layer. Mixing heights are marked by the base of an upper-level inversion, a stable atmospheric layer in which the temperature increases with height. Thus, an inversion can act like a lid on the mixed lower layer, preventing pollutants from dispersing upward and becoming diluted. However, on some occasions, an upper level inversion with pollutants trapped within it may be eroded when the air below is heated, causing pollutants to be "fumigated" down to the ground.

At Vandenberg AFB, surface inversions (0-500 ft) are most frequent during the winter (83 percent at 0400 PDT), and subsidence inversions (1,000-2,000 ft) are most frequent during the summer (55 percent at 1600 PDT), (Kinney, 1975). Table 5.1, based on Lorenzen (1979), gives the average heights and temperatures of the inversion base at Vandenberg and Pt. Mugu. The frequencies of occurrence of the Pasquill-Gifford stability classes are summarized in Table 5.2 for the area from Santa Maria to Lompoc.

Sunlight

Sunlight is a necessary ingredient to the formation of ozone. In the presence of sunlight, primary pollutants such as reactive organic gases and oxides of nitrogen can react chemically over a period of several hours to form ozone. While fog frequently occurs along the coast and in the inland valleys in late spring to mid summer, there is ample sunshine throughout the year. High ozone concentrations are most frequent in the late summer and fall months when fog is less frequent and sunlight is plentiful.

5.1.1.3 Regulatory Setting

National Ambient Air Quality Standards

The U.S. Environmental Protection Agency (EPA) has established air quality standards to protect the health and welfare of the general public from the effects of air pollution. The National Ambient Air Quality Standards (NAAQS), established in the Federal Clean Air Act, are defined as the maximum concentrations which may be equaled but not exceeded for the annual average standards and, in the case of short-term standards, may not be exceeded more than once per year. The NAAQS standards have been set for carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), suspended particulate matter ten microns or less in diameter (PM_{10}) and lead (Pb), all of which are referred to as inert or primary pollutants. NAAQS standards have also been established for ozone (O_3) which is a secondary (photochemical oxidant) pollutant, formed in the atmosphere as a result of a series of chemical reactions. These six pollutants are referred to as criteria pollutants.

Table 5.1 **Climatological Averages For Inversion Height And Temperature, And Wind Direction At 1,000 Ft And 3,000 Ft, For Vandenberg And Pt. Mugu**

(a) Vandenberg				Wind Direction	
		Base Ht ft	Base Temp °F	1,000'	3,000'
Winter	am	791	44	NNE	NW
	pm	2,503	48	WNW	NW
Summer	am	1,270	50	NW	N
	pm	1,435	54	WNW	WNW

(b) Pt. Mugu				Wind Direction	
		Base Ht ft	Base Temp °F	1,000'	3,000'
Winter	am	278	49	NE	NE
	pm	1,066	56	WNW	NNE
Summer	am	1,165	56	E	E
	pm	1,346	60	WSW	SW

(adapted from Lorenzen, 1979)

Table 5.2 Percentage Frequency Of Occurrence Of Stability Classes

Pasquill Stability Class	Lompoc	Santa Maria
A	10.0	2.6
B	12.3	5.9
C	14.7	11.8
D	13.5	38.7
E	12.3	17.9
F	37.3	23.2

State Ambient Air Quality Standards

The California Air Resources Board (CARB) has set ambient air quality standards which specify pollutant concentration limits that are never to be exceeded for sulfur, hydrogen sulfide, and vinyl chloride as well as the six criteria pollutants. Visibility is also regulated at the state level. The state standards are more stringent than the federal standards for all pollutants. The current state and federal standards are summarized in Table 5.3.

Prevention Of Significant Deterioration

Pollutants are said to be in attainment if they meet the ambient air quality standards, and non-attainment if they do not. Attainment pollutants are regulated under the rules and regulations promulgated at the federal level for the Prevention of Significant Deterioration (PSD) and for New Source Review (NSR). All non-attainment pollutants are regulated under NSR rules which are generally more stringent than PSD rules. The PSD review applies to major modifications to existing major stationary sources or new major stationary sources. A source is considered a major stationary source if emissions of any criteria pollutant exceed either 100 tons per year for 28 listed source types or 250 tons per year for any other source type.

If a new source is considered major because of the emissions of any attainment pollutant, PSD review is required for all other pollutants (except non-attainment pollutants) that exceed the significance levels shown in Table 5.4. If a major source is modified, the PSD regulations would apply to those pollutants listed in Table 5.4 with net emission increases exceeding these significance levels. If a source is subject to PSD review, specific requirements apply on a pollutant-by-pollutant basis. The SBCAPCD has been delegated PSD authority by the EPA, and specific PSD requirements have been developed for Santa Barbara County.

Pollutants that occur during construction are generally exempt from PSD review, because the PSD regulations specifically exempt temporary increases of SO_2 and PM_{10} emissions (40 CFR 52.21 f[v]). However, construction emissions are not exempt under SBCAPCD PSD guidelines. Temporary is defined by EPA as two years, although this period can be increased at the discretion of the EPA Administrator (40 CFR 52.21f [4]). In addition, mobile source emissions are exempt from EPA review (42 USC 7401, Section 110(a)[5]). Since mobile sources are the primary source of pollutants during construction, and construction activities generally require less than two years, EPA does not normally review construction emissions.

The PSD regulations also include requirements for air quality monitoring before and after construction. These may be satisfied using existing air quality and meteorological data gathered at a location near the project area. The PSD regulations can be waived if the calculated air quality impacts are less than the values shown in Table 5.5.

Table 5.3 Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[1]	National Standards[2]	
		Concentration[3]	Primary[2, 4]	Secondary[2, 5]
Ozone	1 hour	0.09 ppm (180 ug/m^3)	0.12 ppm (235 ug/m3)	Same as Primary Std.
Carbon Monoxide	8 hour	9 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	Same as Primary Std.
	1 hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	
Nitrogen Dioxide	Annual Average	---	0.053 ppm (100 ug/m^3)	Same as Primary Std.
	1 hour	0.25 ppm (470 ug/m^3)	---	
Sulfur Dioxide	Annual Average	---	.03 ppm (80 ug/m^3)	---
	24 hour	0.04 ppm[6] (105 ug/m^3)	.14 ppm (365 ug/m^3)	---
	3 hour	---		0.5 ppm (1,300 ug/m^3)
	1 hour	0.25 ppm (655 ug/m^3)		---
Suspended Particulate Matter (PM_{10})	Annual Geometric Mean	30 ug/m^3	---	---
	24 hour	50 ug/m^3	150 ug/m^3	Same as Primary Std.
	Annual Arithmetic Mean	---	50 ug/m^3	
Sulfates	24 hour	25 ug/m^3		---
Lead	30 day Average	1.5 ug/m^3	---	---
	Calendar Quarter	---	1.5 ug/m^3	Same as Primary Std.
Hydrogen Sulfide	1 hour	0.03 ppm (42 ug/m^3)		---
Vinyl Chloride (chloroethene)	24 hour	0.010 ppm (26 ug/m^3)		---
Visibility Reducing Particles	1 observation	In sufficient amount to reduce the prevailing visibility[7] to less than 10 miles when the relative humidity is less than 70 percent		---

Table 5.3 Ambient Air Quality Standards (Continued)

Notes:

1 California standards for ozone, carbon monoxide, sulfur dioxide (1 hour), nitrogen dioxide and particulate matter (PM_{10}) and visibility reducing particles are values that are not to be exceeded. The sulfur dioxide (24 hour), sulfates, lead, hydrogen sulfide, and vinyl chloride are not to be equaled or exceeded.

2 National standards, other than ozone and those based on annual averages or annual arithmetic means, are not to be exceeded more than once a year. The ozone standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above the standard is equal to or less than one.

3 Concentration expressed first in units in which it was promulgated. Equivalent units given in parenthesis are based upon a reference temperature of $25^{o}C$ and a reference pressure of 760 mm of mercury. All measurements of air quality are to be corrected to a reference temperature of $25^{o}C$ 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 National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health. Each state must attain the primary standards no later than three years after that state's implementation plan is approved by the Environmental Protection Agency.

5 National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant. Each state must attain the secondary standards within a "reasonable time" after the implementation plans approved by the EPA.

6 At locations where the state standards for ozone and/or suspended particulate matter are violated. National standards apply elsewhere.

7 This standard is intended to limit the frequency and severity of visibility impairment due to regional haze and is equivalent to a 10-mile nominal visual range where relative humidity is less than 70 percent.

Table 5.4 Threshold Levels That Trigger PSD Regulations

Pollutant	Threshold Levels (tons per year)
Sulfur dioxide	40
Nitrogen oxides	40
Carbon monoxide	100
Ozone	40 of VOC [1]
Particulate matter	25
Lead	0.6
Asbestos	0.007
Beryllium	0.0004
Mercury	0.1
Vinyl chloride	1
Fluorides	3
Sulfuric acid mist	7
Hydrogen sulfide	10
Total reduced sulfur	10
Reduced sulfur	10

1 VOC = Volatile Organic Compounds

Table 5.5 Maximum Allowable Increases (a)

	Maximum Allowable Increase (ug/m^3)
Class I Areas	
Particulate Matter	
Annual geometric mean	5
24-hour maximum	10
Sulfur Dioxide	
Annual arithmetic mean	2
24-hour maximum	5
3-hour maximum	25
Class II Areas	
Particulate Matter	
Annual geometric mean	19
24-hour maximum	37
Sulfur Dioxide	
Annual arithmetic mean	20
24-hour maximum	91
3-hour maximum	512
Class III Areas	
Particulate Matter	
Annual geometric mean	37
24-hour maximum	75
Sulfur Dioxide	
Annual arithmetic mean	40
24-hour maximum	182
3-hour maximum	700

(a) DOI increments and EPA-PSD increments are identical.
Source: 40 CFR 52.21

SBCAPCD Rules And Regulations

Local air pollution control districts in California are responsible for regulating stationary sources of air emissions that are located in their jurisdictions. As such, the Unocal Gas Processing project would be regulated by the rules and regulations of the Santa Barbara County APCD. These local rules and regulations include PSD increments which are in addition to the federal PSD regulations. The additional increments are summarized in Table 5.6.

Under Rule 205.C, any source subject to NSR is subject to the following requirements:

(1) For new or modified sources, net emissions increases of 2.5 pounds per hour, or more, of any non-attainment pollutant, except carbon monoxide requires BACT. BACT review levels for carbon monoxide are 20 pounds per hour or 150 pounds per day.

(2) A new or modified stationary source with a net emissions increase of 5 pounds per hour, but less than 10 pounds per hour, 240 pounds per day, or 25 tons per year of any non-attainment pollutant, except carbon monoxide, must submit an application containing information that demonstrates, by air quality impact analysis (AQIA) to the satisfaction of the Air Pollution Control Officer (APCO) that the emissions would not cause an exceedance or interfere with the attainment or maintenance of any primary NAAQS; or prevent reasonable progress toward the achievement or maintenance of any NAAQS.

(3) Sources subject to the provisions of item (2) that have been shown through an AQIA to cause a violation, or interfere with the attainment or maintenance of any national primary air quality standard, shall mitigate those net emissions through emission trade-offs (offsets) by reducing emissions from existing stationary or non-stationary sources.

This increment and mitigation requirement shall be reviewed if CARB or EPA develop an increment or other alternative with supporting technical rationale. The requirements for BACT are specified as the more stringent of the following:

- The most effective emissions control technique which has been achieved in practice for such category or class of source; or

- Any other emissions control technique found, after public hearing by the APCO or CARB, to be technologically feasible and cost effective for such class or category of sources or for a specific source.

BACT can be no less stringent than the emission control required by any applicable provision of SBCAPCD, state, federal or CARB laws or regulations unless the applicant demonstrates to the satisfaction of the APCO that such limitations are not achievable.

Under the PSD portion of Rule 205.C, BACT is required for any source with net emissions increases for attainment pollutants of 5 pounds per hour or more except for carbon monoxide for which the review level is 50 pounds per hour, or 550 pounds per day, or more. The following offset requirement also applies under this rule:

Table 5.6 Santa Barbara County Air Pollution Control District Air Quality Increments (In Addition To Increments Established By Clean Air Act)

Pollutant	Maximum Allowable Increase ($\mu g/m^3$)			
	Class I	Class II	Baseline Data	Air Quality Standard
Carbon Monoxide				
8-hr Maximum	200	2500	1/1/84	10000
1-hr Maximum	800	10000		40000
Nitrogen Dioxide				
Annual	2	25 - 100*	1/1/84	100
Arithmetic Mean	10	100 - 470*		470
Reactive Organic Compounds				
3-hr Maximum*	3	40 - 160*	1/1/84	160
Particulate Matter 10				
24-hr Maximum	2	12 - 50*	1/1/84	50

* This is a Santa Barbara County standard.

Source: Rule 205.C, County of Santa Barbara

- If the net emission increases exceed 10 pounds per hour for reactive organic compounds, nitrogen oxides, sulfur oxides or particulate matter, emission trade-offs are required by reducing emissions from existing sources to offset emission increases from the new source.

5.1.1.4 Existing Air Quality

The proposed project is located in northern Santa Barbara County which is part of the South Central Coast Air Basin. Emissions of inert (primary) pollutants from the project would impact air quality in the immediate vicinity of the project, and emissions of photochemical oxidant precursors, such as oxides of nitrogen and reactive organic gases, would impact air quality on a regional scale. This section presents a summary of existing air quality in the County of Santa Barbara with special emphasis on the Lompoc and Santa Maria areas.

Air Quality Status In Santa Barbara County

The County of Santa Barbara is designated as being in attainment at the state and federal levels for all pollutants except ozone, hydrogen sulfide, and PM_{10}. Both the north and south county exceed the state and federal 1-hour ozone standards. While the south county has been non-attainment for some time, the north county has experienced exceedances only in recent years. Under the 1990 Federal Clean Air Act Amendments, all of Santa Barbara County is considered a moderate ozone non-attainment area. As part of requirements of the California Clean Air Act, the state has designated a portion of the north county (Solomon Hills area) as non-attainment for the hydrogen sulfide standard based on monitoring data. The non-attainment area encompasses some of the proposed project area. The state 24-hour PM_{10} standard is exceeded in both the north and south counties. However, both areas are in attainment of the less stringent federal 24-hour standard, and both areas meet the state and federal annual standards for PM_{10}.

Ambient air quality monitoring is conducted at various sites in Santa Barbara County. State and Local Air Monitoring Stations (SLAMS) are operated by the CARB and by the SBCAPCD. These monitors are located to provide local and regional air quality information. The County also has a number of PSD monitoring stations, operated by industry at the direction of the SBCAPCD, which provide valuable air quality and meteorological data in the vicinity of new or modified sources under SBCAPCD permit. Figure 5-4 shows the locations of all monitoring stations that have operated in the County of Santa Barbara. Table 5.7 summarizes the operational status and parameters measured at sites in the vicinity of Lompoc and Santa Maria.

A county-wide emissions inventory for the base year of 1987 is provided in the SBCAPCD's 1991 AQAP. The emissions inventory was compiled for most pollutants or pollutant precursors for which ambient air quality standards exist including total organic gases (TOG), reactive organic gases (ROG), oxides of nitrogen (NO_x), oxides of sulfur (SO_2), carbon monoxide (CO), and total suspended particulate matter less than 10 microns (PM_{10}). TOG refers to all organic gases emitted into the atmosphere, while ROG excludes methane and several other organic compounds which do not contribute to the formation of ozone. The 1987 average daily emissions inventory for the county is summarized in Table 5.8.

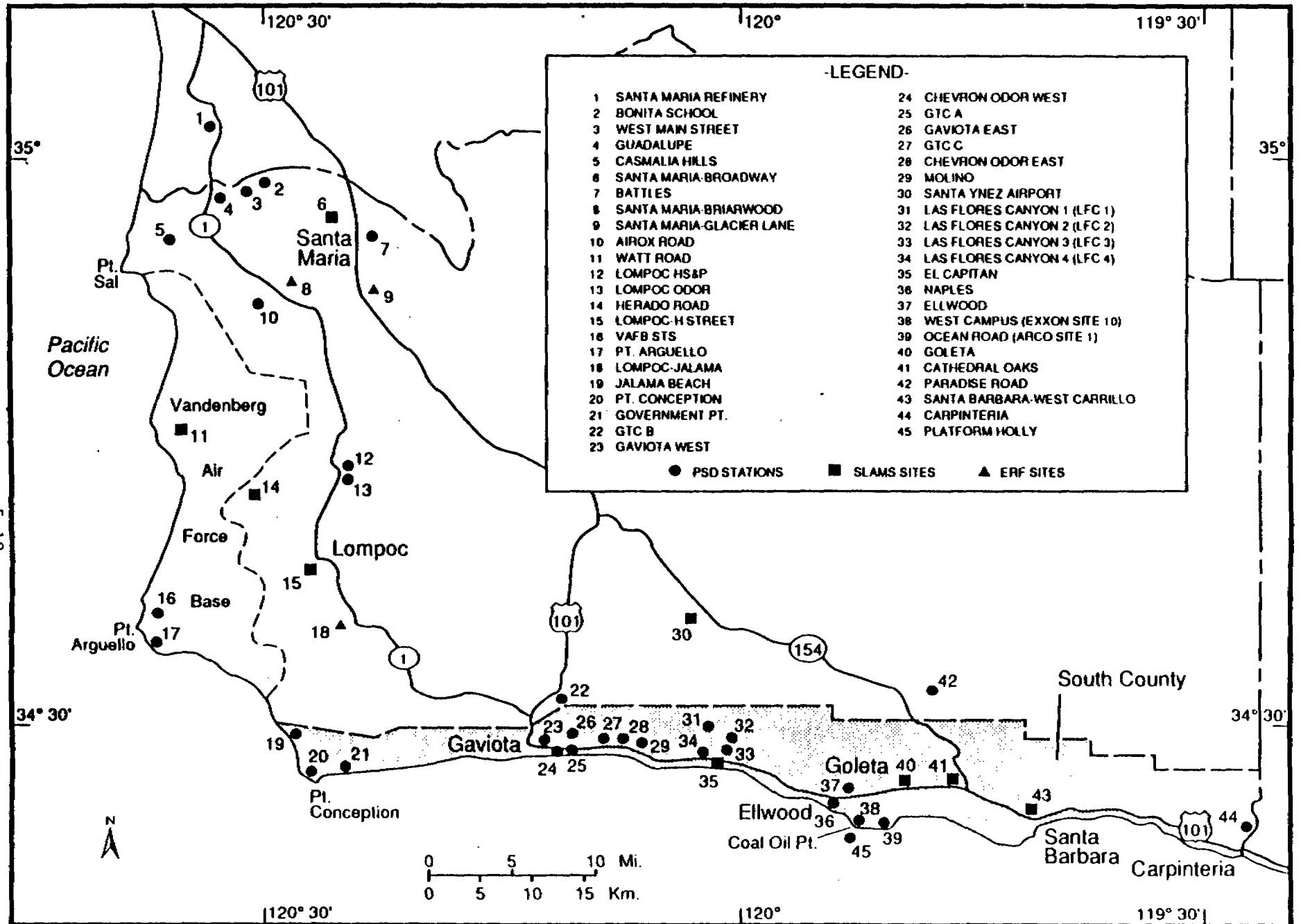


Figure 5-4 Air Quality Monitoring Stations

Table 5.7 Operational Status And Parameters Measured At Air Quality Monitoring Stations In Vicinity Of Proposed Project

Site		Type	Start	End	PARAMETERS													
					O_3	NO_2	SO_2	CO	THC	H_2S	TSP	PM_{10}	ROC	WS	VWS	WD	AMT	TRS
N 6	Santa Maria (SM) Values for SM include these sites																	
	Main Street	SLAMS	Pre-1980	10-81	■		■							■			■	
	McClelland	SLAMS	01-82	09-87	■		■											
	Broadway	SLAMS	09-87	❄	■		■					■						
N 7	Battles	PSD	09-85	❄	■	■			■	■			■	■	■	■	■	
N 8	Santa Maria - Briarwood	ERF	3-1-79	12-31-90														
N 9	Santa Maria - Glacier Ln.	ERF	3-1-79	12-31-90														
N 10	Airox Road	PSD	09-86	11-87	■	■	■		■		■	■	■	■	■	■	■	
N 11	Watt Road	SLAMS	01-83	05-88	■	■	■	■			■			■		■		
N 12	Lompoc HS&P	PSD	09-85	❄	■	■	■		■				■	■	■	■	■	
N 13	Lompoc HS&P Odor	PSD	1-1-88	❄						■				■		■	■	■
N 14	Herado Road	SLAMS	03-82	10-86	■	■	■	■			■			■		■		
N 15	Lompoc (LOM) Values for LOM include these sites																	
	Lompoc - G Street	SLAMS	07-80	04-83	■		■				■			■		■		
	Lompoc - H Street	SLAMS	06-83	❄	■	■	■	■			■			■		■		

Parameters:

O_3	Ozone	PM_{10}	Particulate Matter (less than 10. microns)
NO_2	Nitrogen Dioxide	ROC	Reactive Organic Compounds
SO_2	Sulfur Dioxide	WS	Wind Speed
CO	Carbon Monoxide	VWS	Vertical Wind Speed
THC	Total Hydrocarbon	WD	Wind Direction
H_2S	Hydrogen Sulfide	AMT	Ambient Temperature
TSP	Total Suspended Particulate	TRS	Total Reduced sulfur

❄	still in operation as of June 1991
S	station located in South County
SLAMS	state and local air quality monitoring station
PSD	prevention of significant deterioration

Table 5.8 1987 Average Daily Inventory of Air Pollutant Emissions

	Average Daily Emissions (tons)					
	TOG	ROG	NO_x	SO_2	CO	PM_{10}
Stationary Sources						
Fuel Combustion	5.02	1.40	11.92	2.96	3.31	0.48
Petroleum, Process, Storage & Transfer	28.28	13.08	0.01	0.00	0.01	0.01
Solvent Use	13.78	12.11	0.00	0.00	0.00	0.00
Miscellaneous Processes	244.82	38.66	0.16	0.00	10.64	49.45
Industrial Processes	0.22	0.18	0.01	0.00	0.26	1.02
Waste Burning	3.11	2.23	0.02	0.00	18.08	2.67
Total Stationary Sources	295.24	67.65	12.12	2.96	32.31	53.63
Mobile Sources						
On Road Vehicles	16.81	15.51	19.74	1.08	123.15	1.72
Other Mobile Sources	4.49	4.26	6.20	0.63	25.19	0.62
Total Mobile Sources	21.30	19.77	25.94	1.70	148.33	2.34
Total County Emissions	**316.54**	**87.42**	**38.26**	**4.67**	**180.74**	**55.97**

Source: 1991 Air Quality Attainment Plan, Table 3-1.

Santa Barbara County experiences between 30 and 45 days per year on which the state ozone standard is exceeded and two to eight days per year on which the federal standard is exceeded. Figure 5-5 shows the trend in the number of California standard violations measured in the county over the last ten years based on data from the El Capitan, Goleta, and Santa Barbara SLAMS stations (south county), and Santa Maria, Lompoc and Santa Ynez (north county). While these graphs indicate a decline in the number of violations occurring in the South County during recent years, measurements from the more widespread network of PSD stations now in operation indicate that far more violations occur than is evident from the SLAMS data alone.

Site-Specific Data

The variable nature of ozone violations along the south coast is evident when site-specific violation data are compared for recent years. Data from several north county monitoring locations show several violations were recorded during 1989 through 1991 (Figure 5-6). For PM_{10}, the maximum 24-hr average concentration measured each year and the annual mean for the Goleta and Santa Maria SLAMS stations are shown in Figure 5-7, which shows that both stations violate the state standards. The number of California H_2S standard violations for sites in north county is shown in Figure 5-8.

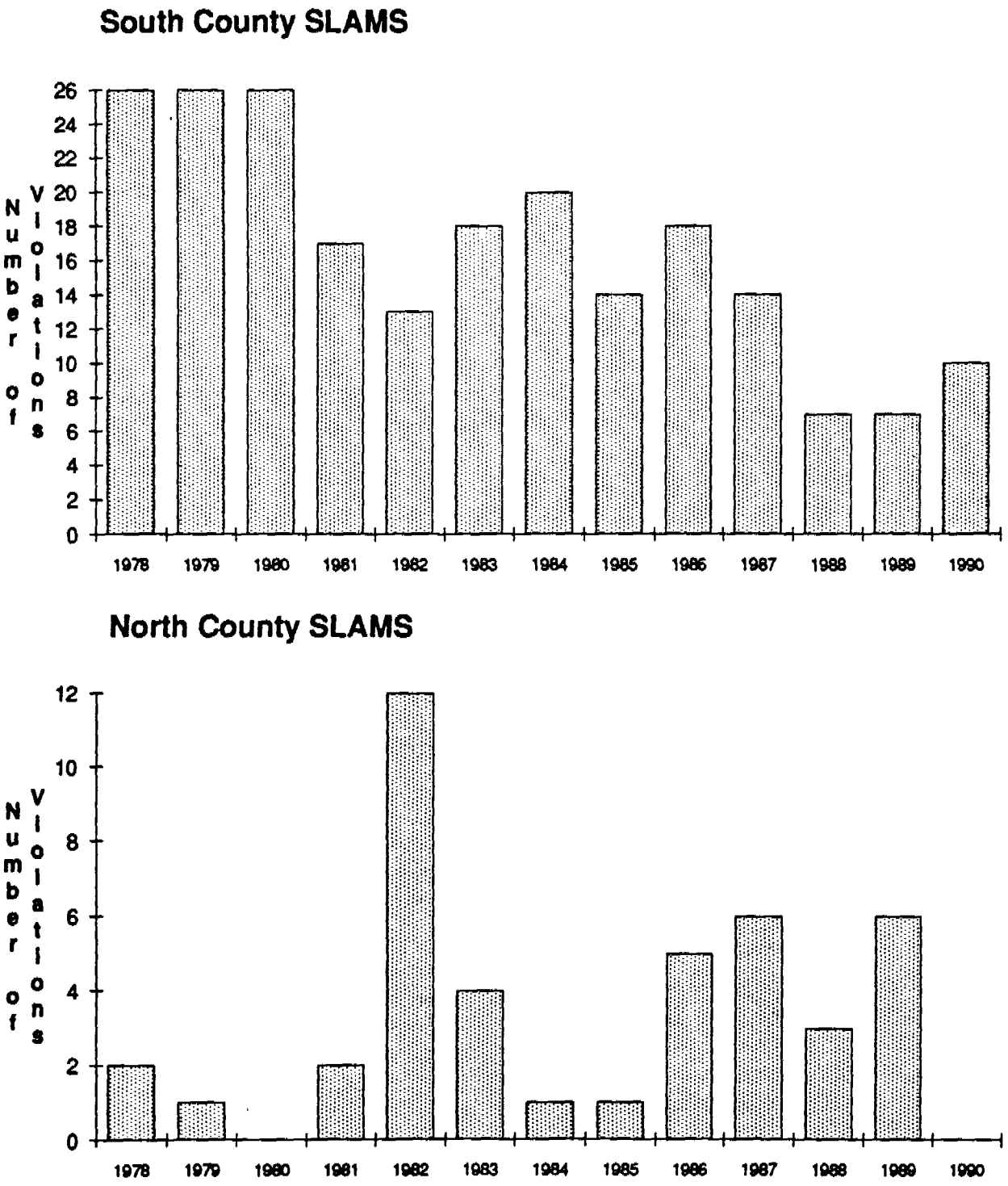
Site-specific data used to define the baseline of air quality for the proposed project are taken from the Lompoc HS&P monitoring station for ozone, and the Santa Maria Broadway and Airox Road sites for PM_{10}. The remainder of the baseline data was taken from the HS&P and Battles monitoring stations. The baseline (or background) values used in the modeling analysis of Section 5.2 are summarized in Table 5.9.

Toxic Air Contaminants

Toxic air contaminants (TAC) are hazardous air pollutants which are known or suspected to cause cancer, genetic mutations, birth defects, or other serious illness to people. Generally, TACs behave in the atmosphere in the same way as inert pollutants (those which do not react chemically but remain of the same chemical composition from point of emission to point of impact). The concentrations of inert and toxic pollutants are therefore determined by the concentrations emitted at the source and the meteorological conditions encountered as those pollutants are transported away from the source. Thus, impacts from toxic pollutant emissions tend to be site specific and their intensity is subject to constantly changing meteorological conditions. The worst meteorological conditions (low wind speeds, highly stable air mass, and constant wind direction) occur relatively infrequently.

5.1.2 Threshold Of Significance

Based on SBCAPCD's definition of significant adverse air quality impacts and the County's Environmental Thresholds and Guidelines Manual, 1990, the following air quality thresholds are relevant to the proposed project:



Source: 1991 Santa Barbara County Air Quality Attainment Plan.

Figure 5-5 Number of California Standard Ozone Violations
Long Term Monitoring Stations Only

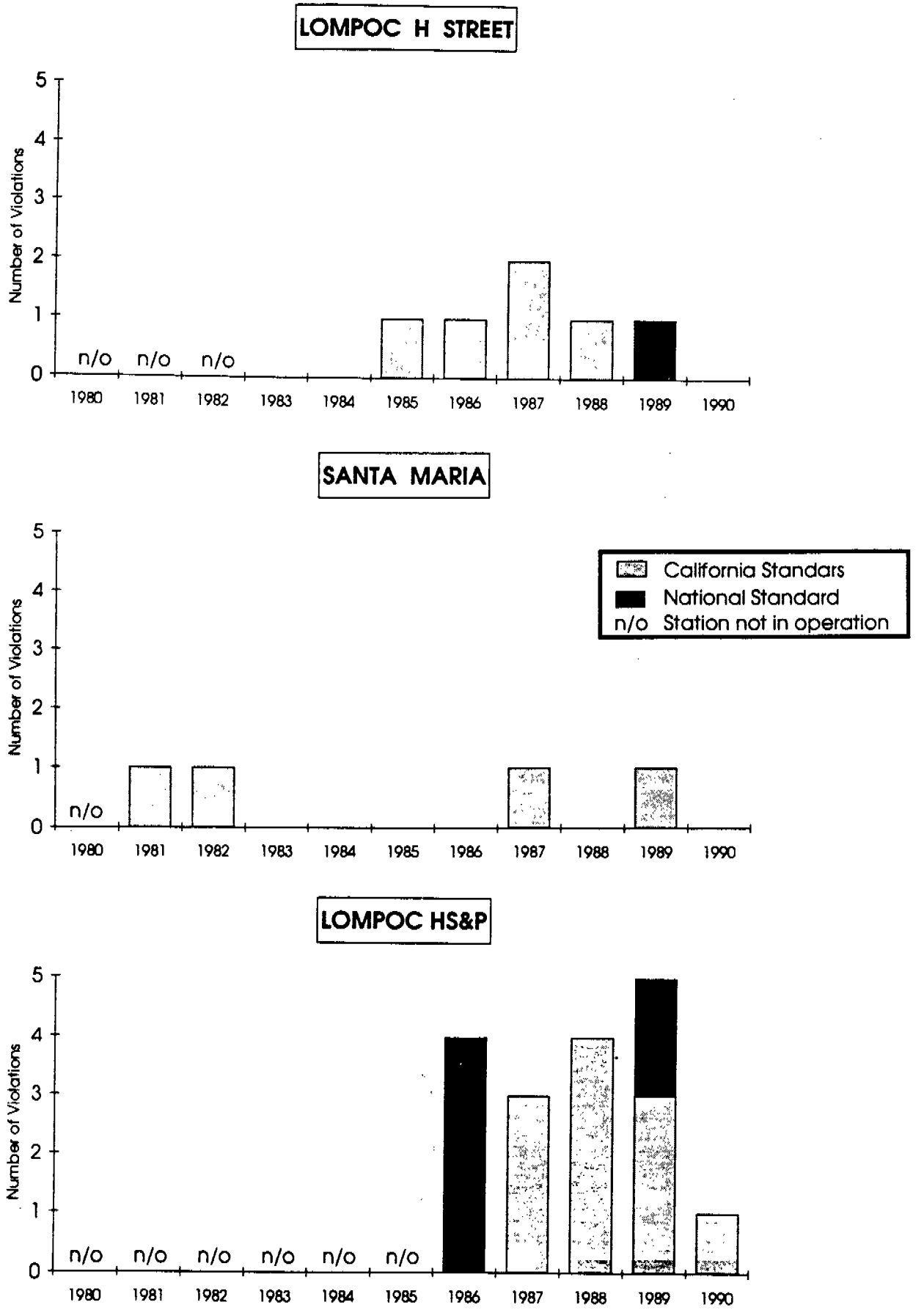
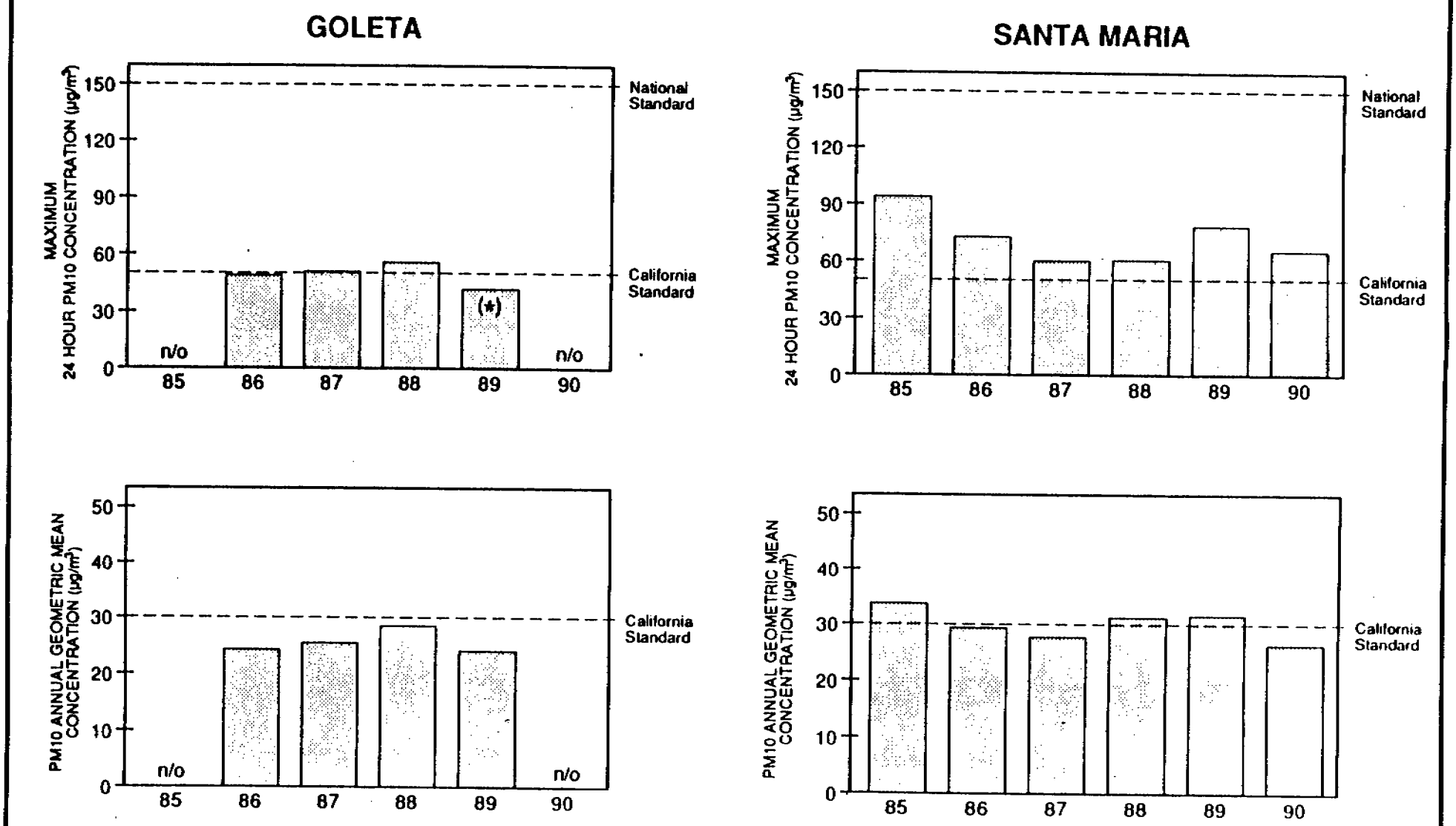


Figure 5-6 Station-By-Station Ozone Standard Violations - North County

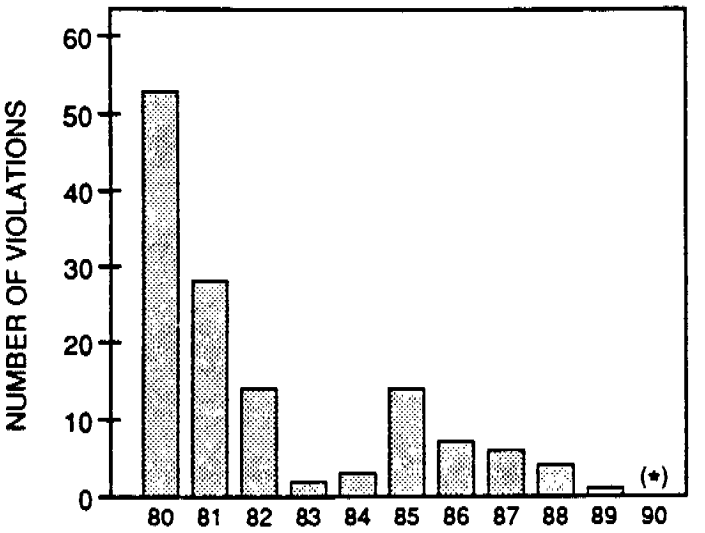


Source: 1991 Santa Barbara County Air Quality Attainment Plan

n/o Station not in operation (*) First high not valid

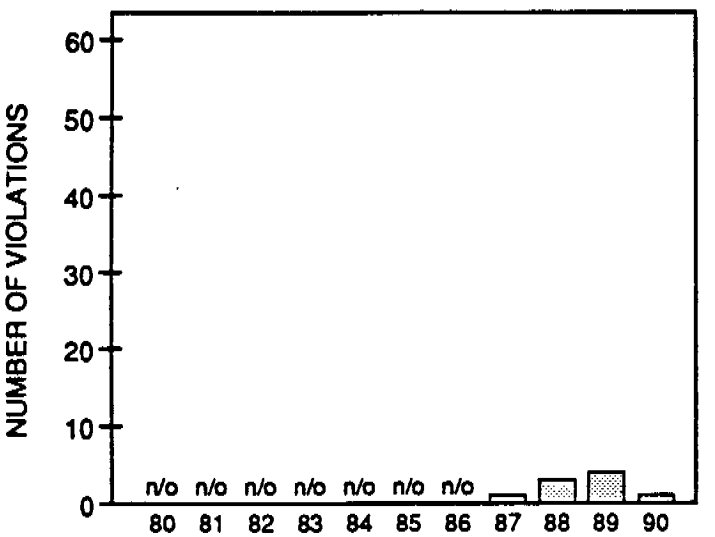
Figure 5-7 Maximum 24 Hour Average and Annual Geometric Mean PM10 Concentrations For Goleta And Santa Maria SLAMS

GLACIER LANE (ERF)



(*) Station closed

BATTLES GAS PLANT (PSD)



n/o Station not in operation

Figure 5-8 Number of California H2S Standard Violations

Table 5.9 Maximum Background 1988-1989 Concentrations

Santa Maria (Batdes)		Maximum Concentration	
Pollutant	Averging Time	(ppm)	($\mu g/m^3$)
NO_2	1-hour	0.020	38
SO_2	1-hour	0.040	105
	3-hour	0.014	37
	24-hour	0.009	18
CO	1-hour	8.0	9142
	8-hour	2.6	2972
PM_{10}	24-hour	--	77
O_3	1-hour	0.082	164

Lompoc (HS&P)		Maximum Concentration	
Pollutant	Averging Time	(ppm)	($\mu g/m^3$)
NO_2	1-hour	0.011	21
SO_2	1-hour	0.040	105
	3-hour	0.014	37
	24-hour	0.009	18
CO	1-hour	8.0	9142
	8-hour	2.6	2972
PM_{10}	24-hour	--	77
O_3	1-hour	0.094	188

- Exceedance of construction and operational thresholds outlined in Table 5.10,
- Substantial contribution to an existing or projected air quality violation, and
- Inconsistency with SBCAPCD Air Quality Attainment Plan.

5.1.3 Proposed Project

This section discusses the air quality impacts, mitigation measures and residual impacts for the proposed project.

5.1.3.1 Impacts

Development of the proposed project would result in both short-term and long-term increases in air emissions. The short-term emissions would be created during construction of the new gas processing facilities and installation of new pipeline tie-ins at the Lompoc HS&P facility, construction of the new fire protection facilities at the Santa Maria Pump Station (SMPS), and modification of the gas handling facilities at the Jim Hopkins Fee (JHF). Some of these construction impacts are considered significant. Long-term emissions would result in fugitive emissions of hydrocarbons and hydrogen sulfide from the new gas processing equipment and pipelines during operation and maintenance. Combustion emissions would occur at the SMPS from the proposed boilers. Some of the operational impacts are considered significant. These impacts are discussed in further detail below.

Construction Emissions

The estimated emissions associated with construction of the proposed project are summarized in Table 5.11. The numbers were estimated separately for the HS&P facility, for the SMPS, and for the JHF. The figures include emissions from construction equipment and emissions from fugitive dust. Emissions have been provided for both the peak hour and the construction total. Appendix C contains the detailed emission calculation spreadsheets.

A review of these emission numbers shows that the proposed project does have the potential to exceed the County's Significance Thresholds, as emissions of PM_{10} are likely to exceed the 2.5 tons per 3-month period in both quarters of the HS&P construction period. Appendix C shows that emissions are estimated as 7,175 pounds (3.6 tons) for the first quarter, and 5,424 pounds (2.7 tons) for the second quarter, assuming a 50 percent reduction due to watering, which was a mitigation measure proposed by Unocal in their application..

Quarterly emissions of NO_x at the HS&P are high (4,650 lb/2.3 tons/qtr) but they do not exceed the County's quarterly thresholds.

Table 5.10 Air Quality Impact Thresholds[1]

CONSTRUCTION PHASE	
Oxides of Nitrogen (NO_x)	Potential exceedance of the 1-hour NO_2 standard (0.25 ppm).
Ozone Precursors	2.5 tons per 3-month period of either pollutant (2.5 - 6.0 tons per 3-month period requires BACT, including offsets).
Particulate Matter smaller than 10 microns (PM_{10})	2.5 tons per 3-month period.
OPERATIONAL PHASE	
Carbon Monoxide (CO) NO_x[2]	Potential exceedance of 1-hour state standard (CO: 20.0 ppm, NO_2: 0.25 ppm). Modeling required when LOS[3] at intersection is reduced by project traffic to Level D or below.
Ozone Precursors NO_x[4] Reactive Organic Compounds (ROC)	2.5 pounds per peak hour of either pollutant from both direct (stationary) and indirect sources.
CUMULATIVE IMPACT THRESHOLD	
Ozone Precursors	2.5 pounds per peak hour of either pollutant.

1 Source: Santa Barbara Air Pollution Control District 10/23/89.
2 For 1-hour NO_2 hot spots at intersections.
3 LOS = Traffic Level of Service.
4 For long-term ozone impacts.

Table 5.11 Modified UNOCAL Facilities Project Construction Emissions

Activity	ROC	NO_x	SO_2*	CO	PM	PM_{10}#
A. Peak Hour Emissions (lbs/hr)						
HS&P Construction	2.52	26.11	3.36	20.51	5.81	5.58
SMPS Construction	1.15	9.80	0.91	4.47	7.68	7.37
JHF Construction	0.55	5.60	0.64	2.91	2.19	2.10
B. Total Emissions (tons)						
HS&P Construction (a)	0.38	3.68	0.38	2.41	6.56	6.30
SMPS Construction (b)	0.04	0.37	3.38	0.16	7.88	7.56
JHF Construction (c)	0.02	0.21	0.02	0.09	5.06	4.86
TOTAL	0.45	4.26	3.78	2.66	19.50	18.72

(a) Total emissions for the 26 week construction period.
(b) Total emissions for the 14 week construction period.
(c) Total emissions for the 14 week construction period.
* Numbers are based upon a fuel sulfur content of 0.25 percent.
\# PM and PM_{10} numbers assume a 50 percent reduction for watering. This was a mitigation measure proposed by Unocal in their application.

Note: See Appendix C for the detail emission calculations.

The estimated project construction emissions were modeled to determine whether they would contribute to a violation of the ambient air quality standards. The modeling was performed using the ISC2 model and PSD meteorological data from the HS&P facility for the HS&P modeling, and from Battles Gas Plant for the two other sites. Background concentrations were obtained from the SBCAPCD and the ozone limiting method was used to estimate NO_2 concentrations. The ozone limiting method was based on the design day peak simultaneous O_3 and NO_2 concentrations observed at the Battles Gas Plant (82 ppb O_3/20 ppb NO_2 on Jan. 11, 1990 @ 1400) and the HS&P (94 ppb O_3/11 ppb NO_2 on April 3, 1990 @ 1700). Further details of the modeling are included in the Technical Documentation Volume I.

The results of the modeling are shown in Tables 5.12 through 5.14. These tables show that violations of the 1-hour NO_2 standard (470 $\mu g/m^3$) are possible at the HS&P and SMPS. Violations of the 24-hour PM_{10} standard (50 $\mu g/m^3$) are also likely to be exacerbated by the project at the SMPS (243 $\mu g/m^3$), HS&P (71 $\mu g/m^3$), and JHF (8 $\mu g/m^3$). Potential violations of the NO_2 standard, as well as exacerbation of the PM_{10} standard violations, would exceed County threshold criteria and result in significant impacts.

Operational Emissions

Operation of the proposed facilities would result in fugitive hydrocarbon and hydrogen sulfide emissions from process equipment and wherever valves or flanges are installed. Table 5.15 provides an estimate of the operational fugitive emissions resulting from new equipment associated with the proposed project. The emission estimates for the new HS&P gas service and light liquid components are based on the EPA/Radian study (EPA, 1985). Emissions from the proposed boilers at the SMPS are based on burner data from the manufacturer and from EPA AP-42. The manufacturer, Alzeta Corporation, provided the NO_x and CO emission factors. The remaining factors were taken from AP-42.

As can be seen from Table 5.15, the majority of the operational emissions are ROC from the HS&P facility. These emissions are based on maximum component counts and throughput rates. Appendix C contains a set of detailed spreadsheets that provide the fugitive hydrocarbon and hydrogen sulfide emission calculations.

While emissions at the existing facilities are reflected in the ambient air quality monitoring data collected at the sites (i.e., current facility impacts are reflected in the ambient air quality baseline), a review of existing emissions and the emissions assumed in the 84-EIR-7 analysis is important. Existing Onshore Entire Source Emissions (ESE) associated with HS&P operation are presented in Table 5.16. Emissions in this table differ from those presented in 84-EIR-7 as follows:

Table 5.12 Unocal HS&P Facility Construction Impacts

Pollutant	Averaging Time	Maximum Impact ($\mu g/m^3$)	Maximum Background ($\mu g/m^3$)	Total Impact ($\mu g/m^3$)	Applicable Standard ($\mu g/m^3$)
NO_2	1-hour	536	21	557	470
SO_2	1-hour	463	105	568	655
	3-hour	263	37	240	1,300
	24-hour	34	18	52	131
CO	1-hour	2,820	9,142	11,962	23,000
	8-hour	352	2,972	3,324	10,000
PM_{10}	24-hour	71	77	148	50

Table 5.13 UNOCAL Santa Maria Pump Station Construction Impacts

Pollutant	Averaging Time	Maximum Impact ($\mu g/m^3$)	Maximum Background ($\mu g/m^3$)	Total Impact ($\mu g/m^3$)	Applicable Standard ($\mu g/m^3$)
NO_2	1-hour	343	38	381	470
SO_2	1-hour	175	105	280	655
	3-hour	70	37	107	1,300
	24-hour	13	18	31	131
CO	1-hour	861	9,142	10,003	23,000
	8-hour	152	2,972	3,124	10,000
PM_{10}	24-hour	243	77	320	50

Table 5.14 UNOCAL Jim Hopkins Fee Construction Impacts

Pollutant	Averaging Time	Maximum Impact ($\mu g/m^3$)	Maximum Background ($\mu g/m^3$)	Total Impact ($\mu g/m^3$)	Applicable Standard ($\mu g/m^3$)
NO_2	1-hour	199	38	237	470
SO_2	1-hour	51	105	156	655
	3-hour	17	37	54	1,300
	24-hour	3	18	21	131
CO	1-hour	233	9,142	9,375	23,000
	8-hour	29	2,972	3,001	10,000
PM_{10}	24-hour	8	77	85	50

Table 5.15 Operational Emissions From New Equipment Associated with the Proposed UNOCAL Facilities

Equipment	ROC*	H_2S*	NO_x	SO_2	CO
A. Hourly Emissions (lbs/hr)					
HS&P Fugitive Emissions	9.02	0.01	0.00	0.00	0.00
SMPS Boiler Emissions	0.05	0.00	0.90	0.02	0.56
JHF Fugitive Emissions	1.79	0.00	0.00	0.00	0.00
B. Total Emissions (tons/yr)					
HS&P Fugitive Emissions	39.50	0.04	0.00	0.00	0.00
SMPS Boiler Emissions	0.22	0.00	3.94	0.09	2.45
JHF Fugitive Emissions	7.83	0.01	0.00	0.00	0.00

* ROC and H2S emissions assume a fugitive hydrocarbon I&M program is in place at all facilities. This was assumed for the project since it is a SBCAPCD rule.

Note: Does not include existing equipment at the sites.

Table 5.16 UNOCAL Point Pedernales Quarterly and Annual Onshore Entire Source Emissions (ESE) for the Production Phase for Existing Facilities [a]

SOURCE	ROC		NO_x		SO2		CO		PM_{10}	
	TPQ	TPY	TPQ	TPY	TPQ	TPY	TPQ	TPY	TPQ	TPY
Pipeline: Surf to HS&P										
Fugitive Components[b]	0.21	0.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Subtotals:	0.21	0.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HS&P										
NG Heater Treaters (3x)	0.09	0.35	1.40	5.59	0.65	2.61	0.97	3.88	0.25	1.00
NG Reclaimer Heater	0.01	0.03	0.15	0.60	0.01	0.01	0.03	0.12	0.01	0.03
NG Reboiler	0.01	0.01	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01
Flare Pilot	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01
Upset Flare	0.01	0.01	0.01	0.03	0.08	0.32	0.01	0.01	0.01	0.01
Pigging	0.02	0.09	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Fugitive Components[b]	9.37	37.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Subtotal:	9.52	37.98	1.59	6.30	0.77	2.97	1.04	4.04	0.30	1.07
Pipeline: HS&P to OPS										
Fugitive Components[b]	0.04	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTALS:	**9.77**	**38.97**	**1.59**	**6.30**	**0.77**	**2.97**	**1.04**	**4.04**	**0.30**	**1.07**

Source: Table 13 of Attachment 2 to Authority to Construct Permit Number 8827 dated August 26, 1992.

(a) This table presents production phase Quarterly and Annual Onshore Entire Source Emissions (ESE) for project sources within the three-mile limit.

(b) Based upon revised component counts provided by UNOCAL.

(c) 0.00 indicates no emissions, 0.01 indicates emissions =< 0.01.

(d) Firewater pumps and emergency generator do not contribute to the NEI.

Pollutant	84-EIR-7 Emissions (tons/year)	Actual Emissions (tons/year)
ROC	79.0	38.97
NO_x	18.8	6.30
SO_2	0.14	2.97
CO	3.31	4.04
PM	0.49	1.07

Annual emissions of SO_2, CO and PM are currently greater for the existing HS&P facility than assumed in 84-EIR-7, while annual emissions of NO_x and ROC from the existing facility are lower than those presented in 84-EIR-7. Emission increases can mainly be attributed to the heater treaters, and to a limited extent, upset flaring. The proposed modification project is not expected to result in increases in these emissions (SO_2, CO and PM) since the heater treaters would not be affected by the proposed project. In addition, the proposed HS&P modifications would allow for the reinjection of onshore and associated gas (from Platform Irene oil) in the event of facility upset, therefore, no additional upset flaring emissions would be expected. Produced gas would be flared at Platform Irene in the event of a process upset at the HS&P, which is the current practice when there is an upset at the Battles Gas Plant. Since the associated gas would be reinjected instead of flared as it currently is, the proposed project could potentially reduce flaring at the HS&P through the addition of the proposed reinjection capability.

Fugitive emissions of ROC for the HS&P Gas Plant are also likely to exceed the County's thresholds with 9.02 lb/hr compared with the threshold value of 2.5 lb/hr. Annual emissions for ROC are estimated to be 39.5 tons/yr at HS&P, 0.22 tons/year at SMPS, and 7.83 tons/yr and JHF for the proposed modification project. Thresholds of 10 lb/hr and 25 tons/yr are in SBCAPCD Rule 205c to define offset requirements. While the proposed modifications would not incrementally exceed this threshold, total facility ROC emissions (9.77 lb/hr at the existing facility plus 9.02 lb/hr for the proposed project) would exceed the offset requirement, thus requiring ROC offsets for the proposed modification project. Operational ROC emissions at JHF are quite low, but would contribute to overall project emission increases and potential impacts.

Increased NO_x and ROC emissions would contribute to regional ozone standard violations. Therefore, facility operation air quality impacts would be significant.

Hydrogen Sulfide/Odor

Based on total fugitive hydrocarbon emissions of 19.4 lb/hr and an assumed average hydrocarbon stream of 500 ppm hydrogen sulfide, the total H_2S fugitive emissions from the proposed HS&P Gas Plant would total only 0.01 lbs/hour or 0.04 tons per year. Dispersion modeling results showed a maximum offsite 1-hour concentration of 4.0 $\mu g/m^3$, which is well

below the state standard of 42 $\mu g/m^3$; therefore, this is considered an insignificant impact. The value of 500 ppm was used for H_2S content since about 12 percent of the total fugitive components are in sour service. Since the maximum permitted H_2S content of the offshore gas is 4,000 ppm, a value of 500 ppm average H_2S for all the fugitive emissions was used.

The potential for odor impacts was also assessed using an area source model. Odors can result from fugitive emissions of sulfurous compounds during routing operations. Fugitive emissions of odorous compounds were modeled and compared to applicable odor thresholds. The odor threshold was taken to be .0003 ppm (4.25 $\mu g/m^3$) of H_2S. The areas that could potentially experience concentrations of odorous compounds above the respective odor threshold are shown in Figure 5-9, and are based upon the results of an area source dispersion model and actual meteorological conditions from the HS&P site. This figure indicates that potential worst-case odor impacts would be limited to the immediate vicinity of the HS&P Facility, and would not impact any offsite population areas. Therefore, the odor impact of the HS&P is considered to be insignificant.

AQAP Consistency

According to Section 15125 (b) of the CEQA Guidelines, proposed public and private projects are subject to an AQAP consistency determination. By definition, consistency with the AQAP means that the emissions associated with the proposed project are accounted for in the AQAP. In its emission forecast, the AQAP increased the petroleum industry's share of ROC from 6 to 11 percent. Even though this project represents a small portion of these ROC emissions, the project does provide another source of fugitive hydrocarbons. However, these emission increases would be offset by SBCAPCD approved emission reductions at a ratio specified by the County. The decommissioning of the Battles Gas Plant would provide an ROC emission offset credit of approximately 293 tons per year. Fugitive sources account for 77 tons per year and combustion sources account for the remaining 216 tons per year. Because 99.5 percent of the proposed project's ROC emission are from fugitive sources, which contribute 63 percent to non-alkane reactive organic compounds (NAROC), the offsets available from the Battles Gas Plant would be sufficient to offset the proposed project's ROC emissions. Given these emission offsets, the proposed project is considered to be consistent with the AQAP. If the Battles Gas Plant continued to operate, another potential source of offsets could be converting the City of Lompoc buses to natural gas.

5.1.3.2 Mitigation Measures

In order to reduce the NO_x emissions associated with the construction activities at the HS&P, a number of proven mitigation measures could be used. These include the use of 2° timing retard on engines, high pressure fuel injectors, and the use of reformulated diesel fuel. Based upon literature searches done for the SBCAPCD (1989), 2° timing retard con be expected to reduce NO_x emissions by approximately 15 percent over the values given in AP-42. The use of reformulated fuels can also serve to reduce NO_x emission by around 10 percent based upon the literature searches done for the SBCAPCD (1989). The use of high pressure fuel injectors

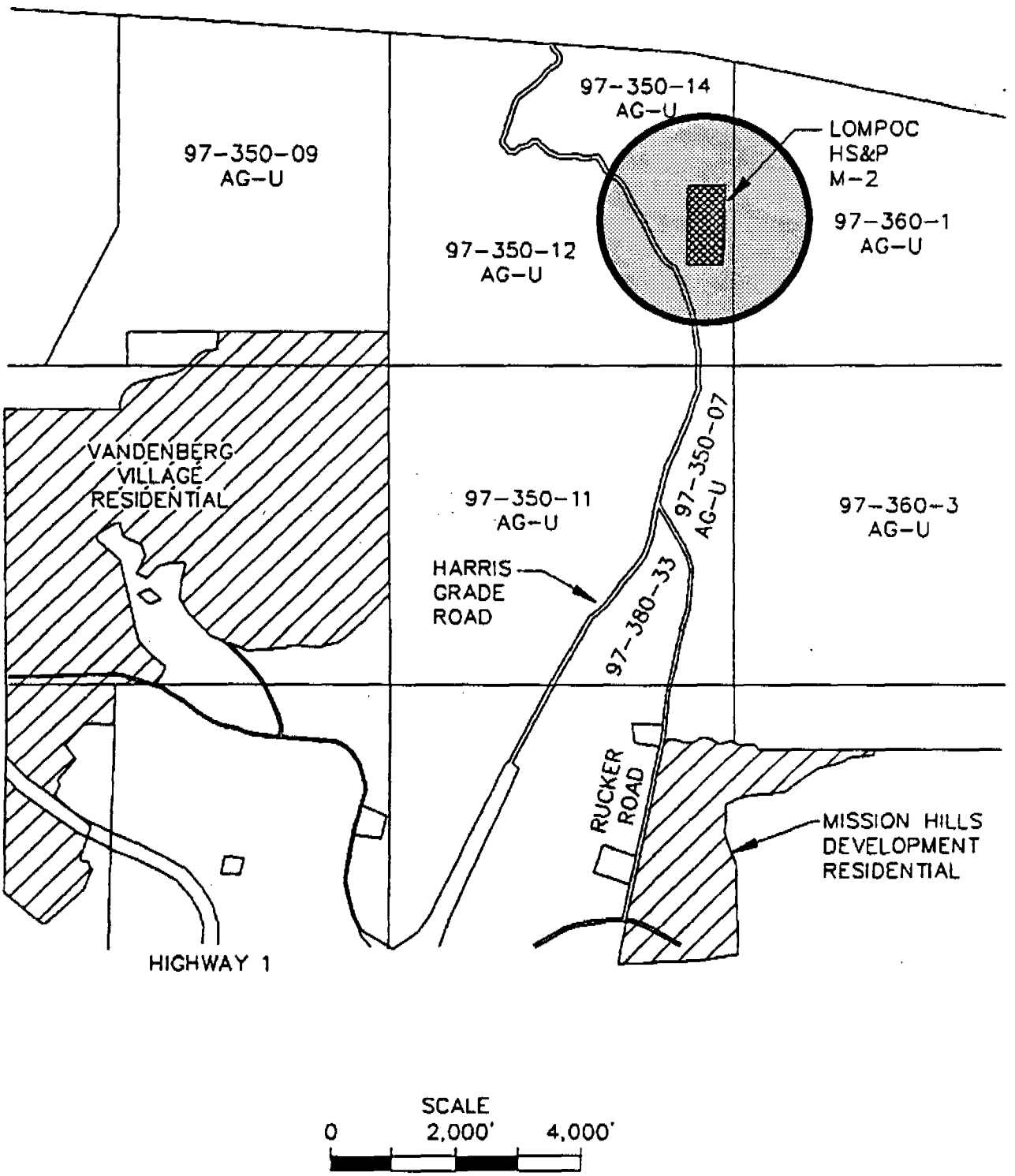


Figure 5-9 Potential Areas of Odor Impacts from HS&P Gas Plant

would reduce NO_x emission by as much as 15 percent over the values given in AP-42 (SBCAPCD, 1989). The combination of these measures could reasonably be expected to reduce the NO_x emissions by approximately 30 percent. A 30 percent reduction would reduce the maximum NO_x impact to 422 $\mu g/m^3$ for the HS&P construction. This would give a total impact of 443 $\mu g/m^3$ which is below the standard of 470 $\mu g/m^3$.

In order to mitigate the operational impacts associated with contribution to O_3 standard violations, the project would be required to offset the NO_x and ROC, emissions consistent with the requirements of the SBCAPCD. For the proposed boilers at the Santa Maria Pump Station the use of low NO_x burners could also reduce emissions to below the 25 ppmv @ 3 percent O_2 proposed by Unocal. The project would also be required by SBCAPCD to implement a fugitive inspection and maintenance (I&M) program to reduce fugitive ROC and H_2S emissions. These types of programs typically reduce emissions by approximately 80 percent. The use of a fugitive I&M program has already been taken into account in the emission calculations since this is a requirement of the SBCAPCD.

5.1.3.3 Residual Impacts

By implementing the above measures, the projected NO_x 1-hr standard violation at the HS&P during construction can be mitigated to a level of insignificance (Class II). The PM_{10} impacts are considered to be significant and can not be mitigated (Class I) since even with water controls the emissions still exceed the State 24-hr standard.

For operation, the significant impacts associated with NO_x and ROC emissions which could exasperate the existing 1-hr O_3 standard violations could be mitigated to insignificance (Class II) by the use of offsets consistent with the SBCAPCD rules.

Odor impacts at the HS&P are considered to be insignificant (Class III).

5.1.4 Alternative HS&P Gas Plant Sites

This section discusses the air quality impacts, mitigation measures and residual impacts for the alternative sites to the HS&P Gas Plant.

5.1.4.1 Impacts

This section addresses potential air quality impacts associated with the two alternatives to the proposed project that were discussed in Section 3.

Orcutt Hill Site

Construction of a 6 MMscfd gas plant at the Orcutt Hill site would be expected to have similar emissions as that for the proposed HS&P Gas Plant. These are summarized in Table 5.17.

Table 5.17 Alternative Site at Orcutt Hills Air Emission/Impact Data

Construction Impacts					
Pollutant	Averaging Time	Maximum Impact ($\mu g/m^3$)	Maximum Background ($\mu g/m^3$)	Total Impact ($\mu g/m^3$)	Applicable Standard ($\mu g/m^3$)
NO_2	1-hour	514	38	552	470
SO_2	1-hour	463	105	568	655
	3-hour	263	37	300	1,300
	24-hour	34	18	52	131
CO	1-hour	2,820	9,142	11,962	23,000
	8-hour	352	2,972	3,324	10,000
PM_{10}	24-hour	71	77	148	50

Construction Emissions						
Emissions	ROC	NOx	SO_2	CO	PM	PM10
Peak Hour (lbs/hr)	2.52	26.11	3.36	20.51	5.81	5.58
Total (tons)	0.38	3.68	0.38	2.41	6.56	6.30

PM and PM_{10} numbers assume a 50 % reduction for watering. This was a mitigation measure proposed by Unocal in their application.
SO2 emisions assume a sulfur content in the fuel of 0.25 %.

Operational Emissions					
Emissions	ROC	H_2S	NOx	SO_2	CO
Peak Hour (lbs/hr)	9.02	0.01	0.0	0.0	0.0
Total (tons)	39.5	0.04	0.0	0.0	0.0

ROC and H_2S emissions assume the use of a SBCAPCD approved fugitive I&M program.

Based upon area source dispersion modeling the projected ambient air quality impacts associated with construction were developed, and are shown in Table 5.17. Construction of this gas plant at the Orcutt Hill site would be expected to result in exceedence of the NO_2 1-hour as well as the PM_{10} 24-hour standards. These are therefore considered to be significant impacts.

The operational emissions for the Orcutt Hill site would be the same as for the proposed HS&P Gas Plant. These emissions are listed in Table 5.17. Fugitive emissions for the Orcutt Hill site are projected to exceed the County's thresholds with 9.02 lb/hr compared with the threshold of 2.5 lb/hr. Annual emissions for the ROC are estimated to be 39.5 tons/yr. Thresholds of 10 lb/hr and 25 tons/yr are in SBCAPCD Rule 205c to define offset requirements. While use of this alternative site would not incrementally exceed this threshold, the total ROC emissions associated with the Point Pedernales field development would. Therefore, these ROC emissions would need to be offset. These ROC emission would contribute to regional ozone standard violations. Therefore, the ROC emissions associated with the alternative site at Orcutt Hill would be considered significant.

Battles Gas Plant

The no project alternative (i.e., continued operation of the existing gas processing facility at Battles) would result in extensive construction emissions due to the need to relocate a majority of the process equipment in order to meet the P-17 audit requirements. Table 5.18 provides an estimate of the construction emissions associated with the modifications of the Battles Gas Plant. These emissions would occur over a 16 week period. Based upon area source dispersion modeling the projected ambient air quality impacts associated with construction were developed, and are shown in Table 5.18. Construction of this gas plant at the Orcutt Hill site would be expected to result in exceedence of the NO_2 1-hour as well as the PM_{10} 24-hour standards. These are therefore considered to be significant impacts.

Table 5.18 lists the operational emissions associated with the existing Battles Gas Plant. There would be no new operational emissions associated with the Battles Gas Plant over what occurs today. This facility is covered by an existing Permit to Operate issued by the SBCAPCD. Therefore, no additional impacts associated with the operation of this facility would occur.

5.1.4.2 Mitigation Measures

In order to reduce the NO_x emissions associated with the construction activities at the alternative Orcutt Hill and Battles Gas Plant sites, a number of proven mitigation measures could be used. These include the use of 2° timing retard on engines, high pressure fuel injectors, and the use of reformulated diesel fuel. Based upon literature searches done for the SBCAPCD (1989), 2° timing retard can be expected to reduce NO_x emissions by approximately 15 percent over the values given in AP-42. The use of reformulated fuels can also serve to reduce NO_x emission by around 10 percent based upon the literature searches done for the SBCAPCD (1989). The use of high pressure fuel injectors would reduce NO_x emission by as much as 15 percent over the values given in AP-42 (SBCAPCD, 1989). The combination of these measures could reasonably

Table 5.18 Alternative Site at Battles Air Emission/Impact Data

Construction Impacts					
Pollutant	Averaging Time	Maximum Impact ($\mu g/m^3$)	Maximum Background ($\mu g/m^3$)	Total Impact ($\mu g/m^3$)	Applicable Standard ($\mu g/m^3$)
NO_2	1-hour	512	38	550	470
SO_2	1-hour	346	105	451	655
	3-hour	138	37	175	1,300
	24-hour	26	18	44	131
CO	1-hour	1,422	9,142	10,564	23,000
	8-hour	251	2,972	3,223	10,000
PM_{10}	24-hour	158	77	235	50

Construction Emissions						
Emissions	ROC	NOx	SO_2	CO	PM	PM10
Peak Hour (lbs/hr)	1.92	18.56	1.80	7.38	5.00	4.80
Total (tons)	0.35	3.35	0.33	2.27	6.52	6.26

PM and PM_{10} numbers assume a 50 % reduction for watering. This was a mitigation measure proposed by Unocal in their application.
SO2 emisions assume a sulfur content in the fuel of 0.25 %.

Operational Emissions					
Emissions	ROC	H_2S	NOx	SO_2	CO
Peak Hour (lbs/hr)	66.9	N/A	130.8	17.8	15.9
Total (tons)	293	N/A	573	78	70

ROC and H_2S emissions assume the use of a SBCAPCD approved fugitive I&M program.
Source: SBCAPCD Permit to Operate (PTO) number 8581 for the Battles Gas Plant. The numbers presented are projected emissions only and were provided in the PTO for informational purposes only. The ROC emissions assume a Fugitive I&M program at the facility.

be expected to reduce the NO_x emissions by approximately 30 percent. A 30 percent reduction would reduce the maximum NO_x impact to 406 $\mu g/m^3$ and 404 $\mu g/m^3$ for the Orcutt Hill and Battles sites construction respectively. This would give a total impact of 444 $\mu g/m^3$ for the Orcutt Hill site and 442 $\mu g/m^3$ for the Battles site, both which are below the standard of 470 $\mu g/m^3$.

For the Battles site, all of these construction emissions are due to the need to relocate equipment at the plant as a result of the P-17 requirements. If the spacing requirements were modified or waved, there would be no substantial construction emissions associated with the modifications at Battles.

In order to mitigate the operational impacts associated with contribution to O_3 standard violations, the alternative gas plant at the Orcutt Hill site would be required to offset the ROC emissions consistent with the requirements of the SBCAPCD. The project would also be required by SBCAPCD to implement a fugitive inspection and maintenance (I&M) program to reduce fugitive ROC and H_2S emissions. These types of programs typically reduce emissions by approximately 80 percent. The use of a fugitive I&M program has already been taken into account in the emission calculations since this is a requirement of the SBCAPCD. Offsets could be provided by the decommissioning and abandonment of the Battles Gas Plant.

No operational mitigation measures would be needed for the Battles Gas Plant because this is an existing facility with a permit to operate.

5.1.4.3 Residual Impacts

By implementing the above measures, the projected NO_x 1-hr standard violation at the alternative Orcutt Hill and Battles sites, which occur during construction, can be mitigated to a level of insignificance (Class II). The PM_{10} impacts at both alternative sites are considered to be significant and unmitigable (Class I) since even with water controls the emissions still exceed the State 24-hr standard.

For operation at the Orcutt Hill site, the significant impacts associated with the ROC emissions, which could exacerbate the existing 1-hr O_3 standard violations, could be mitigated to insignificant (Class II) by the use of offsets consistent with the SBCAPCD rules, and the implementation of a fugitive I&M program.

5.1.5 Expanded HS&P Gas Plant

This section discusses the air quality impacts, mitigation measures and residual impacts for an expanded HS&P Gas Plant that could be built in the future to serve other north county gas producers. This section presents the impacts associated with the installation and operation of a second 6.0 MMscfd gas plant at the existing HS&P site.

5.1.5.1 Impacts

The estimated emissions associated with construction of the expanded gas plant are summarized in Table 5.19. The figures include emissions from construction equipment, and fugitive dust. Emissions have been provided for both the peak hour and the construction total. Appendix C contains the detailed emission calculation spreadsheets.

A review of these emission numbers shows that an expanded gas plant does have the potential to exceed the County's Significance Thresholds, as emissions of PM_{10} are likely to exceed the 2.5 tons per three month period in both quarters of the construction period. Appendix C shows that emissions are estimated as 7,175 pounds (3.6 tons) for the first quarter, and 5,424 pounds (2.7 tons) for the second quarter.

Quarterly emissions of NO_x are high (4,650 lb/2.3 tons/qtr) but they do not exceed the County's quarterly thresholds.

The estimated project construction emissions were modeled to determine whether they would contribute to a violation of the ambient air quality standards. The modeling was performed using the ISC2 model and PSD meteorological data from the HS&P facility. Background concentrations were obtained from the SBCAPCD and the ozone limiting method was used to estimate NO_2 concentrations. The ozone limiting method was based on the design day peak simultaneous O_3 and NO_2 concentrations observed at the HS&P (94 ppb O_3/11 ppb NO_2 on April 3, 1990 @ 1700). Further details of the modeling are included in the Technical Documentation Volume I.

Table 5.19 also presents the results of the construction modeling for the expanded HS&P Gas Plant. The results of the modeling show that violations of the 1-hour NO_2 standard (470 $\mu g/m^3$) are possible. Violations of the 24-hour PM_{10} standard (50 $\mu g/m^3$) are also likely to be exacerbated by the project. Potential violations of the NO_2 standard, as well as exacerbation of the PM_{10} standard violations, would exceed County threshold criteria and result in significant impacts.

Operation of the proposed facilities would result in fugitive hydrocarbon and hydrogen sulfide emissions from process equipment. Table 5.19 provides an estimate of the operational fugitive emissions resulting from new equipment associated with the expanded gas plant..

As can be seen from Table 5.19, the majority of the operational emissions are ROC from the expanded facility. These emissions are based on maximum component counts and throughput rates. Appendix C contains a set of detailed spreadsheets that provide the fugitive hydrocarbon and hydrogen sulfide emission calculations.

Fugitive emissions of ROC for the expanded facility are also likely to exceed the County's thresholds with 9.02 lb/hr compared with the threshold value of 2.5 lb/hr. Annual emissions for ROC are estimated to be 39.5 tons/yr at the expanded gas plant. A threshold of 10 lb/hr, 25 tons/yr, is used in SBCAPCD Rule 205c to define offset requirements. While the expanded facility would not incrementally exceed this threshold, total facility ROC emissions from all the

Table 5.19 Expanded HS&P Facility Air Emission/Impact Data

Construction Impacts					
Pollutant	Averaging Time	Maximum Impact ($\mu g/m^3$)	Maximum Background ($\mu g/m^3$)	Total Impact ($\mu g/m^3$)	Applicable Standard ($\mu g/m^3$)
NO_2	1-hour	536	83	557	470
SO_2	1-hour	463	105	568	655
	3-hour	263	37	240	1,300
	24-hour	34	18	52	131
CO	1-hour	2,820	9,142	11,962	23,000
	8-hour	352	2,972	3,324	10,000
PM_{10}	24-hour	71	77	148	50

Construction Emissions						
Emissions	ROC	NOx	SO_2	CO	PM	PM10
Peak Hour (lbs/hr)	2.52	26.11	3.36	20.51	5.81	5.58
Total (tons)	0.38	3.68	0.38	2.41	6.56	6.30

PM and PM_{10} numbers assume a 50 % reduction for watering. This was a mitigation measure proposed by Unocal in their application.
SO2 emisions assume a sulfur content in the fuel of 0.25 %.

Operational Emissions					
Emissions	ROC	H_2S	NOx	SO_2	CO
Peak Hour (lbs/hr)	9.02	0.01	0.0	0.0	0.0
Total (tons)	39.5	0.04	0.0	0.0	0.0

facilities at the HS&P site would exceed the offset requirement, thus requiring ROC offsets for the expanded gas plant facility.

Operational emissions would not result in any standard violations. However, increased ROC emissions would contribute to regional ozone standard violations. Therefore, facility operation air quality impacts would be significant.

Based on total fugitive hydrocarbon emissions of 38.7 lb/hr for the proposed and expanded HS&P, and an assumed average hydrocarbon stream of 500 ppm hydrogen sulfide, the total fugitive emissions would total only 0.02 lbs/hour or 0.08 tons per year. Dispersion modeling using an area source model results showed a maximum 1-hour concentration of 7.9 $\mu g/m^3$, which is well below the state standard of 42 $\mu g/m^3$. Therefore, this would be an insignificant impact (Class III).

The potential for odor impacts was also assessed. Odors can result from fugitive emissions of sulfurous compounds during routing operations. Fugitive emissions of odorous compounds were modeled and compared to applicable odor thresholds. The areas that could potentially experience concentrations of odorous compounds above the respective odor thresholds are shown in Figure 5-10. This figure indicates that potential worst-case odor impacts would be limited to the immediate vicinity of the HS&P Facility, and would not impact any offsite population areas. Therefore this impact is considered insignificant.

5.1.5.2 Mitigation Measures

In order to reduce the NO_x emissions associated with the construction activities at the expanded HS&P, a number of proven mitigation measures could be used. These include the use of 2° timing retard on engines, high pressure fuel injectors, and the use of reformulated diesel fuel. Based upon literature searches done for the SBCAPCD (1989), 2° timing retard can be expected to reduce NO_x emissions by approximately 15 percent over the values given in AP-42. The use of reformulated fuels can also serve to reduce NO_x emission by around 10 percent based upon the literature searches done for the SBCAPCD (1989). The use of high pressure fuel injectors would reduce NO_x emission by as much as 15 percent over the values given in AP-42 (SBCAPCD, 1989). The combination of these measures could reasonably be expected to reduce the NO_x emissions by approximately 30 percent. A 30 percent reduction would reduce the maximum NO_x impact to 422 $\mu g/m^3$ for the HS&P construction. This would give a total impact of 443 $\mu g/m^3$ which is below the standard of 470 $\mu g/m^3$.

In order to mitigate the operational impacts associated with contribution to O_3 standard violations, the project would be required to offset the ROC emissions consistent with the requirements of the SBCAPCD. The project would also be required by SBCAPCD to implement a fugitive I&M program to reduce fugitive ROC and H_2S emissions. These types of programs typically reduce emissions by approximately 75 percent. The use of a fugitive I&M program has already been taken into account in the emission calculations since this is a requirement of the SBCAPCD.

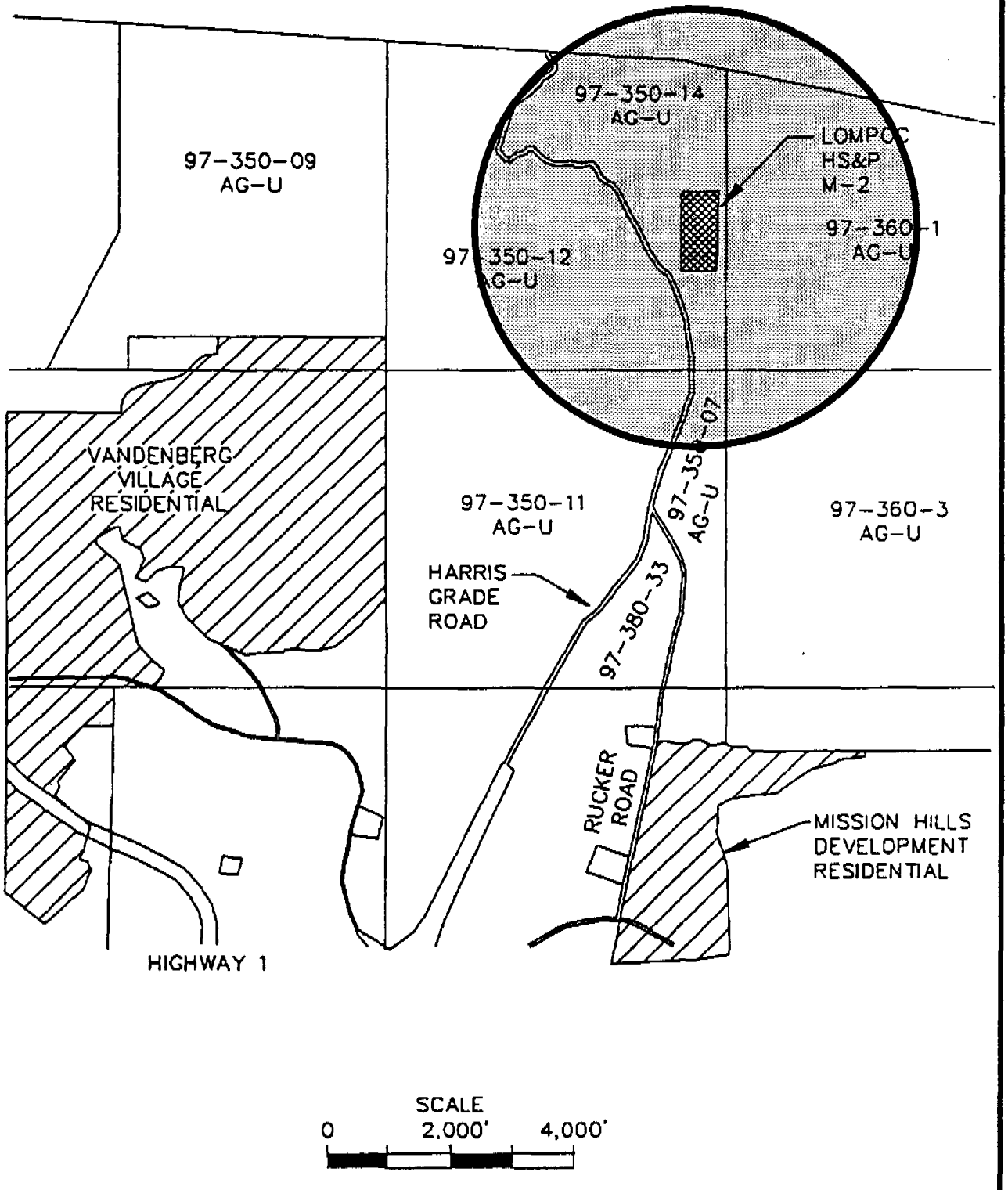


Figure 5-10 Potential Areas of Odor Impacts from Expanded HS&P Gas Plant

5.1.5.3 Residual Impacts

By implementing the above measures, the projected NO_x 1-hr standard violation at the expanded HS&P during construction can be mitigated to a level of insignificance (Class II). The PM_{10} impacts are considered to be significant and unmitigable (Class I) since even with water controls the emissions still exceed the State 24-hr standard.

For operation, the significant impacts associated with ROC emissions which could exacerbate the existing 1-hr O_3 standard violations could be mitigated to insignificance (Class II) by the use of offsets consistent with the SBCAPCD rules. Offsets would need to be located at the time an application was filed for this facility. If offsets could not be found, then the ROC emissions would be considered significant and unmitigable (Class I).

Odor impacts at the HS&P are considered to be insignificant (Class III).

5.1.6 Cumulative Impacts

The cumulative impact discussion has been broken down into two parts. The first covers cumulative impacts associated with the proposed and approved projects list contained in Chapter 4 (Table 4.1). The second provides a qualitative discussion of the impacts associated with a number of options other north county gas producers could pursue if the Battles Gas Plant is shutdown.

5.1.6.1 Cumulative Project Impacts

None of the projects listed as part of the cumulative analysis would be built during the same time as the Unocal Modification Project. Therefore, there is no potential for cumulative impacts to occur during construction, over the existing baseline operations in the north county area.

The majority of the projects listed in the cumulative chapter would occur in the Santa Maria and Lompoc areas. The non-oil projects would result in air emissions due to associated traffic. While the addition of the Unocal HS&P Modification Project does not cause an exceedance of any state or federal standard, the area is in non-attainment for ozone, so any increase in ROC emissions could be considered significant from a cumulative sense. However, the emissions associated with the Unocal HS&P Modification Project represent less than 1 percent of the total permitted emissions within the north county area and ROC emission offsets would be required. Also, the decommissioning of the Battles Gas Plant would reduce local emissions in the Santa Maria area where some of the cumulative projects are located. Therefore, the cumulative impacts to air quality would be considered insignificant.

5.1.6.2 Gas Processing Options for Other Producers

Seven options have been developed to address potential future gas treating facilities associated with the likelihood of Unocal decommissioning the Battles Gas Plant. Potential air quality impacts associated with these scenarios are discussed below. In addition to these options two hypothetical scenarios were developed to address the decommissioning of the Battles Gas Plant. These scenarios are listed in Table 4.4. The impacts associated with each of these are discussed at the end of this section.

Battles Gas Plant with a Modified P-17

Under this scenario, the existing Battles Gas Plant would undergo minor modifications to comply with the list of recommendations presented in Table 4.5. There would be no major construction emissions associated with these modifications. The operational emissions would be the same as for the existing Battles Gas Plant, which is covered by a PTO from the SBCAPCD. Therefore, there would be no significant air impacts associated with this option. However, the gas compressors would need to be electrified in order to provide the proposed project with ROC and NO_x offsets. Electrification of these could provide 428 tons per year of NO_x and 173 tons per year of ROC (APCD PTO #8581).

Install H_2S Removal Equipment At Each Field Not Served By The Proposed HS&P Gas Plant

Limited gas processing facilities (i.e., H_2S removal) at each affected field would result in construction emissions and fugitive operational emissions. Air quality impacts associated with construction would likely range from adverse but insignificant to significant but mitigable depending on the type and location of equipment installed at each field. Operation of the H_2S treatment facilities in each field would be similar to the emissions associated with the proposed equipment at JHF. Fugitive ROC emissions would result from the operation of the H_2S treatment facilities which could contribute to the regional O_3 standard violations which could result in a significant adverse impact. If all the fields installed H_2S removal equipment the total emissions per year could be has high as 80 tons per year of ROC and 0.1 tons per year of SO_2. Given the fact that these would be spread out over as many as 15 fields, emission offsets would not be required by the APCD. Therefore, this option could result in significant and unmitigable air quality impacts (Class I) since the ROC emissions would contribute to the existing O_3 standard violations, and would not be mitigated via offsets. The existing fuel gas pipeline system would still need to be used to allow operators to share gas as needed to meet their fuel demands.

Reinject Gas At Each Field Not Served By The Proposed HS&P Gas Plant

Under this option, the north county producers would reinject the produced gas that is currently being sent to the Battles Gas Plant.. Assuming that the injection compressors were run by fuel

gas, the estimated emissions for these would be 12.4 tons/yr of NO_x, and 10.2 tons/yr of ROC. Table 5.20 provides a breakdown of the emissions by operator and field. This assumes that all gas not processed at the Battles Gas Plant is reinjected except for the fields still owned by Unocal, where they plan to use fuel balancing. The ROC and NO_x emissions which would result from the operation of the reinjection compressors could contribute to the regional O_3 standard violations, resulting in significant adverse air quality impacts. Operations are all below the SBCAPCD offset triggers. Therefore this air quality impacts associated with the ROC and NO_x emissions would be considered significant and unmitigable (Class I), since they would contribute to the regional O_3 standard violation and would not require offsets per SBCAPCD rules.

Flare Gas at Each Facility Not Served by the Proposed HS&P Processing Facility

Under this scenario the gas at all the fields would be flared, except for the Unocal fields where they plan to use gas balancing. The gas would have to be cleaned to below 796 ppm H_2S, as per SBCAPCD Rule 311 (see H_2S removal above). Emission of NO_x and ROC would be dependent on the flare types used and the volumes of gas (see Section 4.2.7). Table 5.21 provides the estimated flare emissions by operator and field for an air assisted flare. The NO_x and ROC emissions are estimated to be around 57 tons/yr and 55 tons/yr respectively. The ROC and NO_x emissions which would result from the operation of the flares could contribute to the regional O_3 standard violations and result in a significant adverse air quality impact. Here again, only City Oil Corporation would trigger the need for offsets based upon the SBCAPCD rules. The remainder of the sites are below the trigger limits for offsets. Therefore the air quality impacts associated with the ROC and NO_x emissions would be considered significant and unmitigable (Class I), since they would contribute to the regional O_3 standard violation and would not require offsets per SBCAPCD rules.

Electrical Generation at Each Field Not Served by the Proposed HS&P Processing Plant

Installation of natural gas burning engines and electrical generators would allow for the production of electricity at each affected site. The fuel would also have to be cleaned as per SBCAPCD Rule 311 before combustion. Table 5.22 provides an estimate of the emissions for electrical generation by operation and field. The Unocal fields are assumed to use fuel balancing. The NO_x and ROC emission are estimated to be approximately 381 tons/yr and 174 tons/yr respectively. These emission calculations assume that the engines are equipped with NSCR to control NO_x emissions. This scenario would also produce approximately 12 MW of electricity. The ROC and NO_x emissions which would result from the operation of the power generation units could contribute to the regional O_3 standard violations and result in a significant adverse air quality impact. A review of Table 5.22 shows that City Oil Corporation and Vintage would trigger the need for offsets based upon the SBCAPCD rules. The remainder of the sites are below the offset triggers. Therefore this air quality impacts associated with the ROC and

Table 5.20 Air Emissions for the Gas Reinjection Option for North County Producers

Owner	Field	1995 Engine Emissions (Tons/Year)					1996 Engine Emissions (Tons/Year)				
		NOx	CO	PM10	ROC	SO2	NOx	CO	PM10	ROC	SO2
City Oil Corp	Orcutt	6.25	7.90	0.26	5.15	0.04	6.25	7.90	0.26	5.15	0.04
Conway	Casmalia	0.19	0.24	0.01	0.15	0.00	0.19	0.24	0.01	0.15	0.00
Conway	Cat Canyon	0.02	0.02	0.00	0.01	0.01	0.02	0.02	0.00	0.01	0.01
Conway	Santa Maria	0.08	0.10	0.00	0.06	0.04	0.08	0.10	0.00	0.06	0.04
Conway	Santa Maria	0.31	0.40	0.01	0.26	0.01	0.31	0.40	0.01	0.26	0.01
Crimson	Santa Maria	0.02	0.02	0.00	0.02	0.01	0.02	0.02	0.00	0.02	0.01
Dominion Oil Co	Cat Canyon	0.37	0.47	0.02	0.30	0.00	0.37	0.47	0.02	0.30	0.00
D&S Services/SABA	Cat Canyon	4.02	5.08	0.17	3.31	1.86	3.82	4.83	0.16	3.14	1.77
Geo Production	Orcutt Hill	0.19	0.24	0.01	0.15	0.00	0.19	0.24	0.01	0.15	0.00
Geo Production	Orcutt Hill	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Petromineral Corp.	Santa Maria	0.02	0.03	0.00	0.02	0.00	0.02	0.03	0.00	0.02	0.00
Petromineral Corp.	Santa Maria	0.06	0.08	0.00	0.05	0.00	0.06	0.08	0.00	0.05	0.00
Petrominerals	Cat Canyon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Texaco	Orcutt	0.37	0.47	0.02	0.30	0.02	0.37	0.47	0.02	0.30	0.02
Vintage	Cat Canyon	2.31	2.92	0.10	1.90	1.07	2.31	2.92	0.10	1.90	1.07
Vintage	Santa Maria	2.19	2.77	0.09	1.80	1.01	2.19	2.77	0.09	1.80	1.01
TOTAL EMISSIONS (TONS/YEAR)		**16**	**21**	**1**	**13**	**4**	**16**	**20**	**1**	**13**	**4**

* *Compression for reinjection assumed to be to 2,000 psig, with a power demand of 0.26 hp/MCFD compressed and 9,000 btu/bhp-hr*
Emission factors assume the use of NSCR
See appendix C for more detailed Calculations

Table 5.20 Air Emissions for the Gas Reinjection Option for North County Producers

Owner	Field	1997 Engine Emissions (Tons/Year)					1998 Engine Emissions (Tons/Year)				
		NOx	CO	PM10	ROC	SO2	NOx	CO	PM10	ROC	SO2
City Oil Corp	Orcutt	6.25	7.90	0.26	5.15	0.04	6.25	7.90	0.26	5.15	0.04
Conway	Casmalia	0.19	0.24	0.01	0.15	0.00	0.19	0.24	0.01	0.15	0.00
Conway	Cat Canyon	0.02	0.02	0.00	0.01	0.01	0.02	0.02	0.00	0.01	0.01
Conway	Santa Maria	0.08	0.10	0.00	0.06	0.04	0.08	0.10	0.00	0.06	0.04
Conway	Santa Maria	0.31	0.40	0.01	0.26	0.01	0.31	0.40	0.01	0.26	0.01
Crimson	Santa Maria	0.02	0.02	0.00	0.02	0.01	0.02	0.02	0.00	0.02	0.01
Dominion Oil Co	Cat Canyon	0.37	0.47	0.02	0.30	0.00	0.37	0.47	0.02	0.30	0.00
D&S Services/SABA	Cat Canyon	3.63	4.59	0.15	2.99	1.68	3.44	4.36	0.14	2.84	1.60
Geo Production	Orcutt Hill	0.19	0.24	0.01	0.15	0.00	0.19	0.24	0.01	0.15	0.00
Geo Production	Orcutt Hill	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Petromineral Corp.	Santa Maria	0.02	0.03	0.00	0.02	0.00	0.02	0.03	0.00	0.02	0.00
Petromineral Corp.	Santa Maria	0.06	0.08	0.00	0.05	0.00	0.06	0.08	0.00	0.05	0.00
Petrominerals	Cat Canyon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Texaco	Orcutt	0.37	0.47	0.02	0.30	0.02	0.37	0.47	0.02	0.30	0.02
Vintage	Cat Canyon	2.31	2.92	0.10	1.90	1.07	2.31	2.92	0.10	1.90	1.07
Vintage	Santa Maria	2.19	2.77	0.09	1.80	1.01	2.19	2.77	0.09	1.80	1.01
TOTAL EMISSIONS (TONS/YEAR)		**16**	**20**	**1**	**13**	**4**	**16**	**20**	**1**	**13**	**4**

* *Compression for reinjection assumed to be to 2,000 psig, with a power demand of 0.26 hp/MCFD compressed* and 9,000 btu/bhp-hr

Emission factors assume the use of NSCR

See appendix C for more detailed Calculations

Table 5.21 Air Emissions Associated with the Flaring Option for Other North County Producers

Owner	Field	1995 Flare Emissions (Tons/Year)					1996 Flare Emissions (Tons/Year)				
		NOx	CO	PM10	ROC	SO2	NOx	CO	PM10	ROC	SO2
City Oil Corp	Orcutt	28.94	515.75	6.64	27.59	0.66	28.94	515.75	6.64	27.59	0.66
Conway	Casmalia	0.87	15.47	0.20	0.83	0.02	0.87	15.47	0.20	0.83	0.02
Conway	Cat Canyon	0.07	1.29	0.02	0.07	0.12	0.07	1.29	0.02	0.07	0.12
Conway	Santa Maria	0.36	6.45	0.08	0.34	0.62	0.36	6.45	0.08	0.34	0.62
Conway	Santa Maria	1.45	25.79	0.33	1.38	0.21	1.45	25.79	0.33	1.38	0.21
Crimson	Santa Maria	0.09	1.55	0.02	0.08	0.15	0.09	1.55	0.02	0.08	0.15
Dominion Oil Co	Cat Canyon	1.71	30.43	0.39	1.63	0.04	1.71	30.43	0.39	1.63	0.04
D&S Serv./SABA	Cat Canyon	18.61	331.64	4.27	17.74	31.69	17.68	315.06	4.05	16.86	30.10
Geo Production	Orcutt Hill	0.87	15.47	0.20	0.83	0.02	0.87	15.47	0.20	0.83	0.02
Geo Production	Orcutt Hill	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Petromineral Corp.	Santa Maria	0.10	1.81	0.02	0.10	0.00	0.10	1.81	0.02	0.10	0.00
Petromineral Corp.	Santa Maria	0.27	4.90	0.06	0.26	0.01	0.27	4.90	0.06	0.26	0.01
Petrominerals	Cat Canyon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Texaco	Orcutt	1.71	30.43	0.39	1.63	0.39	1.71	30.43	0.39	1.63	0.39
Vintage	Cat Canyon	10.71	190.83	2.46	10.21	18.23	10.71	190.83	2.46	10.21	18.23
Vintage	Santa Maria	10.13	180.51	2.32	9.66	17.25	10.13	180.51	2.32	9.66	17.25
TOTAL EMISSIONS (TONS/YEAR)		**76**	**1352**	**17**	**72**	**69**	**75**	**1336**	**17**	**71**	**68**

Assumes air assisted open pipe flares. See Appendix C for the detailed emissions calculations

Table 5.21 Air Emissions Associated with the Flaring Option for Other North County Producers

Owner	Field	1997 Flare Emissions (Tons/Year)					1998 Flare Emissions (Tons/Year)				
		NOx	CO	PM10	ROC	SO2	NOx	CO	PM10	ROC	SO2
City Oil Corp	Orcutt	28.94	515.75	6.64	27.59	0.66	28.94	515.75	6.64	27.59	0.66
Conway	Casmalia	0.87	15.47	0.20	0.83	0.02	0.87	15.47	0.20	0.83	0.02
Conway	Cat Canyon	0.07	1.29	0.02	0.07	0.12	0.07	1.29	0.02	0.07	0.12
Conway	Santa Maria	0.36	6.45	0.08	0.34	0.62	0.36	6.45	0.08	0.34	0.62
Conway	Santa Maria	1.45	25.79	0.33	1.38	0.21	1.45	25.79	0.33	1.38	0.21
Crimson	Santa Maria	0.09	1.55	0.02	0.08	0.15	0.09	1.55	0.02	0.08	0.15
Dominion Oil Co	Cat Canyon	1.71	30.43	0.39	1.63	0.04	1.71	30.43	0.39	1.63	0.04
D&S Serv./SABA	Cat Canyon	16.80	299.31	3.85	16.01	28.60	15.96	284.34	3.66	15.21	27.17
Geo Production	Orcutt Hill	0.87	15.47	0.20	0.83	0.02	0.87	15.47	0.20	0.83	0.02
Geo Production	Orcutt Hill	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Petromineral Corp.	Santa Maria	0.10	1.81	0.02	0.10	0.00	0.10	1.81	0.02	0.10	0.00
Petromineral Corp.	Santa Maria	0.27	4.90	0.06	0.26	0.01	0.27	4.90	0.06	0.26	0.01
Petrominerals	Cat Canyon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Texaco	Orcutt	1.71	30.43	0.39	1.63	0.39	1.71	30.43	0.39	1.63	0.39
Vintage	Cat Canyon	10.71	190.83	2.46	10.21	18.23	10.71	190.83	2.46	10.21	18.23
Vintage	Santa Maria	10.13	180.51	2.32	9.66	17.25	10.13	180.51	2.32	9.66	17.25
TOTAL EMISSIONS (TONS/YEAR)		**74**	**1320**	**17**	**71**	**66**	**73**	**1305**	**17**	**70**	**65**

Assumes air assisted open pipe flares. See Appendix C for the detailed emissions calculations

Table 5.22 Air Emissions Associated with the Electrical Generation Option for Other North County Producers

Owner	Field	1995 Engine Emissions (Tons/Year)					1996 Engine Emissions (Tons/Year)				
		NOx	CO	PM10	ROC	SO2	NOx	CO	PM10	ROC	SO2
City Oil Corp	Orcutt	106.37	134.53	4.38	87.60	0.66	106.37	134.53	4.38	87.60	0.66
Conway	Casmalia	3.19	4.04	0.13	2.63	0.02	3.19	4.04	0.13	2.63	0.02
Conway	Cat Canyon	0.27	0.34	0.01	0.22	0.12	0.27	0.34	0.01	0.22	0.12
Conway	Santa Maria	1.33	1.68	0.05	1.10	0.62	1.33	1.68	0.05	1.10	0.62
Conway	Santa Maria	5.32	6.73	0.22	4.38	0.21	5.32	6.73	0.22	4.38	0.21
Crimson	Santa Maria	0.32	0.40	0.01	0.26	0.15	0.32	0.40	0.01	0.26	0.15
Dominion Oil Co	Cat Canyon	6.28	7.94	0.26	5.17	0.04	6.28	7.94	0.26	5.17	0.04
D&S Services/SABA	Cat Canyon	68.40	86.51	2.82	56.33	31.69	64.98	82.18	2.68	53.51	30.10
Geo Production	Orcutt Hill	3.19	4.04	0.13	2.63	0.02	3.19	4.04	0.13	2.63	0.02
Geo Production	Orcutt Hill	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Petromineral Corp.	Santa Maria	0.37	0.47	0.02	0.31	0.00	0.37	0.47	0.02	0.31	0.00
Petromineral Corp.	Santa Maria	1.01	1.28	0.04	0.83	0.01	1.01	1.28	0.04	0.83	0.01
Petrominerals	Cat Canyon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Texaco	Orcutt	6.28	7.94	0.26	5.17	0.39	6.28	7.94	0.26	5.17	0.39
Vintage	Cat Canyon	39.36	49.78	1.62	32.41	18.23	39.36	49.78	1.62	32.41	18.23
Vintage	Santa Maria	37.23	47.09	1.53	30.66	17.25	37.23	47.09	1.53	30.66	17.25
TOTAL EMISSIONS (TONS/YEAR)		**279**	**353**	**11**	**230**	**69**	**275**	**348**	**11**	**227**	**68**

For more detailed Emission calculations see Appendix C

Table 5.22 Air Emissions Associated with the Electrical Generation Option for Other North County Producers

Owner	Field	1997 Engine Emissions (Tons/Year)					1998 Engine Emissions (Tons/Year)				
		NOx	CO	PM10	ROC	SO2	NOx	CO	PM10	ROC	SO2
City Oil Corp	Orcutt	106.37	134.53	4.38	87.60	0.66	106.37	134.53	4.38	87.60	0.66
Conway	Casmalia	3.19	4.04	0.13	2.63	0.02	3.19	4.04	0.13	2.63	0.02
Conway	Cat Canyon	0.27	0.34	0.01	0.22	0.12	0.27	0.34	0.01	0.22	0.12
Conway	Santa Maria	1.33	1.68	0.05	1.10	0.62	1.33	1.68	0.05	1.10	0.62
Conway	Santa Maria	5.32	6.73	0.22	4.38	0.21	5.32	6.73	0.22	4.38	0.21
Crimson	Santa Maria	0.32	0.40	0.01	0.26	0.15	0.32	0.40	0.01	0.26	0.15
Dominion Oil Co	Cat Canyon	6.28	7.94	0.26	5.17	0.04	6.28	7.94	0.26	5.17	0.04
D&S Services/SABA	Cat Canyon	61.73	78.07	2.54	50.84	28.60	58.64	74.17	2.41	48.30	27.17
Geo Production	Orcutt Hill	3.19	4.04	0.13	2.63	0.02	3.19	4.04	0.13	2.63	0.02
Geo Production	Orcutt Hill	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Petromineral Corp.	Santa Maria	0.37	0.47	0.02	0.31	0.00	0.37	0.47	0.02	0.31	0.00
Petromineral Corp.	Santa Maria	1.01	1.28	0.04	0.83	0.01	1.01	1.28	0.04	0.83	0.01
Petrominerals	Cat Canyon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Texaco	Orcutt	6.28	7.94	0.26	5.17	0.39	6.28	7.94	0.26	5.17	0.39
Vintage	Cat Canyon	39.36	49.78	1.62	32.41	18.23	39.36	49.78	1.62	32.41	18.23
Vintage	Santa Maria	37.23	47.09	1.53	30.66	17.25	37.23	47.09	1.53	30.66	17.25
TOTAL EMISSIONS (TONS/YEAR)		**272**	**344**	**11**	**224**	**66**	**269**	**340**	**11**	**222**	**65**

For more detailed Emission calculations see Appendix C

NO_x emissions would be considered significant and unmitigable (Class I), since they would contribute to the regional O_3 standard violation and would not require offsets per SBCAPCD rules.

Shut-In Oil and Gas At Fields Not Served By The Proposed HS&P Gas Plant

If all of the production not served by the proposed HS&P Gas Plant were shut-in, there would be a reduction in air emissions within the north county. Most of this reduction would come from idling internal combustion engines that run rod pumps.

5.1.6.3 Hypothetical Gas Handling Scenarios

As discussed in Chapter 4, two hypothetical scenarios were developed to address the cumulative impacts associated with the potential decommissioning and abandonment of the Battles Gas Plant. The potential air quality impacts associated with each of these scenarios is discussed below.

Battles with a Modified P-17

Under this hypothetical scenario all the north county producers not slated to go to the proposed HS&P Gas Plant would continue to use the Battles Gas Plant with a modified set of safety upgrades, as discussed in Chapter 4.0. Under this scenario, the only new air quality impacts would be those associated with the proposed project. These would include a Class II impact associated with the NO_x emissions during construction, a Class I impact associated with the PM_{10} emissions during construction, and a Class II impact associated with the ROC and NO_x emissions during operations.

The continued operation of the Battles Gas Plant would not be expected to change significantly from what is occurring today; however, the volume of gas processed would be reduced to less than 6.0 MMscfd.

Flaring

Under this hypothetical scenario, all the north county producers except Unocal that are not slated to go to the proposed HS&P Gas Plant, would flare their gas production. For the Unocal fields not slated for processing at the proposed HS&P Gas Plant, gas balancing would be used in the fields. Under this scenario, new air quality impacts would be associated with the proposed project and flaring. For the proposed project, these would include a Class II impact associated with the NO_x emissions during construction, a Class I impact associated with the PM_{10} emissions during construction, and a Class II impact associated with the ROC and NO_x emissions during operations. For flaring there would be a Class I impact associated with the ROC and NO_x

emissions since the majority of the operators would not trigger the need for offsets per SBCAPCD rules.

This scenario would eliminate the emissions associated with the operation of the Battles Gas Plant.

5.1.7 Mitigation Requirements/Recommendations

All of the mitigation measures listed below are required to reduce significant impacts to the maximum extent feasible.

Construction

Since construction emissions are considered significant, the following measures shall be implemented to reduce the short-term construction emission impacts to insignificant.

[AQ-1] The following methods shall be employed to inhibit dust generation during pipeline and facility construction:

a. Reseed and water to revegetate graded areas.

b. Reduction of the area disturbed (i.e., width of the pipeline corridors) to the maximum extent feasible.

c. Spread soil binders.

d. Cover soil piles whenever winds exceed 15 miles per hour.

[AQ-2] Dust generated by the development activities shall be retained on site and kept to a minimum by following the dust control measures listed below.

a. During clearing, grading, earth moving, or excavation and transportation of cut or fill materials, water trucks or sprinkler systems are to be used in sufficient quantities to prevent dust from leaving the site and to create a crust after each day's activities cease.

b. After clearing, grading, earth moving, or excavation is completed, the entire section of disturbed soil shall be treated immediately by watering or revegetating or spreading soil binders to prevent wind pick up of the soil until the area is paved or otherwise developed or revegetated so that dust generation shall not occur.

c. During construction, water trucks or sprinkler systems shall be used to keep all areas of vehicle movement damp enough to prevent dust from leaving the site. At a minimum, this may include wetting down such areas in the later morning and after work is completed for the day and whenever wind exceeds 15 miles per hour.

[AQ-3] Any soil stockpiled for more than two days shall be covered, kept moist, or treated with soil binders to prevent dust generation.

[AQ-4] To guarantee activation of increased dust control measures, the contractor or applicant shall designate a person or persons in addition to the County's OEC and SBCAPCD inspectors to monitor the dust control program and to order increased watering as necessary, to prevent transport of dust off-site. Their duties shall include holiday and weekend periods when work may not be in progress. The name and telephone number of such persons shall be provided to the RMD and SBCAPCD prior to land use clearance for construction.

[AQ-5] Prior to land use clearance for construction, the applicant shall commit to implementing Best Available Control Technology (BACT) to reduce construction-related NO_x emissions and submit a plan to SBCAPCD indicating BACT for construction emissions.

Operation

Operational emissions are considered to be significant since ROC and NO_x emissions would occur in a non-attainment area for ozone, and H_2S emissions may contribute to regional H_2S standard violations. Therefore, the following mitigation measures shall be used to reduce the ROC, NO_x and H_2S emissions associated with the operation of the proposed project.

[AQ-6] Prior to Final Development Plan Approval, the Applicant shall submit a report to the SBCAPCD that details possible system design modifications that could be used to reduce ROC emissions. This report shall include, but not be limited to, an analysis of how the system component count can be reduced, and an investigation of various components that may result in lower ROC emissions.

[AQ-7] The Applicant shall implement an SBCAPCD-approved Fugitive I&M Program for the project consistent with the APCD Rule 331. The plan shall be approved by the SBCAPCD prior to operation of the modified HS&P.

[AQ-8] Offsets are currently required for HS&P emission increases of NO_x, NAROC, and ROC emissions per Permit to Operate (PTO) 6708, Condition 39. This existing requirement shall be extended to include SMPS and JHF.

5.1.8 Mitigation Monitoring Plan

Mitigation Measures	Administrative Action	Timing	Party Responsible For Verification	Monitoring/ Reporting Schedule	Party Responsible For Verification
AQ-1	Applicant to include measure in construction plans.	Prior to Land Use Clearance	RMD	Periodic Inspection	OEC and Grading Inspectors
AQ-2	Applicant to place measures on construction plans.	Prior to Land Use Clearance	RMD	Periodic Inspection	OEC, Grading, Building and SBCAPCD Inspectors
AQ-3	Applicant to include measure in construction plans.	Prior to Land Use Clearance	RMD	Periodic Inspection	OEC, Grading, Building and SBCAPCD Inspectors.
AQ-4	Applicant to provide name and number of dust monitor.	Prior to Land Use Clearance	RMD and SBCAPCD	Prior to pipeline installation.	
AQ-5	Applicant to provide BACT to SBCAPCD for review.	Prior to Land Use Clearance	SBCAPCD	Periodic Inspection	SBCAPCD
AQ-6	Applicant to provide Report on Alternate Designs	Prior to Land Use Clearance	SBCAPCD	NA	SBCAPCD
AQ-7	Implement an Fugitive I&M Program	Prior to Start-up	SBCAPCD	Periodic Inspection	SBCAPCD
AQ-8	Emission offsets for ROC emissions at HS&P and NO_x emissions at SMPS	Prior to Start-up	SBCAPCD	Periodic Inspection	SBCAPCD

5.2 System Safety

This section discusses potential system safety impacts associated with the proposed project. Information is presented below outlining significance criteria, potential hazard scenarios, the frequencies and consequences associated with these scenarios, and the significance of the hazard scenarios. The section also presents discussions on impacts associated with alternative sites to the proposed HS&P Gas Plant as well as the cumulative projects.

5.2.1 Existing Conditions

For this analysis, the existing conditions discussion focuses on the existing Unocal facilities affected by the proposed modification project (i.e., HS&P, SMPS, JHF and Battles Gas Plant), because the proposed facilities would be directly connected and on existing sites. The affected facilities comprise a substantial portion of the Point Pedernales Field development which lies in Federal Waters 3 to 8 miles west of Point Pedernales in the Santa Maria Basin. The development consists of one offshore oil and gas production platform, oil and gas pipelines, and oil and gas processing facilities.

Existing Baseline Hazards

The original EIR/EIS for the Point Pedernales Field Project evaluated a number of hazardous events for the oil and gas processing facilities. These included:

- Sour gas release from the pig receiver/launcher,
- Oil spills,
- Toxic gas discharges from the HS&P,
- LPG and NGL storage tank Boiling Liquid Expanding Vapor Explosions (BLEVE), and
- LPG and NGL tank truck spills.

As appropriate for each of these hazards, a range of consequences was evaluated which included:

- Jet Fires,
- Pool Fires,
- Fireball,
- Unconfined Vapor Cloud Explosions (UVCE), and

- Toxic Vapor Cloud Dispersion.

Table 5.23 gives the potential hazard distances calculated for some of the events which can be used to characterize existing conditions for the affected facilities. These values have been taken from the 1984 Unocal Point Pedernales Field EIR/EIS (84-EIR-7). While these events are themselves associated with a low probability, there is an even lower probability of realizing the maximum hazard distances given in Table 5.23 based on the conservative assumptions used in the analysis.

An additional hazards analysis was conducted by Unocal (Quest Consultants, 1991) which assessed hazards associated with continued operation of the Battles Gas Plant through July 1994. Results from this study have also been summarized in Table 5.23 for comparison purposes.

A review of the results from the 84-EIR-7 risk analysis and the Quest (1991) risk analysis reveals some substantial differences. Bercha International, Inc. prepared a critique of the two risk analyses for Santa Barbara County (Bercha, 1992) in an effort to reconcile differences in the results between the two studies. Based on this review, it was concluded that most of the differences were attributed to the use of design (84-EIR-7) versus operating (Quest, 1991) data, different operating assumptions, and different analytical techniques. Given the results and recommendations from the Bercha critique, results from both studies should be used to conservatively characterize baseline hazard conditions for the Battles Gas Plant. Because the Quest analysis did not cover the HS&P, results from the 84-EIR-7 analysis were updated based on current operating and design parameters, and current state-of-the-art modeling techniques. These revised modeling results were used to define baseline conditions at the HS&P.

5.2.2 Thresholds Of Significance

Impacts resulting from system safety hazards are characterized as to their magnitude and frequency. In this case, the local area is the land and population surrounding the Unocal HS&P facility, Santa Maria Pump Station, and Jim Hopkins Fee facility. In accordance with the format suggested by the CEQA guidelines for impact classifications, the System Safety hazards can be classified by the severity and impact frequency levels as indicated in Table 5.24. The severity classification describes the level of public risk for a fatality or injury. These classifications are taken from the County of Santa Barbara Environmental Thresholds and Guideline Manual (1990). Figure 5-11 is a matrix that describes the relationship between the frequency of a hazard occurring and the severity of that hazard's consequence. The combinations of accident frequency and severity in Figure 5-11 that are shaded have been defined by the County as significant with respect to public safety.

5.2.3 Proposed Project

This section provides a discussion of the impacts, mitigation measures and residual impacts associated with the proposed project.

Table 5.23 Potential Hazard Distances For The Existing Unocal Facilities

Scenario	Est. Release	Hazard	Hazard Distances (ft) Fatality Old[c]	Fatality New	Injury Old[c]	Injury New
Rupture of sour gas pipeline from Platform Irene to HS&P[a]	60 kg/s	Vapor Fire[d]	3,600	(1,066)	--	--
		Radiation	200	(174)	235	(217)
		Explosion	570	(125)	2,155	(751)
		Toxic Vapor	460	(345)	--	--
Leak in sour gas pipeline from Platform Irene to HS&P[a]	5.7 kg/s	Vapor Fire[d]	850	(400)	--	--
		Radiation	--	--	--	--
		Explosion	--	--	--	--
		Toxic Vapor	--	--	--	--
Gas releases from pig receiver at HS&P[a]	7830 kg	Vapor Fire[d]	5,000	(300)	--	--
		Radiation	--	--	--	--
		Explosion	345	(135)	1,295	(482)
Rupture of Butane Tank at Battles[a]	825 bbl	Vapor Fire[d]	--	2,790	--	--
		Radiation	--	240	330	--
		Explosion	--	720	2,755	--
BLEVE of Propane Tank at Battles[a]	585 bbl	Vapor Fire[d]	--	2,490	--	--
		Radiation	--	625	805	--
		Explosion	--	655	2,460	--
Rupture of 6-inch Butane line at Battles[b]	not available	Vapor Fire[d]	--	2,560	--	--
		Radiation	--	540	--	--
		Explosion	--	320	--	--
Rupture of 6-inch Propane line at Battles[b]	not available	Vapor Fire[d]	--	2,660	--	--
		Radiation	--	575	--	--
		Explosion	--	225	--	--
BLEVE of Butane Tank at Battles[b]	not available	Radiation	--	925	--	--

Sources:
- *a* Union Oil Project/Exxon Project Shamrock and Central Santa Maria Basin Area Study EIR/EIS, Santa Barbara County, March 1985. Values in parentheses represent modeling results that have been revised based on updated models and data on facility design and operation (revised 1992).
- *b* Application to Modify Condition P-17, Final Development Plan 85-DP-71, Point Pedernales Project, November, 1991 (the Quest Study).
- *c* The old values are all from the original Pt. Pedernales Field EIR/EIS.
- *d* Vapor fires based upon 1/2 LFL
- -- Not evaluated in documents.

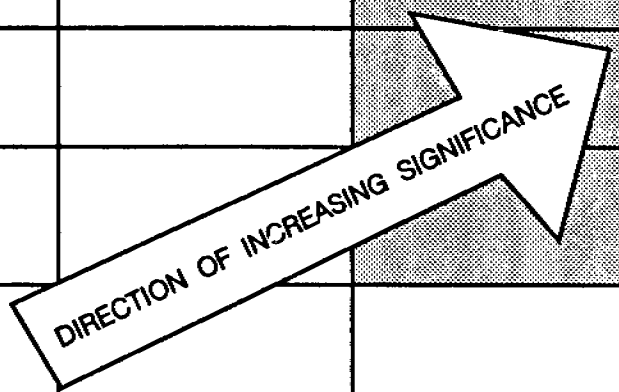
Table 5.24 Criticality And Frequency Classifications

(a) Criticality Classification

Classification	Description of Public Safety Hazard
Negligible	No significant risk to the public, with no minor injuries.
Minor	Small level of public risk, with at most a few minor injuries.
Major	Major level of public risk with up to 10 severe injuries.
Severe	Severe public risk with up to 100 severe injuries or up to 10 fatalities.
Disastrous	Disastrous public risk involving more than 100 severe injuries or more than 10 fatalities.

Type	Frequency	Description
Extraordinary	Less than once in one million years.	An event whose occurrence is extremely unlikely.
Rare	Between once in ten thousand years and once in one million years.	An event which almost certainly would not occur during the project lifetime.
Unlikely	Between once in a hundred and once in ten thousand years.	An even which is not expected to occur during the project lifetime.
Likely	Between once a year and once in one hundred years.	An event which probably would occur during the project lifetime.
Frequent	Greater than once a year.	An event which would occur more than once a year on average.

FREQUENCY OF OCCURRENCE	SEVERITY OF CONSEQUENCE				
	Negligible: No significant risk to the public, with no minor injuries; less than 10 barrels spilled.	Minor: Small level of public risk, with at most a few minor injuries; 10-238 barrels spilled.	Major: Major level of public risk with up to 10 severe injuries; 238 - 2380 barrels spilled.	Severe: Severe public risk with up to 100 severe injuries or up to 10 fatalities; 2380 to 357,142 barrels spilled.	Disastrous: Disastrous public risk involving more than 100 severe injuries or more than 10 fatalities; greater than 357,142 barrels spilled.
Frequent: Greater than once a year.					
Likely: Between once a year and once in one hundred years.					
Unlikely: Between once in a hundred and once in ten thousand years.					
Rare: Between once in ten thousand years and once in a million years.					
Extraordinary: Less than once in one million years.					



County defined as significant impacts.

Source: County of Santa Barbara Department of Resource Management, Environmental Thresholds & Guidelines Manual, Amended 1990; Shell Hercules Platform EIR, 1983.

Figure 5-11 Severity and Frequency Matrix of Significance

5.2.3.1 Impacts

Three steps were undertaken in assessing the safety impacts associated with the proposed modification project. The first step was to develop a range of potential hazards associated with the project. The second was to estimate the likelihood of the hazards occurring, and the third was to estimate the consequences of the hazards should they occur. These three steps represent the results of a hazards analysis. A quantitative risk assessment (QRA) was not conducted as part of this study. The approach of using a hazards analysis was sufficient to allow the potential impacts of the proposed project to be classified as to their significance. The following sections summarize potential impacts associated with the proposed project.

Hazard Scenarios

Several hazard scenarios were developed for the proposed modification project. These scenarios were developed based on a review of the project's components and from input received during the scoping process. The scenarios were designed to encompass a wide variety of process hazards that are typical of oil and gas processing facilities. Each of the scenarios is summarized below with specific detail presented in Appendix D. All of these scenarios would also apply to the alternative sites as well as the consolidation scenarios that include a central gas plant.

1. Pipeline Rupture (HS&P Hazard #1) - This scenario involves a sour gas release resulting from a rupture of the 8" pipeline from Platform Irene to the HS&P (Stream 1). Sub-scenarios include average (470 psig) and maximum operating pressure (600 psig), as well as above and below ground pipeline ruptures. Multiple release angles and crater diameters were simulated for the below ground releases. This scenario covers the entire length of the onshore pipeline and could result from an earthquake, corrosion, or third party damage. A maximum hydrogen sulfide concentration of 4000 ppm was assumed based on system design and permit limits.

2. Pipeline Leak (HS&P Hazard #2) - This scenario involves a sour gas release resulting from a leak (instead of a rupture) in the same pipeline as described in Scenario 1.(i.e., the 8" pipeline from Platform Irene to the HS&P). Rupture and leak scenarios were considered separately to account for different accident frequencies associated with leaks and ruptures. Again, sub-scenarios include average (470 psig) and maximum operating pressure (600 psig), as well as above and below ground pipeline ruptures. Multiple release angles and crater diameters were simulated for the below ground releases. This scenario covers the entire length of the onshore pipeline and could result from an earthquake, corrosion, or third party damage. A maximum hydrogen sulfide concentration of 4000 ppm was assumed based on system design and permit limits.

3. Propane Receiver BLEVE (HS&P Hazard #3) - This scenario assumes that a fire at the HS&P impinges the propane receiver resulting in vessel failure and a BLEVE. For this scenario to occur, four events need to occur simultaneously; a significant external fire, failure of the pressure relief valve, vessel blockage, and no external fire fighting efforts. This is a high consequence/low probability event.

4. Refrigeration System Line Leak (HS&P Hazard #4) - This scenario assumes a leak in a high pressure/temperature section of the HS&P propane refrigeration system resulting from corrosion, third party damage, or a seismic event. Maximum and time-averaged release rates were modeled.

5. Lompoc Compressor Discharge Line Rupture (HS&P Hazard #5) - This scenario assumes a rupture in a high pressure/temperature Lompoc compressor discharge line (Stream 3) resulting from corrosion, third party damage, or a seismic event.

6. NGL Surge Vessel BLEVE (HS&P Hazard #6) - This scenario assumes that a fire at the HS&P impinges the NGL Surge Vessel resulting in vessel failure and a BLEVE. For this scenario to occur, four events need to occur simultaneously including a significant external fire, failure of the pressure relief valve, vessel blockage, and no external fire fighting efforts. This is a high consequence/low probability event.

7. Low Temperature/Pressure NGL Line Rupture HS&P (Hazard #7) - This scenario assumes a rupture in a low pressure/temperature section of the HS&P NGL piping resulting from corrosion, third party damage, or a seismic event. The resulting spill would result in an evaporating NGL pool.

8. High Temperature/Pressure NGL Line Rupture (HS&P Hazard #8) - This scenario assumes a rupture in a high pressure/temperature section of the HS&P NGL piping (Stream 7) resulting from corrosion, third party damage, or a seismic event. The resulting spill would result in a two-phase NGL aerosol jet.

9. Sour Gas Release From SulfaTreat Vessel (HS&P Hazard #9) - This scenario considered a release from one of the three large HS&P SulfaTreat vessels as a result of corrosion, fitting loss, or a valving error. Design vessel conditions and hydrogen sulfide concentrations were assumed. This would also apply to consolidated scenario where each field has an H_2S removal system for fuel gas.

10. Release of H_2S into the Sales Gas Pipelines (HS&P Hazard #10) - This scenario assumes that all three of the SulfaTreat vessels fail to remove the H_2S from the gas stream and that the H_2S analyzer fails or the automatic block valve fails where the sales gas line enters the SoCal Gas distribution network. The SulfaTreat system has been designed to operate on only one vessel. This would be viewed as an extremely low probability event given the design of the system.

11. Propane Receiver BLEVE (JHF Hazard #1) - This scenario assumes that a fire at the JHF facility impinges the propane receiver resulting in vessel failure and a BLEVE. For this scenario to occur, four events need to occur simultaneously including a significant external fire, failure of the pressure relief valve, vessel blockage, and no external fire fighting efforts. This is a high consequence/low probability event.

In addition to the ten scenarios described above, several sub-scenarios were developed to address the range of operating conditions that could occur (e.g., normal versus maximum operating pressure, etc.). While these scenarios do not represent a complete list of all the potential hazards associated with the proposed modification project, they do represent a reasonable range that is sufficient to estimate the significance of the project's potential safety impacts. These represent hazard scenarios directly associated with the proposed facilities. In the unlikely event that some of these events were to happen, there could be other secondary effects (i.e., building damage, equipment damage) where appropriate, these secondary effects are discussed qualitatively.

Hazard Frequencies

For each of the hazard scenarios discussed above, a failure frequency had to be estimated in order to classify the significance of the hazards. This failure frequency is an estimate of how likely this event is to occur. While there are many ways to estimate such frequencies, wherever possible historical data should be used. For this analysis, a wide variety of data bases were applied. Table 5.25 provides the estimated failure frequencies for the ten main hazard scenarios. This table also contains information on the data bases referenced.

Consequence Analysis

This section provides an overview of potential hazards associated with the proposed modification project. As part of the system safety analysis for this SEIR, several hazards have been identified associated with processing of onshore and offshore oil and gas streams. These hazards include the risk of exposure to fires, explosions, and toxic gas streams. A consequence analysis was prepared to quantify the magnitude of potential hazards associated with the proposed project.

Hazard scenarios that were assessed in the consequence analysis include the following potential hazards that can be found in typical oil and gas facilities:

- Sour gas (hydrogen sulfide) releases,
- Liquefied petroleum gas (LPG) and natural gas liquids (NGL) spills,
- Unconfined vapor cloud explosions (UVCE),
- Partially confined vapor cloud explosions,
- Boiling liquid expanding vapor explosions (BLEVE),
- Vessel overpressurization and explosions.
- Underground sour gas pipeline rupture and cratering,

Table 5.25 Estimated Failure Frequencies

Hazard Scenario	Failure Rate in frequency/year (probability)	Data Source and Assumptions
Pipeline Rupture (HS&P hazard # 1)	2.6×10^{-3} (Unlikely)	DOT failure rate of 1.4 failures/1000 mi/yr, corrected for steel pipelines and applicable diameters for the period 1970 to mid 1984. Failure rate based on a pipeline length of 12.2 miles and a rupture to failure frequency of 15 percent.
Pipeline Leak (HS&P hazard # 2)	5.3×10^{-3} (Unlikely)	DOT failure rate of 1.4 failures/1000 mi/yr, corrected for steel pipelines and applicable diameters for the period 1970 to mid 1984. Failure rate based on a pipeline length of 12.2 miles and a major leak to failure frequency of 31 percent.
Propane Receiver BLEVE (HS&P hazard # 3)	8.0×10^{-7} (Extraordinary)	A BLEVE is a catastrophic failure of a pressure vessel containing a liquid at a temperature above its normal boiling point. An extensive risk analysis report prepared by the Netherlands organization of Applied Research (TNO, 1983) estimated the frequency of LPG storage tank BLEVE's at 8.0×10^{-7}/year/tank.
Refrigeration System Line Leak (HS&P hazard #4)	1.1×10^{-3} (Unlikely)	A release from an in-plant line can result from several factors including a line leak (1.0×10^{-5}; Rijnmond), fitting break (1.0×10^{-4}; WASH-1400), or a valving break (1.0×10^{-3}). The failure rate is the sum of these frequencies.
Compressor Discharge Line Rupture (HS&P hazard #5)	9.0×10^{-5} (Rare)	This scenario assumes a rupture of the 2" compressor discharge line. The failure rate is based on a rupture rate of 1 x 10-6/m-yr (Rijnmond) and an approximate line length of 90 meters.
NGL Surge Vessel BLEVE (HS&P hazard #6)	8.0×10^{-7} (Extraordinary)	A BLEVE is a catastrophic failure of a pressure vessel containing a liquid at a temperature above its normal boiling point. An extensive risk analysis report prepared by the Netherlands organization of Applied Research (TNO, 1983) estimated the frequency of LPG storage tank BLEVE's at 8.0×10^{-7}/year/tank.
Low Temperature/High Pressure NGL Line Rupture (HS&P hazard #7)	1.1×10^{-3} (Unlikely)	A release from an in-plant line can result from several factors including a line leak (1.0×10^{-5}; Rijnmond), fitting break (1.0×10^{-4}; WASH-1400), or a valving break (1.0×10^{-3}). The failure rate is the sum of these frequencies.
High Temperature/High Pressure NGL Line Rupture (HS&P hazard #8)	1.1×10^{-3} (Unlikely)	A release from an in-plant line can result from several factors including a line leak (1.0×10^{-5}; Rijnmond), fitting break (1.0×10^{-4}; WASH-1400), or a valving break (1.0×10^{-3}). The failure rate is the sum of these frequencies.

Table 5.25 Estimated Failure Frequencies (continued)

Hazard Scenario	Failure Rate in frequency/year (probability)	Data Source and Assumptions
Sour Gas Release SulfurTreat Vessel (HS&P hazard #9)	1.1×10^{-3} (Unlikely)	A release from an in-plant line can result from several factors including a line leak (1.0×10^{-5}; Rijnmond), fitting break (1.0×10^{-4}; WASH-1400), or a valving break (1.0×10^{-3}). The failure rate is the sum of these frequencies.
Release of H_2S into Gas Distribution Network (HS&P hazard #10)	1.0×10^{-8} (Extraordinary)	A loss of H_2S removal would require that the SulfaTreat material not be replaced in a vessel when it runs out. Vessels will undergo about 8 changeouts per year. Given the fact that there is monitoring on each vessel the likelihood of a changeout not taking place has been estimated at 1×10^{-2}/yr. Since there are four vessels in series, and each vessel is capable of removing the H_2S, the frequency of this event would be 1.0×10^{-8}/yr.
Propane Receiver BLEVE (JHF hazard #1)	8.0×10^{-7} (Extraordinary)	A BLEVE is a catastrophic failure of a pressure vessel containing a liquid at a temperature above its normal boiling point. An extensive risk analysis report prepared by the Netherlands organization of Applied Research (TNO, 1983) estimated the frequency of LPG storage tank BLEVE's at 8.0×10^{-7}/year/tank.

- *An Analysis of Reportable Incidents for Natural Gas Transmission and Gathering Lines 1970 through 1984.* Jones, et al. Prepared for the Pipeline Research Committee, American Gas Association, NG-18 Report No. 158, March, 1986. Provides a detailed failure rate analysis of natural gas transmission based on the Department of Transportation (DOT) data base. (referred to as DOT)

- *Risk Analysis of Six Potentially Hazardous Industrial Objects in the Rijnmond Area, A Pilot Study.* A report to the Rijnmond Public Authority, report presented by COVO Steering Committee, 1982, Dordrecht, Holland: D. Reidel Publishing Co. A compilation of data on numerous types of equipment failure is provided. (Referred to as Rijnmond)

- *Reactor Safety Study, Appendix III - Failure Data,* WASH-1400 (NUREG-75/014), United States Nuclear Regulatory Commission, October, 1975. Provides data on human errors as well as equipment failures, and is one of the most extensive sources of failure-on-demand estimates. (Referred to as WASH-1400)

- Information from the UK Safety and Reliability Directorate's Systems Reliability Service Data Bank. (Referred to as SRS)

- LPG, A study, The Netherlands Organization of Applied Scientific Research, Division of Technology for Society, Apeldoorn, The Netherlands, May 1983.

- Vapor jet and liquid pool fires, and
- Vapor cloud fires.

A detailed consequence analysis is provided in Appendix D. Backup consequence model output is available from the Santa Barbara County Energy Division upon request. The following sections summarize potential impacts at the three Unocal facilities affected by the modification project.

A majority of the potential release scenarios developed in the hazards analysis would occur at the HS&P based on the magnitude of new equipment associated with expanded gas processing at this facility. Modeling results for toxic (hydrogen sulfide), thermal radiation and explosion overpressure exposure are presented in Tables 5.26 through 5.30. Toxic compounds were selected for analysis if they were classified as an AHM, as defined by the California RMPP Guidelines, and the quantity onsite would exceed the TPQ. These are the criteria used by the California RMPP regulation in defining what facilities must prepare risk management programs. For the proposed project only H_2S met these criteria.

The significance of the modeling results is based on the potential for public injury and/or fatalities. Onsite occupational hazards and risk are not summarized in this analysis beyond the identification of potential hazard zones. The following discussion summarizes the severity of the consequences for each scenario. Detailed descriptions of each release are presented in Appendix D, Attachment 1.1.

Hydrogen Sulfide Exposure Hazards

Consequence modeling results for several sour gas (hydrogen sulfide) releases are presented in Table 5.26. Hazard zones are based on areas where H_2S concentrations could potentially exceed the Emergency Response Planning Guideline (ERPG) 2 and 3 levels, and the Immediately Dangerous to Life and Health (IDLH) level (a detailed discussion of the damage health criteria is presented in Appendix D). The significance of the IDLH is discussed later in this section. Based on the location of these releases and the distance to the point of nearest public access/exposure, only scenarios 1 (i.e., rupture of 8" sour gas pipeline between Platform Irene and the HS&P) and 2 (i.e., leak in 8" sour gas pipeline between Platform Irene and the HS&P) have the potential to adversely affect the public. All other scenarios pose little risk based on relatively low process gas hydrogen sulfide concentrations or low process flow characteristics (i.e., flow, pressure, temperature, etc.).

Scenarios 1 and 2 cover releases from the existing sour gas pipeline from Platform Irene. If these releases were to occur within the HS&P facility, the consequences would be considered minor at the point of nearest public access. However, this pipeline crosses a few points of public access (i.e., Harris Grade Road, Highway 1, and Santa Lucia Canyon Road) where the potential for exposure exists. If the pipeline were to leak or rupture near one of these points, exposure to a hydrogen sulfide concentration in excess of 300 ppm is possible, giving the potential for a severe consequence. The hazard footprints do not have the potential to impact Vandenberg

Table 5.26 Toxic Vapor Dispersion Hazard Zones - HS&P

Scenario	Stability/ Wind Speed (m/s)	Distance to ERPG-2 (ft) Length	Distance to ERPG-2 (ft) Width	Distance to ERPG-3 (ft) Length	Distance to ERPG-3 (ft) Width	Distance to IDLH (ft) Length	Distance to IDLH (ft) Width
1a	D/4	227	88	85	32	46	18
	F/2	372	105	97	34	48	19
1b	D/4	57	15	25	7	14	5
	F/2	108	25	35	9	17	6
1c	D/4	459	130	216	69	136	48
	F/2	3,257	145	754	78	345	55
1d	D/4	329	92	149	49	94	34
	F/2	1,372	105	352	56	178	39
2a	D/4	77	26	26	9	14	5
	F/2	107	31	28	10	14	5
2b	D/4	56	18	19	7	10	4
	F/2	74	22	20	7	10	4
2c	D/4	154	39	75	21	47	14
	F/2	1,445	49	269	26	111	18
2d	D/4	114	28	54	15	34	10
	F/2	538	36	134	19	65	13

Table 5.26 Toxic Vapor Dispersion Hazard Zones - HS&P (continued)

Scenario	Stability/ Wind Speed (m/s)	Distance to ERPG-2 (ft) Length	Width	Distance to ERPG-3 (ft) Length	Width	Distance to IDLH (ft) Length	Width
5a	D/4	23	7	10	3	3	3
	F/2	43	7	10	3	7	3
9a	D/4	7	3	---	---	---	---
	F/2	7	3	---	---	---	---

* See Appendix D, Attachment 1.1 for a detailed description of release scenarios.
ERPG - Emergency Response Planning Guidelines.

Table 5.27 Flammable Vapor Dispersion Hazard Zones - HS&P

Scenario	Stability/ Wind Speed (m/s)	Distance to 1/2 LFL (ft) Length	Width	Distance to LFL (ft) Length	Width
1a	D/4	190	72	108	39
	F/2	285	85	131	46
1b	D/4	49	13	30	10
	F/2	89	16	46	10
1c	D/4	407	112	262	79
	F/2	2,477	128	1,066	92
1d	D/4	285	82	181	57
	F/2	1,053	93	479	65
2a	D/4	62	23	36	13
	F/2	82	26	39	13
2b	D/4	46	16	23	10
	F/2	56	16	26	10
2c	D/4	135	36	89	23
	F/2	1,060	49	400	30
2d	D/4	100	24	65	17
	F/2	410	31	185	22
3a	n/a	79	157	62	125
4a	D/4	135	26	69	13
	F/2	138	36	92	13
4b	D/4	213	52	102	20
	F/2	213	69	102	26
5a	D/4	20	3	10	3
	F/2	30	7	13	3

Table 5.27 **Flammable Vapor Dispersion Hazard Zones - HS&P (continued)**

Scenario	Stability/ Wind Speed (m/s)	Distance to 1/2 LFL (ft) Length	Width	Distance to LFL (ft) Length	Width
6a	n/a	207	413	164	328
7a	D/4	13	7	7	7
	F/2	75	13	36	10
8a	D/4	20	3	13	3
	F/2	33	3	16	3
9a	D/4	23	7	13	3
	F/2	26	10	13	3

* See Appendix D, Attachment 1.1 for a detailed description of release scenarios.

LFL - Lower Flammability Limit.

Table 5.28 Thermal Radiation Hazard Zones - HS&P

Scenario	Stability/ Wind Speed (m/s)	Thermal Radiation Hazard Zone (ft) 5 kW/m^2	10 kW/m^2	37.5 kW/m^2
1a	D/4	180	161	135
	F/2	197	177	154
1b	D/4	46	43	36
	F/2	59	56	46
1c	D/4	253	207	154
	F/2	259	217	174
1d	D/4	183	150	111
	F/2	189	157	124
2a	D/4	72	62	49
	F/2	75	66	52
2b	D/4	56	46	36
	F/2	56	49	36
2c	D/4	89	72	52
	F/2	92	75	56
2d	D/4	66	53	38
	F/2	68	55	40
4a	D/4	75	62	49
	F/2	79	66	52
4b	D/4	98	85	66
	F/2	105	92	75
5a	D/4	20	16	13
	F/2	23	20	13
7a	D/4	30	23	7
	F/2	23	16	3

Table 5.28 Thermal Radiation Hazard Zones - HS&P (continued)

Scenario	Stability/ Wind Speed (m/s)	Thermal Radiation Hazard Zone (ft) 5 kW/m^2	10 kW/m^2	37.5 kW/m^2
8a	D/4	16	16	10
	F/2	20	16	13
9a	D/4	36	30	20
	F/2	36	30	23

* See Appendix D, Attachment 1.1 for a detailed description of release scenarios.

Table 5.29 BLEVE Integrated Thermal Radiation Hazard Zones
HS&P

Scenario	Thermal Radiation Hazard Zone (ft) 40 kJ/m^2	80 kJ/m^2	160 kJ/m^2
3a	410	246	118
6a	1,752	1,197	771

* See Appendix D, Attachment 1.1 for a detailed description of release scenarios.

Table 5.30 Explosion Overpressure Hazard Modeling Results - HS&P

Scenario	Stability/ Wind Speed (m/s)	Maximum Distance (ft) to Overpressure Level 0.5 psi	1.0 psi	3.0 psi	5.0 psi
1a	D/4	407	243	115	82
	F/2	453	269	128	92
1b	D/4	108	66	30	23
	F/2	138	82	39	30
1c	D/4	528	262	89	52
	F/2	751	374	125	75
1d	D/4	367	183	61	36
	F/2	472	236	78	47
2a	D/4	121	72	36	26
	F/2	131	79	36	26
2b	D/4	85	52	23	16
	F/2	92	58	26	20
2c	D/4	164	82	26	16
	F/2	289	144	49	30
2d	D/4	117	58	19	12
	F/2	178	89	30	18
3a	a	728	410	125	82
4a	D/4	174	105	49	36
	F/2	177	105	49	36
4b	D/4	272	161	75	56
	F/2	285	167	79	59
5a	D/4	36	20	10	7
	F/2	39	23	10	10

Table 5.30 Explosion Overpressure Hazard Modeling Results - HS&P (Continued)

Scenario	Stability/ Wind Speed (m/s)	Maximum Distance (ft) to Overpressure Level 0.5 psi	1.0 psi	3.0 psi	5.0 psi
6a	a	1,680	942	285	187
7a	D/4	49	30	13	10
	F/2	89	52	26	20
8a	D/4	33	20	10	7
	F/2	46	26	13	10
9a	D/4	--	--	--	--
	F/2	--	--	--	--

a Overpressure levels resulting from a vessel explosion. All other overpressure levels result from unconfined or partially confined vapor cloud explosions.

note: Modeling results for all scenarios (except 1c) indicate that insufficient mass would be available to sustain an unconfined vapor cloud explosion. Partial or total confinement would be required for an explosion to occur.

* See Appendix D, Attachment 1.1 for a detailed description of release scenarios.

Village. The sour gas pipeline corridor is essentially undeveloped and, to a certain extent, is contained in areas where future development is not likely to occur (i.e., Unocal Lompoc field, Vandenberg Air Force Base, etc.).

It should be noted, however, that the risk of exposure, injury and/or fatalities resulting from a leak or rupture of this pipeline does not change with implementation of the proposed modification project, and that the proposed operating conditions would be within current permitted levels. Modeling results in 84-EIR-7 (the original EIR for this project) were based on several worst-case assumptions related to process stream composition and pipeline operation. Subsequent construction and operation of the pipeline have resulted in normal operating pressures lower than those in 84-EIR-7 (600 psig (permitted) versus 900 psig) and worst-case hydrogen sulfide concentrations that are substantially higher (1,100 ppm H_2S assumed in 84-EIR-7 versus a design/projected maximum of 4,000 ppm). The proposed modification project would increase the operating pressure of the pipeline, but this pressure would remain well below maximum pressures assumed in 84-EIR-7. For comparison purposes, the maximum toxic vapor hazard distance presented in 84-EIR-7 was 460 ft (i.e., the distance to the IDLH of 300 ppm) which compares to hazard distance of 345 ft in this analysis.

Flammable Vapor Hazards

Results of the flammable vapor zone modeling are presented in Table 5.27. As with the hydrogen sulfide modeling results, hazards associated with flammable vapors are limited to the HS&P facility with the exception of Scenarios 1 and 2 (e.g., releases from the pipeline from Platform Irene) where there is some potential for the release of flammable vapors where the pipeline crosses points of public access. However, these modeling results indicate that estimated hazards would remain lower than those estimated in 84-EIR-7. These modeling results are based on more realistic design and operating parameters than were available for the 84-EIR-7 analysis.

Modeling results indicate that flammable vapor zones could extend as far as 1,070 ft (distance to the lower flammability limit) from the pipeline. Future development along the pipeline corridor, which could introduce potential ignition sources to the flammable zone) should consider flammable hazards associated with this pipeline.

Thermal Radiation Exposure Hazards

Hazards associated with thermal radiation exposure resulting from pool fires and flame jets are presented in Table 5.28, while results of the BLEVE model are presented in Table 5.29. Hazard zones are based on areas where thermal radiation levels would potentially exceed minor, major, and extensive radiation intensities of 5, 10, and 37.5 kW/m^2, respectively (a detailed discussion of the damage criteria is presented in Appendix D). A thermal radiation intensity of 10 kW/m^2 for 60 seconds was used to estimate potential fatalities. Thermal radiation hazards associated with pool fires and flame jets would be limited to within the HS&P facility and would not pose a significant hazard to the off-site public. In the event of a flame jet resulting from a leak or rupture of the sour gas pipeline from Platform Irene, a thermal radiation hazard would exist in

the immediate vicinity of the pipeline. However, prolonged exposure would be avoidable. These thermal radiation hazards are also less than those presented in the 84-EIR-7 analysis.

Thermal radiation hazards associated with a BLEVE of a LPG or NGL vessel have the potential to adversely affect off-site areas. Hazard zones are based on areas where time-averaged thermal radiation levels would potentially exceed 40, 80, and 160 kJ/m^2 which represent zones of potential first, second, and third degree burns, respectively (a detailed discussion of the damage criteria is presented in Appendix D). While thermal radiation effects of a propane vessel BLEVE would not affect the off-site public, a NGL BLEVE would have the potential to affect off-site areas in the vicinity of Harris Grade Road immediately adjacent to the HS&P. However, thermal radiation levels sufficient to start wild land fires would not be exceeded offsite. Thus, no other off-site areas would be adversely affected. It should be noted that this is an extremely unlikely event ("extraordinary" per Santa Barbara County threshold guidelines) and does not pose a significant hazard to the off-site public according to the threshold frequency-consequence matrix. In addition, hazards associated with a NGL BLEVE are less than those presented in the 84-EIR-7 analysis and those currently estimated for the Battles Gas Plant (770 ft versus 925 ft), especially when the greater population density surrounding the Battles Gas Plant is considered.

Explosion Overpressure Exposure Hazards

Explosion overpressure exposure hazards resulting from unconfined vapor cloud explosions (UVCEs), partially confined vapor cloud explosions, and BLEVEs are presented in Table 5.30. Hazard zones are based on areas where overpressure levels would potentially exceed 0.5, 1.0, 3.0, and 5.0 psi overpressures which represent areas of light, moderate, major and extensive (10 percent fatality) damage, respectively. A detailed discussion of the damage criteria is presented in Appendix D. Modeling results indicate that adverse impacts would be limited to within the HS&P facility with the exception of off-site portions of the Platform Irene sour gas pipeline (Scenarios 1&2) and NGL BLEVE (Scenario 6).

The gas stream in the Platform Irene pipeline is predominantly methane which is difficult to detonate or transition from ignition to a UVCE. The explosion overpressure levels presented in Table 5.30 are only theoretically possible under worst-case conditions where partial vapor cloud confinement and several obstacles exist. Obstacles (i.e., process equipment, buildings, etc.) and partial confinement would enhance flame acceleration and overpressure levels and could lead to vapor cloud deflagration (sub-sonic flame velocity), but detonation (super-sonic flame velocity) would not be likely for methane. Therefore, explosion overpressure hazards are very unlikely outside of the HS&P facility for this scenario. For comparison purposes, these hazard zones are considerably smaller than those presented in the 84-EIR-7 analysis.

Explosion overpressure levels associated with a NGL BLEVE would have the potential to result in minor injury to the public where Harris Grade Road passes the facility (a road segment of approximately 3,000 ft), although no other off-site areas would be adversely affected. As mentioned previously, this is a highly unlikely event and does not pose a significant risk to the public. For comparison purposes, these hazard zones are considerably smaller than those presented in the 84-EIR-7 analysis.

Conditional Probabilities Of Potentially Significant Release Scenarios

The accident frequencies presented in Table 5.25 indicate only the probability of an accidental release and not the probability of the release *and* subsequent consequences. In order to estimate the probability of the consequences resulting from an accidental release, conditional probabilities need to be developed based on the cumulative probability of each factor affecting the hazard scenario. This needs to be done for only the hazard scenarios that:

1. Had the potential for offsite consequences, and

2. Had an accident frequency greater than 1×10^{-6}/yr.

If a scenario meets both these criteria then it could have significant impacts. The only scenarios that meet both criteria were Scenarios 1 and 2. The following factors were used, where appropriate, to estimate the conditional probabilities for Scenarios 1 and 2 (rupture and leak in the sour gas pipeline between Platform Irene and the HS&P):

- Pipeline failure rate of 1.4 failures/1000 miles/yr
  - 15 percent result in a rupture (i.e., severe consequences)
  - 31 percent result in a leak (i.e., severe consequences)
  - 54 percent result in a pinhole leak (i.e., minor consequences)

- Pipeline length adjusted for length of corridor with public access affected by modeled consequences

- Vapor cloud ignition probability of 0.26

- No vapor cloud ignition probability of 0.74

- Applicable meteorological condition of 4.73 percent (stability, wind speed/direction)

- Toxic vapor dispersion - 5 percent fatality, calculated on the probit equation and dosage, based on a time-corrected exposure of 300 ppm over 30 minutes. Corrected for 30 percent fatality of individuals that may remain in the area.

- Flammable vapor dispersion - 30 percent fatality with the assumption that people may be killed in secondary fires. Corrected for 30 percent fatality of individuals that may remain in the area.

- Thermal radiation exposure - 6 percent fatality, calculated on the probit equation and a thermal radiation intensity of 10 kW/m^2 for 60 seconds. Corrected for 30 percent fatality of individuals that may remain in the area.

- Explosion overpressure exposure - 10 percent fatality for an overpressure level of 5 psi.

Conditional probabilities were estimated for those scenarios where the potential for significant impacts were found in the consequence analysis (i.e., Scenarios 1 and 2). Resulting conditional probabilities for Scenarios 1 and 2 were 5.6×10^{-7} and 4.2×10^{-7}, respectively. These probabilities were used in the hazard scenario risk ranking matrix to determine the potential significance of an accidental release from the sour gas pipeline from Platform Irene and the HS&P.

Summary of Heating, Separating & Pumping Facility Project Impacts

A hazard scenario risk ranking matrix is presented in Figure 5-12 which illustrates the severity of release versus the likelihood of an accidental release, and in the case of Scenarios 1 and 2, the conditional probabilities of the release. The shaded area in this figure represents significant impacts per the County's guidelines (see Figure 5-11).

Based on Figure 5-12 and the above discussion, no significant impacts were identified in the system safety analysis. An adverse but insignificant impact would result from a release from the sour gas pipeline between Platform Irene and the HS&P (i.e., release scenarios 1 and 2). These scenarios have the potential to adversely impact areas where the pipeline crosses public access routes, although the probability of these events are extraordinary. The proposed project would increase the average operating pressure of the pipeline from approximately 300 psig to 500 psig, but this pressure would remain well below the maximum pressure of 600 psig (used in the consequence analysis), and the maximum pressure assumed in 84-EIR-7 of 900 psig. Modeling results indicate that the proposed project would not increase hazards associated with the pipeline when compared to the results of the 84-EIR-7 analysis, and potential impacts would remain well below the 84-EIR-7 levels. It should be noted that potential impacts were considered significant for these scenarios in 84-EIR-7. However, more accurate information on pipeline design and operating conditions has become available during the course of Point Pedernales Project construction and operation, and state-of-the-art consequence modeling techniques have improved during the period since the 84-EIR-7 analysis (see Section 5.2.1 for a discussion of how these changes affect baseline conditions).

A majority of hazards identified for the proposed Unocal modification project do not extend off-site, and therefore would have a severity ranking of negligible (i.e., no significant risk to the public, and with no minor injuries). Therefore, based upon the County's significance thresholds for Public Safety, all of these hazards would be classified as adverse but insignificant (Class III).

Several worst-case release scenarios (based on design conditions and worst-case meteorological data) were plotted to illustrate potential modification related project impacts. Figure 5-13 shows the worst-case flame jet impacts for all scenarios which are associated with Scenario 4. All other flame jet impacts would be considerably lower. Thermal radiation modeling results for Scenarios 3 and 6 (LPG and NGL vessel BLEVEs) are shown in Figures 5-14 and 5-15, respectively. The BLEVE scenarios (release scenarios 3 and 6) do have the potential for some minor offsite injuries. However, these events are considered to be "extraordinary," and based on the County's significance thresholds, would be classified as an adverse but insignificant impact

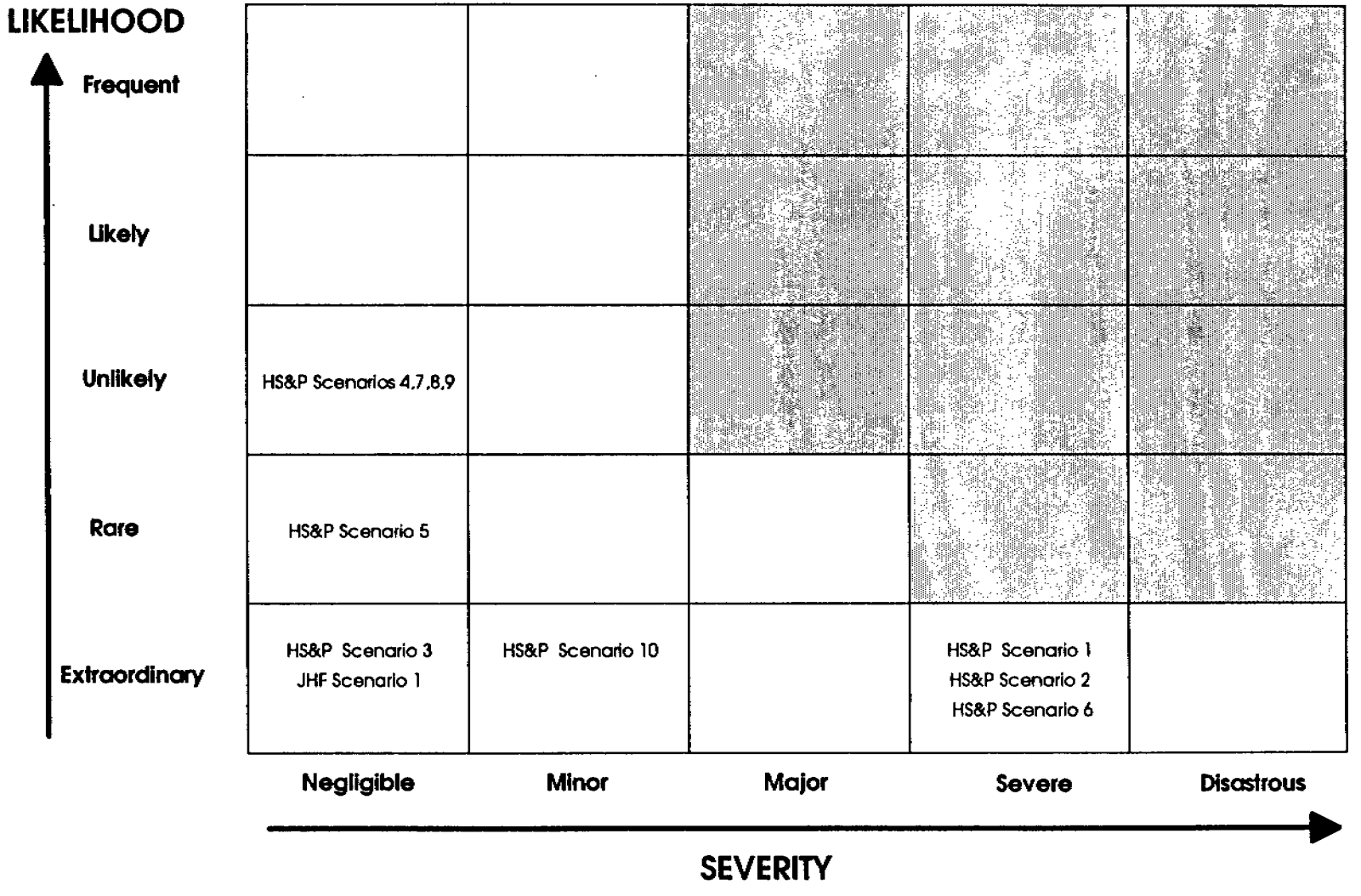


Figure 5-12 Hazard Scenario Risk Ranking Matrix

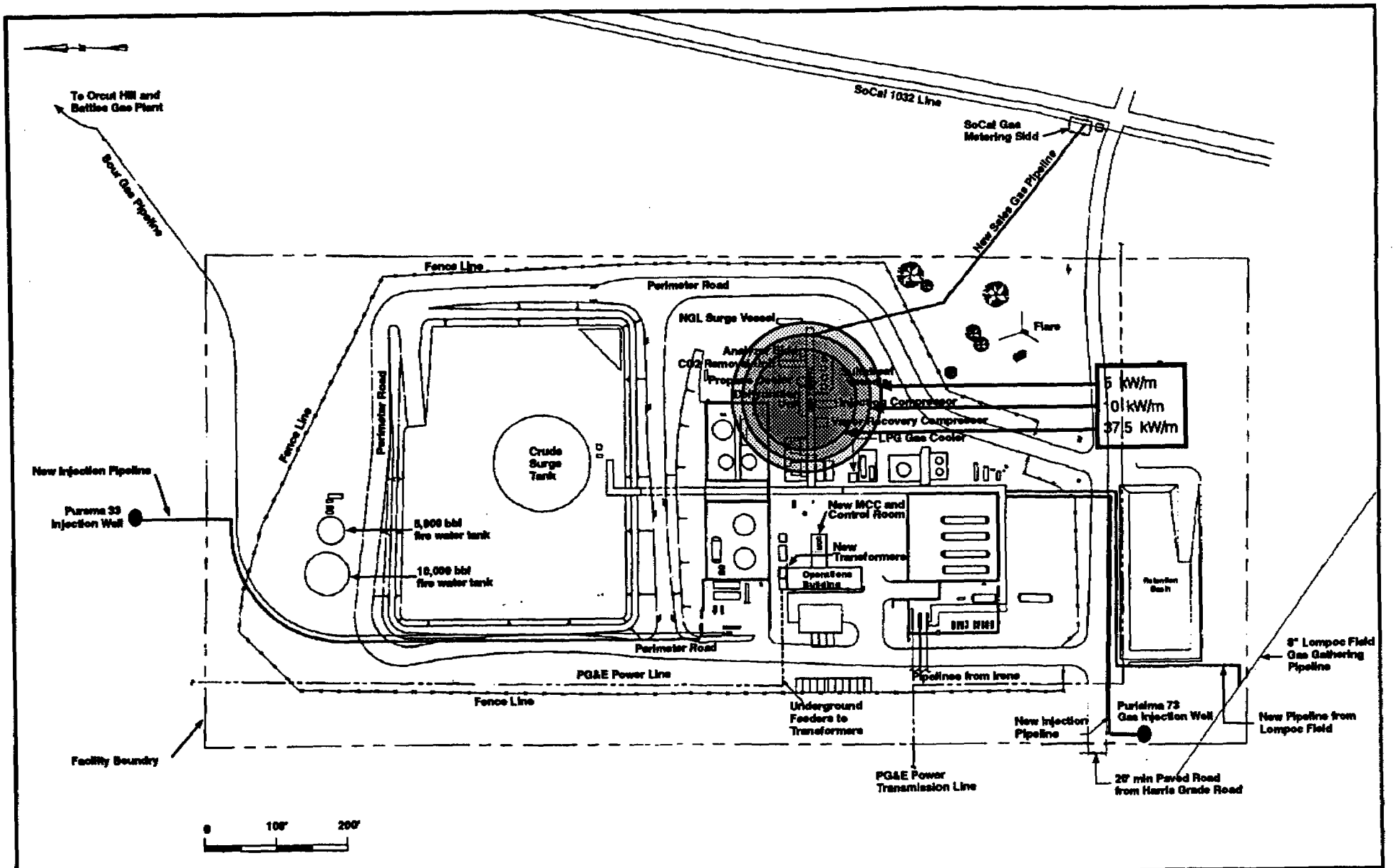


Figure 5-13 Thermal Radiation Hazards Associated With HS&P Scenario 4 (Refrigeration System Line Leak)

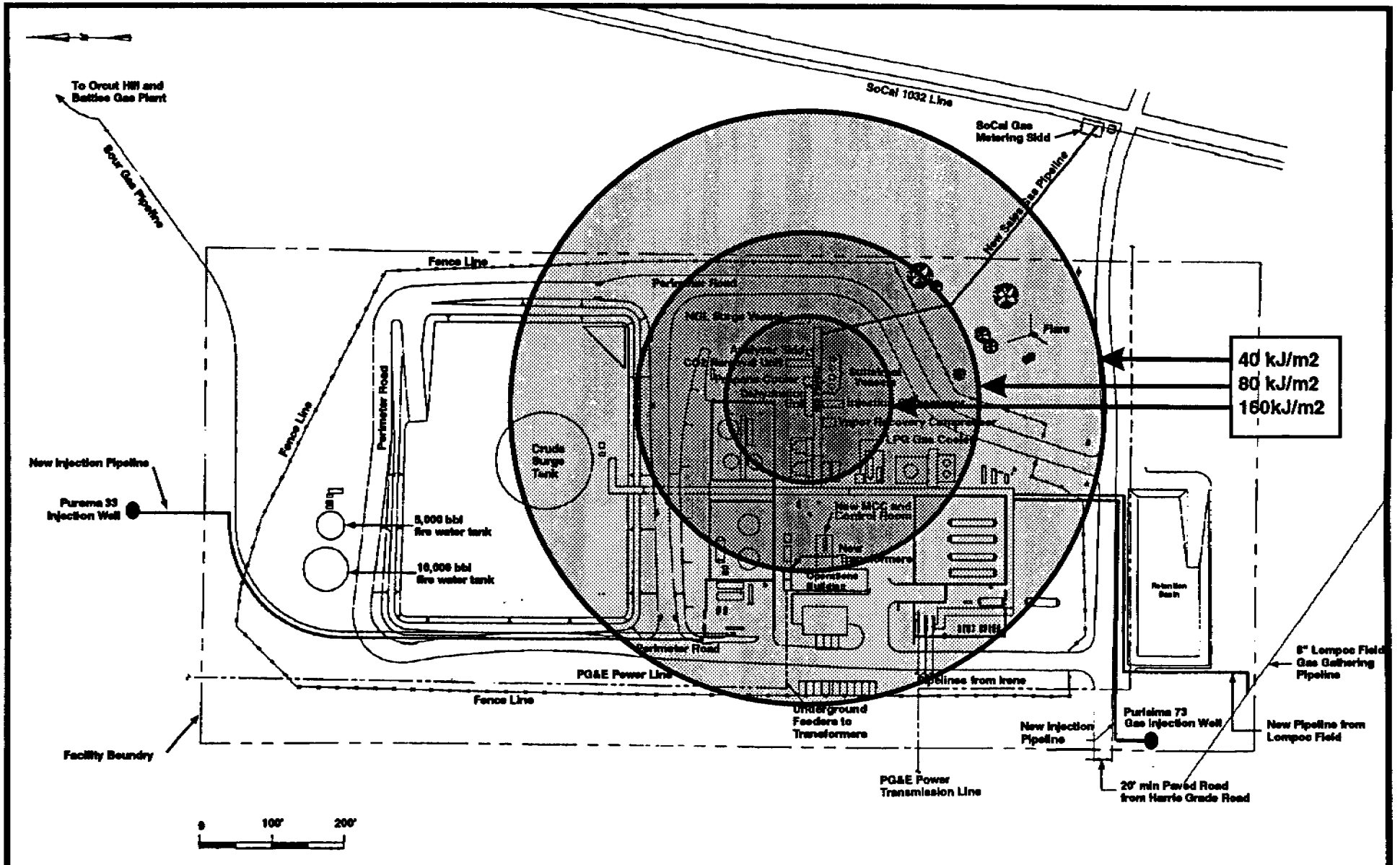


Figure 5-14 Integrated Thermal Radiation Hazards Associated with HS&P Scenario 3 (LPG BLEVE)

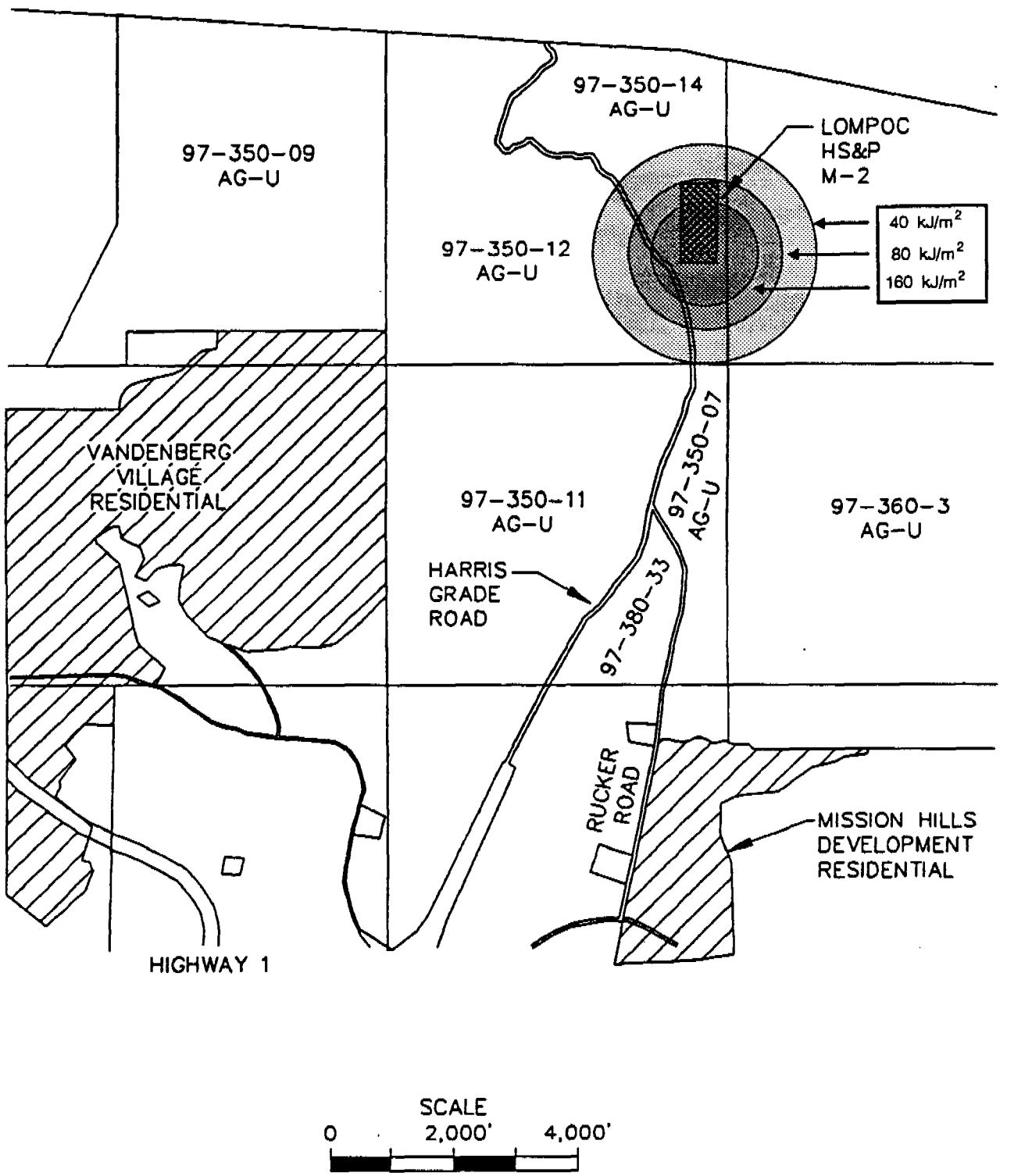


Figure 5-15 Integrated Thermal Radiation Hazards Associated With HS&P Scenario 6 (NGL BLEVE)

(Class III). Figure 5-16 shows the overpressure hazards footprints for the LPG surge vessel BLEVE (scenario #3). This event would not be expected to cause offsite impacts.

Based upon the types of hazards identified, the thermal radiation and overpressure hazards have the potential to cause secondary effects to equipment and buildings located outside the gas plant area. For thermal radiation hazards a heat level of 37.5 kW/m^2 is sufficient to damage equipment and metal buildings. For overpressure, 3 psi and 6 psi are sufficient to cause damage to buildings and equipment respectively. A review of the hazard zones indicates that only the NGL surge vessel BLEVE overpressure could cause damage to buildings outside the gas plant area. In particular, the overpressures created by the NGL surge vessel BLEVE (scenario #6) could cause structural damage to the control room. However, it should be remembered that this hazard scenario is an extremely unlikely event.

None of the thermal or overpressure hazards are projected to cause secondary impacts to the oil plant equipment, including the crude oil tank. Therefore, oil spills resulting from gas plant hazards are not projected to occur for the hazard scenarios evaluated.

Summary of Santa Maria Pump Station Project Impacts

Project related modifications would not have the potential to result in accidental releases at the SMPS. No new equipment associated with acutely hazardous materials has been proposed. Because modifications to the SMPS are limited to improvements in the fire protection system, project related impacts would contribute to improvement of system safety at the SMPS.

Summary of Jim Hopkins Fee Project Impacts

Only one potentially significant release scenario (a BLEVE of the propane receiver) was identified associated with proposed modifications at the Jim Hopkins Fee Site. Because a very low probability (i.e., extraordinary) is associated with this release scenario, and potentially adverse impacts would be limited to the immediate vicinity of the affected equipment (i.e., no offsite and limited onsite impacts), modifications at the JHF site are not expected to result in any significant adverse impacts and therefore the impacts are considered adverse but insignificant (Class III).

Uncertainties Associated With Hazards Analysis

There are many sources of uncertainty which can affect the accuracy of the overall results of any hazards analysis. In this case, there are uncertainties with all of the following factors:

- Release frequency (i.e., pipeline failure rates),
- Release size (leak versus rupture and size of leak/rupture),
- Population impacts (distribution, likelihood of fatality),
- Behavior of release (jet mixing versus passive dispersion),

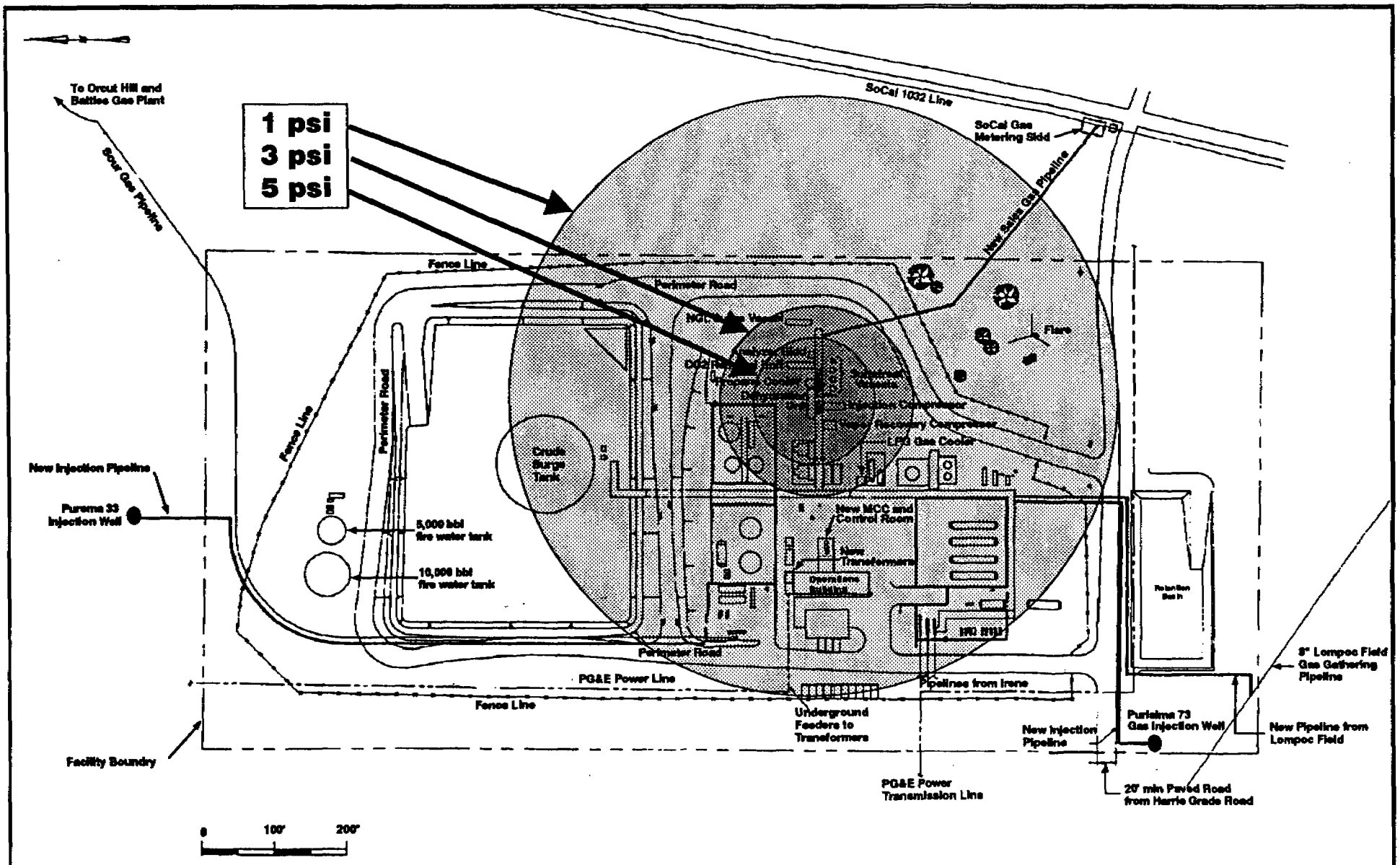


Figure 5-16 Maximum Overpressure Associated with a BLEVE of the LPG Surge Vessel (Scenario #3)

- Accuracy of hazard models (flat terrain versus complex terrain),
- Meteorological conditions (worst-case versus average), and
- Ignition sources and probabilities.

Release sizes and frequencies are the most important contributors to overall uncertainty. In this analysis, the most conservative values have been selected in order to estimate the maximum potential risk related to the proposed project. Conservative estimates of population impacts and ignition probabilities have also been made.

Hazard modeling techniques, while less conservative than those used in the 84-EIR-7 analysis, still employ many conservative assumptions designed to yield worst-case hazard distances. Worst-case design parameters were used to calculate conservative estimates of release rate conditions, while worst-case meteorological conditions that occur very infrequently were also assumed. The biggest change in the hazard modeling techniques was to use cratering/jet models for buried pipeline leaks and ruptures instead of Gaussian models. This change in modeling was justified based upon actual field test data for buried pipelines.

The hazards analysis also used several worst-case assumptions related to the design of the proposed project. For example, the average H_2S concentrations in the sour gas pipeline between Platform Irene and the HS&P are typically around 800 ppm. However, the project is designed (and permitted) to accommodate H_2S concentrations of nearly 4,000 ppm. Because the H_2S concentrations in the gas stream would likely increase over time (based on typical reservoir behavior), the analysis must consider present and future hazards associated with the proposed project. Because the analysis used the H_2S concentration of 4,000 ppm, *current hazards* were likely overestimated by a factor of two to three or more. However, if H_2S concentrations increase in the future, estimates of *future hazards* may not be greatly overestimated. Similar assumptions were also made regarding process/pipeline flow rates, operating pressures, and gas stream compositions, etc. The net result of the hazards analysis is a reasonable worst-case estimate of risk associated with the proposed project.

5.2.3.2 Mitigation Measures

Because none of the system safety impacts were considered significant, no required mitigation measures are needed. However, a number of mitigation measures have been recommended to help in assuring that the proposed project is designed, constructed and operated in the safest manner possible. All of these measures are part of a process safety management (PSM) system. A PSM system is a set of management policies and guidelines that, when implemented, assure the safe design, operation and maintenance of hazardous facilities. PSM programs for some hazardous facilities are now required by OSHA, and the State of California's Risk Management and Prevention Programs (RMPPs) is a more limited PSM program. These recommendations would also be considered consistent with the County's comprehensive plan and zoning ordinances. Each of the recommended measures is discussed below.

Unocal should prepare a Safety, Inspection, Maintenance And Quality Assurance Program (SIMQAP) for construction and operation of the proposed systems. These types of programs establish policies and procedures that must be followed in the design, construction and operation of the facilities. These would include, but not be limited to, items like minimum design specifications, contractor safety requirements, construction inspection requirements, maintenance requirements for all equipment at the facility, policies and procedures for incident/accident investigation and safety audits, training requirements, etc. These types of written policies and procedures help to assure that all activities are conducted in the safest manner possible (see Section 5.2.6, SS-1).

Unocal should also be required to prepare Emergency Response Plans for all of the proposed project components (i.e., facilities and pipelines). These plans should include warning and notification in the event of an offsite consequence as a result of a facility or pipeline related event (see Section 5.3.1.4 for further discussion of emergency responses). It should be noted that for some of the sites, ERPs already exist, and they would only have to be modified.

Unocal should also conduct hazard and operability studies (HAZOPs) on all of the proposed facility modifications. HAZOPs are a technique that is used primarily during the design phase of a project to identify potential hazard associated with the design, and to develop design modifications to reduce or eliminate the hazards. Unocal has a corporate requirement that all new projects undergo a HAZOP prior to construction. HAZOPs are also requirements in the OSHA PSM and the State of California's RMPP legislation (see Section 5.2.6, SS-2).

The final recommended mitigation measure is to install a bright colored marker above the new pipelines that extend offsite of the HS&P facility. This type of measure helps reduce the likelihood of third party damage associated with excavation near the pipelines. This is the most common cause of gas pipeline failures (see Section 5.2.6, SS-3).

5.2.3.3 Residual Impacts

All of the system safety impacts associated with the proposed project were found to be adverse but insignificant (Class III). The system safety impacts associated with the Santa Maria Pump Station were found to be beneficial (Class IV), because the proposed project involves upgrading the existing fire water system to meet current standards.

5.2.4 Alternative HS&P Gas Plant Sites

This section discusses the impacts, mitigation measures and residual impacts associated with the alternative sites.

5.2.4.1 Impacts

Potential system safety impacts associated with the two alternative sites to the proposed HS&P Gas Plant that were discussed in Section 3 are discussed below.

Orcutt Hill Site

The preferred alternative, a gas processing facility at the Orcutt Hill field, would be expected to result in nearly identical system safety impacts as the proposed project. Given the relatively remote location of the Orcutt Hill field site, no significant offsite impacts would be expected. However, a gas plant at the Orcutt Hill field site would result in the continued use of the 6" sour gas pipeline between the HS&P and Orcutt Hill Field. Hazards associated with this line could be as great as 79 feet and 508 feet for H_2S and flammable vapor zones, respectively (see Section 5.2.5, Expanded HS&P, for the modeling results on this pipeline). Given the remote location of this pipeline, these impacts would be considered adverse but insignificant based on the low conditional probability associated with this release scenario (extraordinary) and the County's threshold criteria. This is discussed further in Section 5.2.5 covering the Expanded HS&P.

The Battles Gas Plant

With this alternative the existing Battles Gas Plant would be modified to comply with the requirements of the P-17 audit. The outstanding P-17 recommendations are listed in Table 3.2. As part of the cumulative analysis a detailed quantitative risk assessment (QRA) was done for the Battles Gas Plant with a modified set of safety upgrades (i.e., a modified P-17). Table 4.5 lists the P-17 recommendations that were not included in the modified set of safety upgrades. A number of these recommendations would be covered in the modified set of safety upgrades by the requirement to conduct regular testing of the firewater system. A review of these recommendations indicates that none of them would serve to reduce the level of offsite risk. However, they all would serve to reduce the level of onsite risk. Therefore, the quantitative risk assessment, covering offsite risks, which is presented in Section 5.2.6.2 for the continued use of the Battles Gas Plant with a modified set of safety upgrades (modified P-17), would also apply for the No Project Alternative where Battles is in full compliance with P-17. The reader is referred to this section for a more detailed discussion of the safety impacts associated with the continued operation of the Battles Gas Plant.

The results of this QRA indicate that the Battles Gas Plant has the potential for significant impacts to offsite populations based upon the County's Significance criteria. If one uses the SSRRC's offsite risk guidelines the entire risk of the facility is contained within the gray and the De Minimus regions. The portion of the risk that is within the gray region is dominated by LPG and NGL hazards. Toxic H_2S hazards from the plant are not an issue with regard to offsite risks, since the hazard footprints do not leave the site.

An analysis of the pipeline between the HS&P and the Battles Gas Plant has been done as part of the expanded HS&P Gas Plant Analysis (see Section 5.2.5). This analysis showed that a pipeline leak would be an adverse but insignificant event. However, the pipeline rupture was shown to be a significant event. See Section 5.2.5 for a further discussion of the impacts associated with this pipeline.

5.2.4.2 Mitigation Measures

For the Orcutt Hill alternative site, none of the impacts were identified as significant and therefore, no mitigation measures have been required. However, the same mitigation measures recommended for the proposed project would also apply to the Orcutt Hill site. See Section 5.3.2.2 for a discussion of the mitigation measures.

For the Battles Gas Plant the offsite risks were found to be significant based upon the County's significance criteria, but was found to require economic risk reduction mitigation only based upon the SSRRC's offsite risk guidelines. One of the major risk reduction measures for the Battles Gas Plant would be to limit the volume of propane and butane storage to the maximum extent feasible. In addition, a routine equipment inspection and maintenance program should be developed that assures equipment and piping integrity. Also, the current firewater testing and maintenance program should be continued on a regular basis.

The relatively low level of offsite risk posed by the Battles Gas Plant is a result of the low density of people within a 1,000 feet of the facility. The population in this areas is limited to day time workers; there are no residential or large commercial or industrial sites within this area. However, if in the future this were to change, then the offsite level of risk would increase as the population within 1,000 feet of the plant increased. Therefore, limiting the future development of residential, or large commercial/industrial development within 1,000 feet of the facility would assure that the offsite risk levels associated with the plant would not increase.

In terms of the pipeline rupture risk, the only area that is currently at risk is the four mile stretch along Bradley Road. This could be addressed by installing a pipeline insert. The Driscopipe System by Phillips utilizes a polyethylene liner that is pulled into the existing pipe thereby avoiding having to replace pipe. The liner seals the pipe, eliminates corrosion problems and only utilizes the existing pipe for its hoop strength. The technology is commercially available and is resistant to H_2S corrosion problems. The 8" gas gathering line between Battles and Suey Junction is currently equipped with a polyethylene insert. This type of pipeline insert would be expected to reduce the likelihood of a pipeline rupture by about an order of magnitude. This would reduce the likelihood of a pipeline rupture in this area to less then 1.0×10^{-6}, and extraordinary event (see Section 5.2.5 for a discussion on the conditional probability for this pipeline).

5.2.4.3 Residual Impacts

All of the system safety impacts for the Orcutt Hill site were found to be adverse but insignificant (Class III). With the implementation of the recommended mitigation measures, the impact classification would be the same, Class III, but the likelihood of a hazardous event occurring would be reduced.

For the Battles Gas Plant site, the system safety impacts were considered to be significant and can not be mitigated (Class I). For the pipeline between the HS&P and the Battles Gas Plant, the impacts would be significant but mitigable to insignificant (Class II) if a pipeline liner was installed along the Bradley Road portion of the right of way.

5.2.5 Expanded HS&P Gas Plant

This section discusses the system safety impacts, mitigation measures and residual impacts for an expanded HS&P Gas Plant that could be built in the future to serve other north county gas producers.

5.2.5.1 Impacts

Three steps were undertaken in assessing the safety impacts associated with the expanded HS&P gas facility. The first step was to develop a range of potential hazards associated with the project. The second was to estimate the likelihood of the hazards occurring, and the third was to estimate the consequences of the hazards should they occur. A quantitative risk assessment (QRA) was not conducted as part of this study. The approach of using a hazards analysis was sufficient to allow the potential impacts of the proposed project to be classified as to their significance. The following sections summarize potential impacts associated with the proposed project.

Hazard Scenarios

Several hazard scenarios were developed for the expanded HS&P gas facility. These scenarios were developed based on a review of the project's components and from input received during the scoping process. The scenarios were designed to encompass a wide variety of process hazards that are typical of oil and gas processing facilities. Each of the scenarios is summarized below with specific detail presented in Appendix D.

Exp-1. Pipeline Rupture - This scenario involves a sour gas release resulting from a rupture of the 6" pipeline from Battles to the HS&P. Assumed operating conditions of 200 psig. Multiple release angles and crater diameters were simulated for the below ground releases. This scenario covers the entire length of the pipeline and could result from an earthquake, corrosion, or third party damage. A maximum hydrogen

sulfide concentration of 4000 ppm was assumed based on the H_2S levels for the other fields in the north county limits.

Exp-2. Pipeline Leak - This scenario involves a sour gas release resulting from a leak (instead of a rupture) in the same pipeline as described in Scenario Exp-1.(i.e., the 6" pipeline from Battles to the HS&P). Rupture and leak scenarios were considered separately to account for different accident frequencies associated with leaks and ruptures. Multiple release angles and crater diameters were simulated for the below ground releases. This scenario covers the entire length of the pipeline and could result from an earthquake, corrosion, or third party damage.

Exp-3. Propane Receiver BLEVE - This scenario assumes that a fire at the expanded HS&P impinges the propane receiver resulting in vessel failure and a BLEVE. For this scenario to occur, four events need to occur simultaneously; a significant external fire, failure of the pressure relief valve, vessel blockage, and no external fire fighting efforts. This is a high consequence/low probability event.

Exp-4. Refrigeration System Line Leak - This scenario assumes a leak in a high pressure/ temperature section of the expanded HS&P propane refrigeration system resulting from corrosion, third party damage, or a seismic event. Maximum and time-averaged modeled release rates were considered.

Exp-5. NGL Surge Vessel BLEVE - This scenario assumes that a fire at the expanded HS&P impinges the NGL Surge Vessel resulting in vessel failure and a BLEVE. For this scenario to occur, four events need to occur simultaneously including a significant external fire, failure of the pressure relief valve, vessel blockage, and no external fire fighting efforts. This is a high consequence/low probability event.

Exp-6. Sour Gas Release From SulfaTreat Vessel - This scenario considered a release from one of the three large expanded HS&P SulfaTreat vessels as a result of corrosion, fitting loss, or a valving error. Design vessel conditions and hydrogen sulfide concentrations were assumed. This would also apply to consolidated scenario where each field has an H_2S removal system for fuel gas.

Exp-7a Raw NGL Storage Tank BLEVE - This scenario assumes that a fire at the expanded HS&P facility impinges the raw NGL storage tank resulting in vessel failure and a BLEVE. For this scenario to occur, four events need to occur simultaneously including a significant external fire, failure of the pressure relief valve, vessel blockage, and no external fire fighting efforts. This is a high consequence/low probability event.

Exp-7b Raw NGL Truck Loading Line Failure - This scenario assumes that a raw NGL loading hose fails while loading a truck and results in a pool fire or flammable vapor cloud explosion.

While these scenarios do not represent a complete list of all the potential hazards associated with the expanded HS&P gas facility, they do represent a reasonable range that is sufficient to estimate the significance of the project's potential safety impacts.

Hazard Frequencies

For each of the hazard scenarios discussed above, a failure frequency had to be estimated in order to classify the significance of the hazards. This failure frequency is an estimate of how likely this event is to occur. While there are many ways to estimate such frequencies, wherever possible historical data should be used. For this analysis, a wide variety of data bases were applied. Table 5.31 provides the estimated failure frequencies for the eight main hazard scenarios. This table also contains information on the data bases referenced.

Consequence Analysis

This section presents the modeling results for the Expanded HS&P Facility Option. Modeling results for toxic (hydrogen sulfide), thermal radiation and explosion overpressure exposure are presented in Tables 5.32 through 5.36. The significance of the modeling results is based on the potential for public injury and/or fatalities. On-site occupational hazards and risk are not summarized in this analysis beyond the identification of potential hazard zones. The following discussion summarizes the severity of the consequences for each scenario.

Hydrogen Sulfide Exposure Hazards

Consequence modeling results for several sour gas (hydrogen sulfide) releases are presented in Table 5.32. Based on the location of these releases and the distance to the point of nearest public access/exposure, only Scenarios Exp-1 and Exp-2 have the potential to adversely affect the public. All other scenarios pose little risk based on relatively low process gas hydrogen sulfide concentrations or low process flow characteristics (i.e., flow, pressure, temperature, etc.).

Scenarios Exp-1 and Exp-2 cover releases from the existing sour gas pipeline from Battles Gas Plant to the HS&P. If these releases were to occur within the HS&P facility, the consequences would be considered minor at the point of nearest public access. However, this pipeline crosses and follows several points of public access where the potential for exposure exists. The major areas is a 4 miles stretch along Bradley Road. Given the extremely small footprints for the leak case (23 feet), the footprints would not leave the pipeline right of way. Therefore, the potential consequences of a leak would only be major. However, if the pipeline were to rupture along this stretch, there is the possibility of severe consequences.

Table 5.31 Estimated Failure Frequencies for Expanded HS&P Gas Plant

Hazard Scenario	Failure Rate in frequency/year (probability)	Data Source and Assumptions
Pipeline Rupture (Exp - 1)	4.2×10^{-3} (Unlikely)	DOT failure rate of 1.4 failures/1000 mi/yr, corrected for steel pipelines and applicable diameters for the period 1970 to mid 1984. Failure rate based on a pipeline length of 20 miles and a rupture to failure frequency of 15 percent.
Pipeline Leak (Exp - 2)	8.7×10^{-3} (Unlikely)	DOT failure rate of 1.4 failures/1000 mi/yr, corrected for steel pipelines and applicable diameters for the period 1970 to mid 1984. Failure rate based on a pipeline length of 20 miles and a major leak to failure frequency of 31 percent.
Propane Review BLEVE (Exp - 3)	8.0×10^{-7} (Extraordinary)	A BLEVE is a catastrophic failure of a pressure vessel containing a liquid at a temperature above its normal boiling point. An extensive risk analysis report prepared by the Netherlands organization of Applied Research (TNO, 1983) estimated the frequency of LPG storage tank BLEVE's at 8.0×10^{-7}/year/tank.
Refrigeration System Line Leak (Exp - 4)	1.1×10^{-3} (Unlikely)	A release from an in-plant line can result from several factors including a line leak (1.0×10^{-5}; Rijnmond), fitting break (1.0×10^{-4}; WASH-1400), or a valving break (1.0×10^{-3}). The failure rate is the sum of these frequencies.
NGL Surge Vessel BLEVE (Exp - 5)	8.0×10^{-7} (Extraordinary)	A BLEVE is a catastrophic failure of a pressure vessel containing a liquid at a temperature above its normal boiling point. An extensive risk analysis report prepared by the Netherlands organization of Applied Research (TNO, 1983) estimated the frequency of LPG storage tank BLEVE's at 8.0×10^{-7}/year/tank.
Sour Gas Release from SulfaTreat Vessel (Exp -6)	1.1×10^{-3} (Unlikely)	A release from an in-plant line can result from several factors including a line leak (1.0×10^{-5}; Rijnmond), fitting break (1.0×10^{-4}; WASH-1400), or a valving break (1.0×10^{-3}). The failure rate is the sum of these frequencies.
Raw NGL Storage Tank BLEVE (Exp - 7a)	8.0×10^{-7} (Extraordinary)	A BLEVE is a catastrophic failure of a pressure vessel containing a liquid at a temperature above its normal boiling point. An extensive risk analysis report prepared by the Netherlands organization of Applied Research (TNO, 1983) estimated the frequency of LPG storage tank BLEVE's at 8.0×10^{-7}/year/tank.

Table 5.31 Estimated Failure Frequencies for Expanded HS&P Gas Plan (continued)

Hazard Scenario	Failure Rate in frequency/year (probability)	Data Source and Assumptions
Raw NGL Tank Truck Loading Line Failure (Exp - 7b)	1.1×10^{-3} (Unlikely)	A release from a liquid NGL loading line. This can result from several factors including a line leak (1.0×10^{-5}; Rijnmond), fitting break (1.0×10^{-4}; WASH-1400), or a valving break (1.0×10^{-3}). The failure rate is the sum of these frequencies.

- *An Analysis of Reportable Incidents for Natural Gas Transmission and Gathering Lines 1970 through 1984.* Jones, et al. Prepared for the Pipeline Research Committee, American Gas Association, NG-18 Report No. 158, March, 1986. Provides a detailed failure rate analysis of natural gas transmission based on the Department of Transportation (DOT) data base. (referred to as DOT)

- *Risk Analysis of Six Potentially Hazardous Industrial Objects in the Rijnmond Area, A Pilot Study.* A report to the Rijnmond Public Authority, report presented by COVO Steering Committee, 1982, Dordrecht, Holland: D. Reidel Publishing Co. A compilation of data on numerous types of equipment failure is provided. (Referred to as Rijnmond)

- *Reactor Safety Study, Appendix III - Failure Data,* WASH-1400 (NUREG-75/014), United States Nuclear Regulatory Commission, October, 1975. Provides data on human errors as well as equipment failures, and is one of the most extensive sources of failure-on-demand estimates. (Referred to as WASH-1400)

- Information from the UK Safety and Reliability Directorate's Systems Reliability Service Data Bank. (Referred to as SRS)

- LPG, A study, The Netherlands Organization of Applied Scientific Research, Division of Technology for Society, Apeldoorn, The Netherlands, May 1983.

Table 5.32 Toxic Vapor Dispersion Hazard Zones - Expanded HS&P

Scenario	Stability/ Wind Speed (m/s)	Distance to ERPG-2 (ft) Length	Distance to ERPG-2 (ft) Width	Distance to ERPG-3 (ft) Length	Distance to ERPG-3 (ft) Width	Distance to IDLH (ft) Length	Distance to IDLH (ft) Width
1	D/4	162	47	76	25	49	17
	F/2	484	58	141	30	79	21
2	D/4	53	12	26	6	16	4
	F/2	119	17	40	8	23	6
6	D/4	20	7	6	2	3	1
	F/2	22	7	6	2	3	1

* See Appendix D, Attachment 1.1 for a detailed description of release scenarios.

Table 5.33 **Flammable Vapor Dispersion Hazard Zones - Expanded HS&P**

Scenario	Stability/ Wind Speed (m/s)	Distance to 1/2 LFL (ft) Length	Width	Distance to LFL (ft) Length	Width
1	D/4	171	48	109	33
	F/2	508	57	240	40
2	D/4	53	12	34	8
	F/2	122	16	62	11
3	n/a	79	157	62	125
4	D/4	213	52	102	20
	F/2	213	69	102	26
5	n/a	207	413	164	328
6	D/4	23	7	12	4
	F/2	25	8	12	4
7a	n/a	176	353	105	210
7b	D/4	518	66	301	49
	F/2	2,162	88	1,286	70

* See Appendix D, Attachment 1.1 for a detailed description of release scenarios.

Table 5.34 Thermal Radiation Hazard Zones - Expanded HS&P

Scenario	Stability/ Wind Speed (m/s)	Thermal Radiation Hazard Zone (ft) 5 kW/m^2	10 kW/m^2	37.5 kW/m^2
1	D/4	113	92	62
	F/2	117	96	64
2	D/4	37	30	21
	F/2	38	31	21
4	D/4	98	85	66
	F/2	105	92	75
6	D/4	37	30	21
	F/2	37	30	21
7b	D/4	141	94	31
	F/2	108	65	20

* See Appendix D, Attachment 1.1 for a detailed description of release scenarios.

Table 5.35 BLEVE Integrated Thermal Radiation Hazard Zones - Expanded HS&P

Scenario	Thermal Radiation Hazard Zone (ft) 40 kJ/m^2	80 kJ/m^2	160 kJ/m^2
3	410	246	118
5	1,752	1,197	771
7a	2,185	1,489	951

* See Appendix D, Attachment 1.1 for a detailed description of release scenarios.

Table 5.36 Explosion Overpressure Hazard Modeling Results - Expanded HS&P

Scenario	Stability/ Wind Speed (m/s)	Maximum Distance (ft) to Overpressure Level 0.5 psi	1.0 psi	3.0 psi	5.0 psi
1	D/4	215	108	36	21
	F/2	277	139	46	28
2	D/4	59	30	10	6
	F/2	81	40	13	8
3	a	728	410	125	82
4	D/4	272	161	75	56
	F/2	285	167	79	59
5	a	1,680	942	285	187
6	D/4	42	25	12	9
	F/2	44	26	12	9
7a	a	3,520	1,975	597	390
7b	D/4	242	144	68	50
	F/2	768	456	216	157

a Overpressure levels resulting from a vessel explosion. All other overpressure levels result from unconfined or partially confined vapor cloud explosions.

note: Modeling results for all scenarios indicate that insufficient mass would be available to sustain an unconfined vapor cloud explosion. Partial or total confinement would be required for an explosion to occur.

* See Appendix D, Attachment 1.1 for a detailed description of release scenarios.

Flammable Vapor Hazards

Results of the flammable vapor zone modeling are presented in Table 5.33. Hazards associated with flammable vapors are limited to the HS&P facility with the exception of Scenarios Exp-1, Exp-2 (releases from the pipeline from Battles Gas Plant to the HS&P), and Exp-3 where there is some potential for the release of flammable vapors that could impact points of public access.

Thermal Radiation Exposure Hazards

Hazards associated with thermal radiation exposure resulting from pool fires and flame jets are presented in Table 5.34, while results of the BLEVE model are presented in Table 5.35. Thermal radiation hazards associated with pool fires and flame jets would be limited to within the HS&P facility and would not pose a significant hazard to the off-site public. In the event of a flame jet resulting from a leak or rupture of the sour gas pipeline from the Battles Gas Plant, a thermal radiation hazard would exist in the immediate vicinity of the pipeline. However, prolonged exposure would be avoidable.

Thermal radiation hazards associated with a BLEVE of a LPG or NGL vessel have the potential to adversely affect off-site areas. While thermal radiation effects of a propane vessel BLEVE would not affect the off-site public, a NGL BLEVE would have the potential to affect off-site areas in the vicinity of Harris Grade Road immediately adjacent to the HS&P. No other off-site areas would be adversely affected. It should be noted that this is an extremely unlikely event ("extraordinary" per Santa Barbara County threshold guidelines) and does not pose a significant hazard to the off-site public according to the threshold/frequency-consequence matrix.

Explosion Overpressure Exposure Hazards

Explosion overpressure exposure hazards resulting from unconfined vapor cloud explosions (UVCEs), partially confined vapor cloud explosions, and BLEVEs are presented in Table 5.36. Modeling results indicate that adverse impacts would be limited to within the HS&P facility with the exception of off-site portions of the sour gas pipeline from Battles Gas Plant (Scenarios 1 & 2) and NGL BLEVE (Scenarios Exp-5 and Exp-7).

The gas stream in the pipeline from Battles Gas Plant is predominantly methane which is difficult to detonate or transition from ignition to a UVCE. The explosion overpressure levels presented in Table 5.31 are only possible under worst-case conditions where partial vapor cloud confinement and several obstacles exist. Obstacles and partial confinement would enhance flame acceleration and overpressure levels and could lead to vapor cloud deflagration (sub-sonic flame velocity), but detonation (super-sonic flame velocity) would not be likely for methane. Therefore, explosion overpressure hazards are very unlikely outside of the HS&P facility for this scenario.

Explosion overpressure levels associated with a NGL BLEVE would have the potential to result in minor injury to the public where Harris Grade Road passes the facility (a road segment of

approximately 3,000 ft), although no other off-site areas would be adversely affected. As mentioned previously, this is a highly unlikely event and does not pose a significant risk to the public.

Conditional Probabilities Of Potentially Significant Release Scenarios

The accident frequencies presented in Table 5.31 only indicate the probability of an accidental release and not the probability of the release *and* subsequent consequences. In order to estimate the probability of the consequences resulting from an accidental release, conditional probabilities need to be developed based on the cumulative probability of each factor affecting the hazard scenario. This needs to be done for only the hazard scenarios that:

1. Had the potential for offsite consequences, and

2. Had an accident frequency greater than 1×10^{-6}/yr.

If a scenario meets both these criteria then it could have significant impacts. The only scenarios that meet both criteria is Scenarios Exp-1. The following factors were used, where appropriate, to estimate the conditional probabilities for Scenarios Exp-1 (rupture of the sour gas pipeline between the HS&P and the Battles Gas Plant):

- Pipeline failure rate of 1.4 failures/1000 miles/yr
  - 15 percent result in a rupture (i.e., potential for severe consequences)
    31 percent result in a leak (i.e., potential for major consequences)
    54 percent result in pinhole leaks (i.e., potential for minor consequences

- Pipeline length adjusted for length of corridor with public access affected by modeled consequences (4.0 miles in the Bradley road area).

- Vapor cloud ignition probability of 0.26

- No vapor cloud ignition probability of 0.74

- Applicable meteorological condition of 4.73 percent (stability, wind speed/direction)

- Toxic vapor dispersion - 5 percent fatality, calculated on the probit equation and dosage, based on a time-corrected exposure of 300 ppm over 30 minutes. Corrected for 30 percent fatality of individuals that may remain in the area.

- Flammable vapor dispersion - 30 percent fatality with the assumption that people may be killed in secondary fires. Corrected for 30 percent fatality of individuals that may remain in the area.

- Thermal radiation exposure - 6 percent fatality, calculated on the probit equation and a thermal radiation intensity of 10 kW/m^2 for 60 seconds. Corrected for 30 percent fatality of individuals that may remain in the area.

- Explosion overpressure exposure - 10 percent fatality for an overpressure level of 5 psi.

Conditional probabilities were estimated for those scenarios where the potential for significant impacts were found in the consequence analysis (i.e., Scenarios Exp-1 and Exp-2). Resulting conditional probabilities for Scenarios Exp-1 and Exp-2 are 6.1×10^{-6} and 1.3×10^{-5} respectively. This probability was used in the hazard scenario risk ranking matrix to determine the potential significance of an accidental release from a rupture of the sour gas pipeline from the HS&P to the Battles Gas Plant.

Summary of Expanded HS&P Gas Plant Impacts

A hazard scenario risk ranking matrix is presented in Figure 5-17 which illustrates the severity of release versus the likelihood of an accidental release, and in the case of Scenarios 1 and 2, the conditional probabilities of the release. The shaded area in this figure represents significant impacts per the County's guidelines (see Figure 5-13).

Based on Figure 5-17 and the above discussion, only one significant impact was identified in the system safety analysis for the expanded HS&P project. All of the other system safety impacts for the expanded project would be considered adverse but not significant. The only significant impact identified was that associated with a rupture of the sour gas pipeline from the HS&P to the Battles Gas Plant. This rupture would need to occur along a four mile stretch were the pipeline follows Bradley Road.

The majority of hazards identified for the expanded HS&P Gas Plant do not extend off-site, and therefore would have a severity ranking of negligible (i.e., no significant risk to the public, and with no minor injuries). Therefore, based upon the County's significance thresholds for Public Safety, all of these hazards would be classified as adverse but insignificant.

Several worst-case release scenarios (based on design conditions and worst-case meteorological data) were plotted to illustrate potential expanded gas plant impacts. Figure 5-18 shows the worst-case thermal radiation hazards associated with a NGL loading line failure which results in a pool fire. Figure 5-19 shows the integrated thermal radiation hazards that would result from a BLEVE of an NGL storage vessel. Figure 5-20 shows the overpressure hazard zones for an NGL storage tank BLEVE. None of these hazard zones would be expected to impact areas where the public has access. Therefore, they would all be considered adverse but insignificant.

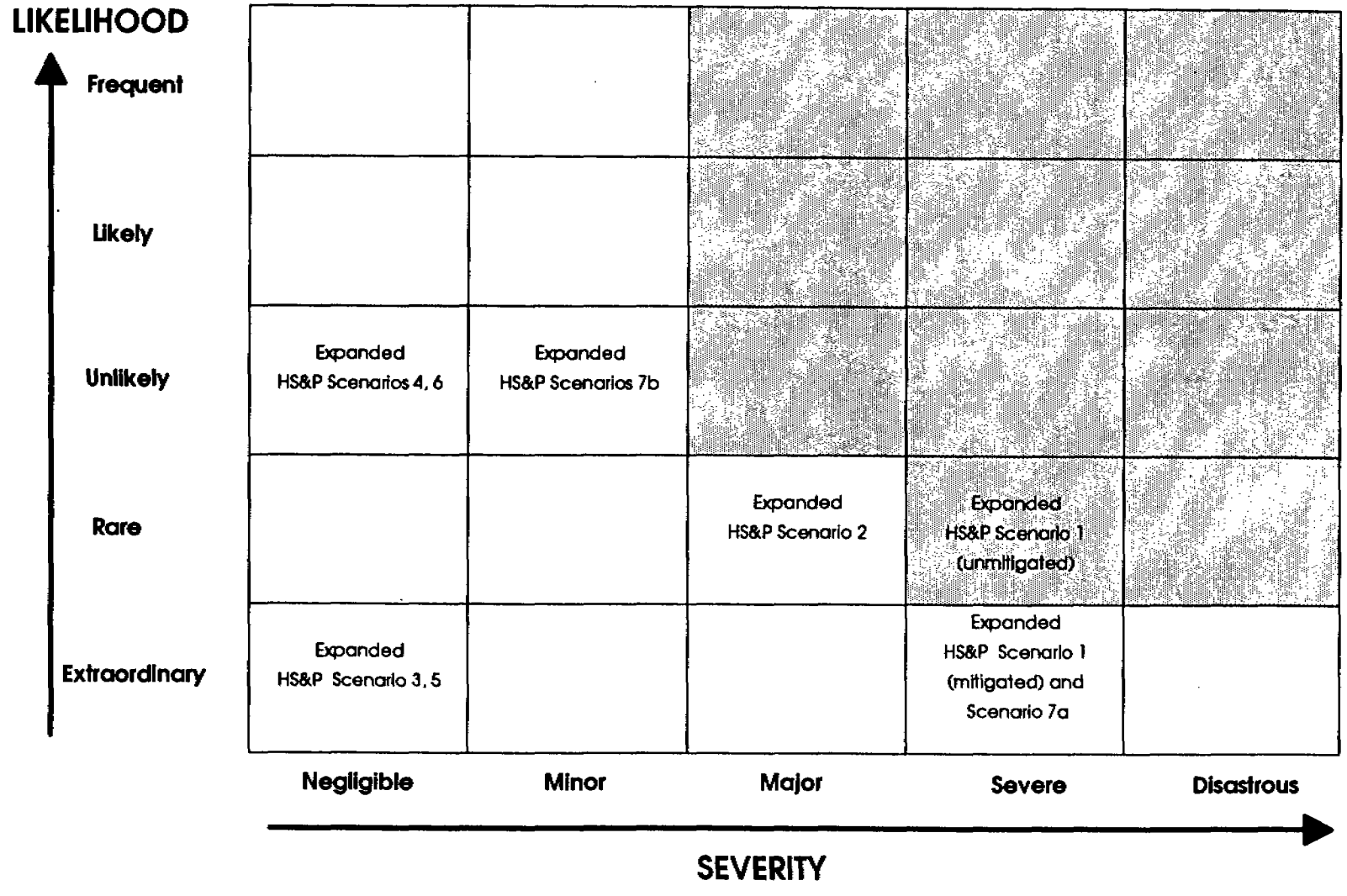


Figure 5-17 Hazard Scenario Risk Ranking Matrix for Expanded HS&P Gas Plant

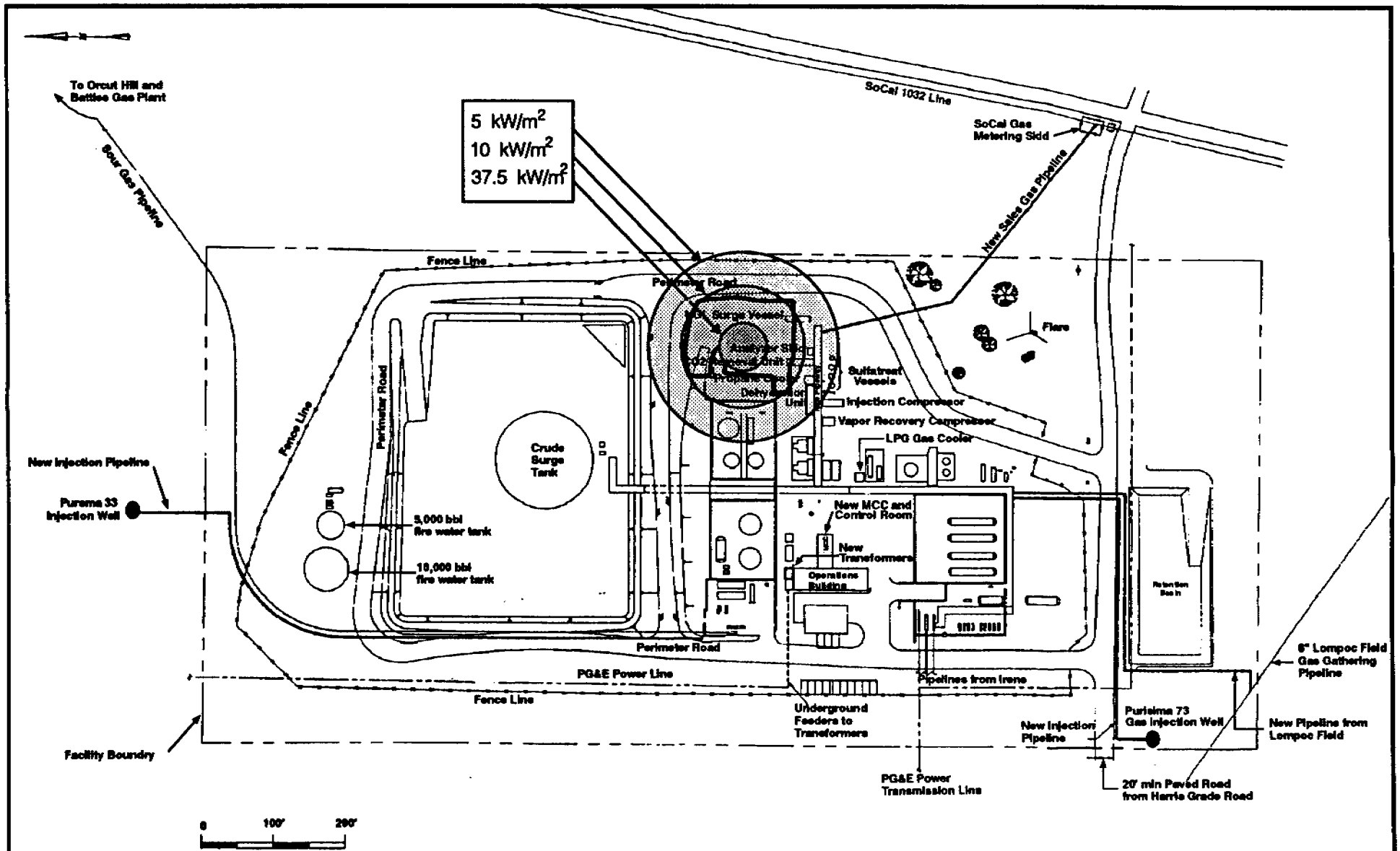


Figure 5-18 Thermal Radiation Hazards Associated with the Expanded HS&P Scenario 7B

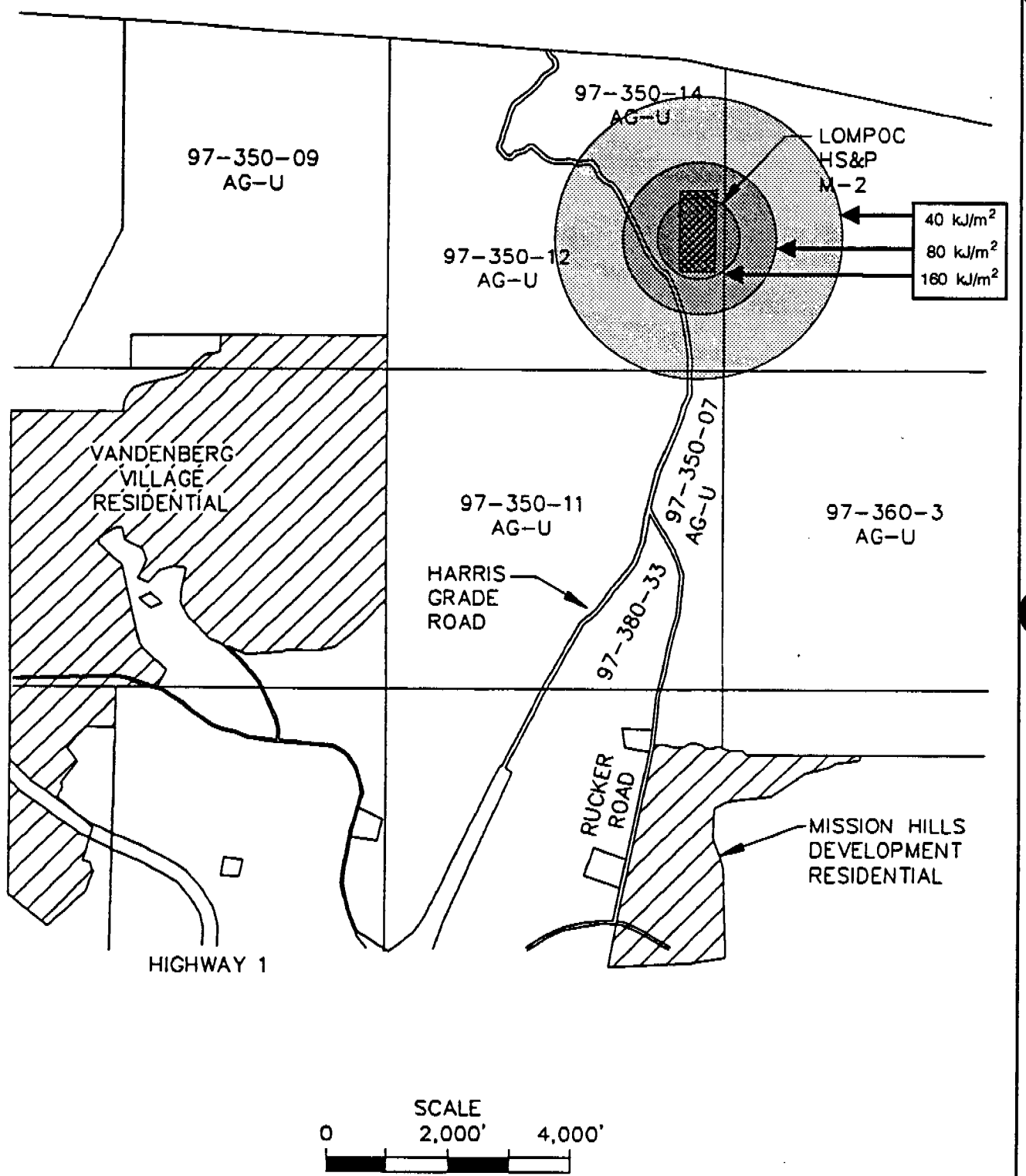


Figure 5-19 Integrated Thermal Radiation Hazards Associated with the Expanded HS&P Scenario 7A

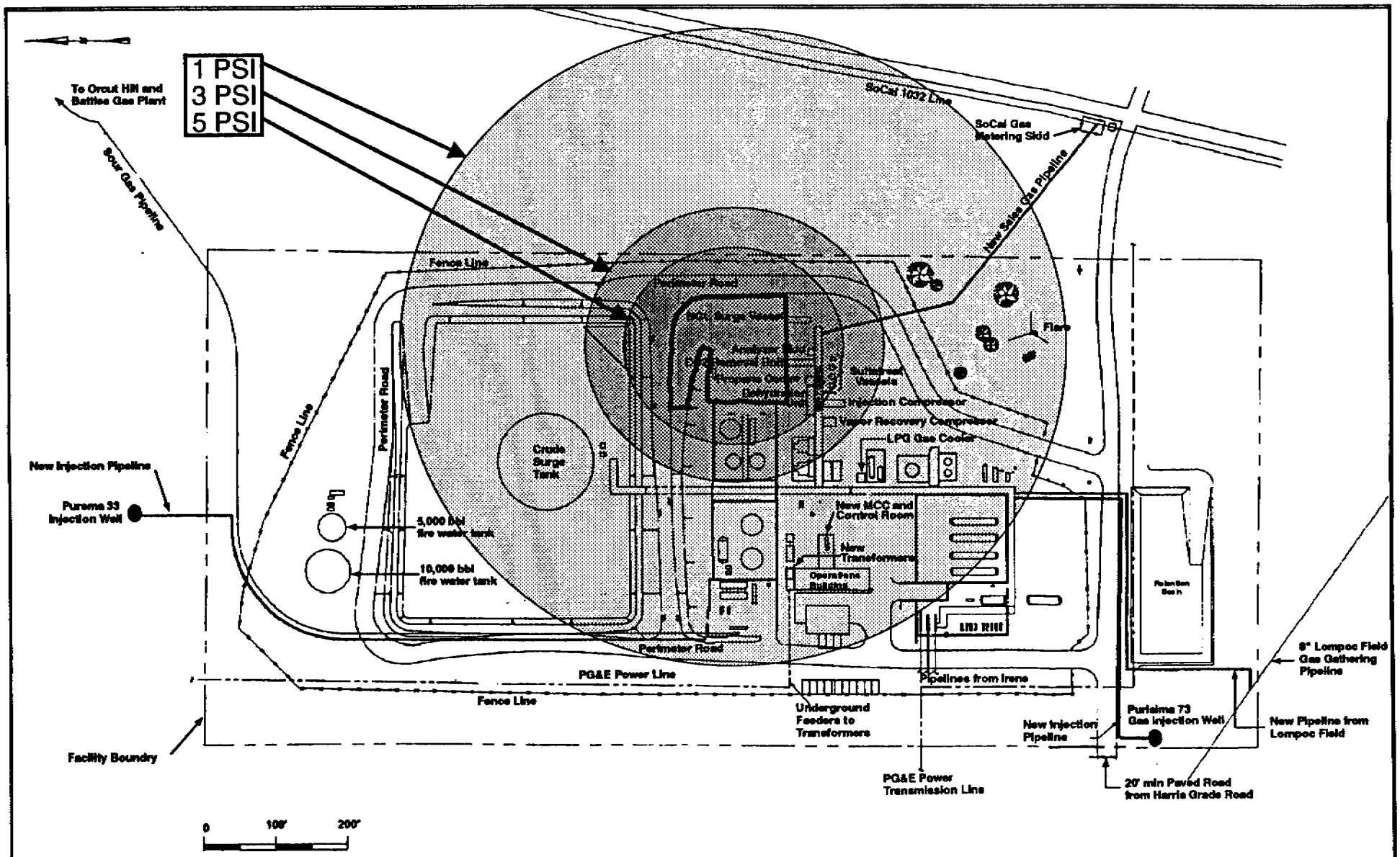


Figure 5-20 Explosion Overpressure Hazards Associated with the Expanded HS&P Scenario 7B

5.2.5.2 Mitigation Measures

The recommended mitigation measures for this option would be the same as that for the proposed project, and would cover both construction and operation. In addition, the use of a pipeline liner in the sour gas pipeline near Bradley Road would substantially reduce the likelihood of a rupture. By eliminating corrosion induced failures, the failure rate along this portion of the pipeline would be expected to drop to 0.7 failure per 1000 miles/yr.. This would reduce the likelihood of a pipeline rupture in this area to less then 9.2×10^{-7}, making this an adverse but insignificant event.

5.2.5.3 Residual Impacts

All of the system safety impacts associated with an expanded HS&P Gas Plant were found to be adverse but insignificant (Class III), based upon the County's significance criteria. The impact associated with a rupture of the pipeline between the HS&P and the Battles Gas Plant was found to be significant. However, if the pipeline section that parallels Bradley road is lined with a new corrosion resistant pipe, the impact would be significant but mitigable (Class II).

5.2.6 Cumulative Impacts

The cumulative impacts discussion is mostly qualitative by necessity. Although some level of safety analysis has been done for the gas processing options, a formal hazards analysis must wait until the projects are being permitted.

The cumulative impact discussion has been broken down into two parts. The first covers cumulative impacts associated with the proposed and approved projects list contained in Chapter 4. The second provides a qualitative discussion of the impacts associated with a number of options other north county gas producers could pursue if the Battles Gas Plant is shutdown.

5.2.6.1 Cumulative Project Impacts

All the cumulative projects listed in Table 4.1 of Section 4 are residential or commercial developments. None of these projects are themselves expected to present system safety risks, and none of the cumulative projects would be affected by the proposed project's safety impacts. Therefore the proposed project's contribution to cumulative impacts is considered to be insignificant.

5.2.6.2 Gas Processing Options for Other Producers

Seven options have been developed to address potential future gas treating facilities associated with the likelihood of Unocal decommissioning the Battles Gas Plant. Potential system safety impacts associated with these options are discussed below. In addition to these options two

hypothetical scenarios were developed to address the decommissioning of the Battles Gas Plant. These scenarios are listed in Table 4.4 of Section 4. The impacts associated with each of these are discussed at the end of this section.

Battles Gas Plant with a Modified P-17

Under this scenario, Battles would need to be modified to comply with the requirements discussed in Chapter 4 for this option. The major Point Pedernales P-17 recommendations that would not have to be compiled with, relative to equipment spacing, the installation of a closed vent system, and some of the fire protection recommendations. Table 4.5 provided a list of the P-17 recommendations that would be complied with as part of this option.

Four steps were undertaken in assessing the safety impacts associated with the Battles Gas Plant with a modified set of safety upgrades (modified condition P-17). The first step developed a range of potential hazards associated with the project. The second estimated the likelihood of the hazards occurring; the third step estimated the consequences of the hazards should they occur. These three steps represent the results of a hazards analysis. Using the results of this hazards assessment, a quantitative risk assessment (QRA), the fourth step, was conducted. A QRA was performed to determine the level of risk to the public of a Battles Gas Plant with only partial compliance with condition P-17 of the Point Pedernales FDP.. The results of this QRA are summarized below. Volume II of the technical documentation, which is available at the County of Santa Barbara Energy Division, contains the detailed consequence modeling assumptions and output used in the QRA.

Hazard Scenarios

Table 5.37 provides a list of the hazard scenarios that were developed for the Battles Gas Plant. These scenarios have been developed for specific areas of the plant. Figure 5-21 shows the location of each plant area. The purpose of dividing the plant into distinct areas was to allow the evaluation of potential accidents as they relate to individual areas, and to allow determination of each areas' contribution to the overall plant risk. Short descriptions of the major equipment in each area is provided below.

Area 1 - Butane Truck Loading: This area contains equipment associated with the butane loading bay, including butane piping and loading hoses. Entering and leaving the boundary of Area 1 are the high pressure natural gas inlet lines which contain H_2S and outgoing sales and field fuel lines.

Area 2 - Propane Truck Loading: The propane truck loading area is similar to the butane loading area. The primary difference is in the material loaded (propane versus butane) and the total amount of equipment located within the immediate area. Area 2 contains equipment associated with the propane (C_3) loading bay. The area includes propane piping, loading hoses, and tank truck. Entering and leaving the boundaries of Area 2 are the high pressure natural gas

Table 5.37 Summary of Battles Gas Plant Release Scenarios

Area 1 - Butane Truck Loading

1-1a Rupture of 2" loading line during butane truck loading
1-2a Rupture of 6" inlet high pressure produced gas line
1-3a Rupture of 8" sales gas line
1-4a Rupture of 6" fuel gas line
1-5a Rupture of 3" liquid butane line
1-1b Leak from 2" loading line during butane truck loading
1-2b Leak from 6" inlet high pressure produced gas line
1-3b Leak from 8" sales gas line
1-4b Leak from 6" fuel gas line
1-5b Leak from 3" liquid butane line

Area 2 - Propane Truck Loading

2-1a Rupture of 3" propane line
2-2a Rupture of 6" inlet high pressure produced gas line
2-3a Rupture of 8" sales gas line
2-4a Rupture of 6" fuel gas line
2-5a Rupture of 3" NGL pipeline
2-1b Leak from 3" propane line
2-2b Leak from 6" inlet high pressure produced gas line
2-3b Leak from 8" sales gas line
2-4b Leak from 6" fuel gas line
2-5b Leak from 3" NGL pipeline

Area 3 - LPG Storage Area

3-1a Rupture of 6" line and subsequent release of propane LPG vessel
3-2a Rupture of 6" line and subsequent release of butane LPG vessel
3-3a BLEVE of LPG storage tank (propane)
3-4a BLEVE of LPG storage tank (butane)
3-1b Leak from 6" line and subsequent release of propane LPG vessel
3-2b Leak from 6" line and subsequent release of butane LPG vessel
3-3b Propane Vessel Rupture
3-4b Butane Vessel Rupture
3-1c Rupture of 4" line and subsequent release of propane LPG vessel
3-2c Rupture of 4" line and subsequent release of butane LPG vessel
3-1d Rupture of 2" line and subsequent release of propane LPG vessel
3-2d Rupture of 2" line and subsequent release of butane LPG vessel

Area 4 - Natural Gas Liquid/Diesel Storage Area

4-1a Large NGL spill
4-2a Rupture of 2" LPG line (propane)
4-3a Rupture of 2" LPG line (butane)

Table 5.37 Summary of Battles Gas Plant Release Scenarios (continued)

4-4a Rupture of inlet high pressure produced gas line
4-5a Rupture of sales gas line
4-6a Rupture of fuel gas line
4-1b Small NGL spill
4-2b Leak from 2" LPG line (propane)
4-3b Leak from 2" LPG line (butane)
4-4b Leak from inlet high pressure produced gas line
4-5b Leak from sales gas line
4-6b Leak from fuel gas line

Area 5 - Fractionation Section
5-1a Rupture of 6" LPG line (propane)
5-2a Rupture of 6" LPG line (butane)
5-3a Rupture of 6" NGL line
5-4a Rupture of 6" inlet high pressure produced gas line
5-5a Rupture of 8" sales gas line
5-6a Rupture of 6" fuel gas line
5-1b Leak from 6" LPG line (propane)
5-2b Leak from 6" LPG line (butane)
5-3b Leak from 6" NGL line
5-4b Leak from 6" inlet high pressure produced gas line
5-5b Leak from 8" sales gas line
5-6b Leak from 6" fuel gas line
5-1c Rupture of 4" LPG line (propane)
5-2c Rupture of 4" LPG line (butane)
5-3c Rupture of 4" NGL line
5-1d Rupture of 2" LPG line (propane)
5-2d Rupture of 2" LPG line (butane)
5-3d Rupture of 2" NGL line

Area 6 - Absorption Section
6-1a Rupture of 6"i nlet high pressure produced gas line
6-2a Rupture of 8" sales gas line
6-3a Rupture of 6" fuel gas line
6-1b Leak from 6"i nlet high pressure produced gas line
6-2b Leak from 8" sales gas line
6-3b Leak from of 6" fuel gas line

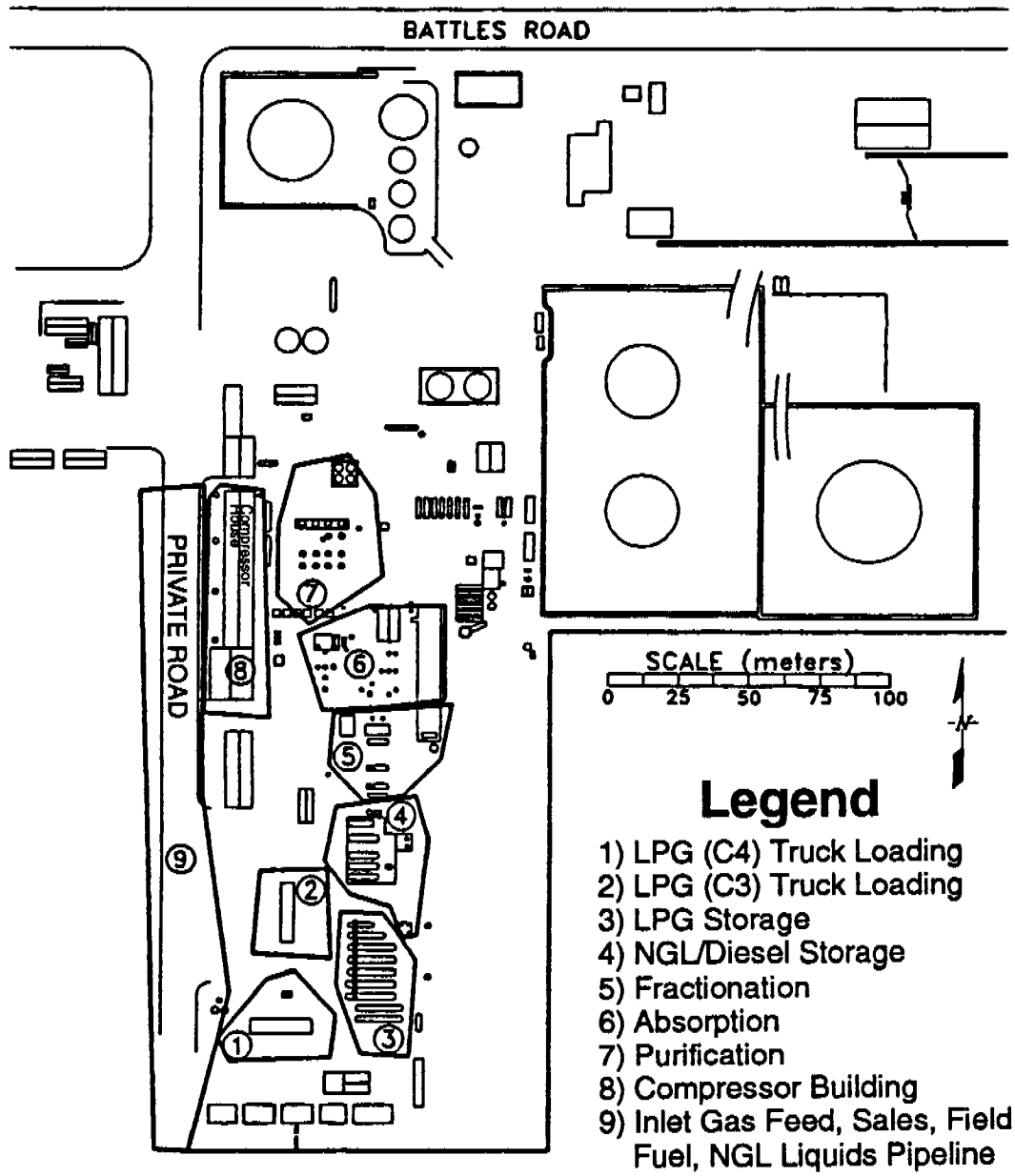
Area 7 - Purification Section
7-1a Rupture of 6" inlet high pressure produced gas line
7-2a Rupture of 8" sales gas line

Table 5.37 Summary of Battles Gas Plant Release Scenarios (continued)

7-3a Rupture of 6" fuel gas line
7-1b Leak from 6"i nlet high pressure produced gas line
7-2b Leak from 8" sales gas line
7-3b Leak from of 6" fuel gas line
7-4b BLEVE from propane refrigeration skid surge vessel

Area 8 - Compressor Building
8-1a Rupture of 8" high pressure sour gas line in compressor building
8-2a Rupture of 10" high pressure sour gas line in compressor building
8-1b Leak from 8" high pressure sour gas line in compressor building
8-2b Leak from 10" high pressure sour gas line in compressor building

Area 9 - Inlet/Outlet Gas Pipelines
9-1a Rupture of 6" inlet high pressure produced gas line
9-2a Rupture of 8" sales gas line
9-3a Rupture of 6" fuel gas line
9-4a Rupture of NGL product line
9-1b Leak in 6" inlet high pressure produced gas line
9-2b Leak in 8" sales gas line
9-3b Leak in 6" fuel gas line
9-4b Leak in NGL product line



Battles Gas Plant
Plant Areas

Figure 5-21 Battles Gas Plant Area

inlet line which contains H_2S and outgoing sales and field fuel lines. Traversing this area is an outgoing NGL line adjoining Area 9.

Area 3 - LPG Storage Area: This area contains equipment associated with the storage and transfer of liquefied petroleum gases (propane and butane). The area includes propane and butane piping, transfer pumps, and product storage vessels. Entering and leaving the boundaries of Area 3 are the high pressure natural gas inlet line which contains a low concentration of H_2S, and outgoing sales and field fuel lines.

Area 4 - Natural Gas Liquid/Diesel Storage Area: This area provides storage for natural gas liquids (NGLs) and absorption oil (diesel fuel). There are two storage tanks for each product. The area is bordered by an earthen dike to prevent liquid spills from entering other nearby areas. Along the western boundary of Area 4, there is 2-inch piping for transferring liquefied propane and butane from the fractionation section (Area 5) to C_3 and C_4 storage (Area 3). This area also contains piping for the propane leading to and from the sweetening unit. Entering and leaving the boundaries of Area 4 are the high pressure natural gas inlet line which contains a low concentration of H_2S, and outgoing sales and field fuel lines.

Area 5 - Fractionation Section: This area contains equipment associated with the fractionation and transfer of LPG's (propane and butane) as well as NGLs. The area includes gas and liquid (propane, butane, NGL, etc.) piping, pumps, and process vessels (columns, reboilers, condensers, accumulators, etc.). In addition, the southern end of the cooling tower is contained in this area. In the cooling tower are gas and liquid lines leading to and from the heat exchanger bundles. Entering and leaving the boundaries of Area 5 are the high pressure natural gas inlet line which contains a low concentration of H_2S, and outgoing sales and field fuel lines.

Area 6 - Absorption Section: This area, as referenced in Figure 5-21, contains the bulk of the lean and rich oil. Gas piping to the cooling tower and glycol unit are also included in Area 6. Entering and leaving the boundaries of Area 6 are the high pressure natural gas inlet line which contains H_2S, and outgoing sales and field fuel lines.

Area 7 - Purification Section: This section of the plant contains the piping and process equipment associated with the purification (removal of H_2S) of the inlet natural gas streams. The area is also defined to include the four lube oil tanks just north of the purification area. Traversing this area is a small fuel line leading from the compressor building to the boilers located to the northeast. Entering and leaving the boundaries of Area 7 are the high pressure natural gas inlet line which contains H_2S, and outgoing sales and field fuel lines.

Area 8 - Compressor Building: Area 8 is defined as the compressor building and the equipment it contains. This area contains all gas piping associated with compression which is not included in Area 7 or Area 9.

Area 9 - Inlet/Outlet Gas Pipelines: Area 9 is defined as the corridor along the western boundary of the gas plant which contains inlet natural gas pipelines, outgoing sales gas pipelines, outgoing field fuel pipeline, and the outgoing NGL pipeline.

Hazard Frequencies

Table 5.38 lists the failure frequencies that were applied to the various hazard scenarios listed in Table 5.37. Failure frequencies estimate how likely events occur. While there are many ways to estimate failure frequencies, historical data has been used for this analysis. Table 5.38 provides information on the databases used to develop these failure rates. For the Battles Gas Plant quantitative risk assessment, failure rates were broken down into four categories which included:

- Process Vessels,
- Storage Pressure Vessels,
- Process Piping, and
- Connections.

The process vessel failure rates were divided into three categories covering ruptures (>2"), large holes (>1" ≤2"), and small holes (≤1"). For the storage pressure vessels the three categories were developed, including; ruptures (>2"), small holes (≤2") and BLEVEs.

Process piping failure rates were broken down into three diameter sizes. For each size a rupture and leak failure rate were developed. Leaks were taken to be holes ≤ 1", and ruptures were taken to be any hole greater than 1". The process piping also included a failure rate for loading hose ruptures.

Connection failures were divided into two categories, one covered 1" connections, the other covered 2" connections. These connection failures were added onto vessel hole failures to account for the possible loss of fitting connections on the vessels.

All of these databases reflect a wide range of equipment ages and would reflect plants during the middle of their average life. A key driver of failure rates is the management systems in place at the facility to address preventative maintenance and equipment integrity.

Consequence Analysis

This section presents the modeling results for the Battles Gas Plant with a modified P-17. Modeling results for toxic hazard zones (hydrogen sulfide), flammable vapors, thermal radiation and explosion overpressure exposure are presented in Tables 5.39 through 5.47. The significance of the modeling results is based on the potential for public fatalities. Toxic compound were selected for analysis if they were classified as an acutely hazardous material (AHM), as defined by the California RMPP Guidelines, and the quantity onsite would exceed the threshold planning quantity (TPQ). These are the criteria used by the California RMPP regulation in defining what facilities must prepare risk management programs. For the proposed project only H_2S met these criteria. For fatalities from H_2S exposure, 1,000 ppm instantaneous exposure was used, along with 700 ppm for 10 minutes. For flammable exposure, any person within a flammable cloud that ignited was assumed to be a fatality, as well as any person exposed to 10 kW/m^2. For BLEVEs any person within the fireball was assumed a fatality, as

Table 5.38 Estimated Failure Rates for the Battles Gas Plant

Description	Failure Rate	Data Source and Assumptions
I. Process Vessels		
Rupture	1×10^{-5}/yr	Smith and Warwick, Phillips and Warwick, and Moss, 1987
Large holes	2×10^{-5}/yr	Smith and Warwick, Phillips and Warwick, and Moss, 1987
Small holes	1×10^{-4}/yr	Smith and Warwick, Phillips and Warwick, and Moss, 1987
II. Storage Pressure Vessels		
Rupture	2×10^{-6}/yr	Smith and Warwick, Phillips and Warwick, and Moss, 1987
Small holes	2×10^{-5}/yr	Smith and Warwick, Phillips and Warwick, and Moss, 1987
BLEVEs	5×10^{-8}/yr	A BLEVE is a catastrophic failure of a pressure vessel containing a liquid at a temperature above its normal boiling point. An extensive risk analysis report prepared by the Netherlands organization of Applied Research (TNO, 1983) estimated the frequency of LPG storage tank BLEVE's at 8.0×10^{-7}/year/tank.
III. Process Piping		
>6" diameter		
Rupture ≥ 2"	3×10^{-8}/ft-yr	WASH-1400, SRS
Leak ≤ 1"	9×10^{-7}/ft-yr	WASH-1400, SRS
>2" <6" diameter		
Rupture ≥ 2"	1.5×10^{-7}/ft-yr	WASH-1400, SRS
Leak ≤ 1"	2×10^{-6}/ft-yr	WASH-1400, SRS
≤ 2"		
Rupture ≥ 2"	3×10^{-7}/ft-yr	WASH-1400, SRS
Leak ≤ 1"	3×10^{-6}/ft-yr	WASH-1400, SRS
Loading hose rupture	5×10^{-3}/yr	CCPS
IV. Connection Failures		
1" connection	1×10^{-4}/yr	WASH-1400
2" connection	1×10^{-5}/yr	WASH-1400

Table 5.39 Battles Gas Plant - H_2S Toxicity Hazard Zones (D/4)

Scenario	Distance to 1000 ppm (ft)	Plume Width (ft)	Distance to Plume Width (ft)	Distance to 700 ppm (ft)	Plume Width (ft)	Distance to Plume Width (ft)
1-2a	13	3	7	23	7	10
2-2a	13	3	7	23	7	10
4-4a	13	3	7	23	7	10
5-4a	13	3	7	23	7	10
6-1a	13	3	7	23	7	10
7-1a	13	3	7	23	7	10
8-1a	13	3	7	23	7	10
8-2a	16	7	10	30	7	16

Table 5.40 Battles Gas Plant - H_2S Toxicity Hazard Zones (F/2)

Scenario	Distance to 1000 ppm (ft)	Plume Width (ft)	Distance to Plume Width (ft)	Distance to 700 ppm (ft)	Plume Width (ft)	Distance to Plume Width (ft)
1-2a	13	3	7	23	7	10
2-2a	13	3	7	23	7	10
4-4a	13	3	7	23	7	10
5-4a	13	3	7	23	7	10
6-1a	13	3	7	23	7	10
7-1a	13	3	7	23	7	10
8-1a	13	3	7	23	7	10
8-2a	16	3	10	33	7	16

Table 5.41 Battles Gas Plant - Flammable Vapor Hazard Zones (D/4)

Scenario	Distance to LFL (ft)	Plume Width (ft)	Distance to Plume Width (ft)	Distance to 1/2 LFL (ft)	Plume Width (ft)	Distance to Plume Width (ft)
1-1a	52	26	26	52	26	26
1-2a	148	23	66	417	39	184
1-3a	256	33	128	712	62	315
1-4a	112	16	46	312	33	128
1-5a	79	39	39	89	59	62
1-1b	23	10	10	23	13	10
1-2b	3	3	3	85	13	3
1-3b	69	10	20	180	20	75
1-4b	3	3	3	95	16	3
1-5b	52	26	26	52	26	26
2-1a	213	69	154	361	128	220
2-2a	85	43	43	85	43	43
2-3a	148	23	66	417	39	184
2-4a	256	33	128	712	62	315
2-5a	112	16	46	312	33	128
2-1b	138	49	92	226	82	128
2-2b	3	3	3	85	13	3
2-3b	69	10	20	180	20	75
2-4b	3	3	3	95	16	3
2-5b	59	30	30	59	30	30
3-1a	479	180	315	787	312	449
3-2a	148	72	72	216	167	131
3-1b	138	49	92	226	82	128
3-2b	52	26	26	52	26	26
3-3b	758	866	249	1243	1000	413
3-4b	0	0	0	515	331	184
3-1c	298	102	184	499	184	315
3-2c	92	30	92	92	30	92
3-1d	138	49	92	226	82	128
3-2d	52	26	26	52	26	26
4-1a	43	23	23	43	23	23
4-2a	138	49	92	226	82	128
4-3a	52	26	26	52	26	26
4-4a	148	23	66	417	39	184
4-5a	256	33	128	712	62	315
4-6a	112	16	46	312	33	128
4-1b	43	23	23	43	23	23
4-2b	138	49	92	226	82	128

Table 5.41 Battles Gas Plant - Flammable Vapor Hazard Zones (D/4) (Continued)

Scenario	Distance to LFL (ft)	Plume Width (ft)	Distance to Plume Width (ft)	Distance to 1/2 LFL (ft)	Plume Width (ft)	Distance to Plume Width (ft)
4-3b	52	26	26	52	26	26
4-4b	3	3	3	85	13	3
4-5b	69	10	20	180	20	75
4-6b	3	3	3	95	16	3
5-1a	479	180	315	787	312	449
5-2a	148	72	72	216	167	131
5-3a	138	69	69	138	69	69
5-4a	148	23	66	417	39	184
5-5a	256	33	128	712	62	315
5-6a	112	16	46	312	33	128
5-1b	138	49	92	226	82	128
5-2b	52	26	26	52	26	26
5-3b	59	30	30	59	30	30
5-4b	3	3	3	85	13	3
5-5b	69	10	20	180	20	75
5-6b	3	3	3	95	16	3
5-1c	298	102	184	499	184	315
5-2c	92	30	92	92	30	92
5-3c	75	39	39	75	39	39
5-1d	138	49	92	226	82	128
5-2d	52	26	26	52	26	26
5-3d	59	30	30	59	30	30
6-1a	148	23	66	417	39	184
6-2a	256	33	128	712	62	315
6-3a	112	16	46	312	33	128
6-1b	3	3	3	85	13	3
6-2b	69	10	20	180	20	75
6-3b	3	3	3	95	16	3
7-1a	148	23	66	417	39	184
7-2a	256	33	128	712	62	315
7-3a	112	16	46	312	33	128
7-1b	3	3	3	85	13	3
7-2b	69	10	20	180	20	75
7-3b	3	3	3	95	16	3
8-1a	148	23	66	417	39	184
8-2a	197	26	92	544	49	220
8-1b	3	3	3	85	13	3
8-2b	3	3	3	85	13	3
9-1a	148	23	66	417	39	184

Table 5.41 Battles Gas Plant - Flammable Vapor Hazard Zones (D/4) (Continued)

Scenario	Distance to LFL (ft)	Plume Width (ft)	Distance to Plume Width (ft)	Distance to 1/2 LFL (ft)	Plume Width (ft)	Distance to Plume Width (ft)
9-2a	256	33	128	712	62	315
9-3a	112	16	46	312	33	128
9-4a	138	69	69	138	69	69
9-1b	3	3	3	85	13	3
9-2b	69	10	20	180	20	75
9-3b	3	3	3	95	16	3
9-4b	59	30	30	59	30	30

Table 5.42 Battles Gas Plant - Flammable Vapor Hazard Zones (F/2)

Scenario	Distance to LFL (ft)	Plume Width (ft)	Distance to Plume Width (ft)	Distance to 1/2 LFL (ft)	Plume Width (ft)	Distance to Plume Width (ft)
1-1a	102	230	72	233	367	85
1-2a	148	20	75	459	46	220
1-3a	259	36	128	787	75	374
1-4a	108	16	56	335	36	154
1-5a	210	430	118	423	600	180
1-1b	20	131	13	69	197	13
1-2b	3	3	3	89	16	56
1-3b	62	10	23	174	26	108
1-4b	3	3	3	112	16	56
1-5b	102	230	72	233	367	85
2-1a	331	131	220	686	354	449
2-2a	148	20	75	459	46	220
2-3a	259	36	128	787	75	374
2-4a	108	16	56	335	36	154
2-5a	210	361	118	384	515	197
2-1b	210	95	154	420	236	262
2-2b	3	3	3	89	16	56
2-3b	62	10	23	174	26	108
2-4b	3	3	3	112	16	56
2-5b	98	292	43	207	390	72
3-1a	827	390	535	1676	981	1099
3-2a	584	1017	335	1089	1401	544
3-1b	210	95	154	420	236	262
3-2b	102	230	72	233	367	85
3-3b	656	1414	295	1184	1712	495
3-4b	741	1230	407	1237	1689	666
3-1c	482	203	315	991	538	643
3-2c	331	597	187	623	840	305
3-1d	210	95	154	420	236	262
3-2d	102	230	72	233	367	85
4-1a	56	216	30	125	305	30
4-2a	210	95	154	420	236	262
4-3a	102	230	72	233	367	85
4-4a	148	20	75	459	46	220
4-5a	259	36	128	787	75	374
4-6a	108	16	56	335	36	154
4-1b	85	151	49	164	226	85
4-2b	210	95	154	420	236	262

Table 5.42 Battles Gas Plant - Flammable Vapor Hazard Zones (F/2) (Continued)

Scenario	Distance to LFL (ft)	Plume Width (ft)	Distance to Plume Width (ft)	Distance to 1/2 LFL (ft)	Plume Width (ft)	Distance to Plume Width (ft)
4-3b	102	230	72	233	367	85
4-4b	3	3	3	89	16	56
4-5b	62	10	23	174	26	108
4-6b	3	3	3	112	16	56
5-1a	827	390	535	1676	981	1099
5-2a	584	1017	335	1089	1401	544
5-3a	420	705	243	751	974	384
5-4a	148	20	75	459	46	220
5-5a	259	36	128	787	75	374
5-6a	108	16	56	335	36	154
5-1b	210	95	154	420	236	262
5-2b	102	230	72	233	367	85
5-3b	98	292	43	207	390	72
5-4b	3	3	3	89	16	56
5-5b	62	10	23	174	26	108
5-6b	3	3	3	112	16	56
5-1c	482	203	315	991	538	643
5-2c	331	597	187	623	840	305
5-3c	187	321	105	331	459	164
5-1d	210	95	154	420	236	262
5-2d	102	230	72	233	367	85
5-3d	98	292	43	207	390	72
6-1a	148	20	75	459	46	220
6-2a	259	36	128	787	75	374
6-3a	108	16	56	335	36	154
6-1b	3	3	3	89	16	56
6-2b	62	10	23	174	26	108
6-3b	3	3	3	112	16	56
7-1a	148	20	75	459	46	220
7-2a	259	36	128	787	75	374
7-3a	108	16	56	335	36	154
7-1b	3	3	3	89	16	56
7-2b	62	10	23	174	26	108
7-3b	3	3	3	112	16	56
8-1a	148	20	75	459	46	220
8-2a	197	26	108	613	59	262
8-1b	3	3	3	89	16	56
8-2b	3	3	3	89	16	56
9-1a	148	20	75	459	46	220

Table 5.42 Battles Gas Plant - Flammable Vapor Hazard Zones (F/2) (Continued)

Scenario	Distance to LFL (ft)	Plume Width (ft)	Distance to Plume Width (ft)	Distance to 1/2 LFL (ft)	Plume Width (ft)	Distance to Plume Width (ft)
9-2a	259	36	128	787	75	374
9-3a	108	16	56	335	36	154
9-4a	420	705	243	751	974	384
9-1b	3	3	3	89	16	56
9-2b	62	10	23	174	26	108
9-3b	3	3	3	112	16	56
9-4b	98	292	43	207	390	72

Table 5.43 Battles Gas Plant - Overpressure Hazard Zones (D/4)

Scenario	Distance to 5 psig (ft)	Distance to 15 psig (ft)	Distance to 21 psig (ft)	Distance to 29 psig (ft)
1-2a	102	56	46	39
1-3a	161	89	75	62
2-2a	102	56	46	39
2-3a	161	89	75	62
3-1a	184	102	85	72
3-3	226	144	144	128
3-4	272	184	184	154
3-1c	125	69	59	49
3-3b	459	249	213	184
4-4a	102	56	46	39
4-5a	161	89	75	62
5-1a	184	102	85	72
5-4a	102	56	46	39
5-5a	161	89	75	62
5-1c	125	69	59	49
6-1a	102	56	46	39
6-2a	161	89	75	62
7-1a	102	56	46	39
7-2a	161	89	75	62
8-1a	102	56	46	39
8-2a	128	69	59	52
9-1b	102	56	46	39
9-2b	161	89	75	62

Table 5.44 Battles Gas Plant - Overpressure Hazard Zones (F/2)

Scenario	Distance to 5 psig (ft)	Distance to 15 psig (ft)	Distance to 21 psig (ft)	Distance to 29 psig (ft)
1-2a	134	72	62	52
1-3a	220	121	102	89
1-5a	148	79	69	59
2-1a	161	85	72	62
2-2a	134	72	62	52
2-3a	220	121	102	89
3-1a	354	194	164	141
3-2a	302	164	141	121
3-3	226	144	144	128
3-4	272	184	184	154
3-3b	459	249	213	184
3-4b	358	194	164	141
3-1c	220	121	102	89
3-2c	203	112	92	79
4-4a	134	72	62	52
4-5a	220	121	102	89
5-1a	354	194	164	141
5-2a	302	164	141	121
5-3a	213	115	98	85
5-4a	134	72	62	52
5-5a	220	121	102	89
5-1c	220	121	102	89
5-2c	203	112	92	79
6-1a	134	72	62	52
6-2a	220	121	102	89
7-1a	134	72	62	52
7-2a	220	121	102	89
8-1a	134	72	62	52
8-2a	174	95	79	69
9-1a	134	72	62	52
9-2a	220	121	102	89
9-4a	213	115	98	85

Table 5.45 Battles Gas Plant - Thermal Radiation Hazard Zones (D/4)

Scenario	Flame Length (ft)	Pool Radius (ft)	Distance to 5 kW/m^2 (ft)	Distance to 10 kW/m^2 (ft)
1-1a		13	105	72
1-2a	62		121	105
1-3a	98		171	151
1.4a	49		102	85
1-5a		16	138	92
1-1b		10	62	46
1-2b	16		43	36
1-3b	26		62	52
1.4b	16		46	36
1-5b		13	105	72
2-1a	102		548	413
2-2a	62		121	105
2-3a	98		171	151
2-4a	49		102	85
2-5a		13	105	66
2-1b	82		364	272
2-2b	16		43	36
2-3b	26		62	52
2-4b	16		46	36
2-5b		10	82	56
3-1a	253		1850	1381
3-2a		36	194	125
3-1b	82		364	272
3-2b		13	105	72
3-1c	164		961	722
3-2c		23	161	108
3-1d	82		364	272
3-2d		13	105	72
4-1a		7	69	46
4-2a	82		364	272
4-3a		13	105	72
4-4a	62		121	105
4-5a	98		171	151
4-6a	49		102	85
4-1b		7	69	46
4-2b	82		364	272
4-3b		13	105	72
4-4b	16		43	36
4-5b	26		62	52

Table 5.45 Battles Gas Plant - Thermal Radiation Hazard Zones (D/4) (Continued)

Scenario	Flame Length (ft)	Pool Radius (ft)	Distance to 5 kW/m^2 (ft)	Distance to 10 kW/m^2 (ft)
4-6b	16		46	36
5-1a	253		1850	1381
5-2a		36	194	125
5-3a		23	138	85
5-4a	62		121	105
5-5a	98		171	151
5-6a	49		102	85
5-1b	82		364	272
5-2b		13	105	72
5-3b		10	82	56
5-4b	16		43	36
5-5b	26		62	52
5-6b	16		46	36
5-1c	164		961	722
5-2c		23	161	108
5-3c		13	98	62
5-1d	82		364	272
5-2d		13	105	72
5-3d		10	82	56
6-1a	62		121	105
6-2a	98		171	151
6-3a	49		102	85
6-1b	16		43	36
6-2b	26		62	52
6-3b	16		46	36
7-1a	62		121	105
7-2a	98		171	151
7-3a	49		102	85
7-1b	16		43	36
7-2b	26		62	52
7-3b	16		46	36
8-1a	62		121	105
8-2a	75		141	125
8-1b	16		43	36
8-2b	16		43	36
9-1a	62		121	105
9-2a	98		171	151
9-3a	49		102	85
9-4a		23	138	85
9-1b	16		43	36

Table 5.45 Battles Gas Plant - Thermal Radiation Hazard Zones (D/4) (Continued)

Scenario	Flame Length (ft)	Pool Radius (ft)	Distance to 5 kW/m^2 (ft)	Distance to 10 kW/m^2 (ft)
9-2b	26		62	52
9-3b	16		46	36
9-4b		10	82	56

Table 5.46 Battles Gas Plant - Thermal Radiation Hazard Zones (F/2)

Scenario	Flame Length (ft)	Pool Radius (ft)	Distance to 5 kW/m^2 (ft)	Distance to 10 kW/m^2 (ft)
1-1a		13	75	46
1-2a	72		128	112
1-3a	115		184	164
1.4a	56		105	92
1-5a		16	105	62
1-1b		7	43	23
1-2b	16		46	36
1-3b	30		62	52
1.4b	20		46	39
1-5b		13	75	46
2-1a	102		548	413
2-2a	72		128	112
2-3a	115		184	164
2-4a	56		105	92
2-5a		13	72	43
2-1b	82		364	272
2-2b	16		46	36
2-3b	30		62	52
2-4b	20		46	39
2-5b		10	56	33
3-1a	253		1850	1381
3-2a		36	180	112
3-1b	82		364	272
3-2b		13	75	46
3-1c	164		961	722
3-2c		23	128	79
3-1d	82		364	272
3-2d		13	75	46
4-1a		7	46	26
4-2a	82		364	272
4-3a		13	75	46
4-4a	72		128	112
4-5a	115		184	164
4-6a	56		105	92
4-1b		7	43	23
4-2b	82		364	272
4-3b		13	75	46
4-4b	16		46	36
4-5b	30		62	52

Table 5.46 Battles Gas Plant - Thermal Radiation Hazard Zones (F/2) (Continued)

Scenario	Flame Length (ft)	Pool Radius (ft)	Distance to 5 kW/m^2 (ft)	Distance to 10 kW/m^2 (ft)
4-6b	20		46	39
5-1a	253		1850	1381
5-2a		36	180	112
5-3a		23	112	66
5-4a	72		128	112
5-5a	115		184	164
5-6a	56		105	92
5-1b	82		364	272
5-2b		13	75	46
5-3b		10	56	33
5-4b	16		46	36
5-5b	30		62	52
5-6b	20		46	39
5-1c	164		961	722
5-2c		23	128	79
5-3c		13	69	39
5-1d	82		364	272
5-2d		13	75	46
5-3d		10	56	33
6-1a	72		128	112
6-2a	115		184	164
6-3a	56		105	92
6-1b	16		46	36
6-2b	30		62	52
6-3b	20		46	39
7-1a	72		128	112
7-2a	115		184	164
7-3a	56		105	92
7-1b	16		46	36
7-2b	30		62	52
7-3b	20		46	39
8-1a	72		128	112
8-2a	89		151	134
8-1b	16		46	36
8-2b	16		46	36
9-1a	72		128	112
9-2a	115		184	164
9-3a	56		105	92
9-4a		23	112	66
9-1b	16		46	36

Table 5.46 Battles Gas Plant - Thermal Radiation Hazard Zones (F/2) (Continued)

Scenario	Flame Length (ft)	Pool Radius (ft)	Distance to 5 kW/m^2 (ft)	Distance to 10 kW/m^2 (ft)
9-2b	30		62	52
9-3b	20		46	39
9-4b		10	56	33

Table 5.47 Battles Gas Plant - BLEVE Thermal Radiation Hazard Zones

Scenario	Maximum Fireball Diameter (ft)	Distance to 80 kJ/m^2 (ft)	Distance to 160 kJ/m^2 (ft)
3-3a	751	1765	1148
3-4a	738	2135	1440

well as any person outside who was exposed to 29 psig. Any person inside a structure was assumed a fatality if the structure experienced 5 psig.

On-site occupational hazards and risk were not evaluated in this analysis beyond the identification of potential hazard zones since the county's significance criteria cover only offsite risk. The same modeling approach used for the proposed project was followed for this cumulative option. See Appendix D for a discussion of the consequence models.

A review of the tables shows the major hazards to be flammable vapors and overpressure hazards. These are primarily associated with the potential release of LPGs and NGLs. Toxic hazard zones (i.e., hydrogen sulfide) are limited to onsite occurrences, and do not impact offsite areas.

Quantitative Risk Assessment

The results of the probability and consequence analysis have been combined to develop FN curves (plots of frequency versus fatalities) using Arthur D. Little's risk analysis software. In calculating the risk profiles a two-dimensional computer map of the facility and surrounding area was prepared. The population distribution and probabilities of ignition were specified over the area of the map, then the likelihood of an individual fatality occurring was calculated at each grid location on the map.

In order to develop a risk profile many factors have to be taken into account. Each release scenario was evaluated for each wind direction and each combination of stability and wind speed. For any given direction of travel, it is necessary to consider the chance of having the particular wind stability class, the chance of the cloud igniting on-site and the chances of the cloud igniting offsite at every downwind location on the map. Clearly, the maximum downwind distances for vapor dispersion will only be attained if the vapor cloud does not ignite at the point of release or at any point on its travel until it reaches the maximum downwind distance, then ignites.

The general calculation approach followed the steps listed below:

- Summarize meteorological data into representative wind direction, wind speed and stability conditions.
- Select an appropriate grid size, then construct a map using Cartesian coordinates of the site and surrounding area.
- Identify the ignition sources and enter the ignition probabilities on the Cartesian grid.
- Determine the annualized population distribution, then enter the data on the Cartesian grid.
- Select the release events, along with the likelihood's of release, consequence data and release locations.

- Determine the likelihood and consequences of immediate ignition.
- Determine the likelihood and consequences of pool fires, vapor cloud fires, jet fires, explosions and toxic releases as appropriate, for each weather condition.
- Determine the probability of ignition at each point along the path of a dispersing vapor cloud using an ignition algorithm (this algorithm is discussed further below).
- Select another release event and repeat the preceding three steps.
- Apply conditional probabilities of fatality given exposure, for each type of consequence (i.e., thermal exposure, explosion overpressure or toxic exposure).
- Aggregate the likelihood of all probabilities of fatality at each location on the map for all the releases scenarios.
- Identify and connect all points which have the same level of risk (e.g., all points where there is a risk of fatality of 10^{-6} per year).
- Construct Number of fatality-Frequency (FN) curves by summing the number of fatalities for each event outcome and plotting the results against the frequency.

The meteorological data used in the risk assessment is specific to the Battles Gas Plant site, and is summarized in the air quality impact section of this document. The probability of ignition was determined by locating potential ignition sources within the facility, including fired heaters, pumps, compressor engines, other electrical components, etc. Fore each release scenario (consisting of release quantity, release location, a specific stability class and wind speed and wind direction), the ignition sources encountered by the cloud are listed. Letting Pi represent the ignition probability of the i^{th} ignition source to be encountered and assuming that areas A contains the first k sources, the probability that the cloud has not yet ignited after covering the areas A is given by:

$$\prod_{i=1}^{k} (1-P_i)=(1-P_1)(1-P_2)...(1-P_k)$$

The following ignition probabilities were used in the risk assessment.

- Farm Houses - 5 percent,
- Industrial Sites - 10 percent,
- People Outside - 1 percent per 5 people,
- Cars/Trucks - 2 percent,
- Electric Pumps - 1 percent,
- Open Flames - 90 percent, and
- Internal Combustion Engines - 2 percent.

The population data for the area surrounding the Battles Gas Plant was taken from the Quest Study, which was undertaken as part of Unocal's P-17 extension application.

Figure 5-22 shows the risk profile for the Battles Gas Plant with the modified P-17 conditions as discussed in Chapter 4 of this document. Based upon the Counties Significance criteria, the offsite impacts would be considered to be significant and can be not be mitigable (Class I). However, based upon the SSRRC's proposed offsite risk guidelines the risk profile is contained almost entirely within the gray with the bottom portion in the De Minims regions. For risks within the gray region the SSRRC would evaluate the need for mitigation based upon a cost benefit analysis. The portion within the gray region is dominated by LPG and NGL hazards. The top part of the curve is primarily driven by the process piping that contains the liquefied LPGs and NGLs. The bottom portion of the curve is driven by LPG and NGL vessel failures and BLEVEs.

It should be noted that even with full P-17 compliance, the offsite risk profile for the Battles Gas Plant would not change from that shown for the modified P-17 case. This is due to the fact that the remaining P-17 recommendations would only affect onsite risk levels (see the Battles Alternative section of this document for a further discussion of this).

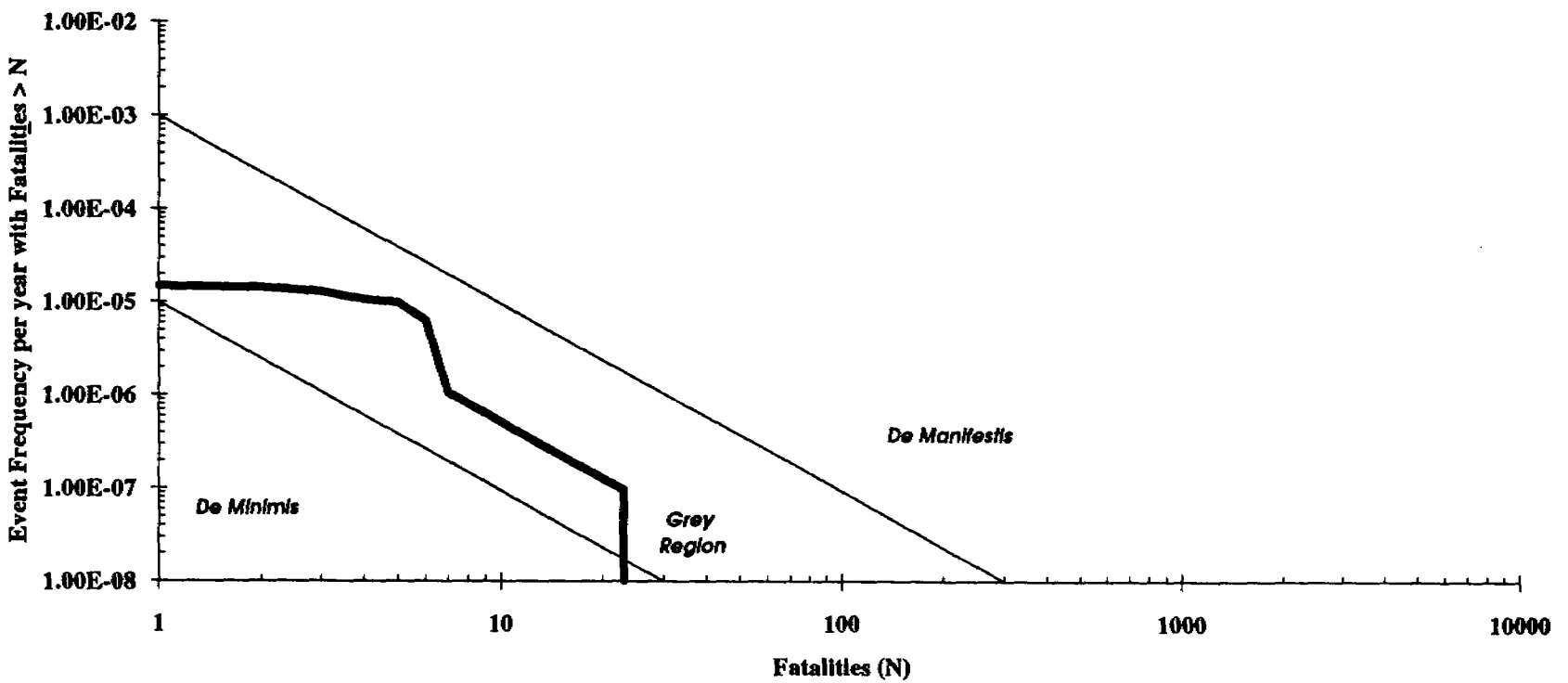
One of the major risk reduction measure for the Battles Gas plant would be to limit the volume of propane and butane storage to the maximum extent feasible. In addition a routine equipment inspection and maintenance program should be developed that assures equipment and piping integrity. Also, the current firewater testing and maintenance program should be continued on a regular basis.

The relatively low level of offsite risk posed by the Battles Gas Plant is a result of the low density of people within a 1,000 feet of the facility. The population in this areas is limited to day time workers; there are no residential or large commercial or industrial sites within this area. However, if in the future this were to change, then the offsite level of risk would increase as the population within 1,000 feet of the plant increased. Therefore, limiting the future development of residential, or large commercial/industrial development within 1,000 feet of the facility would assure that the offsite risk levels associated with the plant would not increase.

Uncertainties Associated with the Risk Profiles

There are many sources of uncertainty which can affect the accuracy of the overall results. These uncertainties deal with:

- Release frequency,
- Release size,
- Population impacts, including distribution and likelihood of fatality,
- Behavior of the release (jet mixing versus passive dispersion),
- Accuracy of the hazard models, and
- Ignition sources and probabilities.



Risk Profile is ploted on the county SSRRC's offsite risk graph.

Figure 5-22 Risk Profile for Battles Gas Plant with a Modified Set of Safety Conditions (Modified P-17)

The release frequencies and sizes are the most important contributors to overall uncertainty. We believe that the chosen values are conservative, i.e., that they overstate rather than understate the risk. Changes in failure rates will directly influence the risk profile. A doubling of the event frequencies would double the probabilities of fatalities. Changes in the relative size of leaks and ruptures will influence the risk profile, but to a lesser extent. The assumptions on population distribution and ignition probability also influence the risk profiles, but are not as significant as the other sources of uncertainty. In addition the effect of increased knock-on effects within the plant could increase the level of risk anywhere from 3 to 10 percent.

Install H_2S Removal Equipment At Each Field Not Served By The Proposed HS&P Gas Plant

Limited gas processing facilities (i.e., H_2S removal) at each affected field could potentially offer the lowest system safety impacts. The hazards for an H_2S removal system would include loss of gas from the SulfaTreat vessel or release of sour gas. Based upon the consequence modeling done for the proposed project, these types of sulfur removal systems would be expected to have hazard zones under 10 feet for H_2S and 26 feet for flammable vapors. Given the remote location of most of the oil fields these hazards would not be expected to go offsite. Therefore, the impacts would be considered adverse but insignificant (Class III). The addition of refrigeration systems would result in some additional onsite risk, however, significant impacts would not be expected to result offsite.

Reinject Gas At Each Field Not Served By The Proposed HS&P Gas Processing Plant

Potential hazards associated with reinjection were assessed as part of the analysis of the proposed project. Results of this analysis indicated that maximum hazard zones associated with reinjection activities would not exceed 15 feet for flammable vapor and H_2S hazards. Given the remote location of most oil fields, these impacts would not be expected to extend offsite. Therefore, system safety impacts associated with reinjection of sour field gas would be adverse but insignificant (Class III). Gas reinjection would most likely require the refrigeration systems to remove the liquids from the gas prior to reinjection. The hazards associated with these systems would be similar to that for the proposed project at the JHF. Assuming the use of a propane refrigeration system, there is the potential for flammable vapor fires and explosions. hazard distances could be as great as 100 feet. Given the remote location of most of these sites, this would be considered an adverse but insignificant impact (Class III).

Flare Gas at Each Field Not Served by the Proposed HS&P Gas Plant

The flaring scenario might require gas processing at sites that have H_2S gas levels above 796 ppm. These processing facilities would have similar safety impacts as the H_2S removal equipment scenario discussed above. In addition, flares would be installed at each lease or group of leases. The results of consequence modeling are similar to those for the H_2S removal

equipment discussed above and represent low system safety impacts. These again would be classified as adverse but insignificant (Class III).

Electricity Generation at Each Field Not Served by the Proposed HS&P Processing Facility

The electrical generation scenario also would require gas processing at each site. The system safety impacts would be similar to the H_2S removal equipment scenario discussed above. Here again they would be considered adverse but insignificant (Class III).

Shut-In Oil and Gas at Field Not Served by the Proposed HS&P Gas Plant

If all the operator that currently use the Battles Gas Plant were to shut-in, there would be minimal change in the overall safety of the north county region. This action would also not produce any new system safety impacts.

5.2.6.3 Hypothetical Gas Handling Scenarios

As discussed in Chapter 4, two hypothetical scenarios were developed to address the cumulative impacts associated with the potential decommissioning and abandonment of the Battles Gas Plant. The potential system safety impacts associated with each of these scenarios is discussed below.

Battles with a Modified P-17

With this scenario the proposed project would be built. The system safety impacts associated with the proposed HS&P Gas Plant were all found to be insignificant (Class III). This included the safety impacts associated with the pipelines between Platform Irene and the HS&P site. The safety impacts for the SMPS were found to be beneficial (Class IV) since the proposed modifications are to add new fire protection equipment. The JHF site safety impacts were found to be insignificant (Class III).

With the Battles Gas Plant, a set of modified safety conditions (modified P-17), the safety impacts were found to be significant and can not be mitigated (Class I) based upon the County's significance criteria. Based upon the SSRRC's offsite risk guidelines, the Battles Gas Plant would be in the gray and De Minimis regions.

Use of the gas pipeline between Orcutt Hills and Battles was found to have a significant but mitigable impact (Class II). See the sections above for the basis for these impact determinations.

Flaring

Under this scenario, the proposed project would be built and the other north county gas producers would flare their gas. The system safety impacts associated with the proposed HS&P Gas Plant were all found to be insignificant (Class III). This included the safety impacts associated with the pipelines between Platform Irene and the HS&P site. The safety impacts for the SMPS were found to be beneficial (Class IV) since the proposed modifications are to add new fire protection equipment. The JHF site safety impacts were found to be insignificant (Class III).

For flaring the safety impacts were found to be insignificant (Class III). See the sections above for the basis for these impact determinations.

5.2.7 Mitigation Requirements/Recommendations

Because no significant impacts were identified for the proposed project, no mandatory mitigation measures are proposed. However, the mitigation measures presented below are recommended to minimize the potential for safety impacts associated with the proposed project. The mitigation measures that have been included here contain process safety management (PSM) techniques that if implemented would help to assure that the proposed project is designed, constructed and operated with the highest degree of safety. The recommended mitigation measures are summarized as follows:

[SS-1] A detailed Safety, Inspection, Maintenance and Quality Assurance Program (SIMQAP) for construction and operation of the existing and proposed system should be prepared by Unocal and reviewed and approved by the Systems Safety Reliability and Review Committee (SSRRC) prior to Land Use Clearance.

[SS-2] A Hazard and Operability Study (HAZOP) for the proposed modifications and ancillary existing structures including the HS&P, Santa Maria Pump Station, and Jim Hopkins Fee should be prepared by Unocal and reviewed and approved by the SSRRC prior land use clearance for construction.

[SS-3] For any pipeline that extends beyond the HS&P facility boundary (i.e., Pipeline 2 - SoCal Gas sales line tie-in; and Pipeline 4 - gas/NGL injection line to well Purisima #33) a plastic, or other suitable material, should be buried about 12 to 18 inches below the surface of the trench fill, above any pipeline, and should cover the width of the trench and length of the pipeline. The material should be brightly colored and be labeled with a warning that the digger is excavating in a hazardous gas pipeline trench.

[SS-4] Applicant shall prepare and/or update existing Emergency Response Plans for all three of the facilities covered by the proposed project. These plans should reflect all of the project modifications that are covered by this application, and should include all components of the project.

5.2.8 Mitigation Monitoring Plan

Mitigation Measures	*Administrative Action*	*Timing*	*Party Responsible For Verification*	*Monitoring/ Reporting Schedule*	*Party Responsible For Verification*
SS-1	Applicant to Prepare SIMQAP	Prior to Land Use Clearance	SSRRC	Applicant to Prepare Necessary Compliance Reports	RMD
SS-2	Applicant to Prepare HAZOP	Prior to Land Use Clearance	SSRRC	Applicant to Prepare Necessary Compliance Reports	RMD
SS-3	Specifications to be Submitted with Construction Plans	Prior to Issuance of Building Permit	Public Works Department	Periodic Inspection	Building Inspectors, RMD
SS-4	Applicant to Prepare/Update ERP for all the sites.	Prior to Start-Up	OES/Fire/RMD	Periodic Inspection	OES/Fire/RMD

5.3 Fire Protection/Emergency Response

This section describes the existing conditions, the fire protection emergency response impacts of the proposed project and alternatives; presents potential mitigative measures; and discusses the cumulative impacts. The current fire protection systems are described in Section 5.3.1 and are assessed relative to potential fire hazards and fire protection impacts. As seen in the previous section, the system safety review addressed the potential fire hazards associated with the proposed modifications.

5.3.1 Existing Conditions

This section describes the general provisions for emergency response from both private and public resources. Current fire protection equipment, plans and response capabilities at each of the facilities that would be affected by the proposed modifications are also discussed.

5.3.1.1 Current Fire Protection At The HS&P Facility

The Unocal HS&P facility fire protection plan, dated May 1987 provides a general description of the existing processes, equipment, and fire protection resources. The facility is equipped with two 3000 gpm fire pumps; two fire water tanks (capacities of 210,000 gallons and 420,000 gallons); and a looped fire main with fixed monitors, hydrants and hose reels. The facility also is equipped with the following:

1. Flame and gas detection system that provides facility shutdown upon activation.

2. Portable extinguishers (ten) are provided throughout the facility.

3. A fixed foam system is provided for the 100,000 barrel oil surge tank, which is identified in the Fire Protection Plan as the facility's largest risk.

4. Fire fighting clothing and self contained breathing apparatus are available on-site for employees responding to emergencies.

5. Drainage is provided through bermed ditches around the facility to a retention basin.

The facility appears to be well designed for fire protection, with sufficient spacing for equipment. It appeared to be well maintained with no extraordinary fire hazards for a facility of its type.

Employee training includes a minimum of eight hours of HazMat training for all employees that work in areas containing hydrocarbon. Fire training is also conducted, however, there is no fire brigade on-site because of the minimal size of the facility and number of employees.

The site is easily accessible from Harris Grade Road via an existing 20 foot wide paved road around the perimeter. There is an additional road within 1000 feet of the facility which also surrounds the HS&P. Both roadways are maintained to support a 16-ton County fire engine.

Outside the perimeter, native vegetation provides a fire exposure for the facility, but the separation distances from process equipment are adequate, since Unocal maintains a 300 foot fire break around the facility.

The nearest fire station is Fire Station No. 51, at 749 Burton Mesa Road. The station is approximately 1.25 miles from the facility with a response time of approximately four minutes. The next nearest station is in Buellton (311) which is over 20 minutes away. Fire fighters and officers are trained in petroleum liquid and gas emergency response, in part by support from Unocal.

5.3.1.2 Current Fire Protection System At Santa Maria Pump Station

Unocal's Santa Maria Pump Station and Unocal's Battles Gas Plant are located on adjacent parcels on property along Battles Road in Santa Maria. These two facilities exist and operate separately with the exception that the Santa Maria Pump Station has no independent means of fire protection. Basic fire protection is also supplied by Battles, including fire water tank and emergency fire pump. In addition to the fire protection supplied by Battles, Santa Maria Station is equipped with a foam system for protection of the oil storage tanks.

The elimination of Battles Processing Plant would necessitate changes to the fire protection system at the pump station so that it is independent of the Battles facility. In order to continue operation of Santa Maria Pump Station, Unocal would replace and upgrade the fire water system. A complete and fully operational fire protection system is necessary prior to decommissioning the Battles Gas Plant.

The proposed project includes replacement of the existing fire water tank and installation of a new fire water perimeter loop with additional fire hydrants. The new fire protection equipment would be located near the northeast corner of the pump station. The new fire water piping would supply the existing foam system and monitors. Replacement of the existing fire water tank is necessary because the current location is within a diked area containing an oil storage tank.

The nearest emergency response to this site would be from the County's Fire Stations #21 and #22, and the City of Santa Maria Stations 1 and 2. Wild fires at the site are not an issue given the developed nature of the area around the site.

5.3.1.3 Fire Protection At Unocal's Jim Hopkins Fee

The Jim Hopkins Fee in the Santa Maria Valley field produces approximately 300 BPD of oil and with a gas production of approximately 125 MSCFD. The Jim Hopkins Fee is located less

than a mile east of the highway junction of U.S. 101 and the Santa Maria Way. The nearest building is an office of the California Highway Patrol located approximately 1/2 mile from the Fee while the nearest residence is a little more than a mile away across U.S. 101.

Currently at the Jim Hopkins Fee there is no fixed fire protection system. The facility is equipped with hand held fire extinguishers and there is a potable water outlet equipped with an non-conforming (garden type) hose. The nearest emergency response to the site would be the same stations as for the Santa Maria Pump Station.

Around the site perimeter, native grassland vegetation provides only a minimal fire exposure for the facility. At the present time, the vegetation appears to contribute only slightly to the overall fire risk, but seasonal growth and changes in use of the land for cattle may affect the degree of hazard.

5.3.1.4 Current Emergency Response Capabilities

In the event of a major incident at any of the three facilities, the County of Santa Barbara would be the first public agency to respond to give assistance. The County of Santa Barbara operates seven (7) fire stations in the areas surrounding the HS&P, Santa Maria Pump Station and the Jim Hopkins Fee. Table 5.48 lists each of the fire stations by number, address and equipment and associated capabilities. The locations of each station and the relationship to the facilities is shown in Figure 5-23.

The City of Santa Maria and the County of Santa Barbara have a mutual aid agreement allowing the city and county fire departments to cooperate in responding to a major incident. This would allow the equipment located in the three Santa Maria stations to respond during an emergency.

In addition to the County emergency response equipment, the oil processing facilities are required by Federal, State and County regulations to have on-site fire fighting equipment and materials to control oil spills or other hazardous material releases. Unocal has materials stored to combat fires, oil spills and other hazardous releases at or near the three facilities. The types of response equipment and their location are shown in Table 5.49.

A recent multi-company/agency drill was conducted at the HS&P facility to test response capabilities to a major incident (Reference letter dated 12/29/91 from the Fire Department). The drill suggested that a five person crew would be needed for an initial response to a major incident at HS&P. Currently, only a four person crew is provided.

In the event of an emergency related to an oil and gas incident, the County of Santa Barbara has developed a region-wide oil and gas industry plan that coordinates the County agencies and the oil and gas companies. The Area Oil and Gas Industry Emergency Response Plan (AOGERP) is the basis for a cooperative effort by the oil and gas industry and the County of Santa Barbara to respond to major petroleum incidents.

Table 5.48 Fire Stations Serving The Project Areas

Station Name/Number	Address	Capabilities/Equipment
Nipomo (SLO County)	450 Pioneer Street Nipomo	Type A pumper; Minimum of one fire fighter per 24-hr shift.
City Of Santa Maria/No.3	1527 N. College Santa Maria	Pumper (1,500 gpm); Brush truck; Three fire fighters per 24-hr shift.
City Of Santa Maria/No.1	204 E. Cook Street Santa Maria	Two engines (1,500 gpm); One reserve pumper (1,250 gpm) ladder truck; Rescue Unit; Brush Fire Unit; Two fire fighters per 24-hr shift.
City Of Santa Maria/No.2	416 W. Carmen Street Santa Maria	Engine (1,500 gpm); Pumper (1,000 gpm); Brush fire truck; Hazardous Material Response Unit; Three fire fighters per 24-hr shift.
Airport/No. 21 (S.B. County)	3339 Terminal Drive	Pumper (1,250 gpm); Crash rescue truck; Three fire fighters per 24-hr shift.
Santa Maria/No. 22 (S.B. County)	1596 Tiffany Park Ct. Santa Maria	Pumper (1,250 gpm); Three fire fighters per 24-hr shift.
Sisquoc/No. 23 (S.B. County)	5003 Depot Avenue Sisquoc	Pumper (1,250 gpm); Three fire fighters per 24-hr shift; Foam Tender scheduled for 1992.
Los Alamos/No.24 (S.B. County)	99 Centennial Los Alamos	Pumper (1,250 gpm); Three fire fighters per 24-hr shift.
Buellton/No. 31 (S.B. County)	168 W. Highway 246 Buellton	Pumper (1,250 gpm); Three fire fighters per 24-hr shift; Hazardous Material Response Team.

Table 5.48 Fire Stations Serving The Project Areas (Continued)

Station Name/Number	Address	Capabilities/Equipment
Gaviota/No. 18 (S.B. County)	17200 Mariposa Reina Gaviota	Pumper (1,250 gallon per minute); 3,500 gallon Foam Tender (specialized oil fire fighting equipment); Three fire fighters per 24-hr shift; Hazmat Unit.
Lompoc/No. 51 (S.B. County)	749 Burton Mesa Road Lompoc	Pumper (1,250 gpm); Reserve pumper (1,250 gpm) Brush Fire Unit; Paramedic ambulance; Four fire fighters per 24 hour shift.

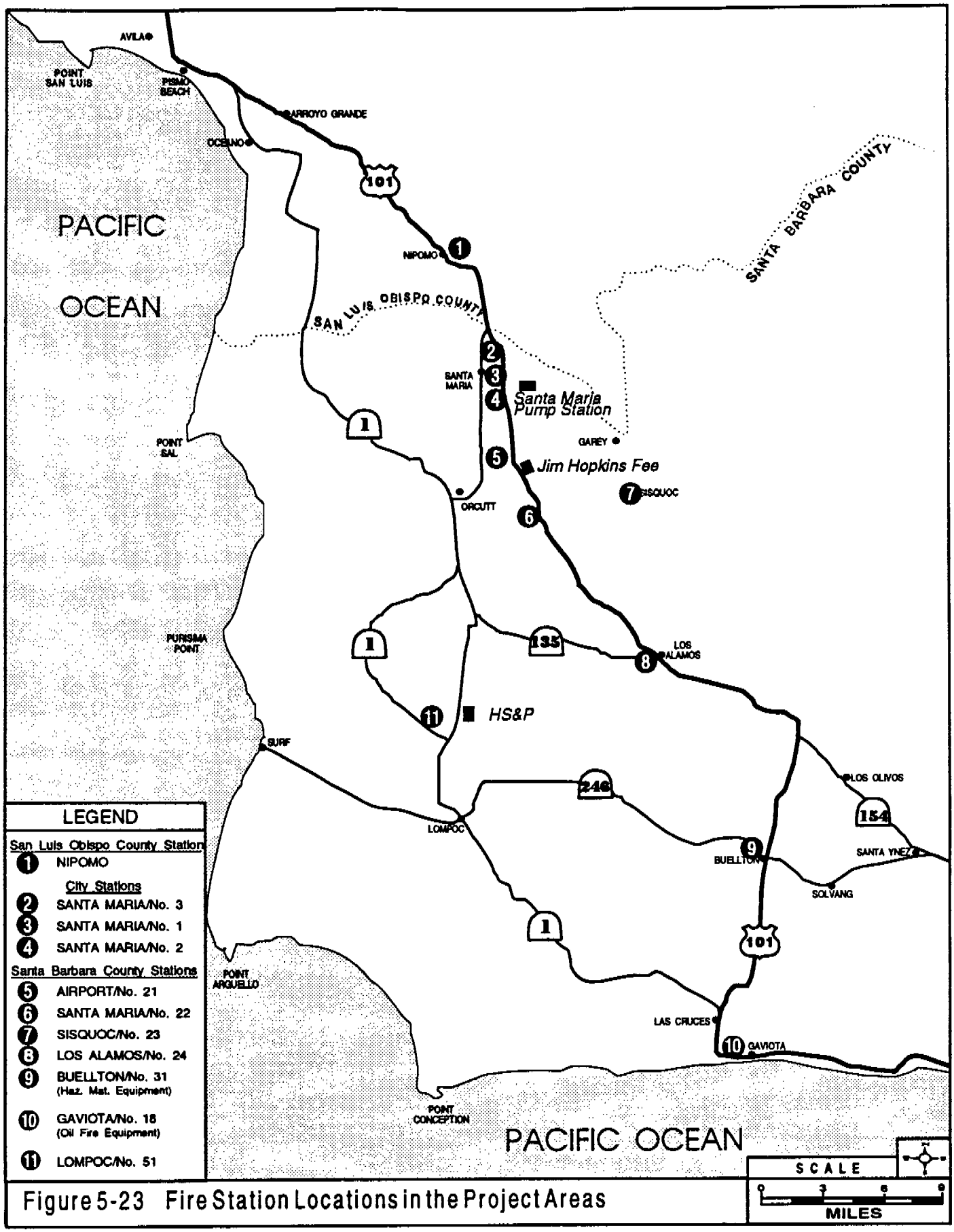


Figure 5-23 Fire Station Locations in the Project Areas

Table 5.49 UNOCAL Santa Maria District Emergency Response Equipment

Location	Item	Quantity
Lompoc Heating Separation and Pumping (HS&P) Facility	Sorbent Boom	500 ft
	Sorbent Pads	10 boxes
	Rakes	10
	Shovels	10
	Pitch Forks	10
	Sand Bags (empty)	500
	Fiberglass/plywood storage box (large)	1
	Portable tanks (3,000 gal)	2
	Gas or diesel driven trash pumps	2
	Emergency response trailer	1
	SCBAs (Self Contained Breathing Apparatus)	6
	Fire fighting turnouts	12
	Tri-monitors	3
	Cellular phones	2
	Emergency Response suitcase	1
	Radio base station	1
	4x4 pickup truck	1
	Foreman's vehicle	1
Lompoc Field	Company radio base station - Lompoc	1
	Half-ton truck, radio #284	1
	Three-quarter-ton trucks, radios #712 and & #748	2
	Half-ton foreman truck, radio #247, cellular phone (805) 680-1172	1
	Three-ton A-frame, radio #217	1
	Three-quarter-ton mechanics truck with side boom, radio #731	1
	Fire fighting turnouts	4
	Solvent	500 gal
	3-in-1, H_2S and combination gas analyzers	1
	H_2S gas analyzers	3
	Fire extinguishers	7

Table 5.49 UNOCAL Santa Maria District Emergency Response Equipment (continued)

Location	Item	Quantity
Lompoc Field (Continued)	Plastic trash bags	100
	Excelcior	3 bales
	Brooms	4
	Portable sprayers (Indian style)	2
	Air compressors (1 portable, 1 on A-frame truck).	2
	Assorted pipe plugs, clamps, and fittings; Pipe cutters, pipe tape and primer; Standard and XTRU coat line pipe; Various hand tools; *Backhoe and welder contractors on-duty during work hours.*	
Lompoc Rolling Equipment	A-Frame truck	1
	Utility truck	1
	Half-ton truck	2
	Three-quarter-ton truck	1
	One-ton utility trucks	2
	Two wheel air compressor trailer	1
	Two wheel gas trailer	1
	Two wheel weigh meter calibrator	1
	Two wheel grease trailer	1
Orcutt Hill Rolling Equipment	One-ton trucks	3
	Three-quarter-ton trucks	4
	780 BBL vacuum truck	1
	Three-ton crescent A-frame truck	1
	Three-ton A-frame truck	1
	Half-ton truck	1
	Two-wheel portable orifice meter trailer	1
	Two-wheel air compressor trailer	1
	Emergency shower trailer	1

Table 5.49 UNOCAL Santa Maria District Emergency Response Equipment (continued)

UNOCAL Northern California Division Pipeline Emergency Response Equipment

Location	Item	Quantity
Avila Station	One-ton flat bed truck	
	Foreman pickup - radio equipped #6258, cellular phone (805) 441-1140	
	Pipe cutters (2", 4", 6", 12" and 16")	
	Scott air packs	2
	Barricades	10
	Company radio base station, call letters KMJ419 - Avila	
	Marine base station, call letters KTD 411 - Avila	
	Homelite 2" pumps, 192 gpm	2
	Aluminum boats, 16' with 25 hp outboard motors	2
	Grove portable crane	
	Portable marine radios, call letters KQ9063	2
	Marine base station, call letters KQ906	
	Portable radios (Spill Coop), call letters KW3862 and KV4847	4
	Minimax 17 boom, 1800'	
	Expandi boom 4300, 2000'	
	51 TGH skimmer	
	Oil containment bag with valves and hose, 1200 gallon	
	Life jackets	10
	3-in-1, H_2S and Combustible Gas Analyzers	
Avila Tank Farm	One-ton mechanics trucks, radio #6265, #6271, #6272;	3
	Company radio base station, call letters KMJ419 - Tank Farm	
	Foreman pickup, radio #6252, cellular (805) 441-0677	
	Two-ton A- frame truck, radio #6266	

Table 5.49 UNOCAL Santa Maria District Emergency Response Equipment (continued)

Location	Item	Quantity
Avila Tank Farm (Continued)	One-ton flat bed with overhead rack, radio #6263	
	Half-ton diesel, radio #6257	
	3/4-ton truck with tools, radio #6255	
	Dokata truck, radio #6261	
	Emergency response trailer with company and spill frequency radios	
	Pole dolly	
	Portable pressure pump	
	Portable fire pumps	2
	Portable weed spray pump	
	Waterous floating pumps	3
	Generators	2
	Mud Pump	
	Centrifugal pump	
	Air driven water pump	
	Air compressor	
	Bonding cables	
	Pipe clamps (6", 8", and 12")	2
	Scarfing ring, 8" to 12"	
	Hot tap machine and 2" valves	
	Emergency lighting	
	Base radio station, call letters KMJ419 - Tank Farm	
	All necessary hand tools, pitch forks, wheel cutters, water barricades, pipe wrap and other materials to do a complete job.	
	Scott Air Packs	2
	Smoke ejector	
	3-in-1, H_2S and Combustible Gas Analyzers	
O'Donnell Pipeline Office	One-ton flatbed with hoist, radio #6262	
	Head Roustabout pickup truck, radio #6254	

Table 5.49 UNOCAL Santa Maria District Emergency Response Equipment (continued)

Location	Item	Quantity
O'Donnell Pipeline Office (Continued)	S-10 pickup Head Gauger, radio #6259	
	One-ton mechanics trucks with hoists, raio #6256 and #6270	2
	Dokata gang trucks, radio #6264 and #6269	2
	Foreman's pickup, radio #6253, cellular (805) 680-1398	
	S-10 pickup, Gauger, radio #6268	
	One-ton truck, radio #6275	
	Portable trash pump	
	Pipe clamps (6", 8", 10" and 12")	
	Gaskets, 150# through 600# series (6", 8", 10" and 12")	
	Various hand tools	
	Pipe cutters (6", 8", 10" and 12")	
	Line-up clamps (6", 8", 10" and 12")	
	Various shrink sleeves	
	Pipe tape and primer	
	Grounding straps	2
	Drilling mud and mixing pans	
	Test heads (6", 8", 10" and 12")	
	Assorted pipe fittings	
	Pressure recorder and stand	
	Generator, 5k	
	Emergency response trailer with company and spill response radios	
	3-in-1, H_2S and Combustible Gas Analyzers	
Avila Station	Sorbent pads	10 bales
	Sorbent booms	2 bales
	Plastic trash bags (100 each)	2 boxes
Avila Tank Farm	Drilling Mud	10 sacks
	Miscellaneous tube turns, gaskets, valves, fittings - all sizes	1 lot
	Shoring equipment (complete)	1 lot

Table 5.49 UNOCAL Santa Maria District Emergency Response Equipment (continued)

Location	Item	Quantity
Avila Tank Farm (Continued)	Solvent	100 gal
	Rags	2 boxes
	Booms (40' each)	15 bales
	Sorbent pads	100 packages
	Fire fighting turnouts	15
	Sand bags (empty)	100
	Chicken wire	1 roll
	Steel fence posts and driver	2 bundles
Creston - Shandon	Solvent	100 gal
Santa Margarita	Solvent	100 gal
O'Donnell Office	Absorbent pads	8 boxes
	Creek booms	6
	Excelsior bales	4

The AOGERP is implemented by the Santa Barbara County Area Petroleum Industry Mutual Aid Agreement (PIMA). Assistance to the affected PIMA member facility would be made available. Requests are made to the AOGERP District Coordinator by the Incident Commander.

Finally, the County approvals of oil and gas facilities requires that Emergency Response Plans (ERPs) be developed, approved and maintained for individual facilities and components to respond to emergencies. The HS&P, associated pipelines and the Santa Maria Pump Station have current ERPs.

5.3.2 Threshold Of Significance

The County's Threshold Significance Guidelines do not contain any significance criteria for Fire Protection Emergency Response as a separate issue area. Therefore, a set of criteria have been developed against which the significance of proposed project impacts to fire protection can be judged. This document has evaluated fire protection impacts for two major areas. The first part evaluates the adequacy and design of the onsite fire protection systems. The second addresses the adequacy of emergency response capabilities. Reflecting these two areas, the following significance criteria were developed.

- The proposed project was considered to have a significant impact if the site does not contain adequate fire water supplies to meet the recommendation in the National Fire Protection Agency (NFPA) Standards.

- The proposed project was considered to have significant impacts if the equipment layout does not meet the Industrial Risk Insurers (IRI) Guidelines for equipment spacing.

- The proposed project was considered to have a significant impact if the site location is located more than 10 miles from an emergency response location (i.e., County fire station) that could be activated in a level 1 or 2 emergency.

The first two criteria were developed based upon a review of the Battles Gas Plant safety audit. This audit identified these two as major issues of concern from a fire protection standpoint. The audit recommendations regarding fire water supplies were based upon the NFPA Guidelines. The equipment spacing recommendations included the requirement to follow IRI guidelines. For these reason, the significance criteria used these same guidelines to judge the level of significance for fire protection.

For the area of emergency response the development of significance criteria was more difficult. As part of the AOGERP agreements, each oil and gas facility that is a member must prepare an emergency response plan. They also conduct drills with County's emergency response crews. Therefore, the facilities that are members have adequate emergency response plans which would help to mitigate potentially significant impacts to insignificance. Although handling of an initial incident will usually prevent a larger scale emergency, the criterion that was developed acknowledges the importance of the backup assistance to initial response effort by plant and

outside emergency response personnel. By meeting the criterion, a project's site location would be within approximately 15 minutes of an County fire station.

5.3.3 Proposed Project

This section discusses the impacts, mitigation measures and residual impacts for the proposed project.

5.3.3.1 Impacts

Fire protection emergency response impacts associated with the proposed project are evaluated and discussed in this section. Each project location is discussed below.

HS&P Gas Plant

The proposed plant layout is shown in Figure 2-5. A review of this drawing showed that all of the equipment would meet IRI spacing recommendations (see Table 5.50). Therefore the equipment spacing impacts to fire protection are considered insignificant.

Based on the layout of the new equipment, an analysis of the fire water requirements was conducted. The analysis takes into account the square footage of the equipment and fire water requirements of oil and gas processing equipment as defined by the National Fire Protection Association.

The overall plot space for the new equipment is a rectangle of 160 feet by 100 feet giving a total area of 16,000 square feet. Within this plot the equipment density is estimated to be 50 percent. This gives an actual plot space of 8,000 square feet. The average height of the equipment was estimated at 10 feet. In accordance with NFPA 15, *Standard for Water Spray Fixed Systems for Fire Protection* dated August 17, 1990, the water rate requirement for fighting fires for vessels, pipe racks and other miscellaneous equipment was chosen to be 0.25 gallons/min/ft^2. Therefore, given an estimated total facility surface area of 9,300 ft^2, the estimated fire water requirement would be approximately 2,500 GPM. The current system capacity with one fire water pump running is 3,000 GPM which exceeds the above requirement and could handle a fire in the area of the new equipment. The current storage capacity for the HS&P fire water system consists of two storage tanks, one of 210,000 gallons and the other with a volume of 420,000 gallons. With a total storage capacity of 630,000 gallons, a fire in this area could be fought for over five hours. This does not take into account that the fire water tanks are tied into a well system which replenishes the storage capacity and that the local county fire department would respond to the situation. Therefore the fire water supply impacts to fire protection are considered insignificant.

The HS&P is with a few miles of the Lompoc Fire Station #51. This station has noted during emergency response drills at the existing HS&P Facilities, that an additional responder might be needed in the event of an emergency (see the baseline discussion above). The additional

Table 5.50 Equipment Spacing Analysis [a]

Category	IRI Recommended Spacing	Proposed Spacing
HS& P New [b] [c]		
1) Heater Treaters to:		
Compressors	100	150
Vessels	100	260
Pumps	100	260
2) Fire Pumps to:		
Compressors	200	800
Vessels	200	700
Pumps	200	700
Heater Treaters	200	930
3) Fire Hydrants to:		
Compressors	100	TBD
Vessels	100	TBD
Pumps	100	TBD
Open Flame	50	TBD
Santa Maria Pump Station [d]		
1) Boilers to:		
Tanks	250	260
Pumps	100	120
Unloading Racks	200	260
2) Fire Pumps to:		
Tanks	350	380
Pumps	200	300
Boilers	50	170
Unloading Racks	200	450
3) Fire Hydrants to:		
Tanks	100	100
Pumps	100	100
Boilers	50	50
Unloading Racks	100	100

(a) Spacing requirements found in Industrial Risk Insurers publication IRInformation IM.2.5.5, *Plant Layout and Spacing for Oil and Chemical Plant*, dated June 3,1991.
(b) The Heater Treaters are considered the nearest open flame source.
(c) Reference HS&P Plot Plan, 16-C-342-1, Rev. D.
(d) The Boilers are considered a utility and are the nearest open flame source.

facilities proposed for the HS&P should not increase the amount of emergency response services required. However, the facility's existing emergency response plans would need to be updated to include the new equipment. Given the County Fire Department's concern regarding adequate emergency response personnel at the Lompoc Station #51 for the existing facility, the County may want to consider increasing the man power to five persons at the station. One option to achieve this would be a relocation of existing personnel. However, for the proposed project impacts on emergency response were found to be adverse but insignificant. The existing fire break around the facility, 300 feet, is considered sufficient and adequate for the prevention of wild fires. While some of the hazard scenarios discussed in the system safety section leave the plant boundaries, they all have likelihood's well below the level considered significant. This is the reason that the 300 foot fire break is considered sufficient.

Santa Maria Pump Station

The proposed plant layout is shown in Figure 2-10. A review of this drawing showed that all of the equipment would meet IRI spacing recommendations (see Table 5.50). Therefore the equipment spacing impacts to fire protection are considered insignificant.

The two existing crude oil tanks at the Santa Maria Pump Station have external, floating roofs and are equipped with an Aqueous Film Forming Foam (AFFF) system to respond in the event of a tank fire. Due to the decommissioning of the Battles Gas Plant, a new fire water pump and tank are proposed to be installed. Based on the new proposed fire water pump and fire water storage tanks at the Santa Maria Pump Station an analysis of the fire water application and storage requirements was conducted. The analysis takes into account the square footage of the floating roof on the larger crude and the design discharge rates of water or foam solution in addition to the storage capacity requirements as defined by the National Fire Protection Association.

The Santa Maria Pump Station has two existing crude tanks the larger of which is 117 feet in diameter and 42 feet high giving a total tank surface area of 10,750 square feet. NFPA 11, *Low Expansion Foams and Combined Agent Systems*, requires a design discharge rate of water or foam solution of 0.30 gallons/min/ft^2 of annular seal area for crude oil storage tanks. The two tanks have an annular seal area of 1,496 ft^2, which would require a flow rate of 550 GPM. Additionally, NFPA 11 requires 0.16 gpm/ft^2 of foam solution for the protection of truck unloading rack areas. For water systems only NFPA 15 requires 0.25 gpm/ft^2. If one assumes the higher flow rate, with a truck unloading areas of 3,000 ft^2, then the flow rate needed would be 750 GPM. Therefore, the total fire water flow rate required for the pump station would be 1,300 GPM. The proposed system capacity with one fire water pump running is 1,500 GPM which is more than sufficient to meet the required NFPA flow rates.

NFPA 16 requires a water supply which is capable of supplying water for at least 60 minutes. The proposed storage capacity for the Santa Maria Pump Station fire water system is 360,000 gallons. With a total storage capacity of 360,000 gallons at an application rate of 1,300 GPM, the system capacity would last for over 4.5 hours which is more than adequate to satisfy NFPA 16. This also exceeds the four hour supply that is typically requested by the

SBCFD. Therefore the impacts of adequate fire water on fire protection are considered insignificant.

The Santa Maria Pump Station is located within eight miles of two County fire stations (see Figure 5-23). Therefore, the impacts of emergency response on fire protection are considered to be adverse but insignificant.

Jim Hopkins Fee

The only equipment proposed for this site is a gas dehydration skid for removing water from field gas. This system comes as one unit mounted on a skid. Therefore, the IRI spacing guidelines would not apply to the unit itself, but would still apply to spacing for fire protection equipment. As stated in the baseline section, this site has no true fire protection system except fire extinguishers. Therefore, IRI guidelines would not apply, and the spacing impacts on fire protection would be insignificant.

Based on the installation of the small refrigeration skid and the lack of fire fighting capability, an analysis of the fire water requirements for the Jim Hopkins Fee was conducted. The analysis takes in account the square footage of the equipment and fire water requirements of oil and gas processing equipment as defined by the National Fire Protection Association.

The overall plot space for the new skid is 6 feet by 10 feet giving a total area of 60 square feet. Within this plot the equipment density is estimated to be 80 percent. This gives an actual plot space of 48 square feet. In accordance with NFPA 15, *Standard for Water Spray Fixed Systems for Fire Protection* dated August 17, 1990, the water rate requirement for fighting fires for vessels, pipe racks and other miscellaneous equipment can range between 0.1 gpm/min/ft^2 to 0.50 gpm/min/ft^2. For this analysis a water rate of 0.25 gallons/min/ft^2 was used. Therefore, the estimated fire water requirement for the gas dehydration skid is 12 GPM. There is currently no formal fire water system at the Jim Hopkins Fee to handle a fire at the gas dehydration skid. Given the fact that no formal fire water system exists at JHF, the impacts of adequate fire water on fire protection are considered significant. The JHF site is located within eight miles of two County fire stations (see Figure 5-23). Therefore, the impacts of emergency response on fire protection are considered to be adverse but insignificant.

5.3.3.2 Mitigation Measures

One significant fire protection impact was identified for the proposed project. For the JHF site a fire water system should be installed to cover the new dehydration skid. This is viewed as important since the skid does have propane as the refrigerant, and as such presents a potential fire hazard.

Two other measure have been discussed here since they are required by the County's Zoning ordinances and Comprehensive Plan. All the proposed facilities should be covered by fire protection and emergency response plans. For the HS&P and Santa Maria Pump Station, the

existing fire protection and emergency response plans should be updated to include the proposed modifications. New fire protection and emergency response plans should be developed for the JHF site. This is covered as a mitigation measure under system safety.

5.3.3.3 Residual Impacts

All but one of the fire protection/emergency response impacts were found to be insignificant (Class III). The significant impact associated with the lack of fire protection at JHF can be mitigated to insignificance (Class II).

It should be noted that the lack of significant impacts on emergency response is primarily due to the extensive emergency response system that the County has in place. This is particularly true for the AOGERP. Should the existing emergency response capabilities of the County diminish, then significant impacts could occur.

5.3.4 Alternative HS&P Sites

This section discusses the impacts, mitigation measures and residual impacts associated with the alternative sites selected in Chapter 3.0.

5.3.4.1 Impacts

The two alternative sites selected for further analysis in Chapter 3.0 were the Orcutt Hill site and the existing Battles Gas Plant. Each are discussed below.

Orcutt Hill Site

Since no formal designs have been developed for a new gas plant at Orcutt Hill it is not possible to assess the potential significance of the equipment spacing and adequacy of fire water on fire protection. It has been assumed that any project proposed for these sites would meet the IRI spacing guidelines and provide adequate fire water consistent with the NFPA Guidelines. Therefore the these impacts to fire protection have been classified as insignificant.

The proposed Orcutt Hill site is within ten miles of a County fire station, and therefore emergency response impacts would be considered insignificant.

Battles Gas Plant

The Battles Gas Plant has undergone an extensive fire protection review as part of the P-17 safety audit. Table 3.2 provides a list of the outstanding fire protection issues from the P-17 audit. A large number of these have to do with spacing of equipment recommended by IRI. It

should be noted that these are only recommended spacing requirements, and that many existing facilities do not meet them.

The other recommendations that deal with the fire water system design and valving could impact the ability to fight a fire at the facility. A number of the recommendations deal with the materials of construction of the fire water system. The main pipes are not lined, but rather are carbon steel, which has the potential to corrode. Unocal has implemented a fire water maintenance program, which involves testing the firewater system regularly to assure that there is adequate flow. The recommended valving should be installed as per the recommendation.

Another major fire issue is the fact that the fire water tank is within the same diked area as the crude oil storage tank. This could present a problem in the event of a crude oil fire in the diked area.

Given the fact that these issues are still outstanding with regard to the recommendations, the impacts to fire protection are considered significant.

The existing Battles Gas Plant site is within ten miles of a County fire station, and therefore emergency response impacts would be considered insignificant.

5.3.4.2 Mitigation Measures

Given that there are no designs for the Orcutt Hill alternative site, it is not possible to develop site specific mitigation measures. However, the two measures discussed above for the proposed project that would be required by County Zoning ordinances or the Comprehensive Plan would also apply to this site.

For the Battles alternative, the issue of the fire water tank within the diked areas could be solved by building a new dike between the two tanks. In terms of the other modifications to the fire water system the valves could be installed in the lateral lines. Also, continued testing of the fire water system on a regular basis, along with the use of corrosion inhibitors should solve the potential corrosion problem.

Also the remaining P-17 recommendations would need to be implemented.

5.3.4.3 Residual Impacts

The fire protection and emergency response impacts for the Orcutt Hill Site is considered to be insignificant (Class III), based upon the assumption that if it were ever persuaded it would comply with all the appropriate requirements.

The fire protection impacts for the Battles Gas Plant are considered to be significant but mitigable (Class II). The emergency response impacts are considered to be adverse but insignificant (Class III).

It should be noted, that the lack of significant impacts on emergency response is primarily do to the extensive emergency response system that the County has in place. This is particularly true for the AOGERP. Should the existing emergency response capabilities of the County diminish, then significant impacts could occur.

5.3.5 Expanded HS&P Gas Plant

This section discusses the fire protection and emergency response impacts, mitigation measures and residual impacts for an expanded HS&P Gas Plant that could be built in the future to serve other north county gas producers.

The existing HS&P fire water system has sufficient capacity to handle a new consolidated fuel gas plant. The equipment could be installed in space available at the existing facility, and the space is sufficient to meet IRI guidelines. Any new facility would need to have additional fire water monitors to cover the new equipment. Therefore, the impacts of fire water supplies on fire protection would be considered to be insignificant.

The facility is also located within ten miles of a County fire station and therefore the impacts to emergency response would be considered insignificant.

5.3.6 Cumulative Impacts

This section discusses the cumulative impacts associated with the proposed projects and those described in Chapter 4, cumulative project descriptions. The section also discusses fire protection as it related to the various options available to other north county producers.

5.3.6.1 Cumulative Project Impacts

The majority of the cumulative projects are commercial and residential developments. These types of developments typically do not have onsite fire fighting capabilities and would rely on the County and Cities of Santa Maria and Lompoc for fire fighting services. With the proposed project any significant impacts to fire protection can be mitigated to insignificance. All of the proposed facilities will have fire protection plans and emergency response plans, and will be capable of providing onsite fire protection services for their facilities. Due to these facts, combined with the fact that the County has an emergency response system developed just for oil and gas, the cumulative impacts to fire protection are considered to be insignificant.

It should be noted that the County fire department has stated that an additional fire fighter would be needed at the Lompoc Fire Station in order to properly respond to a emergency at the existing

HS&P. The additional cumulative growth identified for this area will only serve to exacerbate the man power shortage at the Lompoc Fire Station.

5.3.6.2 Gas Processing Options for Other Producers

Given that these scenarios are hypothetical, it is difficult to assess the impacts to fire protection since no formal design has been done. For all of the scenarios it has been assumed that any newly proposed project would comply with IRI spacing requirements. Therefore spacing impacts to fire protection would be considered insignificant. Each of the of the options are discussed below.

Battles Gas Plant with a Modified P-17

Based upon the modified P-17 recommendations the major fire protection issues associated with the Battles Gas Plant would be mitigated to insignificance. These include improving access to the facility, continuing regular testing of the firewater system to assure that minimum firewater flows are maintained, and limiting the amount of flammable material that could be released during a hazardous event. If all of the measures listed for the modified P-17 in Chapter 4 are done then the fire protection and emergency response impacts would be significant but mitigable (Class II).

Install H_2S Removal Equipment At Each Field Not Served By The Proposed HS&P Gas Plant

Here again, it has been assumed that if these types of facilities were built, they would comply with the IRI and NFPA guidelines regarding spacing and fire water supplies respectively. Therefore, the impacts to fire protection would be considered insignificant (Class III). Given the limited size of this type of facility, they would not pose a significant fire hazard. However, these could be located in remote areas of the north county which could introduce new fire hazards into an areas where emergency response is difficult. Therefore, the emergency response impacts would be considered significant (Class I).

Reinject Gas At Each Field Not Served By The Proposed HS&P Gas Plant

Here again, it has been assumed that if these types of facilities were built, they would comply with the IRI and NFPA guidelines regarding spacing and fire water supplies respectively. Therefore, the impacts to fire protection would be considered insignificant. Given the limited size of this type of facility, they would not pose a significant fire hazard. However, these could be located in remote areas of the north county which could introduce a new fire hazards into an areas where emergency response is difficult. Therefore, the emergency response impacts would be considered significant (Class I).

Flare Gas at Each Field Not Served by the Proposed HS&P Gas Plant

It has been assumed that any facilities, such as H_2S removal equipment or flaring system, would comply with the IRI and NFPA guidelines regarding spacing and firewater supplies. Therefore, the impacts due to fire protection would be considered insignificant (Class III). However, since some of these facilities would be located in remote areas they could introduce new fire hazards into an areas where emergency response is difficult. Therefore, the emergency response impacts would be considered significant (Class I).

Electrical Generation at Each Field Not Served by the Proposed HS&P Gas Plant

It has been assumed that any facilities, such as H_2S removal equipment or an engine system, would comply with the IRI and NFPA guidelines regarding spacing and firewater supplies. Therefore, the impacts due to fire protection would be considered insignificant (Class III). However, since some of these facilities would be located in remote areas they could introduce new fire hazards into an area where emergency response is difficult. Therefore, the emergency response impacts would be considered significant (Class I).

Shut-In Field Not Served by the Proposed HS&P Gas Plant

Since all of the field would be shut-in there would a net reduction in the demand for fire protection and emergency response within the north county. This would represent a beneficial impact (Class IV).

5.3.6.3 Hypothetical Gas Handling Scenarios

As discussed in Chapter 4, two hypothetical scenarios were developed to address the cumulative impacts associated with the potential decommissioning and abandonment of the Battles Gas Plant. The potential fire protection and emergency response impacts associated with each of these scenarios is discussed below.

Battles with a Modified P-17

Under this scenario, the impacts associated with the proposed project would occur. The fire protection and emergency response impacts associated with the HS&P Gas Plant were considered to be insignificant (Class III). For the SMPS, the impacts to fire protection were considered to be beneficial (Class IV), and the emergency response impacts were considered insignificant (Class III). For the JHF site the fire protection impacts were considered to be significant but mitigable (Class II), and the emergency response impacts were considered insignificant (Class III).

In addition, the Battles Gas Plant would continue to operate, and assuming that all of the modified P-17 recommendations listed in Chapter 4 were implemented, then the impacts to emergency response and fire protection would be significant but mitigable (Class II). The basis for each of these impact classifications is discussed above.

Flaring

Under this scenario, the impacts associated with the proposed project would occur. The fire protection and emergency response impacts associated with the HS&P Gas Plant were considered to be insignificant (Class III). For the SMPS, the impacts to fire protection were considered to be beneficial (Class IV), and the emergency response impacts were considered insignificant (Class III). For the JHF site the fire protection impacts were considered to be significant but mitigable (Class II), and the emergency response impacts were considered insignificant (Class III).

For all of the oil and gas production sites that would install flares, the fire protection and emergency response impacts were found to potentially be significant and can not be mitigated (Class I) depending upon the location of the facility. The basis for each of these impact classifications is discussed above.

5.3.7 Mitigation Requirements/Recommendations

The mitigation measures presented below are required to either mitigate significant impacts or to comply with County zoning ordinances.

[FP-1] Unocal shall update the HS&P and Santa Maria Pump Station Fire Protection Plans to cover the proposed modifications. These updates should also address any additional risk associated with the construction activities. Unocal shall prepare a Fire Protection Plan for the JHF Facility. These plans must be approved by the SBCFD prior to construction.

[FP-2] The applicant should submit a revised Emergency Response Plan (ERP) for each component of the project that addresses the potential consequences and actions to be taken in the event of hydrocarbon leaks or fires affecting public safety and the environment. The plans should cover all components of the project. This plan should contain adequate interfaces with response plans for other applicable projects/facilities. The ERP should be reviewed and approved by the County Office of Emergency Services (OES), the Fire Department, and the Resource Management Department prior to operation of the new facilities.

[FP-3] Unocal shall install a fire water system at JFH for the gas dehydration skid that meets the requirements of NFPA Standards, and acceptable to the SBCFD.

5.3.8 Mitigation Monitoring Plan

Mitigation Measures	*Administrative Action*	*Timing*	*Party Responsible for Verification*	*Monitoring/ Reporting Schedule*	*Party Responsible for Verification*
FP-1	Applicant to prepare or update existing facility fire protection plan.	Prior to Land Use Clearance	County Fire Department	Initial approval and periodic review.	County Fire Department
FP-2	Applicant to prepare or update existing facility emergency response plans.	Prior to Operation of modified facilities	County Fire Department and Office of Emergency Services	Initial approval and periodic review.	County Fire Department
FP-3	Install fire water system at JHF for the gas dehydration skid.	Prior to Start up	County Fire Department	Verification	County Fire Department and Administration

5.4 Noise

The following section provides a summary of the current environmental setting for noise, and the impacts attributable to the Unocal HS&P proposed project modifications.

Noise refers to unwanted sound which is heard by people or wildlife. Levels of noise are typically expressed in decibels on the A-weighted scale (dBA). The A-weighted scale is obtained by a frequency filtering of the noise so as to approximate the response of the human ear. The A-weighted noise levels correlate closely with human perceptions of noise or annoyance and can be characterized statistically or by average levels. Noise levels fluctuate throughout the day; spatial variation of noise is due to different kinds and intensities of human activity. A combination of federal, state and local legislation and policies regulate noise levels.

5.4.1 Existing Conditions

The baseline noise levels at the project site were obtained from two major sources. In direct support of the projects, a field measurement study was conducted in November 1984. Analysis of the impacts employed the 1984 EIR estimates of the background and the HS&P noise levels. The 1984 EIR examined the noise levels from a facility similar to the HS&P; the Union Mandalay Plant in Oxnard. Various pieces of equipment were monitored to determine their noise levels in dBA at 15 feet. The results were then applied to the equipment pieces at the HS&P facility, and a composite noise level was determined.

The nearest noise sensitive locations to the HS&P facility are the Vandenberg Village at 5,000 feet and the Mission Hills residential area at 8,500 feet. Shown below are the results of the 1984 EIR noise calculation for these two areas.

Location	Distance	Background (dBA)	Noise Levels of Existing HS&P Facility (dBA)	Combined (dBA)
Vandenberg Village	5,000'	52 CNEL	38 CNEL	52 CNEL
Mission Hills	8,500'	61 CNEL	32 CNEL	61 CNEL

* CNELs are not additive.

As the table above shows, the noise impacts associated with the current HS&P facility are insignificant and make only a minimal contribution to the existing baseline noise level. However, at night there are noise levels at the facility that can be heard by some of the surrounding neighbors. While these night time noise levels would not be considered significant based upon the County's Significance Criteria, they are considered to be adverse.

5.4.2 Threshold Of Significance

Federal, state and local regulatory standards provide the basis for determining the significance of noise impacts. Impacts attributable to operation are considered significant if they exceed the following levels:

- 60-65 dBA - the maximum exterior exposure compatible with the sensitive land uses of residential, schools, libraries, and churches.
- 70 dBA - the maximum noise level compatible with playgrounds, parks, and beaches.

In addition the level change of the impact also must be considered.

5.4.3 Proposed Project

The additions to the HS&P facility include the following pieces of noise producing equipment:

- Three process gas compressor,
- Two transformers associated with the compressor electric motors, and
- Three pumps associated with the dew point suppression system.

The section below shows the impacts associated with the addition of these pieces of equipment

5.4.3.1 Impacts

This equipment and their estimated noise production levels are shown in the table below. The increases in noise due to multiple pieces of equipment are calculated using a logarithmic basis (base 10); therefore, if two pieces of equipment produce 80 dBA individually, together they would produce 83 dBA. The table below shows that the additional equipment at the HS&P will produce an additional 96 dBA at a distance of 15 feet. At the facility boundary the noise level is expected to be 63 dBA.

New Equipment	Size	dBA	Distance (feet)
Gas Compressor	100 hp	88	15
Gas Compressor	100 hp	88	15
Gas Compressor	800	91	15
Transformer		80	15
Transformer		80	15
Pump		86	15
Pump		86	15
Pump		86	15
Combined Total		96	15
Combined total at 5,000 feet		33	5,000
Combined total at 8,500 feet		27	8,500

From the HS&P facility, the closest impact areas are Vandenberg Village and the Mission Hills residential area. The table below shows the impacts to these areas from background noise, the HS&P noise levels as estimated in the 1984 EIR, and the supplementary noise levels due to the addition of the above listed equipment.

Location	Distance	Background (dBA)	Existing HS&P (dBA)	New Addition to HS&P (dBA)	Combined (dBA)
Vandenberg Village	5,000'	52 CNEL	38 CNEL	33	52 CNEL
Mission Hills	8,500'	61 CNEL	32 CNEL	27	61 CNEL

* CNELs are not additive.

The noise impacts associated with the expansion of the HS&P facility are considered to be adverse, but insignificant; and are dominated by the currently existing baseline noise levels. The expansion of the HS&P facility should not result in a substantial increase in nighttime noise levels, since they are dominated by the existing facility.

5.4.3.2 Mitigation Measures

Even though the noise levels associated with the proposed HS&P Gas Plant are considered to be adverse but insignificant, a mitigation measure is suggested to reduce the night time noise levels to the maximum extent feasible. It is recommended that Unocal prepare a noise reduction plan to assist in reducing the night time noise levels to the maximum extent feasible.

5.4.3.3 Residual Impacts

The noise impacts associated with the proposed HS&P Gas Plant are considered to be adverse but not significant (Class III), as a result of the night time noise levels that are generated by the facility.

5.4.4 Alternative HS&P Sites

This section discusses the noise impacts for the alternative sites that were selected for further study in Chapter 3.0

5.4.4.1 Impacts

For both the Orcutt Hill Site as well as the existing Battles Gas Plant, the noise levels would be similar to that for the proposed project. Given that the noise levels for the proposed project do not exceed the significance thresholds at the facility boundaries, it is unlikely that the alternative sites would. Given the remote location of both of these sites, the noise impacts are considered to be adverse but insignificant.

5.4.4.2 Mitigation Measures

No mitigation measures would be required for these alternative sites.

5.4.4.3 Residual Impacts

The noise impact associated with the alternative sites are considered to be adverse but not significant (Class III).

5.4.5 Expanded HS&P Gas Plant

This section discusses the noise impacts, mitigation measures and residual impacts for an expanded HS&P Gas Plant that could be built in the future to serve other north county gas producers.

5.4.5.1 Impacts

The impacts associated an expanded HS&P gas plant would be similar to that for the proposed project. The additional noise level would be an additional 95 dBA at 15 feet. When this is combined with the existing facilities and the proposed gas plant, the noise level at the boundary of the facility would be 65 dBA. From the HS&P facility, the closest impact areas are

Vandenberg Village and the Mission Hills residential area. The table below shows the impacts to these areas from background noise, the HS&P noise levels as estimated above with the proposed gas plant, and the supplementary noise levels due to the addition of the expanded HS&P gas plant.

Location	*Distance*	*Projected Background (dBA)*	*New Addition to HS&P (dBA)*	*Combined (dBA)*
Vandenberg Village	5,000'	52 CNEL	33	52 CNEL
Mission Hills	8,500'	61 CNEL	27	61 CNEL

The noise impacts associated with the expanded HS&P gas plant are considered insignificant; and are dominated by the currently existing baseline noise levels.

5.4.6 Mitigation Recommendation

The mitigation measure presented below is recommended to reduce the adverse impacts due to night time noise levels at the HS&P facility.

[N-1] It is recommended that Unocal prepare a noise reduction plan to assist in the reduction of night time noise at the HS&P facility to the maximum extent feasible.

5.4.7 Mitigation Monitoring Plan

Mitigation Measures	*Administrative Action*	*Timing*	*Party Responsible for Verification*	*Monitoring/ Reporting Schedule*	*Party Responsible for Verification*
N-1	It is recommended that the applicant prepare a noise reduction plan to reduce night time noise to the maximum extent feasible.	Prior to operation.	RMD	Approval of the plan.	RMD

5.5 Other Environmental Issues Areas

In accordance with the California Environmental Quality Act (CEQA), the County of Santa Barbara Resource Management Department prepared an Initial Study for the proposed pipeline Project (see Appendix A). The initial study found that the proposed project's effects on ten issue areas were clearly insignificant or unlikely to occur. Three additional environmental impact issues were found by the Initial Study to be potentially significant; however, mitigation measures incorporated into the project description by the applicant would reduce these potentially significant impacts to less than significant levels. These two categories of impacts are summarized below. Additional information on these issue areas can be found in the Initial Study (Appendix A).

With regard to some of the options for other north county gas producers covered in the cumulative section, there are potential impacts in some of these issue areas. As such, this section of the document provides a summary discussion of other potential issue area impacts for each of the options addressed in the cumulative analysis.

5.5.1 Effects Found To Be Not Significant for the Proposed Project

The following ten issue areas were found not to be significantly impacted by the proposed project:

1. **Water Resources/Flooding** (HS&P, SMPS, JHF) - No water resources or flood plains are located within the vicinity of any of the project sites. No significant increase in water demand would result at any of the project sites. Therefore, no significant impacts are expected.

2. **Noise** (SMPS, JHF) - The surrounding land uses are industrial and noise generating in nature. The project is not expected to substantially increase ambient noise levels, and therefore no significant impacts are expected.

3. **Public Facilities** (HS&P, SMPS, JHF) - The project is not expected to require additional police protection, student generation, solid waste, and new sewer system facilities. Therefore, no significant impacts are expected.

4. **Energy** (HS&P, SMPS, JHF) - The energy demand level and operating load for the project can be meet with existing energy sources. Therefore, no significant impacts are expected. It should be noted that a cumulative effect of the project will be to reinject gas thereby reducing current production levels. This has been discussed in the cumulative section.

5. **Recreation** (HS&P, SMPS, JHF) - No established recreational uses are located within the vicinity of any of the proposed projects sites. Therefore, no significant impacts are expected.

6. **Aesthetics/Visual Resources** (SMPS, JHF) - No designated scenic highways are located within the vicinity of any of the project sites. Therefore, no significant impacts are expected.

7. **Housing** (HS&P, SMPS, JHF) - The proposed project would not effect housing, nor would any affordable housing be removed as a result of the project. Therefore, no significant impacts are expected.

8. **Economics** (HS&P, SMPS, JHF) - The project is not expected to create adverse economic impacts due to construction or operation. Therefore, no significant impacts are expected.

9. **Archaeological Resources** (HS&P, SMPS, JHF) - No resources have been identified onsite. Due to previous disturbances at all the proposed sites, and the fact that these are low sensitivity areas, no significant impacts are expected.

5.5.2 Effects Found To Be Previously Mitigated for the Proposed Project

Three environmental issues were identified in the Initial Study as having the potential to create significant impacts according County significance threshold criteria. The applicant and County of Santa Barbara staff have developed and agreed to mitigation measures which are to be implemented as part of the project to reduce these potential impacts to less than significant levels. These potential impacts and mitigation measures have been incorporated into this document to provide full disclosure as required by CEQA and to assure their implementation.

A copy of the Initial Study is included as Appendix A.

5.5.2.1 Project Impacts

Results of the initial study for the three major issue areas are summarized below.

Transportation/Circulation

According to the Public Works Department, Transportation Division, the portion of Harris Grade Road in the vicinity of the HS&P is currently operating at better than acceptable levels of service (LOS). The only long-term traffic generated by the HS&P project would be for occasional maintenance, by the addition of two permanent employee positions, and by the one and a half truck trips per month for removing spent SulfaTreat solution from the facility. This impact is not considered to be significant. Exportation of about 370 cubic yards of fill over an approximately 3-day period may impact intersections with poor LOS, depending upon the haul route selected. The destination of the fill has not been identified. Because the haul route has not been identified significant impacts could result.

Unocal proposes to use the existing parking area at the HS&P facility as a parking lot for construction crews for the project. The traffic for the six-month construction period of the project is estimated to peak at 182 peak hour trips (PHT) during a 3-week period. Given the acceptable LOS on Harris Grade Road, impacts are considered to be insignificant. This area

would be sufficient to avoid impacts resulting from parking on Harris Grade Road. The operational impacts at HS&P of 2 PHT are also considered to be insignificant.

Sight distance on Harris Grade Road for the project road is approximately 500 feet to the north and 250 feet to the south. While this is considered adequate, the roadside vegetation obscures sight slightly in the south direction. The reduction in height of this brush for a distance of 200 feet would improve the site distance.

For the SMPS, short-term construction impacts estimated at 24 PHT and 48 average daily trips would occur for a 15 week period. Bradley/Betteravia intersection is a two lane road intercepting a four lane road at a stop sign. According to the Public Works Department, this area has an acceptable LOS. Therefore, impacts to the intersection would be insignificant for the short-term during construction. Long-term operation impacts would be insignificant since no new employees are proposed.

For the JHF site, a three man crew would be required for construction, which would generate 3 PHT. Given the current LOS of Santa Maria Way, no significant impacts from short term construction are expected. There would also be no long term impacts due to operation since no new permanent employees would be needed for the JHF site.

Geologic Processes

Onsite soils at the HS&P are highly compressible and moderately sensitive to wetting, which can cause collapse under large loads, and expansion at lesser pressures. The soil permeability is considered to be quite low, and no earthquake faults are recorded onsite. Grading for the proposed project includes site preparation for new process equipment and would involve a total of approximately 9,000 cubic yards of cut and fill. As part of site preparation, an existing road and drainage ditch on the eastern periphery of the facility would be realigned to outside the expanded facility, and the drainage channel would be covered with gunnite. Sheet flow would continue to be directed southward towards a natural unnamed swale. The site is rated high for seismic activity according to the safety elements. Therefore, underground pipelines associated with the project could be affected. Proper installation would render this potential impact insignificant.

For the SMPS site, the onsite soils include the Sorrento series. Permeability of onsite soils is moderately rapid and rapid. Surface runoff is very slow and the erosion hazard is none to slight. No earthquake faults are recorded on site. Approximately 180 cubic yards of cut would be required to construct a 40 by 120 foot evaporation/disposal pond. This material would then be used to construct a 3 foot berm around the pond. Given the disturbed nature of the site and the fact that only minor grading and excavation are required, the geological impacts are expected to be insignificant.

The JHF site soils include the Oceano series. For this site the permeability is rapid, and surface runoff is slow to medium, with the erosion hazard being moderate. However, the soil blowing hazard is very high. The existing site is very level, and grading for the new facilities would be

minimal, strictly for the equipment foundations. Given the developed nature of this site and the fact that only minor grading would be required, the geologic impacts are considered insignificant.

Biological Resources

For the three proposed project sites, only the HS&P site has the potential for impacting biological resources. At the SMPS and JHF sites all of the proposed project components would be located on previously disturbed areas within existing facility boundaries. Both of these sites are currently used for industrial purposes; no native or sensitive vegetation exist onsite; and neither site provides any valuable wildlife habitat.

For the HS&P facility, the majority of the proposed project lies within the existing facility, and this area has already been disturbed. No sensitive vegetation or habitat is located with the facility. However, two of the proposed pipelines would extend outside of the existing facility boundary. Pipeline 2 would extend 200 feet and Pipeline 4 would extend 100 feet. Both of these lines could impact sensitive habitats. The proposed HS&P project site is on the northern edge of Burton Mesa near the Purisima Hills.

During the initial study, it was determined that the habitat surrounding the facility which could be affected by the proposed project included oak woodlands and Burton Mesa Chaparral. Burton Mesa also provides excellent conditions for the California Legless Lizard. Since impacts to these resources could be significant, The County conducted a biological survey of the proposed pipeline corridors. The results of this survey are summarized below. Appendix E provides a copy of this survey.

There are a number of Coast Live Oaks that could be impacted during construction. The proposed project areas that would be disturbed do not contain Burton Mesa Chaparral nor the Black-flowered Figwort. In the area of the pipeline construction, herbaceous wetland plants are present, including brown-headed rush and common rush. The common rush, also known as basket grass, may be culturally significant. The proposed mitigation measures would make any impacts to these species insignificant. The pipeline route construction could impact Coast Live Oaks, which could be significant. The proposed mitigation measures would make these impacts insignificant.

No legless lizards were encountered at the project site during the survey. This is thought to be primarily due to the poor soil conditions at the site and the significant degree of disturbance which has already occurred at the site. The site is also habitat for the Pacific Kangaroo Rat. The proposed project may impact a very small portion of this habitat (all threatened species). However, with the proposed mitigation measures the impacts to this resource would be considered insignificant.

Given the biological sensitive vegetation surrounding the site, potentially significant impacts to the vegetation could occur due to hazardous material spilling off site. This is particularly true

for the offsite pipeline construction. Implementation of the proposed mitigation measures would make this potential impact insignificant.

Visual Resources

Night time glare from the existing HS&P facility has been an issue raised by the public during the review of this document. The existing HS&P facility has prepared a lighting plan to address this issue. As part of the projects' permit effectiveness review, the County and Unocal agreed to review the lighting plan for the facility and determine if it is possible to lessen the night time glare. The current facility has 24 lights. The proposed HS&P gas plant will add four new lights. These new lights are not expected to significantly increase the night time glare from the facility. However, as part of the review of the existing lighting plan, Unocal should address the additional light fixtures that will be associated with the proposed gas plant.

5.5.2.2 Project Mitigation Measures

The following measures have been incorporated into the project description to mitigate the potentially significant impacts discussed above.

Transportation/Circulation

[T-1] For the HS&P construction activities, construction equipment parking shall be restricted to the existing HS&P facility areas. This area shall be included on the final site plan.

[T-2] The applicant shall repair all damage to public roads caused by project-related construction activities, including damaged caused by heavy loads.

[T-3] Working with an RMD-approved biologist the applicant shall reduce the height of existing vegetation 200 feet south of the entrance to the HS&P prior to construction to improve sight distance.

[T-4] Truck trips associated with hauling of excess site soils shall occur outside of peak traffic periods, and shall be limited to between 8:30 a.m. and 4:00 p.m.

Geological Processes

[G-1] Inspection of the pipeline trenches shall be made by a professional geologist or soils engineer approved by RMD prior to installation of the pipelines. The timing of such inspections shall not result in any unreasonable delays in pipeline installation.

[B-1] All oak trees shall be avoided. A tree protection and replacement plan shall be prepared and shall include the following:

a) All trees shall be mapped at their drip lines. Pipeline construction shall be designated on all parcels located outside the drip lines of all oak trees. All ground disturbances including grading shall be prohibited outside areas designated for development of final plans.

b) All oak trees within 25 feet of proposed ground disturbances shall be temporarily fenced with chain-link or other material satisfactory to DERC located six feet outside their drip lines prior to and throughout all grading and construction activities. The fencing shall be staked every eight feet. Trees and fencing shall be designated on all grading and building plans.

c) No construction equipment shall be operated or parked within a six foot radius of all oak tree drip lines. Equipment storage and staging areas shall be designated on the tree protection plan and shown on all grading and building plans.

d) No equipment or construction materials shall be stored within a six foot radius of the drip line of any oak tree.

e) The plan shall provide for revegetation of graded areas.

f) Any roots encountered shall be cleanly cut and sealed with a tree-seal compound. This shall be done under the direction of a RMD approved arborist/biologist.

g) Drainage plans shall be designed so that oak tree trunk areas are properly drained to avoid any ponding. These plans shall be subject to review and approval by RMD or a RMD qualified biologist/arborist.

h) Any unanticipated damage that occurs to trees or sensitive habitats during construction activities shall be mitigated in a manner approved by RMD. This mitigation can include but is not limited to tree replacement on a 10:1 ratio, and hiring an outside consultant biologist to assess the damage and recommend mitigation. The required mitigation shall be done immediately under the direction of RMD prior to any further work occurring on site.

[B-2] Existing stands of *Juncus phaeocephalus* within and near areas planned to be disturbed by installation of the six inch gas line shall be flagged prior to construction. The construction corridor shall then be routed through the area toward the southeast to minimize impacts to established *Juncus* and the surrounding seep area on the upslope side of construction. *Juncus* individuals that cannot be avoided shall be salvaged immediately prior to construction and kept temporarily in damp soil in a plastic pool.

After construction, these plants shall be replanted into the corridor and maintained until they become established.

[B-3] The top six inches of topsoil shall be salvaged from the construction corridors, stockpiled and protected during construction, and respread onto the corridor(s) after construction is complete.

[B-4] During the spring season (March to June) immediately preceding construction, a qualified botanist shall make one or more visits (as appropriate) to collect seed from *Scrophularia atrata* plants that are within the construction corridor. Arrangement shall be made with the Santa Barbara Botanic Garden for temporary storage of this seed, and for use of a small portion, at the Garden's discretion, for propagation at the Garden. This seed shall be redeposited onto the restored slope after construction. Topsoil shall be salvaged from this slope and redeposited after construction, as described for the southeastern area. In addition, jute netting or similar mechanical stabilization is recommended to hold the slope in place after construction. No topsoil salvage is suggested for previously graded areas.

[B-5] Sedimentation, silt, and grease traps shall be installed in paved areas to act as filters to minimize pollution reaching downstream habitats. These filters shall address short-term construction and long-term operational impacts. The filters shall be maintained in working order.

[B-6] Washing of concrete, paint, or other equipment shall be allowed only in areas where polluted water and materials can be contained for subsequent removal from the site. Washing shall not be allowed near sensitive biological resources.

[B-7] Prior to start up, the applicant shall post a bond or other security agreement approved by the County to ensure that all landscaping and revegetation programs are completed to the County's specifications.

Visual Resources

[V-1] Prior to start-up, the applicant shall revise the existing lighting plan for the HS&P facility to include the proposed gas plant. This plan should provide methods for minimizing night time glare to the maximum extent feasible.

5.5.2.3 Residual Impacts

The potentially significant impacts to traffic/circulation, geological processes and biological resources have been reduced to adverse but insignificant (Class III) by the incorporation of the listed mitigation measures into the project description.

5.5.2.4 Mitigation Monitoring Plan

Mitigation Measures	*Administrative Action*	*Timing*	*Party Responsible for Verification*	*Monitoring/ Reporting Schedule*	*Party Responsible for Verification*
T-1	Restrict parking to the existing HS&P facility. and show parking area on final site plans.	Prior to issuance of the final development plan	RMD	Periodic Inspections	RMD
T-2	Assess damage to County roads due to construction.	During and after construction .	Public Works	Periodic inspections	Public Works
T-3	Working with an approved biologist applicant to clear roadside vegetation by the entrance to the HS&P.	Prior to Construction.	RMD	Inspection.	RMD
T-4	Applicant shall submit a plan for hauling excess soil form the HS&P site.	Prior to issuance of the final development plan.	RMD	NA	RMD
G-1	Applicant shall provide to the County the name and qualifications of a professional geologist for inspecting the offsite pipeline trenches.	Prior to Construction.	RMD	NA	RMD
B-1	Applicant shall prepare an Oak Tree Protection Plan.	Prior to Construction.	RMD	Periodic inspections	RMD
B-2	Applicant shall flag the existing stands of *Juncus phaeocephalus* within or near the six inch pipeline.	Prior to Construction.	RMD	Periodic inspections	RMD

Mitigation Measures	*Administrative Action*	*Timing*	*Party Responsible for Verification*	*Monitoring/ Reporting Schedule*	*Party Responsible for Verification*
B-3	Applicant shall salvage the topsoil from the construction corridors.	During Construction	RMD	Periodic inspections	RMD
B-4	Applicant shall collect seed from *Scrophularia atrata* plants prior to construction for use in replanting.	Prior to Construction	RMD	Periodic inspections	RMD
B-5	Applicant shall include in their final site plans a required sedimentation , silt, and grease trap locations.	Prior to issuance of the final development plan.	RMD	Periodic inspections	RMD
B-6	Applicant shall submit as part of their final site plans a protocol for equipment washing during construction.	Prior to issuance of the final development plan.	RMD	Periodic inspections	RMD
B-7	Applicant shall post a bond or other security agreement.	Prior to construction	RMD	Verify proof of bond or other security.	RMD
V-1	Applicant shall prepare a revised lighting plan for the HS&P facility.	Prior to start-up.	RMD	Review lighting plan to assure it minimizes night time glare to the maximum extent feasible.	RMD

5.5.3 Cumulative Impacts on Other North County Producers

This section presents a qualitative discussion on some of the other significant impacts that could occur to other north county producers if the Battles Gas Plant was not available for gas processing. As discussed in Chapter 4.0 a number of options would be available to these producers in the event Battles shut down. The significant impacts associated with the issue areas covered above are discussed below for each of the options.

Battles with a Modified P-17

None of the issue areas covered in this section would be expected to experience significant impacts as result of this option.

Install H_2S Removal Equipment At Each Field Not Served By The Proposed HS&P Gas Plant

None of the issue areas covered in this section would be expected to experience significant impacts as result of this option.

Reinject Gas At Each Field Not Served By The Proposed HS&P Gas Processing Plant

None of the issue areas covered in this section would be expected to experience significant impacts as result of this option.

Flare Gas at Each Field Not Served by the Proposed HS&P Gas Plant

For this option a number of the issue areas covered in this section could have significant impacts. In terms of visual impacts, the building of up to 20 flares within the north county could result in significant impacts to visual resources. Some of the production fields are located near populated areas and the flares used could be as high as 30 feet. They could also have exposed flames that would be visible at night. In order to mitigate this impact, enclosed flares could be used. This would only eliminate the visible flame portion of the impact. The tall flare structures would still exist. Therefore, visual impacts associated with flaring would be considered a significant impact that could not be mitigated (Class I).

In terms of energy the use of flaring would result in a significant loss of gas production from the north county. This loss in energy production would be considered a significant impact that could not be mitigated (Class I).

As a result of flaring the gas there would be a significant loss of revenue for the north county gas producers. If all the gas was flared (6.0 MMscfd) this would result is a loss of revenue to the north county gas producers of around $3.0 million per year. While not an environmental impact, this would be considered a significant impact that could not be mitigated.

Generate Electricity at Each Field Not Served by the Proposed HS&P Processing Facility

None of the issue areas covered in this section would be expected to experience significant impacts as result of this option.

Shut-In Oil and Gas at Field Not Served by the Proposed HS&P Gas Plant

This option, which is the most likely for several producers given the current prices for oil and gas, would result in significant impacts to energy and economics. In terms of energy, there would be the loss of both the oil and gas. This could be as much as 6.0 MMscfd of gas and approximately 1,800 Bbls per day of oil. This loss in energy production and loss of energy resources would be considered a significant impact that could not be mitigated (Class I).

In terms of the economic impacts associated with this option there would not only be a loss of revenue from the oil and gas production (~$10.0 million per year), but also a loss of about 40 full time jobs. This would translate into a loss of as many as 120 indirect jobs. This loss in jobs and revenue from the oil and gas, while not an environmental impact, would be considered significant and can not be mitigated.

5.6 The Environmentally Superior Alternative

This section summarizes the environmental advantages and disadvantages associated with the proposed project and the alternatives. Based upon this discussion, the environmentally superior alternative is selected as required by CEQA. The CEQA Guidelines, Section 15126 (d)(2) state that if the environmentally superior alternative is the No Project Alternative, then the next most environmentally preferred alternative must also be identified.

5.6.1 Comparison of Proposed Project and Alternatives

To facilitate a clear understanding of the relative merits of the various alternatives, this section highlights the major differences among the alternatives and the proposed project, with respect to impacts. The following sections compare the proposed project to each of the two alternatives that were evaluated throughout the document.

Proposed Project vs the No Project Alternative (i.e., Continued Use of Battles)

The primary advantages that the proposed project has over the No Project Alternative (i.e., continued use of the Battles Gas Plant) include:

- A lower level of safety impacts, due to the remote location of the facility and to the large amount of land surrounding the site which provides an excellent safety buffer.
- The HS&P Gas Plant will not generate propane and butane as a byproduct, which reduces the safety impacts associated with the facility.
- Elimination of the need to use the sour gas pipeline between Orcutt Hill and the Battles Gas Plant.
- The proposed project would result in improved fire protection at the SMPS facility.
- The proposed project would result in the decommissioning and removal of the Battles Gas Plant, which would eliminate an existing safety risk. Removal of the Battles Gas Plant would also eliminate a large air emission source within the north county.

The major disadvantages of the proposed project over continued use of the Battles Gas Plant as the only north county gas processing site are primarily driven by the potential cumulative impacts that could occur to other north county gas producers who currently use the Battles Gas Plant depending upon what option they chose for processing their gas. Some of these potential cumulative impacts that might occur for some of the options include:

- A potential increase in new air emission sources associated with the construction and operation of new gas handling equipment, such as flares, cogeneration equipment, and/or reinjection compressors.

- The potential for new visual impacts, due to the construction of as many as 15 flares within the north county.

- A substantial increase in fire protection and emergency response needs due to the construction and operation of up to 15 new gas handling facilities throughout the north county.

- Potential for energy losses from north county producers, due to the need to shut-in production, reinject gas or flare gas. With the case of well shut-in, there could be substantial economic impacts to the other north county gas producers. This could result in secondary economic impacts to the north county.

The degree to which these disadvantages would be realized depends upon the option chosen by each of the north county gas producers should the Battles Gas Plant be decommissioned and abandoned.

In addition the following disadvantage that is directly related to the project would occur.

- Requires construction and operation of new facilities at the SMPS and the JHF site, resulting in new air quality impacts.

Proposed Project vs the Alternative Site At Orcutt Hills

Both of these site have identical impacts for construction and operation. The only major advantage of using the HS&P site is the elimination of the need to move Point Pedernales sour gas from the HS&P site to the Orcutt site. In addition, the HS&P site would make use of an existing consolidated processing site, which would be consistent with County policy. The Orcutt Hill site is not currently considered a consolidated site.

There are no disadvantages that exist for the proposed project over the Orcutt Hill Site.

5.6.2 Environmentally Superior Alternative

The determination of an environmentally superior alternative for this project is complicated. For both the project-specific and the cumulative scenarios, the issues weighted most heavily in the analysis of alternatives were system safety, air quality, and emergency response. At the project-specific level (i.e., when only the projects or an alternatives direct effects are considered), the proposed project is environmentally superior to all of the other alternatives due to its ample setback from urban development, limited distance required for sour gas transport, and the resultant low level of environmental impacts for plant construction and operation. Specifically,

the construction and operation of a gas plant at the HS&P would result in only one significant, unavoidable impact, that of air pollutant emissions during construction. No significant offsite system safety impacts or longterm air quality impacts would result from the operation of the proposed project. In comparison, operation of an upgraded facility at the Battles Gas Plant would involve potentially significant public safety risks and significant, longterm air quality impacts. Relative to the other alternatives, the proposed project also maximizes compliance with the policies of the North County Siting Study.

The cumulative impact scenario considers the direct and indirect effects of constructing a gas plant at the HS&P and de-commissioning the Battles Gas Plant. Under this scenario, the selection of the environmentally superior alternative depends on what assumptions are made about the cause of the indirect effects; that is, what choices do the independent gas producers currently using the Battles Gas Plant make for their future gas production. Therefore, the determination of an environmentally superior alternative for the cumulative scenario involving the decommissioning of Battles is largely speculative. If it is assumed that affected independent producers would shut in or fuel balance, then the proposed project would remain the environmentally superior alternative. However, if all the producers are assumed to flare, reinject the gas that they produce, or construct cogeneration facilities then the no project alternative (involving the operation of an upgraded Battles Gas Plant) could be environmentally superior, particularly with regard to emergency response and air quality. It should be noted that the system safety impacts for these options would be less than those for continued use of the Battles Gas Plant. In reality if the Battles Gas Plant were decommissioned, the independent producers would likely utilize a combination of the options discussed in the SEIR.

Although Unocal's proposed project contemplates the closure of the Battles Gas Plant, some third party could propose to continue operating the Battles Gas Plant rather than incur the indirect effects of shut-in or flaring. This option would require that the Battles Gas Plant be upgraded to meet the intent of condition P-17 of the Point Pedernales Development Plan. This scenario would provide for the processing of Point Pedernales gas and some gas produced onshore at the HS&P, with most of the gas produced in the Santa Maria Valley and Cat Canyon fields being processed at a modified Battles Gas Plant. This alternative is evaluated in the SEIR as the first of two hypothetical gas processing scenarios for northern Santa Barbara County (Table 4.4 on page 4-16 et seq.). This HS&P/modified Battles alternative represents the environmentally superior alternative when the reasonable, worst-case cumulative impacts are considered. This alternative would avoid the potentially significant system safety and air quality impacts of indirect impacts such as flaring; it would minimize the distances over which sour gas is transported; and it would result in two gas plants which meet current safety requirements.

6.0 Consistency With Applicable Plans And Policies

The proposed project has been analyzed for its consistency with applicable Comprehensive Plan policies and the pertinent Article III Zoning Ordinance requirements. The analysis considers the applicant-proposed and the County-proposed mitigation measures and the residual impacts for the proposed project in drawing conclusions about consistency. Additional discussion of Comprehensive Plan policy consistency is available in Appendix K of the Point Pedernales Project EIR/S.

Appendix G of the state CEQA Guidelines, Significant Effects, states that a project will normally have a significant effect on the environment if a project conflicts with adopted environmental plans and goals of the community where it is located. Significant and unavoidable impacts require Statements of Overriding Considerations under CEQA as part of the decision-makers' actions on the proposed project. However, a proposed project must be found to be consistent with applicable policies before approval can be granted. Additional policy analysis as it relates to growth inducing impacts is provided in Chapter 7.

Division 8 of the County Zoning Ordinance covers energy facilities, and would be applicable to the proposed project. The proposed HS&P Gas Plant would be subject to Section 35-296, Treatment and Processing Facilities, which is contained in Division 8 of the Zoning Ordinance. Since the proposed site is zoned M-CR (Coastal Related Industry), the proposed project would be considered a permited use.

The facility is proposed for a site that is currently used for oil processing, and, as such, would represent a consolidated site. The proposed gas plant at the HS&P will serve as a consolidated gas plant for offshore and onshore gas. At this time, other north county gas producers have declined to participate in this gas plant project. However, the HS&P site does contain sufficient space for future gas processing expansion in order to accommodate onshore gas from other producers in the future, if needed. This ability to accommodate future expansion should be addressed in the final development plan for the proposed project to assure consistency with the County Zoning Ordinance.

The results of the consistency analysis are summarized in Table 6.1.

Table 6.1 Analysis of Project Consistency with Applicable Comprehensive Plan Policies and Zoning Ordinance Requirements

Requirement	Consistency	Basis
COMPREHENSIVE PLAN		
Hillside and Watershed Protection Policies (Land Use Element)		
Maximize cut and fill; fit development to site topography; avoid clearing during rainy season; stabilize slopes and control sediment.	Consistent	A substantial amount of earth (9,000 cubic yards cut and fill) is proposed to be moved to accommodate the proposed project at the HS&P. Minimal or no grading would be required at the SMPS or JHF. Implementation of the County's standard conditions regarding geology and soils (numbers 116-121) and County-proposed biological mitigation measures requiring revegetation and sediment control would provide consistency with these policies.
Ecological Communities Policies		
Preserve unique ecological areas; minimize changes in topography, vegetation, and biological communities	Consistent	Although generally located within the Burton Mesa Chaparral area, the proposed HS&P project would be located on a previously disturbed site where vegetation consists largely of non-native species. Two proposed pipelines would impact disturbed coastal scrub vegetation. Implementation of the County proposed biological mitigation measures would ensure consistency with these policies. Proposed modifications to the SMPS and JhF would not affect unique ecological areas or result in significant changes to topography, vegetation, or biological communities.
Fire Hazard Recommendations (Seismic Safety/Safety Element)		
Policy 2 - development of land in high fire hazard area subject to Conditional Use Permits and review by Fire Department	Consistent	Project is located in a high fire hazard area. The project is permitted with a Final Development Plan which is a discretionary action parallel to issuing a Conditional Use Permit. The hazardous nature of the project necessitates review by the County Fire Department, thus the project satisfies the intent of this policy. Implementation of County-proposed mitigation measures FP-1 and FP-2 would require the preparation of a Fire Protection Plan and Emergency Response Plan, respectively, for the project.

Table 6.1 Analysis of Project Consistency with Applicable Comprehensive Plan Policies and Zoning Ordinance Requirements (Continued)

Requirement	Consistency	Basis
Noise Policies (Noise Element)		
Policy 1 - In the planning of land use, 65 dB Day-Night Average Sound Level should be regarded as the maximum exterior noise exposure compatible with noise-sensitive uses unless noise mitigation features are included in the project design.	Consistent	Noise impacts associated with the expansion of the HS&P facility are expected to be dominated by currently existing noise levels. The noise level at the HS&P facility boundary is expected to be 63 dBA. This level is considered to be insignificant.
Land Use Development Policy #11		
Due to estimated oil and gas reserves located offshore, the County has prepared a study entitled Siting Gas Processing Facilities: Screening and Siting Criteria. This study is incorporated herein by reference to guide a comprehensive analysis of alternative sites should the County receive an application for a Development Plan to construct or expand a facility in the NCCPA for treating or processing either onshore or offshore gas production. The criteria are designed to optimize public safety, environmental protection, and the benefits of consolidation.	Consistent	A screening analysis for alternative gas processing sites was conducted as part of this SEIR. The results of this analysis show that the proposed gas processing site (the HS&P) is consistent with all of the screening/siting criteria contained in the Siting Study except for the siting criterion address attainment status for air quality. Given the current non-attainment status of North County, none of the sites would be considered consistent with this criterion. While the proposed project does not provide for consolidated gas processing of both onshore and offshore gas production, the HS&P site does provide sufficient space for expansion in the future to handle onshore gas production in the North County. The SEIR addresses the environmental impacts of future consolidation at the HS&P site.
Visual Resources Policies (Land Use Element)		
Policy 1 - All commercial, industrial, planned development shall be required to submit a landscaping plan to the County for approval.	Consistent	Requiring the applicant to update the existing facility Landscape Plan (Condition L-1 of Unocal's Point Pedernales Project Development Plan) for the proposed expansion of the HS&P would ensure consistency with this policy.

Table 6.1 Analysis of Project Consistency with Applicable Comprehensive Plan Policies and Zoning Ordinance Requirements (Continued)

Requirement	Consistency	Basis
Visual Resources Policies (Land Use Element) - Continued		
Policy 2 - Structures in rural area to be compatible with character of natural environment except where technical requirements dictate otherwise; structures designed to follow natural contours of landscape; no intrusion into skyline as seen from public viewing places.	Consistent	Technical requirements for gas processing facilities dictate the height and design of proposed structures. The proposed project represents an incremental increase in developed area and would only slightly be visible to passing motorists on Harris Grade Road as it would be almost entirely obscured by the existing facility. Implementation of conditions similar to Unocal's Point Pedernales Project Development Plan Conditions L-2, L-3, L-5, L-7 and L-8 would help to minimize any potential visual impacts of the project.
LOMPOC COMMUNITY GOALS		
Air Quality		
Good air quality should be maintained as one of our greatest assets.	Consistent	Implementation of the County-proposed air quality mitigation measures AQ-1, AQ-2, AQ-3, AQ-4, AQ-5, AQ-6, AQ-7, and AQ-8 would help to minimize potential air quality impacts of the project. In particular, the requirement for emission offsets would reduce the emissions of air pollution in the County and also provide consistency with this policy.
Noise		
Excessive noise should be eliminated through the development of noise pollution standards.	Consistent	Noise impacts associated with the expansion of the HS&P facility are expected to be dominated by currently existing noise levels. The noise level at the HS&P facility boundary is expected to be 63 dBA. This level is considered to be insignificant.

Table 6.1 Analysis of Project Consistency with Applicable Comprehensive Plan Policies and Zoning Ordinance Requirements (Continued)

Requirement	Consistency	Basis
Lompoc Community Goals ***Land Use Development Policies***		
1) The unique character of the area should be protected and enhanced with particular emphasis on protection of agricultural lands, grazing lands, and natural amenities. 2) Residential, commercial and industrial growth should be confined to urban areas. 5) Industrial development should be light intensity.	Potentially inconsistent	The proposed gas processing facility presents potential inconsistencies with the Lompoc Community Goals of confining industrial development to light intensity uses and requiring that industrial growth occurs within urban areas. The proposed project also represents a development which is uncharacteristic of the area in that it would not appear to be fully integrated with the rural features of the region. However, the following issues must also be considered in determining overall land use compatibility of the proposed site for the proposed use (See discussion under the Land Use Development Policy #11 on previous page): 1) There is a recognized need for gas processing facilities for Central Santa Maria Basin production in the North County. 2) County policy encourages consolidation of oil and gas processing facilities to minimize land disturbances throughout the County. 3) Due to system safety issues, gas processing facilities are more appropriately located away from populated areas. Given these points, the proposed project can be considered appropriately sited despite the potential inconsistency with the referenced land use policies, because of its relatively remote location and capability to accommodate consolidated equipment.

Table 6.1 Analysis of Project Consistency with Applicable Comprehensive Plan Policies and Zoning Ordinance Requirements (Continued)

Requirement	Consistency	Basis
Water Resources		
Policy 4 - The County should plan for and encourage the maximum conservation of water.	Consistent	Project related water demand is estimated to total 0.36 acre feet per year (AFY). The threshold for the Lompoc Basin is 6.57 AFY. Thus, impacts to water resources are considered insignificant. A condition requirement similar to Condition F-6 of Unocal's Point Pedernales Project Development Plan would satisfy the intent of this policy.
ARTICLE III OF THE COUNTY ZONING ORDINANCE		
	Consistent	Section 35-296.2.1, Permitted Districts, identifies oil and gas processing facilities as permitted uses in the Coastal Related Industry zone district.

7.0 Growth Inducing Impacts

In general terms, a project may induce spatial, economic or population growth in a geographic area if it meets any one of the four criteria identified below:

1. Removal of an impediment to growth (e.g., establishment of an essential public service or the provisions of new access to an area).

2. Economic expansion or growth (e.g., changes in revenue base, employment expansion, etc.).

3. Establishment of a precedent setting action (e.g., an innovation, a change in zoning or general plan amendment approval).

4. Development or encroachment in an isolated area or one adjacent to open space (being different from an "infill" type of project)

Should a project meet any one of the above listed criteria, it can be considered growth inducing. The impacts of the proposed project are evaluated below with regard to these four growth inducing criteria.

7.1 Removal Of An Impediment To Growth

The proposed project involves the construction of a gas processing facility at the existing HS&P facility near Lompoc, the installation of fire fighting and crude heating facilities at the existing Santa Maria Pump Station, located at the existing Battles Gas Plant, and the installation of gas dehydration facilities at the existing Jim Hopkins Fee Site. The new HS&P gas processing facility would serve to replace the existing Battles facility, and as such the project would not increase the existing gas processing capacity in the north county area.

The proposed project would not result in the establishment of an essential public service nor would it provide new access to an area previously inaccessible. Instead, the proposed project would provide a more efficient and safer means of processing gas. Therefore, the proposed project is not considered to be growth inducing under this criterion.

7.2 Economic Growth

Short-term economic growth could occur in the Lompoc and Santa Maria areas during the construction phase of the proposed project because of the approximately 160 construction workers and associated support services. Long-term project employment is extremely limited,

and existing employees from Battles would be transferred to the new facilities. Therefore, there would be no new operational employment associated with the proposed project. While the construction activities will result in some short-term increase to the County's existing revenue base, the operational activities would not result in any increase to the revenue base. Therefore, due to the short-term and limited nature, economic growth associated with this project is not considered to be significant.

7.3 Precedent Setting Action

As a consolidated gas processing site, the proposed project is consistent with the policies of the County's Comprehensive Plan and designations of the Zoning Ordinance. In terms of the North County Gas Siting Policies, which are part of the County's Comprehensive Plan, the proposed project is consistent with these policies, and in particular, it is consistent with siting criterion #16 which requires consolidation of oil and gas processing facilities. Therefore, the proposed project is not considered to have any precedent setting action. A review of consistency with the North County Gas Siting Policies is provided in Chapter 3.0.

7.4 Development Of Open Space

Development of open space is considered growth inducing when it encroaches upon urban-rural interfaces or in isolated localities. The proposed project would be constructed in existing industrial areas on previously disturbed areas. Therefore, the proposed project is not considered to be growth inducing under this criterion.

7.5 Conclusion

The proposed project does not meet any of the four growth inducing criteria specified in this section. As a result, the proposed project is not considered to be growth inducing.

8.0 Significant Irreversible Environmental Changes

The Section 15125(f) of the CEQA Guidelines states that significant irreversible environmental changes which would be involved with a proposed project may include the following:

- Uses of non-renewable resources during the initial and continued phases of the project which would be irreversible because a large commitment of such resources makes removal or non-use thereafter unlikely;

- Primary impacts and, particularly, secondary impacts which commit future generations to similar uses; and

- Irreversible damage which may result from environmental accidents associated with the project.

Development of the proposed project would involve the consumption of some non-renewable and locally limited natural resources (i.e., fossil fuels and water) associated with construction activities. The proposed project is not expected to require a measurable, long-term quantity of non-renewable resources. Therefore, this demand is not considered to be significant.

The proposed project would not directly create an increase in the recovery of and consumption of oil or gas. Rather, the proposed project would reduce the amount of energy being used for oil and gas processing when compared to the existing baseline. Therefore, the proposed project does not result in commitment of petroleum products to future use, but would actually reduce the current commitments.

The proposed project could result in environmental accidents which have the potential to create irreversible impacts in the form of destruction of biological resources and potential loss of life. However, the potential for environmental accidents to occur can be reduced to levels of insignificance. This can be accomplished through use of adequate design and operating procedures, and efficient emergency response plans specifying staffing and equipment needs. However, the potential remains for irreversible damage as a result of an unlikely upset associated with the operation of the proposed project.

9.0 Short-Term Use Of The Environment vs. Maintenance Of Long-Term Productivity

Section 15126(e) of the CEQA Guidelines states that the relationship between short-term uses of the environment and the maintenance and enhancement of long-term effects of the proposed project which adversely affect the environment shall be discussed. Special attention is to be given to impacts which narrow the range of beneficial uses of the environment or pose long-term risks to health and safety. In addition, the reasons why the proposed project is believed by the sponsor to be justified now, rather than reserving an option for future alternatives, should be explained.

The proposed project would have a life expectancy of between 10 and 25 years, based upon projected gas production volumes. However, because the proposed project components would be located within existing facility boundaries they are not expected to unavoidably restrict existing or future land uses in the site vicinity.

Operation of the proposed project would generate additional long-term risks associated with gas processing accidents which could affect the health and safety of employees and the local population, as well as resulting in potential degradation of the local environment. Such risks would be minimized to the maximum extent feasible through adequate design, and operating procedures.

The development of the proposed project would allow gas to be processed in a safer manner than currently exists today, since the new facilities would replace the existing Battles Gas Plant. The proposed project is consistent with most of the gas facilities siting criteria contained in the County's General Plan.

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Table of Contents

Comments Received On The Public Draft

Energy Enterprises
Specializing in Alternate Energy Development

August 29, 1993
Via FAX-Hardcopy to follow

Page 1 of 19

John Zorovich
SBRMD
1226 Anacapa Street, 2nd Floor
Santa Barbara, CA 93101

Re: Comments on July 14, 1993 version of Draft EIR
HS&P Modifications
#92-EIR-13

Dear John:

Thank you for sending me a copy of the draft EIR for the HS&P modifications. While this draft has gone a long way to correct the previous deficiencies, it now is getting closer to the point that detailed corrections may be made. Please accept these comments towards that end.

1. Page ES-2, 2nd paragraph from the bottom, 2nd sentence. I think that the consultant is trying to rewrite history. The purpose for the second part of the P-17 condition was not "to bring the Battles up to current safety standards". The purpose was "to do safety audit". Doing a safety audit does not require one to do anything about that audit. Nowhere in any of the proceedings I am aware of for the original permit was it stated that "the purpose was to upgrade the Battles Plant to current safety standards". Please provide a reference in the EIR or the Planning Commission testimony to support this statement. EE-1

2. Page ES-4, second paragraph. The report states that "a number of smaller changes are needed at other Unocal facilities", and proceeds to address them. Since a number of smaller changes are also required at the independent oil companies, inherently they must be addressed completely, or the EIR is not adequate. Section 15151 of the CEQA guidelines states : EE-2

> "An Environmental Impact Report should be prepared with a sufficient degree of analysis to provide decision makers with information which enables them to make a decision which intelligently takes account of environmental consequences"

The law does not state that the EIR is limited solely to the impacts to the environment that result by only the applicants activities. In the past, others and I have stated that the independents will flare gas. This flaring will only occur if the project goes forward. It is an environmental consequence. Because of this, you need to remove from all places in this document references that the options of the independents were only reviewed to a programmatic level, not a permitting level. First, I am not sure what that means, and second, I think this draft did a very good job at identifying the impacts, without micro managing the project.

As such, this EIR must either 1) be adequate to address the all impacts, including those that may occur on the independents properties, and mitigate all of those Class I impacts; or 2) be inadequate, and not be legally allowed to be certified as "complete".

3. Currently Unocal is selling off many of its properties. If the owners of one of the properties that it sells, for instance, the Jim Hopkins lease, decides that they don't want to put in the refrigeration system proposed, or change it to reflect proper designs, what is the impact to the balance of the project? Is it negated because the complete plan was not done? Is there some sort of liability on the future owner to do things that are not directly related to the HS&P? EE-3

4. Page ES-7- Fourth paragraph. What happens to the NGL's recovered by the refrigeration skid? EE-4

5. Page ES-8 and elsewhere throughout the EIR. The existing Battles Gas Plant modifications are not the "No Project Alternative". The No Project alternative will be not installing the HS&P modifications, and Battles Gas Plant would be shutdown. This is what will occur if the project is not approved. AD Little naively believes that if the project were not approved, (the "No Project"), Unocal would go ahead and do the 40 safety modifications on the Battles short list. They won't. The gas supply and economics won't support it. The reduced safety modifications are an alternative that we, the independents, presented to you, RMD, in the one workshop you sponsored.

The Battles short list of modifications is one alternative, because the long list of safety concerns is what has predicated the desire and requirement to do something. Battles will be shutdown if the project is not approved. EE-5

In your study, you have come up with the solution that solves all of the independent oil companies problems, gives Unocal what it needs and minimizes the environmental impact, more so than any one part of the project taken individually. The "No Project" case is shutting down Battles. The Environmentally Superior Alternative (Executive Summary, Section G) is reducing the safety concerns list for Battles, making certain modifications there. The second Environmentally Superior Alternative is the HS&P modifications proposed by Unocal.

Unocal will go forward with the HS&P modifications. By stating that the modified Battles list is the preferred choice (and is not the "No project" alternative), allows both projects to go forward concurrently. Unocal gets its desires and the offshore gas is handled in a safer manner. If Unocal, or if some predecessor to Unocal comes forward, and will deal with the safety concern list, the independents don't flare.

6. Figure S-5. I would suggest adding numbers next to the boxes so one can visually see that the Lompoc Field only met 2 of the 5 air quality criteria, for example. EE-6

7. Page ES-18, second paragraph. Why do you recommend a "corrosion resistant" liner. Wouldn't steel be just as good since the original line was steel and it has lasted over 50 years? It is just worn out. The impacts could also be mitigated by installing a new steel line. EE-7

8. Page ES-19, fourth paragraph. It is interesting that the report states that there is no significant impact of the emergency response due to the extensive system the County has, however if they diminish, then significant impacts will occur. Later in the report, when talking about if the independents shut down it states that there will be no impact, however, the loss of those companies will diminish the emergency response capabilities of the County. Is this not a significant impact that should be included as a Class I impact on Page ES-7? EE-8

9. Table S.1, page ES-22 and throughout all similar Tables (i.e. Table 4.2). Petrominerals Magenheimer line-This lease is located in the Cat Canyon field. Geo Production- the Lease is Careaga. Production, H2S and CO2 content- these appear to be in significant error. Please correct per the figures below. I have only indicated those requiring changes. Since this table is important in the analysis of who needs to do what when flaring (installing H2S treating equipment), it is important that it is correct. It appears that what the author has done is use an average figure of 10% CO2 for Santa Maria and Cat Canyon, 15% for Orcutt Hill and Lompoc, and 38% Casmalia. Averages for a field should not be used when the table implies an average value per lease. EE-9

Operator- Lease	Production	H2S	CO2
Conway- Casmalia		0	7.7%
Conway- Brookings (left off table- Cat Canyon Field)	5	Unknown- use Waite Bradley Sales #	Unknown- use Waite Bradley Sales #
Conway- Waite Bradley		Unknown- use Waite Bradley Sales #	Unknown- use Waite Bradley Sales #
Conway- Union Sugar		2400	9.2%
Conway- Enos		65	12.0%
Dominion Oil- Los Flores		0	5.4-10.6%
Geo- Careaga			AD Little to check
Petrominerals- Hancock		1	6.3%
Petrominerals- Magenheimer		5	3.1%
Petrominerals- Arata		Unknown- lease SI	Unknown- lease SI
Texaco- Orcutt		AD Little to check	AD Little to check
Vintage- CC		AD Little to check	AD Little to check
Vintage- SM		AD Little to check	AD Little to check

If you need proof of these figures, I will provide you with the gas analyses run by Unocal or outside parties at the leases.

10. Figure S-9 and other places Map is used. The map is getting better, but still the errors exist. The Conway Oil lease shown above Crimson Partners is to the west of Highway 1, just at the tip of the field, and should be shown as Conway- Union Sugar. The Petrominerals location shown by the Battles Plant should also list Conway- Enos immediately below it. The Conway lease shown in the Casmalia Field should also list Unocal there (the Unocal Escolle Lease). Dominion Oil in Cat Canyon sends and receives gas from Battles. Petrominerals in Cat Canyon should not state "Gato Ridge" but rather "Magenheimer and Arata". EE-10

11. Page ES-26, last paragraph. The statement is made "This modified list of P-17 recommendations does not contain any of the equipment spacing (or closed loop vent system) recommendations ..since none of these are required by any building, safety, or fire code." This is very disturbing to me. How then did these recommendations get into the safety audit? They must be mere personal preferences by the SSRRC! As personal preferences for a design, they have no place in an audit of an existing system. If a safety audit is part of any recommendation for mitigation, this EIR has the duty to spell out that the ground rules for the audit are only the applicable building, safety, or fire code requirements. EE-11

12. Page ES-27, first paragraph in H2S Section. The statement "Under this scenario, each lease would need..." is incorrect. It should be "Under this scenario, some leases would need...". The statement "This type of facility would be skid mounted and include gas compressors..." is incorrect. This type of facility can consist of a single vessels, not a skid, and compressors most likely would not be required. (Why compress the gas? What are you going to do with the compressed gas?) EE-12

13. Page ES-27, first paragraph in H2S Section, and all other places referencing "SulfaTreat". SulfaTreat is the patented name for one type of H2S treating system. There is also Sulfa Check, HS-100, caustic, formaldehyde, SulFerox, and water washes. This EIR should not state in such definite terms that SulfaTreat would be used. In reality, most companies would probably use Sulfa Check or H-100 because it is easier to handle and one doesn't have to deal with a solid waste. EE-13

Please rephrase all references to SulfaTreat to be something like "One possibility for H2S treating is SulfaTreat, however, many other similar chemicals are on the market that do an equivalent job. The choice of chemical will be made by the individual operator looking at the conditions at each individual lease. The environmental impact of the choice will not change significantly."

14. Page ES-27, second paragraph in H2S Section. This discussion about the Lakeview gas plant is in error. The plant was built by Husky in the 1970's, 30 years ago. The operation does have NGL handling, however, it does not have an NGL recovery system. The statement "The facility, If permitted, could be EE-14

upgraded for the..." is not a fair representation of what it would take to use this facility. It is not a question of whether permits would allow work to be performed there, it is my understanding that the entire plant would have to be destroyed and started new. It would be a bigger effort than installing the plant at the HS&P. That plant is a special breed of plant designed specifically for the 10-20% sulfur content in the gas coming from the Lakeview and Nicholsen areas. Just because it is called a "gas plant" does not mean that they all are the same and any one can be plugged into any slot. At Husky, we conducted a preliminary study looking at "upgrading" the plant to get more gas, and the result was that it was going to be a nightmare. Vintage, however may have the answers that Husky did not have. I would suggest unless RMD has information contrary to the above, that this paragraph be toned down on the merits of the Lakeview Plant (unless AD Little is planning on buying it and starting it up).

EE-14 cont.

15. Page ES-28, first paragraph under Flare Gas. The statement is made "air or fluidic seals are preferred" when running 24 hours per day. Preferred by whom? Both the air and fluidic seal (or John Zink Mol Seal) may be preferred by the manufacturer because they cost more, however, these types of flares are preferred only when operation is <u>not</u> 24 hours per day. The reason is that the seal prevents <u>air</u> from coming down the tip and making an explosive mixture inside of the flare line. Air can only enter when gas is not leaving. Very small volumes of gas can be used (i.e. levels of 0.1-1 MSCFD actuates the seal), hence the reason non-continuous flares to have a continual purge system.

EE-15

16. Page ES-28, second paragraph under Flare Gas. There are not two flares operating in the County, there are at least seven flares (Oryx- Barham Ranch, Triton- Blair (2), Texaco- Cat Canyon, Halladar- GP 10, Unocal- Battles, Geo-Barbara Investment; along with at least two more permitted; Vintage-Lakeview and GTI- North Orcutt).

EE-16

17a. ES-28. General. Generating electricity is only possible if there is a flare. Please add this statement.

EE-17a

17. ES- 28, first paragraph of section on Electricity, sixth line. The gas for an engine does not have to be dry, the H2S must only be less than 796 ppm, and the "octane rating" only affects engine knocking, and is not a requirement to use that gas. The higher % of methane and ethane, the higher the octane number and lower the chances of knocking. Considering that most of the gas that would be considered for this application is now being used in IC engines, is somewhat proof that the question of octane should not even be brought up. Someone is throwing a red herring to see how knowledgeable the writers of this EIR are.

EE-17

18. ES-28, second paragraph, second line. The Waukesha lean burn GL series is not the only engine available. Caterpillar has similar engines and other engines may be modified or PSC's could be added to meet the emission control

EE-18

requirements of the APCD. Stating that "only Waukesha" has the technology, while being an untruth, makes this EIR some sort of sales pitch.

19. ES-28, second paragraph, third line. This is the first I have ever heard of "halide" poisoning of a catalyst. The APCD has never mentioned it as a possible problem when they passed Rule 333. What is this and is it a real possibility, or just an academian's research project?

EE-19

20. ES-29, first paragraph, first line. The writers of this EIR must be lost in the business world. Shutting in production is not the most likely scenario, even if it was in the County's secret desires. The independents won't shut in wells, if for no other reason than, if they do, they will be forced to spend many hundreds of thousands of dollars abandoning the wells and facilities. That is not a "most likely scenario".

EE-20

21. ES-29, first paragraph, third line. Again, the writers of this EIR are writing about some people, (the independents) and making insinuations about financial strength that they know <u>nothing</u> about, and which is not in the purview of an EIR to address. The question is not the "access to capital to pursue other alternatives". <u>It is that one does not spend capital on projects that will lose money</u>. If the project were going to make money, the "access to money" is no problem. Business is not like the government, who can spend money without requiring a return on investment. That is called "going bankrupt" and is similar to a person investing in a stock of a company that takes a nose dive. If IBM's stock is currently 100, and you know that it will drop to 5, do you buy the stock, just because you have "access to capital"?

Drop all references to financial strength of the companies. It has no bearing on the decision of what is done by these companies.

EE-21

22. ES-29, first paragraph, fifth line. The loss in oil production will not be 550 bbl/day. The loss in the independents oil production (excluding Vintage and Texaco) will be 690 barrels/day. Including those two makes the loss closer to 1800 BOPD. Please justify the 550 BPD figure or develop an appropriate figure.

EE-22

23. ES-29, first paragraph, sixth line. The figure of 20 direct jobs and 60 indirect jobs is not correct. Independents are lean companies, and they rely heavily on outside contractors to perform day-to-day activities that the majors have employees for. First, the employee count is incorrect. This figure is closer to 40 direct jobs. Because of the higher ratio, the indirect jobs would be closer to 200 jobs. Please justify the 20::60 figure based on a study dealing with the small producers.

EE-23

24. Page ES-33, third paragraph. Speculating on a possible density change near Battles is in appropriate and should be dealt with in the EIR required for those increased densities at that time. By the same token, to be fair, it is possible that the population density will change near the HS&P modifications.

EE-24

however, the EIR has not speculated on this. I don't think it is appropriate to have either one addressed, because it is speculation.

EE-24 cont.

25. Page ES-34, first paragraph. The statement is made "Given the low level of emissions...offsets might not be required." I question both phrases. Eighty tons/year over ten fields makes 10 TPY, which the APCD regards as significant, requiring BACT. Please get written verification that they would agree that this is either a low level of emissions or a high level of emissions. In addition, the statement is made that offsets may not be required. Please pin this down. Either they are or they aren't. Which one is it.

EE-25

26. Page ES-34, second paragraph. As a follow-up to question 13, SulfaTreat is one option. Will the same risk level occur with Sulfacheck, formaldehyde, caustic or HS-100?

EE-26

27. Page ES-35, first paragraph. The EIR estimates the emissions as 250 TPY of NOx, assuming 0-2000 psi injection pressure on 5 MMSCFD. I think you have a math error here, as the calculated hp for this sort of load is .26 hp/MSCFD. The hp load is then 1560 BHP, @9000 BTU/hp-hr makes 336 MSCFD, or 122 TPY NOx w/o controls, 12 TPY with controls. Similarly, the ROC figure appears in error. In addition, this section does not match up with the results on Table 5.20.

EE-27

28. Page ES-35 and ES-36, Air Quality paragraphs. In both of these instances, the EIR states that the air emissions (before the corrections above) are 250 TPY NOx for reinjection and Table 5.21 shows 57 TPY for flaring. The paragraph starts out by starting that it is a significant air quality impact, however because it is spread out, it would not trigger the need for offsets. Doesn't each operation have to be looked at separately and the EIR state that it would be an insignificant impact at each location, as opposed to lumping them all together? After all, the offset requirement will not be determined on a County wide basis.

EE-28

29. Page ES-36, second paragraph, first line. This statement is incorrect. Flaring will not require gas processing at each site, on the contrary, it would be the exception at each site. Please review the revised Table S-1 and you will see that processing would only be required at five sites, nine sites would not require it.

EE-29

30. Page ES-36, second paragraph, third line. Flares would not be installed at each well site or field. Flares would be installed at each lease or groups of leases.

EE-30

31. Page ES-37, second paragraph. The economic loss of gas is not $1.0MM/year (this makes the gas value $.45/MSCF), but rather it is closer to $3.3MM/year (ignoring the recent temporary price reduction Unocal has made).

EE-31

32. Page ES-37, fourth paragraph. The emissions quoted in the paragraph do not match with the Tables on pages C-62 through 64. In addition, the mW stated as being produced is high. Gas production of 3,958 MSCFD (Table, page C-60) would produce about 13.7 mW using 12,000 BTU/kW-hr efficiency.

EE-32

33. Page ES-38, fifth paragraph. See comments 20 and 22.

EE-33

34. Page ES-38, last line. The economics are in error. Six MMSCFD @ $1.50/MSCF plus 1800 BOPD at $15.00/BO makes economic losses of $13.1MM per year. Please justify the $5.0MM figure.

EE-34

35. Page ES-38 and 39. Last line, Jobs. Please correct per comment 23.

EE-35

36. Page ES-39, Section G. Please review in light of comment 5.

EE-36

37. Page IS-2, Option C.3, and IS-13 Option A.1. Something is wrong here. If H2S equipment is installed in the field with a fugitive I&M program, it is a Class I impact with potentially significant impacts (Option C.3). Then that same equipment, or actually more extensive equipment is installed at the HS&P with the same I&M program, it is a Class II impact. Something went haywire between these two. I think Option C.3 should be a Class II impact.

EE-37

38. Page IS-3, Options 4, 5, and 6. The impact is NOx plus ROC.

EE-38

39. Page IS-3, Option 6, mitigation measure #2. There is not a compressor associated with this option. There is no I&M program associated with this option because the gas is handled in only 10-20 fittings. The mitigation should be low NOx controls only.

EE-39

40. Page IS-2 and 3, Options C.3, C.4, C.5, and C.6. All are shown as the residual impacts are "potentially significant", while for the bulk of the leases, the amount of gas consumed is insignificant. Because there are 14 different operations with different choices, each one will be a different significance, I would suggest that you replace these Sections with a simple spreadsheet showing each lease on the vertical axis, and each option on the horizontal axis, and fill in the boxes if the residual impact will be Class I or Class II. The following is an example:

EE-40

Lease	H2S in field	Reinject	Flare	Elec. Gen.
Conway- Enos	N/A	Class II	Class II	Class II
Conway- Union Sugar	Class I	Class II	Class II	Class I
Dominion	Class II	Class II	Class II	Class II
Vintage	Class I	Class I	Class I	Class I

Then shade in the Class I impacts, so it will be obvious where attention should be paid.

41. Page IS-3, Shut In Production- Air Quality. There is another impact associated with this. If 14 leases shut in production, the APCD will lose a very significant portion of its funding from stationary sources. That funding now goes to subsidize gas stations, dry cleaners, and public awareness programs. Wouldn't this be a Class I impact because the APCD could not do its job then and there would be an increase in air emissions? EE-41

42. Page IS-5, C.7. As with the comment 41, the statement is made later that loss of funding and support for the Countywide Emergency Response Plan would made a Class I impact. Well if the wells are shut in, there will be a loss to the ERP, so it would be a Class I impact. EE-42

43. Page IS-6 and IS-7, Options C-3-C-6, page 5-167, first paragraph. Expanding the emergency response capabilities within North County will not be a mitigation, it will only be an aggravation. The response capability is acceptable the way it is. Please provide some sort of justification that any expansion would be needed. It appears this has been added as some sort of leverage tool to get more money for fire departments and OES in tight budget times. Please don't make this document a political tool by these agencies. EE-43

44. Page IS-9, ES-27, and elsewhere. "Installing H2S equipment in the field" is not an option. All that is, is a processing means to get gas clean enough to use it. It must be used in conjunction with an option that consumes the gas. A company cannot just install H2S equipment in the field and think the problem is solved. If that is done, either options C-4, C-5, or C-6 must be pursued. Come to think of it, on each of those options, the EIR addressed H2S removal, so really it should be taken out totally as an option. EE-44

45. Page IS-12, Option C-5. The residual impact may be potentially significant. If the enclosed flare is located in the back hills of the Careaga lease, or sitting next to an existing tank battery, I cannot understand how it will have any visual impact. EE-45

46. Page IS-18, B-2. Please modify the mitigation measure to read "or install a new steel line". EE-46

47. Page IS-23, mitigation measure 4. I have a hard time understanding the logic of RMD on this one. I can see limiting traffic between 7-8:30 AM and between 4:00-6:00 PM on weekdays, but if Unocal wants to do their construction at midnight, or do its hauling at night to be ready for the next day, aren't nighttime hours "non-peak"? EE-47

48. Page IS-24, mitigation measures 2 and 3. From past RMD experience, the oak tree section needs to be thought out more fully. The pipelines in question are in the midst of an oak forest. In the past, RMD required Unocal to gather acorns and try to grow them in a nursery, which was a dismal failure. On the opposite side, Triton at the Blair Lease needed to mitigate some oak damages and planted saplings vs. acorns. We are having a 96% or better survival rate EE-48

after 2 years. I suggest the mitigation rate be 3::1 with saplings, not 10::1 with acorns. It is throwing money down a rat hole.

49. Pages IS-36-37. In the Class IV Beneficial Impacts, the authors left off of the table the options for the independents C-1 through C-7. Please add these lines and show what will be beneficial with these other choices. EE-49

50. Page IS-36-37. Each of these options is incorrectly described. Options A and B are the "Proposed Project", not "Proposed Project with All Other Producers in the North County Shutting In Production". To me this implies that the project presented to the County by Unocal was "We will put in this project that will shutdown the independents". Was this the proposal? If so, the entire EIR didn't properly address the impacts and the independents were not consulted about their thoughts on participating in this project in this manner. EE-50

51. Page IS-36, A.1 and B.1. This doesn't adequately describe all of the beneficial impacts. If there is a reduction in the air emissions because Battles is shutdown and the independents are gone (a drop of ~30% of permitted air emissions), the beneficial impact will also be the layoff of 30% of the APCD staff, or 30 people, which is beneficial given the County's budget situation and the air pollution these workers cause going to work. This is a savings to the County of approximately $3,000,000! Please add this as beneficial impact. EE-51

52. Page IS-37, A.1 and B.1. This doesn't adequately describe all of the beneficial impacts. If there is a reduction in the demand for these services, the beneficial impact will be the layoff of 8 firemen, and 1 person for OES and 1 person in EHS, which is beneficial given the County's budget situation. This is a savings to the County of approximately $900,000! Please add this as a beneficial impact. EE-52

53. Page 1-7, last paragraph, second line up. I disagree with the statement "it was in all parties best interest". It was not in my best interest or the independent's best interest to pursue the project. (Otherwise why are you having such problems with drafting this EIR?) EE-53

54. Page IS-9, Options A.1 and C.1. Both of these options will be taking stripped out NGL's and reinjecting them back into the reservoir at Lompoc to be forever lost. This represents a loss of reserves that needs to be viewed the same way as the C.4, C.5, and C.7 as Class I impacts. EE-54

55. Page 3-7, fifth Line. The Cat Canyon, Orcutt Hill, and Battles are all non-attainment for H2S. I don't think the Battles Plant is in an area that is non-attainment for SO2. If so, all of the operations are most likely are in that same area. EE-55

56. Page 3-20, Measure AQ-1. I think the Battles site should be a (+) here and the Lompoc sites all (-). There are more exceedances of the standards at the Lompoc Stations than the Battles station. See page 5-23. EE-56

57. 3-20, Measure AQ-2. Again, Battles should be a (+). There are no downwind neighbors. If the authors take the opinion that there are, please provide data from the APCD on the number of odor complaints in Santa Maria that have been indisputably traced to the Battles Plant. Compare that with the complaints in Lompoc from the existing HS&P to justify any difference in ratings. EE-57

58. Page 3-22, Measure A-2. Battles should be a (+). The Battles site option is the modification, not the entire plant. In addition, the bulk of what is seen is the Santa Maria Pump Station, not the gas plant. The modifications will reduce the visibility, hence is a positive measure. EE-58

59. Page 3-24, second paragraph, first line. The correct figure is six, not seven (before the above suggested changes). EE-59

60. Page 3-27, fourth paragraph. The existing Battles Site does offer environmental advantages. It is already a disturbed site, hence no oaks tress must be cut, grading done, etc. EE-60

61. Page 4-7, Unocal Operations. Unocal receives most of their fuel gas back. It would be helpful to add to this document the volume of gas they receive back on a lease by lease basis, the way the original draft began to do. EE-61

62. Page 4-7, Dominion and Conway operations. Dominion does receive gas back at its UCB lease, Conway receives it back at Waite Bradley and Brookings. EE-62

63. Page 4-7, Texaco, last line. Where does this purchased gas come from? EE-63

64. Page 4-8. Please check the direction of flow on the So Cal gas line near Buellton. I think it goes the other way. EE-64

65. Page 4-13, last line. Why does this EIR state anything about the Central and Northern Santa Maria Basins? The San Miguel project was stopped in its tracks. Stating anything about future offshore production seems a little naive when one looks at what Santa Barbara and San Luis Obispo County have done to stop and make uneconomic offshore production. Please delete the last part of this phrase because the probability of it occurring matches the possibility of BLEVE's from the butane tanks. EE-65

66. Page 4-14, Table 4.3. For clarity, I would suggest listing the Conway and Petrominerals' properties by field and lease. There is only 1 Geo operation. The three Petrominerals properties (the second is actually in the Cat Canyon field) would have a first option of "Continue at Upgraded Battles", then "Flaring", then "Electrical Generation". There was not an option of a new gas plant at Battles. Unocal's third option shouldn't be "None", but a choice of the above. I would guess that it would be "Flaring". City Oil's third selection should be "Restart Cities Gas Plant". EE-66

67. Page 4-15, second paragraph. The second case listed should not have Petrominerals generating electricity. First, the table above has been corrected, second, there is only one Santa Maria location, and the gas volume is 7 MSCFD, which will generate 24 kW, which wouldn't pay for even the transformers for the power, much less the engine, switchgear, etc. EE-67

68. Page 4-16, Table 4.4. Please correct the Petrominerals line. (Spelling error also). EE-68

69. Page 4-16, Table 4.4. Unocal- Orcutt Hill. If Battles were upgraded, wouldn't the preferred choice for Unocal be to keep the Orcutt Hill Gas at the upgraded plant vs. all of the pipeline changes to allow Orcutt gas to go south? Wasn't that one of the prime concerns that the Santa Maria gas couldn't go South because there wasn't a line available? EE-69

70. Page 4-16, Table 4.4 (and all other Tables similar such as 4.3, 5.1, and 4.2). Unocal's Santa Maria refinery was left off all these Tables. What are they going to do? EE-70

71. Page 4-19, first paragraph, 11 lines down. It is stated that the vessels would be designed to handle pressure s of 500 psi and 300°F, however those far exceed the conditions required. I would suggest adding what are the actual conditions required (200 psi and 150°F). EE-71

72. Page 4-21, point 4. For the non-electricians, I would suggest that you define "MCC" (Motor Control Center). EE-72

73. Page 4-21, second to last paragraph, third line. Pressure piping larger than 2" is welded. Lines 2" and smaller are usually screwed. Please check with Unocal on their desires. In addition, the way this is worded, what happens to the 1-1/4" and 1-1/2" lines? EE-73

74. Page 4-23, last paragraph, four lines from the bottom. There are four separate access roads to the plant, and three are very wide and straight. Why does one need to be widened? It seems smarter to just take it out of service if the fire trucks don't have steering wheels. EE-74

75. Page 4-24, S&P 6, S&P 11, S&P 13. Please explain the logic of performing a complete seismic analysis on these items. What are you proposing to do with the results? If it is rebuild the plant, don't you think it would be appropriate to state those desires now? If it is just for the files, why waste the money down another rathole? EE-75

76. Page 4-24, item S&P 32. Why are "as built" P&ID's required? The plant operators know how it works, who else needs to know how it operates? Who are these drawings for? What is their legitimate reason to have these made? What are they going to do with them? To what detail with the P&ID's be required? EE-76

77. Page 4-24, last line. The requirement to add valves to "limit inventory loss" is a decision by Unocal and should have no bearing on RMD. If an upset were to occur, the value of the product is worthless when one compares it to the value of a life. The 10,000 gallon tanks will have a maximum of $5,000 worth of product. Why spend $20,000 on valves to save only a portion of the $5,000 of product. It again is throwing away money. EE-77

78. Page 4-25, third paragraph. The Gas Plant would have to be shut down for more than "a few days". I would guess it would be shutdown for over a month. EE-78

79. Page 4-25, sixth paragraph. See comment 12 and 13. EE-79

80. Page 4-25 and 4-27. Please correct per comment 14. EE-80

81. Page 4-27, second paragraph, third line. The requirement would be for each lease, not each field. EE-81

82. Page 4-27, second paragraph, fourth line. Please preface the statement about Gato that they are the only independent injection gas. Your statement implies that this option is easily done. EE-82

83. Page 4-27, second paragraph, fifth line. The loss of gas is not temporary. It is permanent. EE-83

84. Page 4-27, second paragraph, sixth line. Please support the statement "the gas could possibly be recovered at a later date" To do what? There is no gas plant in this scenario; there is excess gas, hence no need for it; and what is to say it could be recovered? Please refer to my previous letter to you on this matter discussing the problems with reinjection and subsequent recoveries. EE-84

85. Page 4-27, second paragraph, eighth line. The discussion in Chapter 2.0 is briefer than this section. Please describe the reinjection compressors more fully here since it isn't done in Chapter 2.0. EE-85

86. Page 4-27, second paragraph, eighth line. The statement is made that the compressors would be "gas-fired". Are those permittable by the APCD considering the NSR, the controls, and Rule 333? EE-86

87. Page 4-27, second paragraph, last sentence. Why would H2S not have to be removed? Going to 2000 psi requires NACE standards. Please justify the statement EE-87

88. Page 4-27, bullet points. It is a "Radius of Review Investigation". EE-88

89. Page 4-27, last paragraph. I appreciate the County wanting to be a matchmaker to get companies together, but this is not the place for it. Please correct this paragraph to reflect all sweet gas locations from Table 5-1. EE-89

90. Figure 4-11. This drawing is incorrect with regards to process (and you want Unocal to supply as-built P&ID's for your review and approval???) Immediately downstream of the water knockout needs an H2S removal stan. There is no need for an LTS system because the compressor will take the gas to a pressure to squeeze out the liquids. If an LTS is used, it would be downstream of the compressor. EE-90

91. Page 4-29, top line. County RMD policies do not easily allow this joint venture. It becomes part of the Gas Plant Consolidated Siting Study, which makes it not a feasible alternative. An operation can only serve the lease it is on, or else it is subject to the study and associated reviews. This becomes a gigantic pipeline project because two sets of lines need to be available, the low pressure gas out and the injection gas back. EE-91

92. Page 4-29, second paragraph, third line. A flare tip is good for many millions of cubic feet per day. EE-92

93. Page 4-29, second paragraph, fifth line. An ignition system is not required on the simplest and most common type of flare. EE-93

94. Page 4-29, second paragraph. See comment #15. EE-94

95. Page 4-29, third paragraph. It is all well and good to talk about steam injection for flares, but not one of the leases that would be flaring have a steam source. How are you proposing to deal with that? Many of these leases don't have electricity to operate an air compressor. EE-95

96. Page 4-29, third paragraph. I would suggest adding "Kaldair" to the list of suppliers with NAO, since they have provided a good portion of the flares in the County. EE-96

97. Page 4-29, fourth paragraph. Citing one example doesn't really support the statement that the price depends on the size and type of flare. Either include more examples to justify the statement or delete the paragraph completely. Up to this point you haven't been concerned about the cost of any of other option, why are you suddenly concerned now? EE-97

98. Page 4-29, last paragraph. Please see comments #17a, 17, 18, and 19. EE-98

99. Page 4-30, third paragraph. Inclusion of discussion on fuel cells is not appropriate here. Discussion of research projects that have the same chances of success as tidal power, perpetual motion machines, and carburetors that get 200 miles per gallon don't really have a chance in this situation. The Independents who are forced to do something they don't want won't be guinea pigs. We are not research labs. Delete the paragraph. EE-99

100. Page 4-30, fourth paragraph. The first statement is technically incorrect It should read "All production of electricity will require tying..." EE-100

101. Page 4-30, fourth paragraph. Please add a clause on the end of this sentence which PG&E neglected to tell you. That is, "however, PG&E has numerous additional charges that effectively eliminate the 3 cents/kW payment for sources less than 100 kW. EE-101

102. Page 4-30, fifth paragraph. Please see comments 20, 21, 22, and 23. EE-102

103. Page 4-30, fifth paragraph, third line. The "access to capital" issue; flaring is free, hence no requirement of "access to capital". This makes it the preferred alternative. EE-103

104. Page 5-22. These plots are great for the AQAP, however for these purposes where you are attempting to show a trend, the plots should be based on violations/operating station since the number of stations changes every year. EE-104

105. Page 5-23. These plots should be updated to show 1991 and 1992 data. EE-105

106. Page 5-37, third paragraph. The statement is made about the decommissioning of Battles as being an offset. Where are you adding in the increases due to the flares, generators, compressors and H2S scrubbers in the field? EE-106

107. Page 5-43, third paragraph. I&M programs get an 80% credit, not 75%. EE-107

108. Page 5-49. third paragraph, last line. Please look at the data. The operators export gas. They do not need to "share gas to meet their needs". They export gas, that is why they must flare. EE-108

109. Table 5.20. Note at the bottom. Where did you get a horsepower demand like this? With 4 stages of compression, the compression ratio would be 2.9, making the load .263 hp/MSCFD. With 5 stages of compression, the compression ratio would be 2.3, making the load be 0.267 bhp/MSCFD. Please check the number carefully and correct this table. This will trickle back into many other areas and conclusions of the EIR. EE-109

110. Table 5.20. For these tables, the author has used the actual expected production figures for the emissions, however for the HS&P modifications, the permitted level of production was used. Isn't this a discrepancy? EE-110

111. Page 5-52, first paragraph. Please check with the new table 5.20 if the statement about City is correct. EE-111

112. Page 5-52, second paragraph. As demonstrated before, leases with small volumes will not use "air assisted" flares. The appropriate flare would be the open ended pipe for the leases where the emissions are less than 2.5 lbs/hr and the air assisted only on larger sites. Please make the correction. EE-112

113. Page 5-52, last paragraph. The 30 mW number is incorrect. 6000 MSCFD at 12,000 BTU/kW will produce 20.8 mW. If the gas volume is 3959 MSCFD, the power is 13.7 mW. EE-113

114. Page 5-57, sixth paragraph. There is no construction required for flaring. All it takes is erecting a 2" piece of pipe, kind of like putting in a tether ball. There would be no impacts of construction. It should be an adverse impact, but insignificant, Class III. EE-114

115. Page 5-58. Mitigation measure AQ-1, #e. If a method cannot be identified now after 5 or ten major EIR's in this County covering major pipelines and facilities, there isn't any other feasible method. This should be deleted to allow Unocal to proceed knowing what is in store in the way of future conditions. EE-115

116. Page 5-59, Operation description, second line. "H2S emissions may contribute...". EE-116

117. Page 5-59, AQ-6. This condition is a waste of effort and unreal. Unocal, in the effort of saving capital dollars will be minimizing the components they have to start with. To reduce any further will increase the risk of compromising safety. A study of what type of components that can be used to reduce emissions has already been performed by numerous other companies. Why is Unocal asked to recreate the wheel? EE-117

118. Page 5-59, AQ-7. Please add the words "..Program for the project consistent with the APCD's Rule 331." EE-118

119. Page 5-91, last paragraph, first two sentences. This EIR is to identify and mitigate environmental impacts associated with the project. Making the statement that AD Little has added some measures anyway because they "thought it might be neat" stinks of the problems businesses have had in Santa Barbara County. The EIR can't provide a justification for it, then it is not in the purview of the authors to add measures based on personal preference. Remove from here and all other places in the document the conditions AD Little has added that do not meet the requirement of the EIR, those being the SIMQAP, the ERP, the HAZOPS, and the pipeline line marker. Unocal may consent to go ahead and do these things, but it is not in the place of the EIR to add the wish list of others attempting to insure job security. EE-11

120. Page 5-142, third paragraph. See comment 30. EE-12

121. Page 5-144, SS-3. If one puts brightly covered material in the trench such as red tainted soil, how does one mark the warning required in the last sentence on those pieces of dirt? EE-121

122. Page 5-168, Where are the mitigation measures for the Class I impacts for the flaring, the H2S removal, the electrical generation, and the reinjection options? EE-12

123. Page 5-158, fourth and fifth paragraph. In one statement it says Burton Mesa Chaparral would be impacted. In the next paragraph it says there no Burton Mesa Chaparral. If there is none, delete the reference completely. EE-123

124. Page 5-179, T-4. Please see comment # 47. EE-124

125. Page 5-180, B-1(f). Please correct to read "Any oak roots encountered". EE-125

126. Page 5-180, B-1(h). Please see comment 48. The 10::1 is extreme and does not match with SB Botanical studies of replacement ratios. EE-126

127. Page 5-180, B-2 and B-4. This is the first mention of these plants in this report. As such, there is no information to support the recommendation of these mitigation measures. Delete the measures. EE-127

128. Page 5-181, B-6. How does one wash concrete? Concrete is hard and will not go anywhere. How will the concrete migrate to a sensitive resource? And if the concrete does move, how does concrete differ from a rock moved to that same spot? EE-128

129. Page 5-182, T-3, T-4, B-2, B-3, and B-4. Why is Resource Management Department responsible for verification on both the approval and the inspections? It would seem to me that the Santa Barbara County Agriculture Commission would be imminently more qualified on these matters that personnel in the Energy Division. EE-129

130. Page 5-184, fourth paragraph. The economics are wrong. Please see comment #31. EE-130

131. Page 5-184, last two paragraphs. Please correct per comments #20, 21, 23, and 34. EE-131

132. Pages 5-186, 187. Please correct all of this based on the above comments. EE-132

133. Page C-53, assumptions. These emission factors do not match what the APCD uses in permits. The NOx factor is .001 lb/MMBTU, CO is .02-.035; PM10 is .005; and ROC is .028-.053 for OPF. Please correct the flare H2S levels on the right column per the numbers in table S-1. The assumption of 900 HHV is low. A better estimate would be 1100 BTU/scf. EE-133

134. Page C-35 through C-69. The Geo- Barbara Investment property does not take gas to Battles. Please delete this line. This is where the extra line got added in as stated in comment #66. EE-134

135. Pages C-36 through C-69. None of these companies were flaring in 1991, 1992, and most likely will not in 1993. Why are these years included? EE-135

136. Page C-35, C-40, C-45, C-50, C-55, C-60, C-65. The bottom line is not "Emissions", it is "Production". EE-136

137. Pages C-36-C-59. The following are the results of NOx emissions for the 1996 year for the different flare types: EE-137

Flare type	NOx	ROC
OPF unassisted (page C-38)	47	64
OPF Steam (page C-43)	37	43
OPF- Air (page C-48)	57	55
Cascade unassisted (page C-53)	62	3
Cascade assisted (page C-58)	37	3

This indicates to me that there really is little difference in the NOx between flare types, hence why even discuss in this EIR the difference between cascade and OPF's for ROC's.

138. Page C-60, Assumptions. These emission factors do not match what the APCD uses in permits. The NOx factor is .19 lb/MMBTU w/o control and ROC is .02 without control. Please correct the flare H2S levels on the right column. The assumption of 900 HHV is low. A better estimate would be 1100 BTU/scf. Please see the data Unocal provided to you. EE-138

139. Pages C-60 through C-64. The NOx control factor was listed in the assumptions, but it wasn't included in the calculations for all these tables. Please check the tables. If it wasn't included, this will change a good section of the write-up and the conclusions of the EIR. EE-139

140. Pages C-61 through C-64, Heading. It is Battles, not BAttles. EE-140

141. Page C-65, assumption at bottom. Please see comments 27, 138 and 139. EE-141

142. Page C-70 through C-74. Please redo based on above errors (if they are errors. EE-142

143. There are numerous spelling errors throughout the document. The following are some that I caught: EE-143

Page/Line	Spelling	Page/Line	Spelling
ES-20/5 from bottom	Minimus	5-57, second paragraph	North County should be capitalized

ES-38, 10 lines from the bottom	fields	5-57, fourth paragraph	North County should be capitalized
IS-23, Measure 4	soils	5-57, sixth paragraph	North County should be capitalized
3-8, 2nd line	from, not form	5-120, fourth paragraph, fifth line	"fro" should be "from"
3-11, Comment B.4	Hazardous	Page 5-184, second and fourth paragraphs	North County should be capitalized
3-11, Comment B.4	Corrosive	Page C-23 through C-34, Titles	It is "Pedernales", not "Perdernalas", and "field", not "filed."
4-29, 4th Paragraph	flared should be flares		
5-37, last Paragraph, 4th line down	con should be can		
5-52, last line	"this" should be "the"		
Table 5.21, note at bottom	assisted		

EE-143 cont.

11

Did anyone proof read this document or was the public chosen to be the teachers? I know my spelling isn't that good, but...

I think another iteration may be required prior to being able to state to the Planning Commission that this EIR is "complete" for their decision making.

If you have any questions, please give me a call.

Sincerely,

E. Bruce Falkenhagen

cc: Bruce Conway
Phillip Farahmand
Gerry Raydon
George Brayton
Charlie Katherman

SANTA BARBARA OPERATIONAL AREA

0015565

EMERGENCY SERVICES ORGANIZATION

126 West Figueroa Street
Santa Barbara, CA 93101
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AL FAORO
Director

DONNA PALMER
Chief Deputy

MARY BARRON
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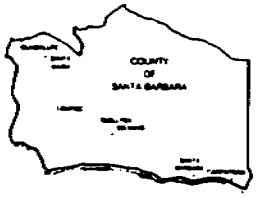
Program Manager



City of Buellton
City of Carpinteria
City of Guadalupe
City of Lompoc
City of Santa Barbara
City of Santa Maria
City of Solvang
County of Santa Barbara

OFFICE OF EMERGENCY SERVICES

RECEIVED
COUNTY OF SANTA BARBARA
AUG 17 1993
RESOURCE MANAGEMENT DEPT
ENERGY DIVISION

MEMORANDUM

TO: John Zorovich, Energy Division

FROM: Richard Abrams, Office of Emergency Services

DATE: August 30, 1993

Re: Comments on Draft SEIR for Unocal Modifications Associated With Point Pedernales Field Development [92-EIR-13]

The Office of Emergency Services has reviewed pertinent sections of this document relating to emergency response planning and submits the attached comments. Thank you for the opportunity to once again provide comments on the proposed modifications.

Consistent with past OES comments on this project, the attached comments focus on the proposal to modify the HS&P, rather than the other alternatives. OES reaffirms it's comments based on those for the May 1993 Administrative Draft SEIR and the September 1992 Public Draft SEIR because we feel they were not adequately addressed. Of primary concern is the apparent lack of hazard footprints, and adequate mitigation measures for certain scenarios detailed in the report.

Please call me at 568-3146 if you have any questions.

Attachment

[me2dseir.mmo]

COMMENTS

1. Figure 2-4 does not clearly indicate Pipeline #5 as noted in the text (Page 2-6, *Stream 6*). The proposal appears to include the use of a portion of the existing HS&P to Battles gas line to transport toxic gas between HS&P and Orcutt Hill. The OES would like to see the hazard footprint for this pipeline and the conditions under which this pipeline is operated within the proposed project modifications. The H2S content is about 300 ppm, which is the IDLH. Refer to Page 2-6; and Page 2-9 (*Stream 6*). OES-1

2. Page 2-21 discusses a gas line between Jim Hopkins Fee Site and Orcutt Hill. H2S content is 300 ppm or less. Please provide the appropriate model of the hazard footprint for this particular line for the proposed final project conditions and modifications. OES-2

3. Existing Baseline Hazards (Page 5-61): The potential hazards list does not directly identify or discuss the risk related to oil spills at or associated with this facility (which receives, handles, stores and ships large amounts of oil). No discussion has addressed the formulation for Oil Spill Contingency Plans addressing this particular risk. OES-3

4. The hazard scenarios (Page 5-69) do not consider the gas lines associated with Jim Hopkins fee, or Orcutt Hill. Is OES to assume that the pipeline mentioned in Comment 2. considered in this list of scenarios, or is this a different line. Please provide appropriate models of the hazard footprint for these particular lines and under which conditions they are operated given the proposed final project conditions and modifications. OES-4

5. The LPG BLEVE scenario and the NGL BLEVE scenario at the HS&P could severely impact the Control Room, it's occupants, and the equipment and systems critical to timely emergency response. Limited discussion is provided about this possibility. Primary concerns include protection of the Control Room from overpressure and thermal effects, protection of critical monitoring, shutdown and notification systems, and public safety along Harris Grade Road (Page 5-69 and 5-89). The concern regards the vulnerability of onsite buildings to the potential hazard and the effect this hazard poses on the subsequent actions and response which may result in offsite consequences. OES recognizes this scenario has a low probability of occurring, but feels it should be addressed. OES-5

6. Mitigation Measures (Page 5-92): Statement should read "These plans should include warning and notification in the event of an offsite consequence as a result of a facility or pipeline related event." Please add the recommended language to the statement. OES-6

7. Orcutt Hill Site (Page 5-93): Discusses the gas pipeline from Orcutt Hill and states that a risk exists and that the system safety impacts are nearly identical with those of the HS&P to Battles pipeline. A hazard footprint is provided based on the HS&P to Battles pipeline. Please provide the appropriate model of the hazard footprint for this particular line for the final project conditions and modifications. Additionally, the proposed mitigation is inadequate, in that emergency planning, detection, shutdown, and notification procedures in the event of a release are not discussed for the Orcutt Hill pipeline though the risks has been considered insignificant. OES-7

8. The Battles Gas Plant (Page 5-93): A rupture of the HS&P to Battles pipeline was shown to be a significant event, yet no discussion regarding detection, shutdown, and notification procedures in the event of a rupture are addressed. In addition to the installation of the pipeline liner, other mitigation measures for public safety, such as sirens, road signs, or warning lights should be considered to address the four mile stretch along Bradley Road. OES-8

9. Mitigation Requirements/Recommendations (Pages 5-144 and 5-168):

   Measures SS-4 and FP-2 are inadequate. Measures should state that emergency response plans for each component of this project must be provided. At present, none have been submitted for the Jim Hopkins lease, Santa Maria Pump Station (except for Sisquoc Pipeline), Orcutt Hill, or the intervening gas lines associated with Jim Hopkins or Orcutt Hill. OES-9

10. Current Fire Protection at the HS&P Facility (Page 5-147):

    Correction as to the Buellton Fire Station designation; Station 31, not 331. OES-10

11. Consequence Analysis (Page 5-120):

    Corrections to the statement which should read, " Toxic compounds were selected for analysis ..." OES-11

Please refer to OES comments dated June 8, 1993 regarding proposed OES conditions.

Carol F. Nash
432 St. Andrews Way
Lompoc, California 93436

August 30, 1993

Mr. William Dourse, Deputy Director
County of Santa Barbara, Resource Management Department
1226 Anacapa Street, Second Floor
Santa Barbara, California 93101

Re: UNOCAL modifications Supplemental EIR
ACE #92021083, Santa Barbara County #92-EIR-13

The first request of this letter will be to ask for an extension of time for written comments. The technical nature of the EIR deserves considerable study.

The introduction to the Executive Summary comments on the importance of the cumulative analysis on other North County gas producers that use the Battles Plant. Because the majority of Operators are in the Santa Maria area and because Union Oil is trying to divest itself of this operation, it seems illogical to introduce "processing" activities at the Lompoc HS&P plant in this highly residential area. There are many significant and potentially significant adverse impacts connected with the Lompoc site: air quality, risks associated with H_2S removal, reinjected gas, noise pollution, night lighting, electrical generation, etc. These factors indicate that the expansion of the Lompoc plant is not feasible. Alternative sites need to be investigated. CN-1

If consolidation of oil and gas activities is a consideration, there could not be a poorer location than the Lompoc site. It is reasonable to believe that additional oil and gas fields, both offshore and onshore, could become activated at some future date and expect to expand the use of the existing plant. This is a worrisome possibility. There are no assurances against still further expansion at the Lompoc site. CN-2

I can appreciate the concerns about economic feasibility of refitting the Battles Plant, but that seems hardly good reason to endanger and further adversely impact the residential communities of Vandenberg Village and Mission Hills. The existing Lompoc plant has had many more adverse impacts than we were informed could be possible. To Union Oil's credit, the company has worked to correct the acrid odors and loud noises. However, to date, there are still lighting and noise problems. CN-3

"Economic feasibility" is the biggest factor driving the placement of the processing capability and expansion of the Lompoc site. This type plant should not be in the midst of residential communities. This community well remembers the POPCO (H_2S) scare when Vandenberg Village residents were urged to evacuate their neighborhoods. CN-4

The risks are real! We know that H_2S in high concentrations is lethal and deadens the sense of smell, increasing its deadly potential. Also, there is always the possibility of explosion. It is difficult to accept a policy of measuring profit margins against risks to human life. Furthermore, I am not comforted by suggestions that Union Oil's Sales Gas Processing will dwindle to nearly nothing by 2010. There is greater potential for other Operators to want to use and expand the plant as long as it is "economically feasible". CN-5

When the original plant was being proposed, it was suggested that it would be only a separation plant because of the inherent risks involved with a "processing" operation. There were statements made that the company would not think of putting a processing plant in a residential neighborhood. Now, the population is greater and closer to the plant, and expansion is exactly what is being proposed. CN-6

At the August 12 hearing, it was stated that the Burton Mesa Chaparral State Preserve would serve as a buffer between the plant and the homes. This is a community and people always walk the paths and old roads in the Preserve. People hike and walk their dogs throughout the area. The Preserve is a place of adventure for children and a classroom for biology and botany students. CN-7

The level of noise from the present plant has improved, but there are still whistles and, occasionally, the sound of anxious voices echoing from the plant. CN-8

The night lighting from the plant lights up the sky with an orange glow. On foggy nights, there appears to be a huge fire beyond the hill. The Harris Grade lookout point was once a great spot for viewing orbitting satellites and astronomical phenomena at night. Also, instead of dark skies for the "Candlelight Tours" at La Purisima Mission State Historic Park (a national historic landmark), the lighted orange sky proves a big distraction. CN-9

Even for the separation plant, the risks and adverse impacts are obvious. To add "processing" at this location would be irresponsible. Expansion of the Lompoc site would have many significant impacts in the areas of air quality, ground water quality, safety, fire protection, emergency response, aesthetics, etc. Please investigate alternate sites. CN-10

Thank you for your consideration.

Sincerely,

Carol F. Nash

Carol F. Nash

CITY OF LOMPOC

VALLEY OF FLOWERS

August 26, 1993

RECEIVED
COUNTY OF SANTA BARBARA

AUG 27 1993

RESOURCE MANAGEMENT DEPT
ENERGY DIVISION

Mr. John Zorovich
Energy Division
Santa Barbara County
1226 Anacapa Street
Santa Barbara CA 93101

RE: Draft Supplemental EIR on Unocal HS&P

Dear Mr. Zorovich;

The City of Lompoc staff have reviewed the Draft Supplemental EIR on the Unocal HS&P and have the following comments regarding air quality impacts:

Page 5-59 Since the proposed project will exceed the offset threshold requirements for fugitive emissions (as discussed on page 5-36) and therefore create Class I air quality impacts in the Lompoc Valley, we suggest that an additional mitigation measure be added as an offset requirement for the project. The mitigation measure is to establish a quick-load natural gas fueling facility available to the public for natural-gas-powered vehicles in the Lompoc Valley. As an alternative fuel source for vehicles, this technology will serve to reduce emissions in same airshed which impacts are being created by the project. The City of Lompoc is investigating modifying its transit vehicle fleet to natural-gas-powered engines, but the lack of a quick-load fueling facility in the local area is an impediment to this conversion, as well as private investment in these vehicles. Therefore the Unocal project, which processes natural gas and will create Class I air quality impacts by adding to the Lompoc Valley's emission inventory, is a natural candidate to assist in offsetting the same impacts by establishing such a fueling facility. COL-1

14

We appreciate the opportunity to review and comment upon this Supplemental EIR.

Sincerely;

Jeremy Graves, AICP
Acting Planning Director

c: Gene L. Wahlers, City Administrator
Larry McPherson, Public Works Director

CITY HALL, 100 CIVIC CENTER PLAZA, P.O. BOX 8001, LOMPOC, CA 93438-8001
(805) 736-1261; FAX: (805) 736-5347

Santa Barbara County
Air Pollution Control District

RECEIVED
COUNTY OF SANTA BARBARA

AUG 26 1993

RESOURCE MANAGEMENT DEP
ENERGY DIVISION

MEMORANDUM

TO: John Zorovich, RMD Energy **DATE:** 26 August 1993

FROM: Ron Tan, APCD (x8937) **FILE:** EIR\HS&P2.wp5
[ARCORR\HS&P2.wp5

SUBJECT: Review of Draft SEIR for the Unocal Point Pedernales Field Development Modifications

cc: TEA Chron
Project File
Bobbie Bratz

Thank you for the opportunity to review the Draft SEIR. As the majority of the comments we provided on the Administrative Draft SEIR were addressed, we have only two comments:

1. Page 5-10, "Prevention of Significant Deterioration", last paragraph, last sentence SBCAPCD-1

   Table 5.5 pertains to increment consumption and not ambient monitoring trigger values.

2. Page 5-37, AQAP Consistency

   a. NAROC is non-alkane reactive organic compound, not non-alkaline reactive organic compound. SBCAPCD-2

   b. Fugitive ROC emissions from components in gas service are comprise of 63% NAROC and 37% AROC. SBCAPCD-3

\\ADMLT\WP\EIR\HS&P2.wp5
\\ADMAIR\WP\AIRCORR\HS&P2.wp5

26 Castilian Drive B-23, Goleta, CA 93117 Fax 805-961-8801 Phone 805-961-8800
James M. Emerson, Air Pollution Control Officer William A. Mascer, Assistant Director

COUNTY OF SANTA BARBARA

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SANTA BARBARA,
CALIFORNIA 93101
AREA CODE 805
966-2030
FAX 966-3019

F. G. (SANDY) SCOTT
Assistant Director

FRANK BRECKENRIDGE
Building and Safety Official

DEPARTMENT OF PUBLIC WORKS

MARLENE F. DEMERY
Director

OIL & GAS OFFICE

MEMORANDUM

RECEIVED
COUNTY OF SANTA BARBARA
AUG 30 1993
RESOURCE MANAGEMENT DEPT
ENERGY DIVISION

Date: August 30, 1993

To: John Zorovich
Energy Division

From: Jim Norris
Building & Safety

Re: Unocal HS&P Modifications: Draft EIR Review

Building & Safety has reviewed Unocal's Draft EIR for the HS&P modification dated July, 1993. We have the following comments:

Page ES-22, Table S.1

This table is not consistent with Table 4.2. Table 4.2 does not show Conway's Waite Bradley Lease. SBCBS 1

Page ES-30, System Safety

For the expanded HS&P Gas Processing Facility sour gas pipeline should be from Battles Gas Plant to the HS&P. SBCBS 2

Page IS-4, System Safety C.2

Does the criteria of fatality frequency of 1 x 10^{-6} apply to existing facility? SBCBS 3

Page IS-18, System Safety C.1

Sour gas pipeline would be from Battles to the HS&P. SBCBS 4

Page IS-31, 3.1.7

Sour gas pipeline would be from Battles to HS&P. SBCBS 5

Page IS-31, 3.2

For Battles Gas Plant with modified P-17 should have the same impact as the Battles Gas Plant alternative. SBCBS 6

Page 2-6, Stream 4, Figure 2-4

Pipeline #5 is not identified on Figure 2-4. SBCBS 7

Page 2-14, 5th Paragraph

HS&P was also designed as per API RP-14C. Would API RP-14C still be followed for the proposed project? SBCBS 8

Page 4-3, Figure 4-1

Siaquoc Pipeline is not shown, but is listed under "list of key pipeline". SBCBS 9

Page 4-6, Table 4.2

This table is not consistent with Table S.1 in the Executive Summary. SBCBS 10

Page 4-13, Section 4.2.2

As per Table 4.3 there are two operators (Texaco and Geo Products) other than Unocal who chose to use an expanded HS&P Gas Plant not one operator as stated. SBCBS 11

Page 4-20, NGL Stabilization Tower

6' diameter tower probably could handle 10,000 barrels/day of NGL. Also it should be NGL stabilization system and not just the tower. SBCBS 12

Page 4-20, 4-21, Gas Compression

Correct the figure number from Figure 4-2 to 4-3 (two places). SBCBS 13

Page 5-63, Table 5.23

Numbers are scrambled in this table. Revise this table to show appropriate hazard distances at their correct locations. SBCBS 14

Page 5-67, #5, #7, #8

These scenarios are for line ruptures. Correct "leak" to "rupture" in each scenario description. SBCBS 15

Page 5-93, The Battles Gas Plant

Table 5.30 does not list P-17 recommendations. Table 5.30 is for explosion overpressure Hazard Modeling Results for HS&P. SBCBS 16

Page 5-95, EXP-1, EXP-2

The sour gas pipeline would be from Battles Plant to the HS&P. SBCBS 17

Page 5-97, Hazard Frequencies

Table 5.31 lists only eight hazard scenarios and not ten as stated. SBCBS 18

Page 5-113, Battles Gas Plant with a Modified P-17

Table 5.30 does not provide a list of the P-17 recommendations. SBCBS 19

Page 5-113, Hazard Scenarios

Appendix D does not provide details for these scenarios. SBCBS 20

Page 5-139

What does ignition probability of "People outside - 1% per 5 people" mean? SBCBS 21

Page 5-143, Section 5.2.6.3, Battles with a Modified P-17

Why would the proposed project be built with Battles Plant with a modified P-17 in operation? SBCBS 22

Page 5-163, Battles Gas Plant

Table 3.1 does not provide list of outstanding issues. SBCBS 23

Page 5-167, Battles with a Modified P-17

Why would the proposed project be built if the Battles Gas Plant with a modified P-17 is to continue its operation? As per Environmentally Superior Alternative, No Project Alternative is continued use of the Battles Plant with a modified P-17 compliance. As a result the proposed project would not be built. SBCBS 24

This concludes our comments. Should you have any questions, please feel free to call me at x3029.

cc: Jay Sheth, RBE

JS:lm

STATE OF CALIFORNIA — RESOURCES AGENCY PETE WILSON, Governor

DEPARTMENT OF PARKS AND RECREATION

Channel Coast District
1933 Cliff Drive, Suite 27
Santa Barbara, California 93109
(805) 899-1400

August 30, 1993

William J. Douros
County of Santa Barbara
Resource Management Department
Energy Division
1226 Anacapa Street, 2nd Floor
Santa Barbara, California 93101

Dear Mr. Douros:

Unocal Modifications Supplement E.I.R. SCH #92021088

The Department of Parks and Recreation has concerns regarding the issue of public safety and the siting of the planned modifications to the Lompoc HS&P facility at the proposal site near Lompoc.

On safety issues, points were awarded to those sites near properties having workers engaged in agriculture. This method of awarding points tended to favor using the proposed Lompoc sites rather than several of the closely scoring alternative sites. DPR-1

What the study failed to take into consideration is the fact that the Lompoc sites are surrounded by public recreation lands and lands that are a part of biological preserves rather than commercial agricultural lands. These lands are likely to have on them, at various times, hundreds of members of the public such as joggers, bicyclists, horseback riders, hikers, youth groups and many other recreationists. DPR-2

Unlike heavily impacted agricultural lands, these lands have been specifically set aside to be protected for all times, and an accident originating at this new facility will cause irreparable loss to future generations. DPR-3

We believe that a review of the criteria and a reevaluation of alternative sites is in order.

Sincerely,

Richard A. Rider for
Steven E. Treanor
District Superintendent

17

VINTAGE OIL, INC.

RECEIVED
CITY OF SANTA BARBARA
AUG 27 1993
RESOURCE MANAGEMENT DEPT
ENERGY DIVISION

August 26, 1993

Mr. John Zorovich
County of Santa Barbara
Resource Management Department
Energy Division
1226 Anacapa St., Second Floor
Santa Barbara, CA 93101

Re: SBC 92-EIR-13
Unocal HS&P Modifications

Dear Mr. Zorovich:

In May, 1992, Vintage Omniferous First Joint Venture ("Joint Venture") acquired substantially all of Shell Western E & P, Inc.'s North County oil and gas production. Vintage Oil, Inc. ("Vintage") is the managing partner of the venture. The Joint Venture supplies the largest volume of gas to the Battles Plant outside of Unocal's own production. Currently, daily gas production from the Cat Canyon and Santa Maria Valley Fields exceeds 1,700 MCFD; this is contrasted to SWEPI's 1991 daily average of 1,380 MCFD. Vintage's plans are to continue with the development of its North County properties, consequently the trend of increasing gas volumes is anticipated to continue. VOI 1

As noted in the SEIR, decommissioning of the Battles Gas Plant will have a significant impact on North County oil and gas producers. All of the options discussed in the SEIR would require some form of permitting with various county agencies. The issue of "grandfathering" permits required for each of the options should be addressed and discussed in the SEIR. Considering current oil prices and the amount of capital investment required for each option, a "grandfathered" permit allowing flaring of produced gas seems to be the best option at the present time. VOI 2

The option of an "Expanded HS&P Processing Facility" seems to have changed dramatically over the past few weeks. As you are aware, Unocal is considering the sale of its interest in Platform Irene and the HS&P Facility. As stated in our letter to Mr. David Stone dated September 15, 1992, decommissioning of the Battles Gas Plant without a viable alternative does not meet the County's stated land use policy goal for the North County Consolidation Planning Area. The SEIR does not address what impact this sale would have on outside gas reaching the HS&P Facility for processing. VOI 3

As stated earlier, produced gas volumes are expected to increase as Vintage continues development of its North County properties. Having an outlet for our produced gas, whether sales or some form of disposition, is critical to our economic success and the future of our operations in Santa Barbara County. Vintage intends to be cooperative in our involvement with the County and other producers in resolving these matters of concern. VOI 4

Sincerely,

Larry L. Bates
Project Manager
California Operations

Unocal Energy Resources Division
Unocal Corporation
201 South Broadway
Orcutt, California 93455
Telephone (805) 937-6378

UNOCAL

August 30, 1993

Mr. John Zorovich, Planner
County of Santa Barbara
Resource Management Department, Energy Division
1226 Anacapa Street, 2nd Floor
Santa Barbara, California 93101

RE: COMMENTS ON THE HS&P SEIR OF JULY 14, 1993

Dear John,

Unocal appreciates the time and effort both you and Alice McCurdy have spent in directing the preparation of the document. It appears to provide a good review of the questions raised during last year's public hearing as well as provide specifics for the independent oil and gas producers if the Battles Gas Plant is not available to process gas produced within Northern Santa Barbara County.

Enclosed please find specific comments regarding this document. One of the major concerns is the design of the Expanded HS&P Gas Plant. The design would probably include a regenerable process such as an amine system to remove the hydrogen sulfide and carbon dioxide as well as liquid fractionation to minimize transportation of NGLs by truck.

Please contact me at (805) 934-8242 or Mr. John Houghton at (805) 934-8259 if you have any questions.

Sincerely,

Robert G. Sipley, Jr.
Project Manager

Enclosure

cc: Alice McCurdy, County of Santa Barbara, RMD, Energy Division
Alan Sharpnack, Unocal, Ventura

18

Unocal Point Pedernales Project
Draft Supplemental Environmental Impact Report

Page numbers with corresponding comments are included for your reference:

Page	Comment	
ES-4	IRI is an acronym for Industrial Risk Insurers	UNOCAL 1
ES-7	The existing gas pipeline between Jim Hopkins Fee and Orcutt Hill transports gas at 2,000 ppm hydrogen sulfide and 250 psig. With the proposed project, gas pressure and hydrogen sulfide content may vary, depending on the direction of flow in the pipeline, but the gas transported will always have a hydrogen sulfide concentration less than 796 ppm and a pressure less than 50 psig.	UNOCAL 2
ES-19	Installation of a fire water system and preparation of an ERP for the Jim Hopkins Fee site seems excessive.	UNOCAL 3
ES-19	First line of fourth paragraph should read, "It should be noted, that the lack of significant impacts on emergency response is primarily due to".	UNOCAL 4
ES-19	Unocal has met the intent of 61 fire safety recommendations at Battles Plant. "There are 33 outstanding recommendations. Eleven of these are viewed as critical to providing adequate fire safety. If the eleven were implemented, the impacts to fire protection would be insignificant."	UNOCAL 5
ES-21	The statistics should be revised to reflect the divestiture of Cat Canyon and Gato Ridge to SABA. Using the numbers in the table, the figures should be revised to read, "Two-thirds of this was Unocal gas, as can be seen from Figure S-10. The remaining one-third is from other operators in the North County."	UNOCAL 6
ES-22	For operator Geo Production, lease should be Careaga	UNOCAL 7
ES-22	The operator should be changed from UNOCAL to SABA for the Cat Canyon field production.	UNOCAL 8
ES-24	Figure S-10 should be revised to reflect the divestiture of Cat Canyon to SABA. Also, Figure S-10 shows 20% of the gas coming from "Other Onshore," while the text on page ES-21 says ~17% is from other operators.	UNOCAL 9
ES-26	The expanded HS&P gas processing facility could not have a design similar to the proposed HS&P gas processing facilities. While it would need to have H_2S and CO_2 removal systems and could have a Low Temperature separation system, it would have to use different technologies than the proposed facility.	UNOCAL 10

ES-26 It would be impractical to build a new gas pipeline from HS&P to Battles in order to tie-in to the SoCal Gas-Sisoc Junction station. More likely, a pipeline would be constructed from HS&P to SoCal's 1010 pipeline near Divide station. — UNOCAL 11

ES-26 The Fire Department has suggested repairing not widening the existing access roads into the Battles Gas Plant. — UNOCAL 12

ES-27 The Shell Lakeview Plant was built by Husky during the late 1970s; therefore, it is only about 15 years old. That plant is permitted to operate. If it were used only for processing produced gas into fuel gas it would not need CO_2 removal and would probably not need refrigeration, stabilization or NGL storage or trucking facilities. — UNOCAL 13

ES-28 If it takes one to two years to obtain a gas injection permit from the DOG, what will be the options of the Independents in the meantime? — UNOCAL 14

ES-28 How much time is required to obtain a permit from the APCD to flare gas? — UNOCAL 15

ES-28 How much time is required to obtain a permit from the APCD to install a lean burn electrical generator? — UNOCAL 16

ES-29 What financial impact will the loss of 60 jobs and 550 b/d of oil production have on Santa Barbara County revenue? — UNOCAL 17

ES-30 The second line of the first paragraph should read, "...a rupture of the sour gas pipeline from Battles Gas Plant to the HS&P. This impact was...." Also, the word "insignificance" has been omitted from the third line of the first paragraph. — UNOCAL 18

ES-30 The sixth line of the last paragraph contains a typographical error. It should be de minimis instead of De Minims. — UNOCAL 19

ES-32 Figure S-13. Grey Region is spelled differently than in the reference on the previous page. — UNOCAL 20

ES-34 Why is there no discussion of economics for installing H_2S removal equipment at each field or reinjecting gas at each field like there is for flaring gas at each field and shutting-in production at each field? — UNOCAL 21

ES-35 The impact of ROC and NO_X emissions from as many as 10 different gas reinjection compressors is characterized as unmitigable, and thus, a Class I impact. These emissions could be mitigated by offsets from the closure of Battles Gas Plant. — UNOCAL 22

ES-35 Refrigeration systems would not be needed to remove liquids from the gas prior to reinjection. — UNOCAL 23

ES-37 The generation of electricity for use on the leases could eliminate some of the ROC and NO_X emissions from existing sources at those locations, offsetting the emissions created by the generation equipment. — UNOCAL 24

ES-39 The last sentence in the first paragraph should read, "This loss in jobs and revenue is not an environmental impact, but is considered to be significant." — UNOCAL 25

IS-23 Mitigation Measure 4 should refer to truck trips associated with hauling of excess site soil. — UNOCAL 26

IS-25 Mitigation Measure 2 should read, "...polluted water and materials can be contained for subsequent removal from the site. — UNOCAL 27

1-1 The first sentence of the second full paragraph should read, "... Unocal proposed to process the gas from Platform Irene at its existing gas processing facility located east of the City of Santa Maria ...." — UNOCAL 28

1-1 The second bullet under Statement of Purpose should read, "... fire fighting equipment and the construction and operation of steam boilers; and" — UNOCAL 29

1-5 The title of Section 3.0 should be "Alternative Screening/Siting Analysis." — UNOCAL 30

2-1 While the Point Pedernales Unit has the option of returning produced water to Platform Irene for discharge to the ocean, all produced water is currently injected onshore. — UNOCAL 31

2-8 The second paragraph of section 2.2.2.1 should begin, "The SulfaTreat facilities consist of a series of four vessels filled with SulfaTreat granules which remove essentially all of the H_2S, carbonyl sulfide and mercaptans from the gas." — UNOCAL 32

2-8 The third line from the bottom of the page should read, "for selectively removing hydrogen sulfide gas, mercaptans and other sulfur compounds found ...." — UNOCAL 33

2-11 Please change the first bullet of the second group to read, "... a single-stage 100 hp compressor...." We may not use a rotary vane compressor in that application. — UNOCAL 34

2-21 The Jim Hopkins Fee currently produces 200 b/d of oil and 50 Mscfd of gas. — UNOCAL 35

2-27 Last paragraph/first sentence: "It is projected that the proposed projects would need to operate for about six months prior to decommissioning the Battles Gas Plant." Need to refer to time extension and how under the current time frame it will not be possible. — UNOCAL 36

3-2 Current throughput at Battles is 9-10 MMscfd. UNOCAL 37

3-11 Table 3.2. Both Hazardous and Corrosive are misspelled in the description of Item No. S&P 6. UNOCAL 38

3-13 The first and second sentences of the second paragraph appear to contradict one another. Please clarify what is meant by, "As with all other alternative sites, the additional project components at the Santa Maria Pump Station and Jim Hopkins Fee would still need to be constructed." UNOCAL 39

3-14 Section 3.1.3. Unocal no longer operates Cat Canyon field. It is owned by SABA and operated by D&S Industrial Services, Inc. UNOCAL 40

3-15 Section 3.1.5. Gas production at Platform Irene would not be dehydrated prior to reinjection. Gas would be compressed up to about 2,000 psig, using existing electric compressors. Reinjection would require about 850 hp (about 450 hp more than is currently required). The existing subsea power cable could supply any additional power requirements. Offshore injection may not eliminate the need to use the 8" sour gas pipeline that currently runs from Platform Irene to the HS&P facility. The pipeline may need to be used to transport facility gas from the vapor recovery system at HS&P back to Platform Irene for injection. UNOCAL 41

3-15 Section 3.2. The second numbered item should read, "Screen the study area to remove large tracts and corridors determined to be incompatible for gas processing." UNOCAL 42

3-27 In the seventh line of the fourth paragraph "then" is used twice instead of "than." UNOCAL 43

3-27 In the fifth paragraph it should be pointed out that offshore injection may not eliminate the need to use the 8" sour gas pipeline that currently runs from Platform Irene to the HS&P facility. The pipeline may need to be used to transport facility gas from the vapor recovery system at HS&P back to Platform Irene for injection. UNOCAL 44

3-28 Cat Canyon Site. Gas from Platform Irene could be transported from HS&P to Cat Canyon through an existing sour gas pipeline system. UNOCAL 45

3-28 Gas Reinjection On Platform Irene. Offshore injection may not eliminate the need to use the 8" sour gas pipeline that currently runs from Platform Irene to the HS&P facility. The pipeline may need to be used to transport facility gas from the vapor recovery system at HS&P back to Platform Irene for injection. UNOCAL 46

4-7 In the seventh line of the second paragraph reference is made to "the above table." Please change it to read "Table 4.2," if that is what is intended. UNOCAL 47

4-7 Please change the last sentence of the second paragraph to read, "Unocal recently sold all of its producing leases in the Cat Canyon and Gato Ridge fields to SABA. These properties are operated by D&S Industrial Services, Inc." UNOCAL 48

4-9 Figure 4-4. Gas production from the Santa Maria Refinery fluctuates dramatically but averages less than 200 Mscfd. The same comment applies to Figure S-10 on page ES-24. UNOCAL 49

4-10 The third line of the fifth paragraph should read, "have to find alternative ways of treating their gas...." UNOCAL 50

4-13 Texaco did not know the impact of their choice for and HS&P Gas Plant. UNOCAL 51

4-13 If other offshore gas would enter HS&P, different technologies would be utilized--actually, different technologies would be utilized if additional onshore gas were processed at HS&P. UNOCAL 52

4-15 First paragraph, second line, "as options they might pursue" should be removed. Also, please delineate the other options available. UNOCAL 53

4-15 Section 4.2.2.1. The design of the Expanded HS&P Gas Plant as described in this section is inadequate to accommodate the gas composition which originates from the onshore fields in question. One of the main reasons the onshore fields could not be accommodated by the proposed facility is because of the gas composition. Attached you will find a revised Figure 4-7 which shows a more realistic design for processing onshore gas, or offshore gas with H_2S and CO_2 concentrations similar to those found onshore. UNOCAL 54

4-15 Section 4.2.2.1. In the third line of the first paragraph, reference is made to Figure 4-6. It should be Figure 4-5. UNOCAL 55

4-15 The last line on the page should read, "Each of these components is discussed below." UNOCAL 56

4-16 Table 4.4. Electrical Generation is spelled wrong for Petromineral Corp. UNOCAL 57

4-17 Figure 4-7 does not represent an appropriate solution for processing gas from onshore fields to SoCalGas sales specifications. Also, Sales Gas from "Gas Compression" should go to SoCalGas not to Unocal. See revised Figure 4-7 attached. UNOCAL 58

4-18 Figure 4-8. The following words are spelled incorrectly: Processing (in the title), Facility Boundary, Purisima 33, SulfaTreat. UNOCAL 59

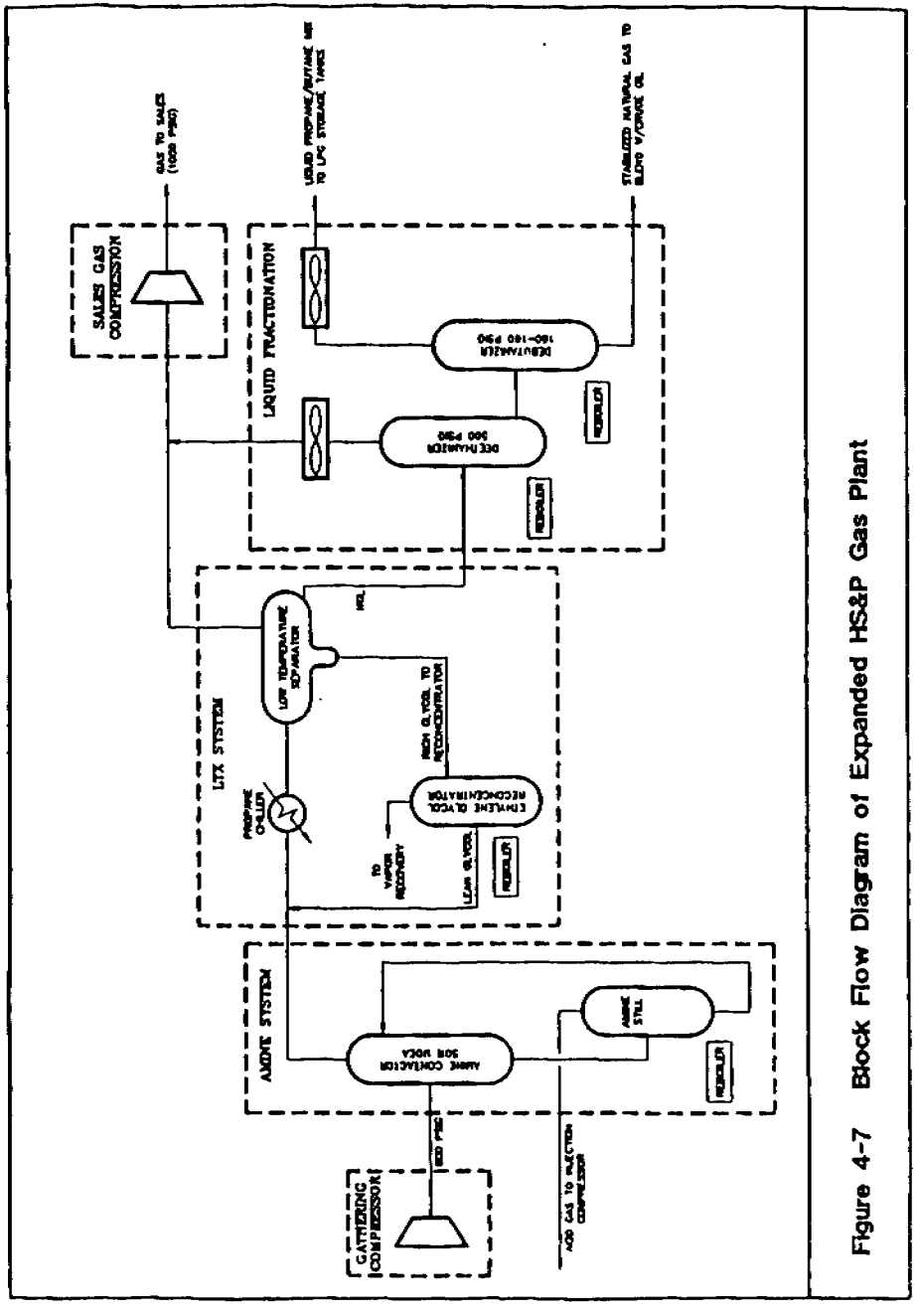

Figure 4-7 Block Flow Diagram of Expanded HS&P Gas Plant

4-19 The third sentence of the first paragraph should read, "The SulfaTreat facilities would consist of a series of four vessels filled with SulfaTreat granules which would remove essentially all of the H_2S, carbonyl sulfide and mercaptans from the gas." SulfaTreat would probably not be appropriate for this application, see revised Figure 4-7 attached. UNOCAL 60

4-19 In the ninth line of the first paragraph, reference is made to the SulfaTreat vessels being "20 feet in length." The vessels will be vertical and thus 20 feet tall. SulfaTreat would probably not be appropriate for this application, see revised Figure 4-7 attached. UNOCAL 61

4-19 Dew Point Depression System. The second paragraph states, "The existing glycol system at HS&P is adequately sized to accommodate additional gas processing...." While the system is adequate to convert for use at the proposed gas processing facilities, it would not be sufficient to serve both the proposed HS&P gas processing facilities and the Expanded HS&P Gas Plant. UNOCAL 62

4-19 Carbon Dioxide Removal System. Selectively permeable membranes are an inadequate means of removing CO_2 from a gas stream containing ~10% CO_2 at the pressure stated. See revised Figure 4-7 attached. UNOCAL 63

4-20 If membranes were used for CO_2 removal, the pressure would need to be increased to more than 1500 psig (in which case the permeate would have a CO_2 concentration greater than 50% and a heating value less than 600 Btu/SCF) or have a large number of membranes, which would yield a very high permeate volume which may not be able to be accommodated by the proposed injection wells. UNOCAL 64

4-20 NGL Stabilization Tower. The sales gas stream could not accommodate all of the propane in the gas streams without exceeding the SoCalGas hydrocarbon dewpoint specifications, particularly if the gas had to be compressed to the 1,000 psig sales pressure. Also, in order to minimize the transportation of NGLs by truck, a debutanizer should be added to allow the natural gasoline (C_{5+}) to be blended with the crude oil and transported from the facility by pipeline. See revised Figure 4-7 attached. UNOCAL 65

4-20 NGL Storage and Truck Loading. Two 10,000 gallon storage bullets would be insufficient to give adequate surge capacity for liquids production from the facility. Production of butane and gasoline (C_{4+}) from the onshore fields averaged 10,600 gallons/day in 1992. The storage tanks would need to be at least 20,000 gallons each. As mentioned above, the trucking of butane and gasoline would not be the ideal way of handling liquids. See revised Figure 4-7 attached. UNOCAL 66

4-20 Gas Compression. The SoCalGas distribution line 1032 does not service Guadalupe. UNOCAL 67

4-20 SoCalGas has indicated that amounts in excess of 5 MMscfd could not be used in the distribution network during the summer months. UNOCAL 68

4-20 The reference to Figure 4-2 at the end of the penultimate paragraph should be Figure 4-3. UNOCAL 69

4-20 The new sweet gas pipeline would not need to go all the way to Suey Junction. It could terminate at the 1010 line near Divide Station or Harris Station. If it went to Suey Junction, the sales pressure there is only 400 psig. UNOCAL 70

4-21 The reference to Figure 4-2 in the second line of the first paragraph should be Figure 4-3. UNOCAL 71

4-21 The last sentence of the first paragraph is misleading since additional sales gas compressors would be required for either scenario, either at HS&P or at Harris Station. UNOCAL 72

4-21 Construction of Expanded HS&P Facility. Please refer to this section as "Construction of Expanded HS&P Gas Plant," to prevent confusion with the proposed project or with some hypothetical expansion of the heating, separating or pumping facilities. UNOCAL 73

4-21 It would be impossible to meet IRI spacing guidelines, or even prudent practice guidelines for spacing, within the area designated for the Expanded HS&P Gas Plant if a new MCC and control building is to be placed within the area. UNOCAL 74

4-21 Who would pay for, own and operate the Expanded HS&P Gas Plant? How much of Point Pedernales Pipeline Company's infrastructure will be used by the Expanded HS&P Gas Plant? The existing vapor recovery compressors, flare scrubber and fire protection system would need to be reviewed for adequacy and expanded if necessary. UNOCAL 75

4-22 Figure 4-9. For consistency please change the title to "Construction Schedule for the Expanded HS&P Gas Plant." UNOCAL 76

4-23 Facility Operation. If the facility is operated by a third party, the facility will need to have separate computer control, power, water, vapor recovery, flare and fire protection systems. UNOCAL 77

4-23 Section 4.2.2.2. The fourth line from the bottom, the sentence "This would require widening the access road to the facility," should be omitted. The Fire Department has requested that the condition of the road be improved, but not that it be widened. UNOCAL 78 (continued)

4-24 Table 4.5. Please eliminate the comments for Item No. S&P 2. The feasibility of replacing the cooling tower with a propane refrigeration unit has not yet been established, nor has Unocal determined that idle propane refrigeration units currently located at other sites would be the most appropriate. UNOCAL 79

4-24 Table 4.5. The comments for the first item following F&H 23 should read, "Improve the access road to the facility." UNOCAL 80

4-25 The first line should read, "... Unocal has stated that it may be possible...." UNOCAL 81

4-25 Section 4.2.2.3. In the second paragraph, SABA should be added to City Oil and Vintage, since it currently produces about 2 MMscfd of gas. This will change the 87% in the third line. UNOCAL 82

4-25 The Shell Lakeview Plant was originally built by Husky about 15 years ago. UNOCAL 83

4-26 Figure 4-10. In order to be effective, gas going to the SulfaTreat needs to be water saturated. Therefore the H_2S Removal Skid would need to precede the Gas Dehydration Skid. UNOCAL 84

4-27 What is the status of City's gas plant south of Orcutt Hill? UNOCAL 85

4-28 Figure 4-11. Separation is spelled incorrectly. UNOCAL 86

4-30 The first full sentence on the page states that "flares would have to be installed for periods of shut-down or emergencies." Alternatively, the fields could be shut down for the brief periods when the electrical generation systems are not working UNOCAL 87

4-30 What financial impact would the loss of the 550 bbl/day and 60 jobs have on Santa Barbara County? UNOCAL 88

5-16 Table 5.6. Please note the 3-hour ROC standard is a County standard only. UNOCAL 89

5-17 Air Quality Status in Santa Barbara County. The first paragraph leads the reader to believe that the North County ozone problem has only recently occurred and is getting worse. Please note that we are monitoring more violations because more monitoring stations are being built in different locations. UNOCAL 90

5-17 Air Quality Status In Santa Barbara County. The non-attainment area for hydrogen sulfide does not encompass the proposed project area UNOCAL 91

5-21 1990-1992 ozone data indicate the frequency of ozone violations is decreasing both in the North and South County. Why are these data not included in the "trend" analysis? UNOCAL 92

5-28 Table 5.10. Please review the NO_2 data collected at Battles and HS&P. Unocal is unaware of any significant NO_2 levels which have been monitored during the last five years of operation. UNOCAL 93

5-30 Operational Emissions. The seventh line of the first paragraph should read, "The manufacturer, Alzeta Corporation...." UNOCAL 94

5-37 Are 0.0003 ppm and 4.25 micrograms/cubic meter of H_2S equal? UNOCAL 95

5-39 Please note that Rule 331 provides an 80% ROC reduction credit. UNOCAL 96

5-41 Typo in seventh line of the first complete paragraph should read "Point Pedernales field." UNOCAL 97

5-41 Battles Gas Plant. The third line from the bottom of the first paragraph refers to "the Orcutt Hill site." Should it read the Battles site? UNOCAL 98

5-41 Fifth line of the last paragraph should read "timing retard can be expected ...." UNOCAL 99

5-44 The last line of the fourth paragraph should read, "Documentation Volume I." UNOCAL 100

5-44 NO_2 should be added to the ROC and H_2S emissions mentioned in the sixth paragraph. UNOCAL 101

5-45 Table 5.19. The total impact associated with the 1-hour NO_2 standard and the 3-hour SO_2 standard appear to be incorrect. UNOCAL 102

5-45 Table 5.19. The operational emissions associated with the Expanded HS&P Gas Plant should include ROC, NO_X and CO emissions associated with the combustion of approximately 100 Mscfd of fuel gas to fire the glycol reconcentrator, and the reboilers for the amine still, deethanizer and debutanizer. The heat load associated with these pieces of equipment would be about 5 MMBtu/hour UNOCAL 103

5-46 Typo in the fourth complete paragraph, should read "...2° timing retard can be expected...." UNOCAL 104

5-49 Simultaneous operation of new HS&P facilities and upgraded Battles would require electrification of compressors. UNOCAL 105

5-52 Unocal does not intend to use gas balancing at SMV, Casmalia, Cat Canyon UNOCAL 106

5-57 Typo in heading, "... at Fields Not Served..." UNOCAL 107

5-58 [AQ-2] (c) last sentence "This may include wetting down..." UNOCAL 108

5-59 [AQ-5] What is the basis for this requirement? This should be eliminated unless the requirement for construction BACT is triggered by SBAPCD Rules 202 and 205. UNOCAL 109

5-59 [AQ-6] Why is this suggested? It seems that any minute savings associated with reducing the component count would be overshadowed by the possible safety or operational problems it would create. UNOCAL 110

5-59 [AQ-8] This is in conflict with the SBAPCD definition of a stationary source. The Net Emission Increase which identifies the level of control is calculated for each individual stationary source. There are three stationary sources mentioned, the Jim Hopkins Fee, the Santa Maria Valley East and the Lompoc HS&P. UNOCAL 111

5-61 In the third line of the second paragraph what does "current sites" mean? UNOCAL 112

5-63 (a) "revised"
(d) Not true.
nC_4 - No reference to this item.
C_3 - No reference to this item. UNOCAL 113

5-67 The last sentence in Item 4 should read, "Maximum and time-averaged release rates were modeled." UNOCAL 114

5-71 Fourth complete paragraph "i e." instead of "e.g." UNOCAL 115

5-71 Fifth paragraph last complete sentence, comma between "...possible, giving the..." UNOCAL 116

5-92 Reference should be made to existing Emergency Response Plans. UNOCAL 117

5-93 The Battles Gas Plant. Reference to Table 4.2 in the second line should be Table 4.3. Reference to Table 5.30 in the fourth line should be Table 4.5. UNOCAL 118

5-97 Flammable Vapor Hazards. Reference to Table 5.32 should be Table 5.33. UNOCAL 119

5-113 Reference in the first line on the page to Table 5.30 should be Table 4.5. In the same sentence, "compiled" should be complied. UNOCAL 120

5-113 Hazard Scenarios. There is a reference in Areas 1- 7 to high pressure natural gas pipelines which contain a low concentration of H_2S. This pipeline contains gas with about 2,000 ppm H_2S. UNOCAL 121

5-113 Area 4. The first sentence should read, "This area provides storage for natural gas liquids (NGLs) and absorption oil (diesel fuel). UNOCAL 122

5-139 Please clarify the meaning of "weed speed" as mentioned in the fifth line of the first full paragraph. UNOCAL 123

5-148 In the first paragraph, the California Highway Patrol office is located approximately 1/2 mile from the Hopkins facilities, not from the Hopkins Fee land. UNOCAL 124

5-153 Table 5.49. Orcutt Hill Rolling Equipment. That should be a 70 BBL vacuum truck. UNOCAL 125

5-158 First bullet. NFPA is an acronym for National Fire Protection Agency UNOCAL 126

5-158 Second bullet. IRI is an acronym for Industrial Risk Insurers. UNOCAL 127

5-163 Battles Gas Plant. Reference to Table 3.1 should be Table 3.2. UNOCAL 128

5-170 Section 5.4.1. What is meant by, "...associated with the current offshore exploration and development...," in the first paragraph? UNOCAL 129

5-177 Second paragraph should begin "Sight distance..." UNOCAL 130

5-177 Geologic Processes. The seventh line of the first paragraph should read, "... the drainage channel would be covered with gunnite." UNOCAL 131

5-179 [T-1] There are no existing HS&P facility site staging areas. The existing parking areas will not be sufficient during construction. UNOCAL 132

5-179 [T-3] Should this be an RMD- versus RMP-approved biologist? UNOCAL 133

5-180 [B-1] (f). This should be restricted to roots larger than a certain diameter. UNOCAL 134

5-180 [D-2] The second line from the bottom should read, "these plants shall be replanted...." UNOCAL 135

6-1 Why the statement: "This ability to accommodate future expansion should be addressed in the final development plan for the proposed project to assure consistency with the County Zoning Ordinance?" UNOCAL 136

6-2 Table 6.1. Should the first Requirement be to Minimize cut and fill? UNOCAL 137

9-1 How was the life expectancy of approximately 25 years derived? UNOCAL 138

EE-1	The P-17 required that Unocal implement all the safety audit findings within 3 years in order to continue operating the Battles facility. Condition P-17 specifically states "The purpose of this audit is to bring Battles up to current safety standards applicable to oil and gas facilities."
EE-2	Page ES-4, third paragraph states that the document also discusses the impacts associated with a number of options for the independent north county producers. These impacts are discussed in Sections 4 and 5 of the report.
EE-3	If properties such as JHF are sold, the new operator is not required to pursue the project evaluated in this document. If the HS&P is sold, a new owner would not be obligated to pursue this project. If a development plan is approved by the County, the new owner could let it expire.
EE-4	A condensate removal system would not be required because the gas does not have to be transported long distances. Instead, the NGLs would remain in the gas and be burned as part of the fuel gas.
EE-5	The "project" under consideration in this document is Unocal's proposed modifications to the Point Pedernales Offshore Oil and Gas Development Project. This project includes Platform Irene, a number of oil and gas pipelines, and the HS&P facility. If this project is not approved, Battles would be an optional location for the processing facility. Because Unocal needs to process their gas somewhere, if the proposed gas plant is not built then it is logical to assume that Battles would need to be upgraded so it could continue to operate. If Battles is not upgraded and the proposed project is not built, then the Point Pedernales Field would have to shut-in, or find some other alternatives such as gas reinjection.
EE-6	The screening criteria are shown in more detail in Chapter 3.
EE-7	Installation of a new pipeline is an option, although considerably more expensive and with greater environmental impact.
EE-8	Page 5-167 states that if the fields were shut-in, there would be a net reduction in demand for fire protection and therefore a beneficial impact.
EE-9	Table has been modified. A footnote has been added to the table to state that the values are averages for the fields not the leases, and that leases vary.
EE-10	Map has been modified.
EE-11	The spacing recommendations in the P-17 safety audit are a result of the Industrial Risk Insurers (IRI) standards.
EE-12	Text has been modified.
EE-13	Text has been modified.
EE-14	Text has been modified.
EE-15	This paragraph was based on information obtained from NAO Company. This reference was added to the text.
EE-16	Text has been modified.
EE-17a	Page ES-28, second paragraph from the bottom, last sentence already refers to the need for flares.

EE-17	The high octane number requirements are primarily for the Waukesha GL engine systems that utilize a pre-chamber combustion system and main-chamber lean burn technology to reduce NO_x emissions. This leaner combustion necessitates the need for a high octane number. In addition, the H_2S, octane and water specifications were provided by Waukesha and PAMCO. This reference has been added to the text.
EE-18	Text has been modified.
EE-19	Text has been modified.
EE-20	Comment noted. Text has been modified.
EE-21	Comment noted. Text has been modified.
EE-22	The number of barrels lost has been modified.
EE-23	The figure used is based upon past work done for oil and gas EIRs/EISs, and is considered appropriate for this study.
EE-24	The level of risk associated with a facility is a function of the level of consequence and likelihood. High densities of people near the plant would increase the consequence and therefore the risks. As a mitigation measure for the Battles facility option, population densities in the area immediately around the Battles facility should be limited. Given the fact that Battles Gas Plant is in an area that could see development, it is the role of a CEQA document to look at potential future impacts. The HS&P site is surrounded by land owned by Unocal and land that is an ecological preserve. Therefore growth in this area is highly unlikely.
EE-25	The document provides estimates of annual emissions for each lease. The sites that have over ten tons per year would require offsets. Sites below this level would not.
EE-26	The risk level is due to H_2S gas which could be released from any H_2S treating system.
EE-27	Math error has been corrected, and text and table have been modified.
EE-28	The impacts collectively will be a significant impact for the project examined here because, as each individual operator installs the equipment, their emissions will not be large enough to require offsets for that individual operator. CEQA requires disclosure of cumulative or collective impacts.
EE-29	Text has been modified.
EE-30	Text has been modified.
EE-31	Comment noted. The cost numbers have been modified.
EE-32	Text has been modified.
EE-33	See Response to Comments EE-20 and EE-22.
EE-34	The numbers have been modified.
EE-35	See Response to Comment EE-23.
EE-36	See Response to Comment EE-5.
EE-37	The text is correct. With some of the independents, offsets would not be required and therefore, the impact would be Class I. The HS&P would trigger offsets and therefore the impact would be Class II.
EE-38	Text has been modified.

EE-39	Text has been modified.
EE-40	The cumulative analysis looks at the combined impact for all the leases. The purpose of the cumulative is not to address the impact classification for each lease/option. This would be done at the time a formal application was received.
EE-41	This effect on the APCD is speculative at best, and therefore does not need to be addressed in the SEIR. In addition, the costs to the APCD would be reduced because they would not have to inspect and monitor these oil and gas production sites.
EE-42	While there may be a loss of funding, the number of sites that would need to be covered would also be reduced, and therefore, there would be a beneficial impact to the emergency response system.
EE-43	Page ES-18, last sentence, notes that the County Fire Department drill indicated they were understaffed.
EE-44	This option is addressed as a means of cleaning fuel that could then be used as fuel to run existing IC engines in the field. Text has been added to state this.
EE-45	Text has been modified.
EE-46	Text has been modified.
EE-47	While this may be true for traffic, nighttime hauling could have adverse noise impacts.
EE-48	Page IS-24, mitigation measure 2 states only that an oak tree protection and replacement plan be prepared. This oak tree mitigation is the standard for the County.
EE-49	There are no beneficial environmental impacts associated with these options.
EE-50	In order to assess the level of beneficial impacts it is necessary to address hypothetical scenarios for the other producers. This is discussed further in Chapter 4.0. These tables summarize the beneficial environmental impacts identified in Section 5 of the document. Beneficial impacts were only identified under the hypothetical scenario that other producers would shut-in.
EE-51	Comment noted. This is not considered a beneficial environmental impact.
EE-52	Comment noted. This is not considered a beneficial environmental impact.
EE-53	Text has been modified to state that it was in Unocal's best interest.
EE-54	Comment noted. Text has been modified.
EE-55	The Battles plant is in the non-attainment area for H_2S, but not for SO_2.
EE-56	The table referenced is for ozone only. The criteria refers to all pollutants, and the Battles area has higher baseline pollutants then the Lompoc site.
EE-57	The proposed site has a "+" based upon the odor modeling. Using similar modeling for Battles there is the possibility of odors at nearby businesses.
EE-58	In evaluating the sites with these criteria, we are looking at the whole site and not just the modifications. The point is how good is the site for a gas plant.
EE-59	Text has been modified.
EE-60	Comment noted. The text has been modified.
EE-61	Comment noted. Because Unocal plans to stop the shipment of fuel gas to its leases with the proposed project, this information was dropped from the document.

EE-62	Text has been modified.
EE-63	Gas is purchased from SoCal Gas.
EE-64	The arrow on the map is only to indicate that the pipeline continues, and is not intended to show direction of flow.
EE-65	This is only mentioned because it is possible that in the future these fields could be brought into production. For example, Merrit Oil has indicated they may develop other offshore fields in the Santa Maria Basin.
EE-66	Some of the requested changes have been made to the table.
EE-67	Text has been modified.
EE-68	Text has been modified.
EE-69	Unocal's proposed project is to move this gas to the south. Therefore, the document has assumed this would happen.
EE-70	The refinery gas would stay at the refinery and be used as fuel.
EE-71	Text has been modified.
EE-72	Text has been modified.
EE-73	Text has been modified.
EE-74	Text has been modified.
EE-75	A seismic analysis is conducted to determine if the scrubber system could withstand an earthquake. Appropriate upgrades and/or fixes might be the result. This is very similar to the requirements of the RMPP legislation.
EE-76	P&ID can be used to conduct process hazards analysis needed to conform to the risk management and prevention program, and OSHA PSM requirements.
EE-77	This is a reasonable mitigation measure to reduce the risk of offsite fatalities.
EE-78	Text has been modified.
EE-79	See Response to Comments EE-12 and EE-13.
EE-80	See Response to Comment EE-14.
EE-81	Text has been modified.
EE-82	Text has been modified.
EE-83	Text has been modified.
EE-84	Text has been modified.
EE-85	The compressors are discussed in Chapter 2, page 2-11.
EE-86	The gas compressors would have to have NO_x controls, such as catalysts or PSC or lean burn technologies, as per Rule 333. This has been accounted for in the development of the estimated emissions.
EE-87	Some of the leases have low to negligible levels of H_2S. Therefore, depending on the lease, the gas might have to be scrubbed. This has been clarified in the text.
EE-88	Text has been modified.
EE-89	This is only stated as a possibility. It would be up to the independents to work such a deal out if it was in their economic best interest.
EE-90	While it is possible to use the compressors to remove the NGL liquids, intercoolers would be needed. Also to place the LTS unit after high pressure compressors would be more costly due to the higher pressure rating of the equipment.

EE-91	This sharing of gas is a possibility, but would require some level of permitting from the County.
EE-92	Text has been modified.
EE-93	Text has been modified.
EE-94	See Response to Comment EE-15.
EE-95	Text has been modified.
EE-96	Text has been modified.
EE-97	Text has been modified.
EE-98	See Response to Comments EE-17a, 17, 18 and 19.
EE-99	Fuel cells were specifically mentioned by Gato Corporation in a letter to the County dated February 5, 1993. Due to fuels cells high efficiency and very low emissions and their increasing viability, they are a continued interest as a form of "alternate energy".
EE-100	The electricity could be used for operating blowers, electric motors for pumping units or a range of other possibilities.
EE-101	Text has been modified.
EE-102	See Response to Comments EE-20, 21, 22 and 23.
EE-103	Capital would be needed to build the flares.
EE-104	The plots are provided to show that the areas is in non-attainment.
EE-105	The plots are from the 1991 AQAP, which did not cover these years.
EE-106	Emissions due to the flares, generators, etc. are addressed in Section 5.1.6.
EE-107	Text has been modified.
EE-108	Some operators, Texaco for example, need to purchase gas occasionally.
EE-109	Math and table have been modified.
EE-110	For the HS&P the permitted level was used, because this is what will be permitted. For the other options there is no pending project so a permit level is unknown. The only source is the estimated production level.
EE-111	The table has been checked and modified.
EE-112	Text has been modified.
EE-113	Text has been modified.
EE-114	There is some construction required for flares, but none that would be significant. The only construction emissions discussed in this section are for the proposed HS&P gas plant.
EE-115	All these measures are possible and can be employed to reduce dust. Measure "e" has been deleted.
EE-116	Text has been modified.
EE-117	See Response to Comment UNOCAL-110.
EE-118	Text has been modified.
EE-119	These measures are added to reduce potential for adverse impacts, even though they do not represent significant impacts. CEQA does allow for mitigation measures to rescue adverse impacts. These are only recommended.
EE-120	See response to comment EE-30.
EE-121	Page 5-144, SS-3 third line states "plastic, or other suitable material." No mention is made of colored dirt.

EE-122	There are none identified, because offsets would not be required.
EE-123	No reference is made to Burton Mesa Chaparral on page 5-158. The comment applies to page 5-178. The first statement covers why there was a need to conduct a biological survey. As a result of the survey, no impact to the Burton Mesa Chaparral was found.
EE-124	See Response to Comment EE-47.
EE-125	Text has been modified.
EE-126	See Response to Comment EE-48.
EE-127	See Appendix E of the SEIR for a discussion of these plants.
EE-128	This measure covers the washing of equipment that contaminated with concrete, paint, or other materials. The conditon has been modified to provide more clarity.
EE-129	The County RMD is responsible for assuring compliance with these conditions. Biological expertise is required to insure proper implementation.
EE-130	See Response to Comment EE-31.
EE-131	See Response to Comment EE-20, 21, 23, 34.
EE-132	This section has been revised as needed.
EE-133	Emission factors were taken from the APCD report on flare emissions.
EE-134	Text has been modified.
EE-135	These emissions are a hypothetical calculation assuming that the operators had or will have flared.
EE-136	The tables have been modified.
EE-137	There is not a large difference for NO_x emissions. But ROC emissions vary significantly depending on the flare type used.
EE-138	Text has been modified.
EE-139	Emission factors were taken from AP-42 Section 3.2-2, which assumes 3,400 lb NO_x/scf and 1050 BTU/scf of gas. The emissions factor for NO_x of 0.32 lb/MMscf includes a 90 percent reduction.
EE-140	Text has been modified.
EE-141	See Response to Comments EE-27, 138 and 139.
EE-142	These tables have been corrected as needed.
EE-143	The spelling errors in the document have been corrected.

OES-1	Figure 2-4 has been modified to show Stream 5. This pipeline between the HS&P and the Battles Gas Plant has been analyzed as part of the expanded HS&P gas plant. It is addressed to a permit level of detail as scenarios Exp-1 and EXP-2. Detailed hazard footprints are provided in the document. See Tables 5.32 through 5.36. The conditions analyzed were those for the expanded HS&P Gas Plant (200 psig, 4000 ppm). The impacts of this pipeline are summarized on page 5-95. With mitigation, use of this pipeline was found to be a Class II impact. Because the proposed project's use of this pipeline would result in smaller footprints, then those for the expanded HS&P Gas Plant no additional modeling was done. In terms of CEQA, we had classified the impact associated with the use of this pipeline. Under CEQA this lower hazard case need not be modeled, because it is covered by another case within the same document.
OES-2	See Response to Comment OES-1.
OES-3	The existing facility does have an oil spill contingency plan. Text has been added to the baseline section to address this. The potential for the gas plant to impact the oil equipment has been addressed in the SEIR in section 5.2.3.1.
OES-4	The only line that will be affected by the proposed project that is associated with the Orcutt Hill and JHF sites is the pipeline between the HS&P and the Battles Gas Plant. This line has been addressed as part of the Battles Gas Plant alternative. See Response to Comment OES-1.
OES-5	The effects of the LPG and NGL BLEVE on buildings have not been discussed because both of these events have an extremely low probability. Based upon the County's significance criteria, these would be insignificant impacts given their low probability of occurrence. Even based upon the SSRRC's guidelines for risk mitigation, these events would not require any mitigation. It should be noted that there has **never been** a BLEVE of an LPG or NGL storage tank at a gas plant in the USA. Given the extremely low likelihood of this event, no additional discussion of the potential impacts associated with this event have been added to the document.
OES-6	Text has been revised to reflect the provided language.
OES-7	See Response to Comment OES-1.
OES-8	The use of the pipeline liner provides sufficient mitigation to bring this event to a insignificant classification based upon the County's significance thresholds. However, the document does require ERPs for the facilities and pipelines. In these plans the issues of emergency planning, detection, shutdown, and notification procedures would be discussed.
OES-9	Comment noted. The wording of the measures have been modified.
OES-10	Text has been modified.
OES-11	Text has been modified.

CN-1	The SEIR looked at 8 different sites as part of the alternative site analysis (see Chapter 3). It found the HS&P site to be a reasonable site based upon the County's gas processing siting criteria. The HS&P gas processing facility is proposed to handle only gas from Platform Irene and fields in the southern part of the north county. The County's policies regarding gas processing in the north county recognize the need for more than one site. The SEIR recognizes this, and indicates that the Battles Gas Plant site is a reasonable site for gas processing in the northern part of the north county. The SEIR identified significant impacts that could not be mitigated to insignificance for only air quality which resulted from construction activities. There were no significant impacts found for system safety (i.e., H_2S), noise or visual. There will be no electrical generation associated with the proposed project.
CN-2	The analysis in the SEIR shows the HS&P site to be consistent with the majority of the County's Siting Criteria for gas processing facilities. Further expansion of the HS&P site would be subject to County approval and would need to undergo some type of environmental review at the time it was proposed.
CN-3	The document has addressed the issue of odor and noise and found that the addition of the proposed gas plant would not significantly increase these impacts. For the issue of noise, based upon the County's significance criteria, the noise levels associated with the existing and proposed facilities would not be considered significant. The final document has addressed visual impacts at the facility, and while these were found to be adverse but insignificant based upon the County's significance criteria, the document does contain a mitigation measure for Unocal to update their lighting plan for the facility. See Response to CN-9.
CN-4	This site is surrounded by over 5,000 acres of undeveloped land. The buffer zone between the plant and the surrounding communities is greater than one mile. The POPCO issue had to do with H_2S in the gas distribution pipeline, and had nothing to do with the location of the facility. In fact, the POPCO plant is located in southern Santa Barbara County. Unocal has proposed installing special devices to prevent the introduction of H_2S into the sales gas.
CN-5	While it is true there is no such thing as zero risk, the risk levels proposed by this facility are low enough that they are considered to be insignificant based upon the County's significance criteria. While it is true that H_2S is deadly in high enough concentrations, modeling done as part of the SEIR indicate that the impacts associated with a release of H_2S are considered to be insignificant due to the high pressure of the gas and the jet mixing that would occur if a release did happen.
CN-6	The original EIS/EIR for the Point Pedernales Field did look at a gas plant at this site. A plant was not placed here because Unocal proposed to use the Battles Gas Plant for processing the gas. The Battles plant was found to have some potential safety concerns which resulted in the County requiring a safety audit. As a result of this audit Unocal has proposed to build the HS&P Gas Plant.
CN-7	See Response to Comments DPR-1 through DPR-3.
CN-8	See Response to Comment CN-3.

CN-9	Comment noted. Based upon the County's visual impact criteria, the issue of night lighting would not be considered significant. The final SEIR has addressed the issue of night time glare from the facility. Given the adverse nature of this impact, a mitigation measure has been added to the document that requires Unocal to update their existing lighting plan for the facility. This mitigation measure will require that the nighttime glare be reduced to the maximum extent feasible. It should also be noted that the existing facility has 21 lights. The proposed gas plant will add approximately 4 new lights. This small increase in lighting fixtures would not lead to an increase in the nighttime glow from this site.
CN-10	The original EIS/EIR and this SEIR for the Point Pedernales Field did identify significant as well as adverse impacts. The proposed gas plant would only lead to a significant impact that could not be mitigated in air quality, and this would only be during construction. Adverse but insignificant impacts were identified for air quality, system safety, fire protection and emergency response. No additional significant impacts were identified for ground water quality and aesthetics.
COL-1	The discussion of offsets indicates that if offsets are provided, then the air quality impacts would be Class II, because the offsets would provide the necessary mitigation. Unocal has sufficient offsets at the Battles Gas Plant to cover the emissions that would be generated by the new gas plant at the HS&P site. In the event Battles was not shut down, the use of mobile offsets from the City of Lompoc could serve as a source. This potential source of offsets has been discussed in the Final SEIR.
SBCAPCD-1	The text has been modified.
SBCAPCD-2	The text has been changed to reflect the comment.
SBCAPCD-3	The fugitive emission numbers have been changed to reflect the comment.
SBCBS-1	The table has been corrected.
SBCBS-2	The text has been corrected.
SBCBS-3	This criteria does apply to the existing facility.
SBCBS-4	Text has been changed.
SBCBS-5	Text has been changed.
SBCBS-6	Table has been modified to reflect the same impact classification as the Battles Gas Plant alternative.
SBCBS-7	A title for pipeline # 5 has been added to the figure.
SBCBS-8	API RP-14C would be followed for the proposed facility.
SBCBS-9	The Sisquoc Pipeline should not be listed on Figure 4-1, because it is an existing project. The figure key has been modified.
SBCBS-10	This table is correct. Table S.1 has been modified.
SBCBS-11	Text has been modified.
SBCBS-12	This is true in terms of what it could treat. The text has been changed to reflect that it is a stabilization system, not just a tower.
SBCBS-13	Figure number has been corrected.
SBCBS-14	The table has been corrected.
SBCBS-15	The scenario titles have been corrected.

SBCBS-16	The reference in the text here is wrong. The text has been modified.
SBCBS-17	The text has been corrected.
SBCBS-18	The text has been changed to reflect that there are only eight scenarios.
SBCBS-19	The reference in the text here is wrong. The text has been modified.
SBCBS-20	Appendix D is only for the proposed Gas Plant and the Expanded HS&P Gas Plant. Information on Battles is in the Technical Documentation File II, available from the County of Santa Barbara Energy Division.
SBCBS-21	This accounts for people smoking, using lighters, and other flammable devices.
SBCBS-22	Unocal might sell the Battles Gas Plant to other north county gas producers and then build the proposed HS&P gas plant for their own use.
SBCBS-23	The reference was wrong. The text has been modified.
SBCBS-24	See Response to Comment SBCBS-22.
DPR-1	The criteria used in ranking the alternative sites were taken from the Santa Barbara North County Gas Processing Facility Siting Study, which has been approved by the Board of Supervisors. None of the criteria award sites adjacent to agricultural workers. The main criteria for system safety as it relates to population is if there are populated areas near the facility (PS-1). The only sites receiving a negative value for this were three sites in the Lompoc field that are closer to Mission Hills and Vandenburg Village.
DPR-2	While it is true that a number of the Lompoc field sites are surrounded by the biological preserve, the proposed site is surrounded by land that is owned by Unocal (see Figure S-8). A review of the system safety hazards show that the only hazards that have the potential for impacting the preserve all have likelihood of occurrence below 1×10^{-6}/yr, which is considered to be an insignificant impact. Given the remote nature of these hazard events, it is unlikely they would affect the areas of the property that are open to the public.
DPR-3	The SEIR found that none of the system safety impacts would have the potential for significant impacts to the biological preserve. This finding is based upon the County of Santa Barbara's system safety significance criteria.
VOI-1	Comment noted. The discussion of cumulative gas production in north county has shown that Vintage Oil's gas production is expected to increase over the next few years.
VOI-2	It is true that all the options for other producers would require some form of permitting. A number of them, such as air quality permits, are a requirement of state and Federal law and could not be "grandfathered".
VOI-3	While it is true that Unocal is considering selling the Point Pedernales Field and the HS&P site, the sale would not affect the use of the site by other operators because the new owner would be required to abide by the existing permits which require allowing access to the site for other consolidated users.
VOI-4	Comment noted. The reason that the SEIR was expanded was due to the fact that the decommissioning of Battles would impact other north county gas producers. The document does indicate that for some of these options the Battles Gas Plant is the preferred alternative, this is primarily due to the impact on other north county gas producers.
UNOCAL-1	Text has been revised.

UNOCAL-2	The information in this paragraph was provided by Unocal in their application. The information in the comment has been incorporated into the document.
UNOCAL-3	Given the fact that propane will be handled at the site, a fire water system does represent a reasonable mitigation measure.
UNOCAL-4	Text has been modified.
UNOCAL-5	Text has been modified.
UNOCAL-6	This data is for 1991, and represents the actual production by company. It is our understanding the divestiture to SABA occurred after this time. Therefore, the text and figure are correct. A note has been added to the text to mention the divestiture of Cat Canyon and Gato Ridge to SABA.
UNOCAL-7	Text has been changed.
UNOCAL-8	See Response to Comment UNOCAL-6. A footnote has been added to the table.
UNOCAL-9	See Response to Comment UNOCAL-6. A footnote has been added to the figure. The text has been changed to 20 percent.
UNOCAL-10	The technologies that are used for the HS&P could be used for an expanded HS&P with the same gas processing capacity. While it might be more economical to use other technologies, it is technically feasible to use the proposed HS&P technologies. Unocal was asked during the preparation of the SEIR to provide information on the design of an expanded HS&P gas plant. None was provided and therefore assumptions had to be made by the preparer of the SEIR.
UNOCAL-11	This option was discussed in the SEIR in Chapter 4.
UNOCAL-12	Comment noted. Text has been revised.
UNOCAL-13	Comment noted. Text has been revised.
UNOCAL-14	Most operators would need to shut-in, or Battles would need to operate until permits could be received.
UNOCAL-15	The time required to permit these options would depend on the type of review required. If CEQA review was required, up to one year could be needed. Without CEQA review the time required could be around 2 to 4 months.
UNOCAL-16	The time required to permit these options would depend on the type of review required. If CEQA review was required, up to one year could be needed. Without CEQA review the time required could be around 2 to 4 months.
UNOCAL-17	It is unclear what impact this would have on Santa Barbara County revenues. A revenue analysis was beyond the scope of the SEIR.
UNOCAL-18	Text has been modified.
UNOCAL-19	Text has been modified.
UNOCAL-20	Text has been modified.
UNOCAL-21	The economics for the options have been removed from the document.
UNOCAL-22	Offsets would not be required because the emissions are below the SBAPCD offset triggers.
UNOCAL-23	Comment noted. Some of the other operators stated that such systems might be needed to prevent liquid from forming in the compressors.
UNOCAL-24	This is true, but would require that gas fired engines be replaced with electric motors. This might also require the installation of electrical transmission lines.
UNOCAL-25	Text has been modified.

UNOCAL-26	Text has been modified.
UNOCAL-27	Text has been modified.
UNOCAL-28	Text has been modified.
UNOCAL-29	Text has been modified.
UNOCAL-30	Text has been modified.
UNOCAL-31	Text has been modified.
UNOCAL-32	Text has been modified.
UNOCAL-33	Text has been modified.
UNOCAL-34	Text has been modified.
UNOCAL-35	Text has been modified.
UNOCAL-36	Text has been modified.
UNOCAL-37	Text has been modified.
UNOCAL-38	Text has been modified.
UNOCAL-39	The text has been modified to clarify this point.
UNOCAL-40	Comment noted. The text has been modified.
UNOCAL-41	Comment noted. The text has been modified.
UNOCAL-42	Text has been modified.
UNOCAL-43	Text has been modified.
UNOCAL-44	Comment noted. The text has been modified.
UNOCAL-45	Comment noted. The text has been modified.
UNOCAL-46	Comment noted. The text has been modified.
UNOCAL-47	Comment noted. The text has been modified.
UNOCAL-48	Comment noted. The text has been modified.
UNOCAL-49	These numbers were provided by Unocal for the year 1991. Therefore the numbers have not been changed.
UNOCAL-50	Text has been modified.
UNOCAL-51	This is the choice they stated at the time of the questionnaire. It only represents an estimate, and in no way binds Texaco.
UNOCAL-52	See Response to Comment UNOCAL-10.
UNOCAL-53	Text has been modified.
UNOCAL-54	See Response to Comment UNOCAL-10.
UNOCAL-55	Text has been modified.
UNOCAL-56	Text has been modified.
UNOCAL-57	The text has been corrected.
UNOCAL-58	See Response to Comment UNOCAL-10. The figure has been modified to say SoCal Gas.
UNOCAL-59	The text has been corrected.
UNOCAL-60	The text has been modified. See Response to Comment UNOCAL-10.
UNOCAL-61	The text has been modified. See Response to Comment UNOCAL-10.
UNOCAL-62	Comment noted. Given the composition of the gas and the operating pressure stated, membranes may not be the most practical method for removing CO_2. This method was chosen as one possibility. When and if an operator proposes an expanded HS&P facility, any changes from the design evaluated here will need to be addressed.

UNOCAL-63	See response to comment UNOCAL-10.
UNOCAL-64	A membrane system was chosen as only one possible method for removing CO_2. While this may not represent the most practical solution, it is used in this hypothetical case as a basis for assessing environmental impacts. When and if an operator proposes an expanded HS&P facility, any changes from the design evaluated here will need to be addressed.
UNOCAL-65	SoCal Gas has indicated the propane could be taken in the pipeline if the injection point was the high pressure transmission pipeline. The large volume in this line could accommodate the small amount of propane. A debutanizer was not added because Unocal stated that additional NGLs could not be added to the Point Pedernales crude oil pipeline.
UNOCAL-66	We have increased the recommended capacity of the NGL storage tanks for the expanded HS&P Gas Plant.
UNOCAL-67	Text has been modified.
UNOCAL-68	Text has been modified.
UNOCAL-69	Text has been modified.
UNOCAL-70	Text has been modified.
UNOCAL-71	Text has been modified.
UNOCAL-72	Text has been modified.
UNOCAL-73	Text has been modified.
UNOCAL-74	Comment noted. Text has been added to the section to say that the new MCC would need to be added to the existing MCC at the HS&P.
UNOCAL-75	Because the expanded HS&P is only a hypothetical project at this time, the issue of who would own, operate and pay for the facility cannot be determined. This decision would be based upon economics. It could be Unocal who then charges the other operators for use of the facility. Another option could be that one of the independents builds and operates the expanded HS&P Gas Plant. A comment has been added to the section to state that the flare system and fire protection system at the HS&P would need to be reviewed for adequacy if the expansion took place.
UNOCAL-76	Text has been modified.
UNOCAL-77	While this may be the case, it would also be possible to develop an agreement where by water, flare, vapor recovery and fire protection systems could be shared.
UNOCAL-78	Text has been modified.
UNOCAL-79	Text has been modified.
UNOCAL-80	Text has been modified.
UNOCAL-81	Text has been modified.
UNOCAL-82	Text has been modified.
UNOCAL-83	Text has been modified.
UNOCAL-84	Comment noted. Figure has been changed.
UNOCAL-85	The current status of this gas plant is unknown. This plant was not addressed because none of the operators chose it as a potential option.
UNOCAL-86	Text has been modified.
UNOCAL-87	Comment noted. This alternative to flares has been added to the text.

UNOCAL-88	See Response to Comment UNOCAL-17.
UNOCAL-89	A footnote has been added to the table to reflect this comment.
UNOCAL-90	The fact that more monitoring stations exist now does not mean that air quality is getting better or worse.
UNOCAL-91	Comment noted. While the HS&P site is not within the non-attainment areas for H_2S, the SMPS is within the non-attainment area.
UNOCAL-92	The data that was used was from the 1991 AQAP which did not include this data. The point that is important is that the County is still in non-attainment.
UNOCAL-93	Table 5.10 provides County significance criteria. The NO_x data provided in Table 5.9 shows the NO_x values at the HS&P and Battles Gas Plant are very low.
UNOCAL-94	Text has been modified.
UNOCAL-95	Yes these values are equal.
UNOCAL-96	Comment noted. Text has been modified.
UNOCAL-97	Text has been modified.
UNOCAL-98	Text has been modified.
UNOCAL-99	Text has been modified.
UNOCAL-100	Text has been modified.
UNOCAL-101	This paragraph covers only the operational emissions for the expanded HS&P Gas Plant. Based upon the design evaluated, there are no NO_x emissions associated with the operation of this proposed facility.
UNOCAL-102	These have been reviewed and they are correct.
UNOCAL-103	Based upon the design evaluated, there would be no NO_x emissions. If other designs were used then NO_x emissions would be an issue.
UNOCAL-104	Text has been modified.
UNOCAL-105	Text has been modified.
UNOCAL-106	Text has been modified.
UNOCAL-107	Text has been modified.
UNOCAL-108	Text has been modified.
UNOCAL-109	This is required because without mitigation on construction equipment there is the potential for exceedance of the 1-hr NO_x standard.
UNOCAL-110	Reducing the component count does not always mean that safety and operation problems are introduced. For example, the use of ball valves can reduce fugitive emissions without compromising safety or operability.
UNOCAL-111	Because all these sites are considered part of the modified Point Pedernales Field project, they fall under the same permit and, therefore, would require offsets.
UNOCAL-112	The text has been changed to existing sites.
UNOCAL-113	The footnotes have been modified.
UNOCAL-114	Text has been modified.
UNOCAL-115	Text has been modified.
UNOCAL-116	Text has been modified.
UNOCAL-117	Text has been added to address the existing emergency response plans.
UNOCAL-118	Text has been modified.
UNOCAL-119	Text has been modified.

UNOCAL-120	Text has been modified.
UNOCAL-121	Text has been modified.
UNOCAL-122	Text has been modified.
UNOCAL-123	This should be wind speed.
UNOCAL-124	Text has been modified.
UNOCAL-125	Text has been modified.
UNOCAL-126	Text has been modified.
UNOCAL-127	Text has been modified.
UNOCAL-128	Text has been modified.
UNOCAL-129	Text has been modified.
UNOCAL-130	Text has been modified.
UNOCAL-131	Text has been modified.
UNOCAL-132	The condition has been modified to state that staging areas will be within the site boundaries.
UNOCAL-133	Text has been modified.
UNOCAL-134	This is a standard condition of the County of Santa Barbara.
UNOCAL-135	Text has been modified.
UNOCAL-136	This is to address the issue of consolidation as required by the County Zoning Ordinance.
UNOCAL-137	Text has been modified.
UNOCAL-138	This was based upon the original Point Pedernales Field EIR/EIS. The life expectancy has been modified.

BEFORE THE RESOURCE MANAGEMENT DEPARTMENT

OF THE COUNTY OF SANTA BARBARA

IN THE MATTER OF THE)
)
UNOCAL HS&P MODIFICATIONS)
) Public comment hearing
SUPPLEMENTAL ENVIRONMENTAL)
)
IMPACT REPORT 92-EIR-13)

TRANSCRIPT OF PROCEEDINGS

Thursday, August 12, 1993

Lompoc City Council Chambers Hearing Room
100 Civic Plaza
Lompoc, California 93436

Reported by: Diane Ledbetter

APPEARANCES

COUNTY OF SANTA BARBARA

Energy Division

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Arthur D. Little

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PUBLIC

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RESOURCE MANAGEMENT DEPARTMENT

August 12, 1993

7:00 p.m.

- - P R O C E E D I N G S - -

MS. McCURDY: Good evening and thank you for coming. This is a hearing with the County's Energy Division of the Resource Management Department. We are here tonight to receive your comments on the draft Supplemental Environmental Impact Report that's been prepared for Unocal's proposed modifications to their Point Pedernales project, specifically those would be modifications to their Lompoc HS&P facility, the Santa Maria pump station and the Jim Hopkins Fee site.

I'd like to start out with some introductions. I'm Alice McCurdy, I'm with the Energy Division. To my right is John Zorovich who is also with the Energy Division. We have Diane Ledbetter who is here as our court reporter, and John Peirson on my left who is with Arthur D. Little who is the consulting firm that's been responsible for preparing this document for us.

We do have some EIRs available on the table on the left-hand side or my side of the room. If any of you don't have copies and are interested, feel free to take a

copy with you. We also have a sign-up sheet up front that you can come up to any time or at the end. If you aren't on the mailing list already we will add you to the mailing list and we will assume you're interested in receiving any notices of future hearings for this project.

John Peirson is going to give the main presentation tonight. He is going to be giving us an overview of the project. He is going to be summarizing the project's impacts and describing what is new in this document. I wasn't here a year ago for the first hearing but I assume that some of you were. And a lot of what's in this document has already been available for a long time and it's not really new material. So he will be focusing on what has been added to this document to respond to the comments that were received from the public who were in attendance approximately a year ago at the first hearing on this project.

After the presentation by Mr. Peirson we'll then open it up to the public and we want to hear from you any concerns you had about the document, whether you think there are inaccuracies or inadequacies. The public review period ends August 30th, so you still have I think it's two weeks?

MR. ZOROVICH: Two and a half weeks.

MS. McCURDY: Two and a half weeks to turn

comments in to us. And feel free to contact us if you have questions after tonight too.

So with that I think I'll turn it over to John Peirson.

MR. PEIRSON: Good evening. As Alice said my name is John Peirson and I work with Arthur D. Little. I was the project manager in preparing this document. As Alice said, about a year ago we sat here and went through a first public draft and we received comments, and based upon those comments we made some major modifications to the document and have recirculated it.

What I'm going to go through tonight very briefly is an overview of Unocal's proposed project. Basically the project is the same as it was a year ago. I'm not going to spend a lot of time covering that. The second part I'll go through are the major changes to the SEIR. These are things that we did to the document as a result of comments received and how we modified the document.

The third part would be overview on the cumulative analysis. One of the areas where we made major changes was in regards to other North County producers who were currently using the Battles Gas Plant and what were the options for them if the Battles Gas Plant was decommissioned. And the last thing I'm going to go through is the summary of significant impacts for the proposed

project as well as the cumulative impacts. If anybody has any questions while I'm talking, feel free to ask and I'll try to answer them.

This is a map of kind of the northwest part of Santa Barbara County and it shows the major components of Unocal's Point Pedernales field. The Lompoc HS&P, which is right here, currently has an oil dehydration facility where oil from Platform Irene is taken and then the oil is dehydrated and then shipped north up to Unocal's Santa Maria refinery. Unocal is proposing to install a six-million-standard-cubic-foot-a-day gas plant at the Lompoc site. This gas plant would be used for processing of the Platform Irene gas. Currently that gas is taken to the HS&P site and then shipped up to the Battles Gas Plant through those pipelines.

Unocal is proposing to decommission the Battles Gas Plant and process the gas from Platform Irene at the Lompoc HS&P site. At that site the gas would be sweetened and the H2S would be removed. Then the gas would be injected into the local SoCal distribution network in the Lompoc area for sale. The natural gas liquids that would be recovered from the gas would be injected into the crude oil and would continue going up to the Santa Maria refinery, which is shown towards the top of the map, through that pipeline. Any other gas liquids like propane and butane

would be reinjected into existing onshore wells in the Lompoc oil field which is where the HS&P is.

They're also proposing to make modifications to their Santa Maria pump station which is located adjacent to the Battles Gas Plant. With the decommissioning of the Battles Gas Plant they will need to, if they want to continue to operate that facility they'll need to make some modifications there, installing some heaters as well as some fire protection equipment. And those are modifications that are needed if Battles would be decommissioned.

The other place they're proposing to make some changes is the Jim Hopkins Fee which is an existing oil and gas production site. They need to make some modifications to that site in order to continue producing their oil and gas from that site. These are minor modifications, installing equipment to remove liquids and some just minor piping modifications within the site. That's the extent of the proposed project.

We analyzed the impacts to that proposed project in the original EIR and received a number of comments regarding particularly impacts to other producers who are currently using the Battles Gas Plant, other small producers who ship their gas to the Battles Gas Plant. And if that plant was decommissioned they would have no other place to take their gas and would have to pursue other

options in order to process that gas.

So as part of that we made some major revisions to the document. These included an analysis of an expanded production at HS&P. This is basically to take the proposed gas plant and add an additional six million standard cubic feet a day of gas processing at the HS&P site that other operators could use. That was analyzed to a permit level of detail.

We expanded the analysis of other options that would be available to North County producers and I'll go through what those are. There was about eight of them that we looked at and to a permit level of detail. We evaluated as I said the expanded HS&P gas plant. We did an analysis of who is using the Battles Gas Plant, where the gas is coming from, how much they would project in the future would be produced so we could get a handle on the quantity of gas that would be displaced from the Battles plant.

We did an evaluation of the risks associated with the Battles Gas Plant as it exists today. Back in I guess it was '89 or '90, somewhere like that, the County did a safety audit of the Battles Gas Plant and came up with 270-odd recommendations to improve the safety of that plant. Unocal implemented all but about 38 of them and there were 38 remaining. And we looked at what was the risk of this plant as it stands today with the mitigation measures that

were the audit measures that had already been incorporated, get a handle on the level of risk associated with that facility.

Two items not listed on here that we did, we received comments about the concerns regarding noise with the Battles Gas Plant. We added a section to the document that addressed noise levels that would be associated with the expansion at that plant, doubled the current noise levels and what would be projected with the addition of this equipment. And the other one was odors. There was concerns about H2S odors from the facility.

MS. McCURDY: It was HS&P actually, the noise.

MR. PEIRSON: The noise was HS&P.

MS. McCURDY: Not Battles.

MR. PEIRSON: Sorry, the noise was HS&P, and odors at the HS&P due to an expanded plant. And we did an analysis on odors and we did actual odor modeling and developed odor footprints, and that was included in the air quality section of the document.

In terms of production, one of the things we did is we went out to producers in the North County who used Battles and conducted a survey of those producers. This table here which is taken from the document lists the production that currently goes to the Battles Gas Plant. We went out and surveyed these operators to get production

estimates from them of what they would expect to occur over the next 5 to 10 years in production from these fields in terms of gas. We got information on their average H2S content and their average CO2 content which were important in developing designs of gas plants for an expanded HS&P. We also asked them what would be their preferences if Battles was shut down, what would be their preferences for other options in terms of what they could pursue as ways to continue producing without the availability of Battles.

As a result of the survey we generated two curves, production curves. This one here was peak production, and what this shows is the production expected between 1990 -- this is for actual production -- out to the year 2010 in terms of gas in the North County that would go to Battles if it continued to operate. We called this peak gas production because this had a couple of assumptions in it. One was that somebody pursued the addition of a second platform in the Point Pedernales field, that has been covered in the area studies in other documents covering the Point Pedernales field, and we assumed that that project would go forward. And that's why you see, in the top line you see an increase in gas production around 1996. Given the current economic situations for oil and gas and offshore development, it is considered highly unlikely that that platform will be pursued in the near future.

The other assumption we made is regarding other onshore gas, this is nonUnocal gas. What we assumed here is that Vintage Oil who has taken over a lot of Shell's leases up here in the North County is pursuing an aggressive program to increase gas production, and they are bringing a lot of wells that Shell had shut down back on line. This assumes that they basically brought back on line all of Shell's wells and was able to recover them with gas production. Again, we felt that that was a bit aggressive and so we included it in the peak gas production. And the third assumption that was made is the bottom line which is Unocal's production, that that stayed constant out through the year of 2010 and that there was no decline in production from Unocal's fields.

The second one that we made which was the one that we actually analyzed in the document because we feel that peak one is speculative at best and CEQA doesn't require that we analyze things that we view as speculative. This one looks at offshore production where there is no addition of a platform out in the central Santa Maria basin, it is just production from Platform Irene which it will decline and cease around 2002, 2005.

We see that the onshore gas does climb and actually holds fairly steady after about 1995 and this is due to increases with Vintage and also Conway who are

undergoing increases in production. And this did assume that a fair majority of the wells came back on line that Vintage was trying to recover and had fairly large volumes of gas production. There are some other operators in there that, smaller operators who actually gave us projections that showed their gas production declining. And the other assumption that was made here was that actually Unocal's production would decline on a straight line over time, and that's pretty consistent with what it's doing currently.

This is the production curve that we used to analyze cumulative impacts for other operators as well as the size of the gas plant for an expanded HS&P. What it shows is that other than Unocal gas we're going to need to handle somewhere around six million standard cubic feet a day from other operators and onshore sources, and that's the size that we looked at for an expanded HS&P gas plant.

In order to address the large number of comments we received from other operators about the impacts that they would have if Battles was decommissioned, as I said, in the survey we asked them to identify options, three options that they would pursue if Battles was shut down. Most of them chose as their first option to continue using Battles. As you know that was not one on the list, but that was the one that was preferred because it really means not having to change what you are doing.

So the other options that were selected and that we addressed in the document was an expanded HS&P gas plant which I talked about; the Battles Gas Plant with a modified P-17, this is basically to say let Battles continue to operate without having to comply with the remaining 30-odd conditions that are still outstanding on the P-17 which is the safety audit. There would still be some requirements that we did analyze in the document of the Battles Gas Plant such as lining some of the offsite pipelines with liners, doing some additional work at the facility regarding fire protection, but it was not to comply with a lot of the spacing requirements that are still outstanding, and really it was what we called the modified P-17.

The other option was sweet gas, gas sweetening in the field. This involved installing an H2S removal system out in the different fields and allowing operators to sweeten the gas right there. They could use it as fuel within the fields. Another one was gas reinjection. This involves sweetening some of the gas and running internal combustion engines that ran compressors that then reinjected the gas that they produced back into the ground and will allow them to continue to produce oil. You have to realize that most of these wells that produce here in the North County produce gas along with the oil. So if you don't have

some way of getting rid of the gas, you cannot continue to produce the oil.

Flaring, this is one that a lot of the operators identified as a primary choice. It's probably one of the cheapest options. This would involve taking the gas and burning it in flares and installing flares in the different sites around the county and basically burning the gas. They can continue to produce oil. The other one, a few operators identified electrical generation. This involved taking the gas and burning it in internal combustion engines that then ran electrical generators and they generated electric power that they could use in the fields for electric motors or sell the power to PG&E. And last was basically to shut-in and not produce oil or gas. And those are the options that we looked at.

For each of those options we looked at each operator, we estimated safety impacts that would be associated with that. We developed air emission estimates for each operator and each field for each of those alternatives. We looked at fire protection and emergency response issues associated with each of those for the different fields. And then in order to develop a hypothetical scenario, "what if" scenarios, we developed two of them and we looked at the survey results and what was the primary choice that the operators had chosen and what was

the secondary choice. And what we developed for each operator in a hypothetical scenario was these two here.

And without much surprise, the first choice that most people had, except for Unocal, was to continue using the Battles Gas Plant or to upgrade it, meaning the modified P-17. And this really would allow them to continue to operate in the manner that they currently are operating. Unocal, we put the three facilities that they would be proposing to use for the HS&P gas plant. We included HS&P as their new facility, and we made the assumption that if Battles was to continue in an upgraded case that Unocal would continue to use that facility for their other production sites in the North County.

In the second scenario we have the majority of the other operators pursuing flaring, basically burning the gas in flares. We have Petrominerals had identified electrical generation as their second preferred option. Unocal has said that if HS&P is built that in their other fields here in North County that would no longer go to the Battles plant they would use fuel balancing and this means they are basically producing enough fuel within the site to allow them to burn it in their engines and they can balance their fuel and they do not have excess. And that would apply also to their Santa Maria field. And both the Vintage fields would use flaring.

These were analyzed and put together to look at what would be the impacts in air quality, system safety, fire protection and emergency response, and then we evaluated the impacts and classified them as cumulative.

I'm going to talk now a little bit about the significant impacts that were identified. For the proposed project we identified significant impacts on air quality for construction and operation. In construction there was only one Class I impact and that had to do with the emissions due to particulate matter less than 10 microns. These emissions were fairly low, but since the North County is in nonattainment already for PM-10, any additional emissions of PM-10 cannot be mitigated to insignificant and so these were considered to be Class I. That was the only Class I air quality -- or the only Class I impact associated with the project was just due to construction PM. There were no other Class I impacts associated with the proposed project.

In terms of other impacts in air quality, there were a number of other significant impacts that were identified but they were able to be mitigated to a level of insignificance. Construction NOx emissions were identified as Class I; without mitigation they would lead to violations, potential violations of the state standards. But with mitigations such as reformulated fuels and some timing retard and special injectors on construction

equipment they were able to get the violations below the standards, so those were mitigated to insignificant.

In terms of operation, there were issues of NOx and ROC emissions from the plant. Well, while these are relatively small, again, the North County is in nonattainment with respect to ozone and therefore any additional ROC or NOx emissions are considered significant. Unocal's proposed mitigation would be to provide offsets to offset those emissions, and if that was done consistent with the Santa Barbara County Air Pollution Control District rules these would be considered mitigated to insignificant.

In terms of fire protection and emergency response, the Jim Hopkins Fee site with the proposed addition of some refrigeration system, there is no fire protection system associated with that in the proposed design, that was viewed as being a significant impact. And one of the mitigation measures was to install fire protection equipment for that system and that was then mitigated to the level of insignificance.

There were traffic circulation impacts associated with the construction of the HS&P site on Harris Grade Road and parking issue; by certain mitigation that the County put together in the Initial Study, those were mitigated to a level of insignificance.

And in biology there are a couple of pipelines

that travel one to 200 feet outside of the boundaries of the HS&P. One of those lines connects to the SoCal distribution line, and there were some rare and endangered species and sensitive habitats that could be impacted. A biological survey was conducted by Unocal as part of the Initial Study and a number of mitigation measures were developed to mitigate those impacts to insignificant.

So in summary really the only Class I impact as I said that's associated with the proposed project is PM-10 emissions due to construction, and those are viewed to be short term and will only happen during the construction period.

In terms of the noise and the odor impacts, what we found is based on odor modeling of the proposed facility along with the existing facility the odor levels under worst-case meteorologic conditions from that facility did not impact any of the housing areas, Mission Hills, Vandenberg Village, any areas, and therefore they were viewed as being insignificant. Noise levels would not be affected by the addition of this equipment over what exists today in the baseline over at the existing facility. So again, that was found to be an insignificant impact.

One thing we did find was now that we went and looked at the options available to other North County producers and evaluated those lists of options that we went

through, we identified a fair number of significant cumulative impacts that would be associated if this project went forward and the Battles Gas Plant was decommissioned. These impacts included air quality. Under a lot of the scenarios there are limits -- ceilings I should say -- by Air Pollution Control District rules above which you must offset emissions. And for a lot of these small producers, if they were going to install flares or electrical generation equipment, their emissions would not trigger the need for offsets. They would be below the thresholds established by the Santa Barbara County Air Pollution Control District. Therefore these additional ROC and NOx emissions would be considered significant Class I because they would not be required by Santa Barbara County rules to offset those emissions.

System safety, there were some Class I impacts that were identified for these alternatives. Most of these have to do with the, or what was left was actually for the Battles Gas Plant. Even with the modified P-17, the Battles Gas Plant would be viewed with the County's criteria as still a significant safety impact. It would be difficult to ever get that plant, even if it was a new plant, to be not significant safety impact because of the criteria.

We also judged the plant in terms of its risk based upon the System Safety and Reliability Review

Committee's guidelines for offsite risk where they have a curve that they divide into three regions. There is a region where you're required to do mitigation, there is a gray region where mitigation is required if it's economically feasible, and then there is an area where it is no mitigation is required. When you look at the risk of the Battles plant against those guidelines, what you find is the Battles plant falls in the gray region and the area not requiring mitigation. So by those standards it would be questionable whether or not additional mitigation would be needed if the Battles Gas Plant would continue operating. But based on the County's significance criteria for CEQA it would be considered still a Class I impact.

Fire protection/emergency response, in this case a lot of the current fields that would have to install options to continue to produce such as flaring or H2S sweetening are in areas that are remote and are not very accessible to emergency response and do not have a lot of fire protection. Because of that these were viewed under the cumulative analysis as being a Class I impact to fire protection and emergency response. Also if you were to get everybody in these fields to install flares or to install H2S sweetening you would add an awful lot of sites, potential sites for emergency response to the North County and therefore that would place a large burden potentially on

the emergency response system here within the North County and that was also considered to be a significant impact.

We also found significant impacts in terms of energy. What this is, the County has guidelines to look at energy loss, meaning energy that's not being used for societal purposes. In flaring, all of the gas is being burned and wasted; with reinjection the gas is being put back into the ground and cannot be used and supplied to the population; with shut-in all of the oil and gas production is lost. So we did see in some of these different scenarios some Class I impacts due to energy.

As a side note to that, while CEQA does not allow you to classify directly loss of income, obviously shut-in and flaring would result in loss of income to some of the North County operators and shut-in would result in loss of jobs. But those were not classified because they are not direct environmental impacts.

Visual impacts, flares were viewed to be a Class I impact. We could have as many as 20 flares installed around the North County that would represent some of them in some very, fairly populated areas where production is, and these were viewed to represent a Class I visual impact.

Again, these are just based on cumulative and whatever option, if Battles is decommissioned other

operators are going to have to decide on their own what option to pursue and this just lays out the types of impacts that you would see depending on the type of option that these operators pursue.

And that's the end of my presentation. If there are any questions I'd be glad to try and answer them.

MS. McCURDY: Anyone have any questions?

MS. NASH: In regard to sweetening, you sweeten only H2 -- you kept referring to H2S. Are you only sweetening H2S?

MR. PEIRSON: Sweetening refers to the process of removing hydrogen sulfide or H2S from the gas. And in a lot of cases depending on the type of process you use you will also remove CO2. But with what Unocal is proposing it removes just the H2S.

MS. NASH: And what are the emergency situations that you might anticipate in so doing?

MR. PEIRSON: In sweetening? There is potential to have pipe breaks and release of, mainly release of sour gas, release of sour gas, basically gas that contains H2S. And then you would have flammable and toxic footprints.

MS. NASH: Well, is that not proposed from the point of leaving HS&P plant to go toward Battles?

MR. PEIRSON: Well, for the Unocal facility

they are proposing to sweeten gas, and as part of their proposed project the document addressed releases of the sour gas from the sweetening areas and from the pipeline, and we looked at footprints for those and we developed hazards for those. But all of those hazards remained within the area of the plant, they did not travel further than the plant. So since they did not go offsite and did not have offsite impacts, they were viewed as insignificant impacts. And within the document there, there are maps of the facility and they show the areas that would be covered by those different hazards.

MS. NASH: And there's no opportunity for this gas to escape in its sweetened form? I think at the last hearing I said something about odorless and somebody told me it wasn't odorless, it was just so offensive that it knocked out.

MR. PEIRSON: Sour gas has a rotten egg smell and if it's high enough concentrations you lose your sense of smell, and H2S is very toxic. Sweet gas is what you burn in your house. The final product of this when they clean it up and send it into the distribution network is natural gas that you burn or people burn in their house for their stoves, for their heaters. When we call it sweet gas that's really what we're referring to is natural gas that I guess it's PG&E up here sells to you in your home. And the gas

that is proposed, the Platform Irene gas that would go to the HS&P would be injected into the local PG&E distribution network and would end up being the gas that you burn in your homes or you use to heat your homes.

MS. NASH: I guess what I'm referring to is that my understanding is that in its highest concentration H2S is not necessarily odorless but it's lethal and it's when you can't smell it.

MR. PEIRSON: There is a point at which H2S, you do not, it basically damages the olfactory nerves and you cannot smell it. And there is a point at which H2S is lethal, that's right. And in the document we evaluated different concentrations of lethality for H2S basically.

MS. NASH: Well, I mean, I want to know what safeguard we have against that sort of thing happening in the area where we have no alarms and we have, our notices aren't even our alarm to --

MR. PEIRSON: Right. What I'm saying is that there's two areas that it could happen in the proposed project. One is the pipeline that runs from Irene to the HS&P, that's got sour gas in it. That line has systems in place that were a part of the original project for H2S protection. They have leak detection systems so if they do get a leak they can isolate the line. We modeled that line, we modeled leaks from that line along that whole route again

and it had been done once before in the original EIR. And what we found is that line does travel through areas, but there are no areas where it is populated that the hazard zones from H2S where it would have a lethal concentration would be impacted if you got a rupture from that line or a leak from that line.

The other place that you could have releases of H2S are at the plant itself. That's before it gets sweetened. You could also have sour gas release within the plant itself, and we looked at a number of scenarios for that in the document and we modeled to look at if this release occurred under different meteorological conditions how large would the footprints be, meaning the areas where if you were within that you could die basically. And none of these footprints for HS&P went outside of the facility boundaries, meaning it's not going to travel to the populated areas. It's only going to impact the people who are working within the facility.

MS. NASH: Where would those areas be, do you know?

MR. PEIRSON: There are maps that are in the document that show within the facility what areas are impacted. And there are tables that give you for the different scenarios of HS&P releases within the plant how large in terms of feet the footprints would be.

MS. NASH: And what is the emergency response to that?

MR. PEIRSON: Unocal has got an extensive emergency response plan. Within the facility, the facility has got hydrocarbon detectors, meaning it would pick up the gas portion of the leak. They also have hydrogen sulfide detectors that are proposed as part of the project that would pick up H2S in case there was a leak. They have emergency shutdown procedures. They have procedures in place for notifying in an emergency response plan that they've submitted to the County and also it is part of the Office of Emergency Services within the County, and they have a very detailed plan. I mean, it's a notebook that's about yea high of emergency response plans for that facility.

Those same plans would have to be developed for the new gas plant at the HS&P. So they have an extensive -- and they have an emergency response plan for their pipeline, from Irene all the way to Battles. They have a complete emergency response plan that has notification, who gets notified, how they respond, how they shut that line down, and those are all required by the County of Santa Barbara as permit conditions to the Point Pedernales field.

Even though based on our modeling those footprints do not go into areas that would impact people,

they've still got these plans and are required to develop these plans. And they do drills at the site. As a matter of fact just before we started work on this document there was a drill with the County fire department -- I think it was Station 51, am I right? -- who went out and they did practice drills. So that, I mean, they do practice this stuff. It's something that is taken very seriously.

You have to understand, as I said, our modeling shows we're not impacting offsite people and that's what CEQA is interested in: Are you going to do damage or potential harm to the public. It's not concerned with the people who work in the facility, but Unocal is very concerned about people who work in the facility. So their emergency response plans are really very much geared toward not only protecting the public but also protecting their investment, protecting their employees. They have a vested interest in making sure those plans work, and they do do a lot of drills to practice for certain release conditions.

MS. NASH: How is this different, say, from what was -- you may or may not be familiar with the Hollister situation.

MR. PEIRSON: Well, there's a lot of differences with the Hollister situation. First of all this is much lower hydrogen sulfide. This stuff, Hollister Ranch, the Chevron Point Arguello field could have had an

H2S content as high as 20,000 parts per million in the gas. Theirs runs at around four to six, I think they're limited to six as a permit condition if I'm not mistaken. The Chevron line is a huge 22-inch line and this is like an 8-inch line which means you have more mass if there is a release. This line operates at like three or 400 pounds per square inch; the Chevron line operates as high as 1,200 pounds per square inch, so you have much greater potential for a large release of material and therefore a larger footprint.

The Hollister line also going through Hollister Ranch runs within a thousand feet, 800 feet of homes. This line doesn't come anywhere near that in terms of homes. So there's a lot of differences between this and the Chevron situation through Hollister Ranch. And every one of those differences is in favor of making this line having lower risk, and what we found in looking at the line here is that it doesn't represent a risk to the public that would be considered significant. I don't want to say there is no risk because there is no such thing as no risk. But the risk levels are so low based on County criteria that it's insignificant. In the Chevron case the risk levels are much higher, orders of magnitude higher.

MR. NASH: Do you do a relative risk assessment between say improvement of Battles and then the increase at

the HS&P?

MR. PEIRSON: Well, the problem -- yes. In essence we did, we developed the risk profile which is a plot of frequency versus fatality, the likelihood of one or more, three or more, five or more fatalities. We did that for Battles. We can't do that same plot for the HS&P gas plant because the footprints don't leave the site and therefore the probability of an offsite impact is so low that you're not going to be able to plot it on a risk profile.

So in essence we did, but what we're saying is that the HS&P gas plant does not, from a safety perspective, does not represent a significant risk to the public whereas the Battles plant because of its location does represent some significant level of risk mainly to the workers, agricultural workers who are in the area right around -- I mean, the agricultural fields come right up to the side of the plant and there are people in those fields working, and that's not the case with the HS&P.

MR. NASH: You know that the HS&P was 2.7 miles northeast of Lompoc. How close is it to Mission Hills and the Village?

MR. PEIRSON: I don't remember that number off the top of my head, but that number is in the document, particularly under the area of odor impacts where we talk

about it and under the safety part. It's closer to both of those than it is to Lompoc.

MR. NASH: We should be --

MR. PEIRSON: I know, but what I'm telling you is that the hazard footprints do not leave the boundaries of the Unocal facility.

MR. NASH: That's surprising because the little drawings that you have show both Mission Hills and the little rectangle that represents the Village looked like maybe a little over a half mile.

MR. PEIRSON: I think Mission Hills is about a half mile, but I think Vandenberg Village is a little bit --

MR. NASH: And under no prevailing wind conditions; is that right?

MR. PEIRSON: We modeled what is the most stable condition which is called F-stability, one meter per second. That would cause footprints to travel the furthest that they can. And most of these did not, I mean, they just didn't leave the site. You have to understand that when you have an above ground pipe and it breaks, it's kind of like turning on a faucet, you get a large blast of material coming out and what happens, it's called a jet, and what happens is as that jet occurs you get air entrain into the material which basically dilutes it, disperses it, and that's the whole thing you want to have happen. You want

these things to disperse. And what ends up happening is for the releases in the plant you entrain enough air into these releases that by the time it gets to the edge of the facility it is below the level that would be considered potential for fatalities.

MR. NASH: You know, they tell us though that there's no sound, no audible, and we live perhaps maybe a mile away and we hear considerable sound. I mean, we could record them. I've attempted to do that.

MR. PEIRSON: Are you in Mission Hills?

MR. NASH: In the Village.

MR. PEIRSON: In the Village.

MR. NASH: And we're assured then that no sound's reaching us.

MS. NASH: We hear it all the time.

MR. PEIRSON: Well, as I said, that may be true for an existing facility. What we looked at is given noise levels for the existing facility when you add this equipment on top of that is it going to increase the levels of noise.

AUDIENCE MEMBER: (Inaudible)

MR. PEIRSON: Well, if you think about it if you're sitting on a highway and the highway has got ten cars going by and if you double the number of cars, the level of noise does not double.

MR. NASH: No, I didn't say it would double,

it's increased.

MR. PEIRSON: But this equipment, there is not that much associated with this equipment that is moving parts and compressors, there are a few compressors and that's about it. There are not major amounts of large noise-generating equipment associated with this gas plant. It's a pretty small plant.

MS. McCURDY: I want to break in for a second. I think the question and answering is very helpful when you have a consultant here who knows a lot, but I wanted to give anyone a chance. If there is anyone here who would like to give us some input or concerns they have about the document I want to make time for that. We will go back to answering your questions and we'll take as long as it takes.

But I wanted to see, is there anyone here who has comments that they'd like to present on the draft EIR? I know it's early in the review period and there aren't too many and maybe we'll go back to question and answers. Is that a hand back there?

(No response)

MR. ZOROVICH: One other thing, perhaps for our court recorder if you could say your name first and then she could kind of get down what you're saying.

MS. BROOKS: My name is Mary Ellen Brooks. I reside at 4202 Polaris Avenue and I'm not familiar with the

document, I've just read about it in the newspaper this morning. I live probably four miles from the present plant and I had an experience after the HS&P plant opened. We have a two-story home and we started hearing this droning and droning and droning. And I think those of you -- I did call Unocal to find out is this what I'm hearing, is it coming from your plant. And there were some denials initially, oh, no, it couldn't be, you're crazy. And then finally I called again, I said, well, would you come over here and listen. And in fact it was from the plant and at that point the people from Unocal seemed to be very cooperative and said that they did have a problem with the noise and that they were working on it, and several months later it seemed to be rectified.

Now, this was a noise issue that I imagine had come out on an EIR for the original plant that took many, many, many months to rectify, and I'm just wondering now that if this facility is going to be expanded obviously there will be some other noises. I no longer hear the plant where I reside now. I think people in other areas of the Village do still hear it.

Another concern I have that never came out on the EIR from the first plant, you know, if you live in our area it's almost as if we have no nighttime anymore. I don't know if you've ever driven since they opened up the

plant, with the lights, you can be downtown Lompoc, you can drive from downtown out to the Village or out to Mission Hills and there's this great orange glow that covers our area. And I know I've left people's homes at night and we look up and, you know, granted you get a lot of fog, but that fog becomes this wonderful orange glow night after night after night.

And this is an issue that I don't think was ever raised in the original EIR, and I feel as a resident of this community and there are times when I'd like to see a dark sky and I'd like to see some stars. And there are many evenings when that is no longer possible because of this great orange glow. I have friends that live up on West Fir in downtown Lompoc and have this panoramic view of the Lompoc Valley which is altered drastically since that one plant has opened because you always have the big orange glow. And I'm hoping that if this plant is expanded, turn down your lights at night. Thank you very much.

MS. McCURDY: Thank you for your comment.

Yes, sir.

MR. HASELNO: I'm Bob Haselno. I reside at 535 Tamarack Court and I probably live closer than anybody. I live right where Saint Andrews Way terminates. And I know of the glow that she is talking about. The smell, the thumping of whatever it is, turbines, pumps, I don't know.

But I can hear the two-way radios. I can hear the back-up alarms or whatever they're doing over there. And there's many times that I'm woken up at night at 4:00 in the morning, there's still something going on, and if this plant gets expanded that this noise is going to stay the same. So that's my concern. It's bad enough the way it is now. But some nights if they're clear you can really hear what's going on. And when you hear a two-way radio, that's not right.

MS. McCURDY: When you talk about being woken up at night, that's not the droning noise, that's the other noise?

MR. HASELNO: That's the droning noise. It's not -- just everything in general. It's kind of a thump or, I don't know, a turbine noise or a thump. I've never been to the plant but I know when I come down the hill here's the sky just like something's on fire or whatever it is.

MS. NASH: It's like a rushing.

MS. McCURDY: Thanks for your comments.

Is there anyone else?

Just getting back to the comment about wanting to see a dark sky, last night was a good night for a dark sky, a meteorite shower, if any of you happened to see it.

MR. BURNETT: The name is Walt Burnett, I live in Mission Hills. I went through a lot of this scenario

when the original plant was being built. Fortunately it was moved to this site because the community of Mission Hills objected to where they wanted their primary site to be. And I have to say thank God we got it moved out where it was.

Yes, I have to say that I can hear it. I'm about two miles south of my location. I don't hear the motors as much, I'm hard of hearing. But I do hear the telephone go off and other items -- this is their outside phone, not their inside ringing. They obviously go to reduced manpower and they have one guy that's outside and he flips the switch so he knows what's happening. But the sounds do travel. It echoes down the canyon. And I would suggest that perhaps somebody tour the area in the evening, a foggy evening so that they can understand.

Now, the odors, I have not detected the hydrogen sulfide odors at all in the immediate area since the plant began operation. There used to be a significant oily odor, a film, from the old facility that was there for many years. That has improved. I guess my concern is not what's planned in the immediate future but if we put this facility in and 5 to 10 years down the stream is it going to be allowed to degrade to the condition that Battles is in today and then we have a perpetual safety hazard condition? So this is one that I think needs to be looked at. That would be my concern.

Now, Unocal has I feel had a reasonably good track record in trying to do a good maintenance job, but they may sell the facility as I read something in the paper about. And I have no assurance that the next man is not going to be more oriented to not setting aside money for maintenance and repair. I guess that's my area of concern.

MR. PEIRSON: I would respond to some of that, and it was talked about in the document regarding Battles. In the last four to five years a number of laws have been passed by the state and the federal government regarding what's called process safety, and it's the issues that you raised which is that in the past plants have been neglected and the risks have increased over time and there have been some serious accidents as a result.

The state passed a law called the Risk Management Prevention Program that is administered by the County here -- right now it's Environmental Health who is administering it -- that requires facilities handling acutely hazardous material, for which HS&P qualifies, to prepare a risk management prevention program and those address issues of preventative maintenance, operating and emergency response, all of these things, and they are something that they have to update every three years and are audited by the County government.

In addition, the federal government, OSHA, has

passed laws called PSM, Process Safety Management, which requires almost identically the same requirements as the RMPP for acutely hazardous materials, and they go in and will inspect plants and they require them to have preventative maintenance programs, management systems in place to try to prevent that. And the third one is part of the Clean Air Act which amendments were recently passed as an RMP regulation which is Risk Management Program that will be administered by the EPA. And it follows exactly the same issues in terms of minimizing risks to the public from hazardous releases.

So these are all programs that have been added or legislations that have been added in the last three to four years that have not been around beforehand. No matter who owns the facility, they're going to have to comply if they meet what are called the minimum thresholds or the TPQs, the Threshold Planning Quantities, in terms of materials, which this facility would. So those should, with time, assure that plants do not deteriorate in time, assuming that they are carried out properly by the state and the federal government.

MR. ZOROVICH: Just to add something to it, you really had a valid point, and in addition to what John pointed out there is a condition which specifies, it's also in Condition P-17 which is an agreement between the County

and Unocal, and that requires the County to do what is called the BAST or the Best Available and Safest Technology audit every five years. We're doing it too, constantly. And I think at the time the project was approved there was some uncertainty what we wanted to have happen at another Battles or a facility that is old and starts deteriorating. So they placed this condition on the project and what that does is the County goes in and does a safety audit to some regards of the facility and that's conducted every five years. We're just going through that right now or we have been in the last year. And so that's also an additional requirement. I think it's the only project that we have in the county that has that requirement. So that also would help to ensure that the facility is maintained throughout its life.

MR. NASH: Excuse me, what project is BAST?

MR. ZOROVICH: It's a condition.

MR. NASH: I know what BACT is, but what project will it apply to?

MR. ZOROVICH: The BAST audit?

MR. NASH: Yes, the Best Available Control Technology.

MR. ZOROVICH: It applies to the Lompoc HS&P facility.

MR. NASH: And you say they are following that

now?

MR. ZOROVICH: The condition as it's worded requires that that audit, this BAST audit be done every five years, the first five-year period starting when the facility began operations. And so the County and Unocal in the last year have been going through and conducting this BAST audit and that should be completed shortly.

MR. PEIRSON: He is referring to BAST, Best Available Safest Technology, as opposed to the air quality BACT which is Best Available Control Technology. So they are slightly different. This is geared toward the best available safety technology.

MR. BURNETT: As a follow-up part, this is the reason I asked the question, is that you identified that in 1989 you found this whole list of items that needed to be fixed based on laws and requirements, and there's still 38 of them outstanding. Now, I'm looking at this facility modified in the 15 years down the road, and where do I stand? That's my area of concern.

MR. PEIRSON: But I come back to, let me just say that the laws that I kind of recited were not in place when Battles was built. And it's questionable from our analysis of those 30 some odd that are remaining, only a few of those have any impact -- would do anything to improve safety to people offsite. The rest are issues of onsite

safety. And at least from a CEQA perspective I'm only looking at offsite. Somebody like OSHA might look at it differently because they're interested in what goes on onsite.

MS. McCURDY: Anyone else?

MR. BUTTNY: Just kind of a comment that speaks to an issue that worries me. What you're saying then primarily is that the efficiency and the safety of this program is going to depend a great deal on the County staff being able to perform all of its functions as required by state law. And we are going through right now at the County drastic reorganization of the very agencies that are required to perform these inspections. And a comment, perhaps something should be added to environmental impact reports that measures the environmental impact of reducing County staff so that they cannot adequately function to carry out the mandates that the state says they should carry out. I know this is not something you can do, but it's just something that bothers me.

MR. PEIRSON: I made a comment regarding that fact in this document.

MR. BUTTNY: Did you? Good.

MR. PEIRSON: There is a, really, there is a comment to that exact fact that said that while this is classified today as an insignificant impact, if staffing

cuts occur within the County and emergency response levels are reduced, then this would be considered a significant impact. I made sure that that statement, and I agree with you that that is a big concern and that statement is in the document.

MR. BUTTNY: We'll use it.

MS. McCURDY: Yes, sir.

MR. PICCIUOLO: My name is John Picciuolo, I am a resident of Vandenberg Village at 445 Oakhill Terrace. I notice in this draft document the impact on water resources is judged to be not significant. I also note that there appears to be a significant increase in the amount of injected hydrocarbons and other substances in the vicinity of the plant as a byproduct of the change in process. Has there been any analysis or will there be any analysis as to the possibility of these additional hydrocarbons and additional substances finding their way into our aquifer water supply?

MR. PEIRSON: A couple of things. First of all the reinjection is back into the producing, into the reservoirs where the oil in Lompoc field is coming from. So they're not just putting it into the ground, they're putting it back basically into an oil-producing reservoir which if I understand correctly is much deeper than the water levels where the groundwater is here in the Santa Maria or Lompoc

area.

The other thing is the Department of Oil and Gas which is state-run has very strict requirements about the development of reinjection wells, and that is talked about in this document, in terms of where they can reinject, what reservoirs can they reinject into. And you cannot reinject materials or produced water or gas or even oil -- I don't know why anybody would reinject oil -- but gas or produced waters without getting permits and requirements and doing studies and that has to all be done through the Department of Oil and Gas by the state. And that would have to be approved before reinjection wells can be brought on-line, and that's why the document states that while gas reinjection was looked at as an option for other operators, it probably would not be pursued because of the requirements set forth by the Department of Oil and Gas.

MR. PICCIUOLO: Well, I hear what you're saying but it's my reading of this document that the material that's to be injected will be coming in from Platform Irene and not out of the Lompoc field --

MR. PEIRSON: Right.

MR. PICCIUOLO: -- and that it will be a significant increase over what is now coming in and potentially injected. I would certainly feel a lot better if within this document there were some statement of some

kind that some geologist or some qualified engineer or perhaps an expert in injection wells had looked at this potential increase in injected material and taken a hard look at as to what the increased risks might be to our aquifer water supply. Vandenberg Village is located as it's described in your document only about 5,000 feet from that particular plant. Mission Hills is within about 8,000 feet; that's pretty close when it comes to aquifers, underground formations.

MR. PEIRSON: There's a couple things I wanted to say. One is that most of the gas that would be reinjected in the Lompoc field does not come from Irene, it comes from the Lompoc field. Right now gas produced in the Lompoc field is sent up to Battles. They're going to decommission Battles. So in order to continue to operate the Lompoc field, that gas is going to be reinjected back into where it came from.

The plant that's being built is strictly to process gas from offshore, from Platform Irene. What will get reinjected along with the gas from the Lompoc field will be some amount of gas liquids, basically propanes and butanes that are produced. That is a relatively small fraction of the material that will be reinjected back into the ground. And I think the document or the project description states that it is onshore production primarily

that will be reinjected.

There also may be material that will be reinjected coming down from the onshore Orcutt field if they do not have -- if they were producing excess gas from Orcutt meaning they couldn't burn it all in their engines, if they had excess production they would ship it to the Lompoc area and reinject it there also. So in time some of that material from Orcutt may also come down for reinjection. But the majority of what is being reinjected is onshore gas production from the Lompoc field and in interim periods there may be some from the Orcutt field and very small amounts of gas liquids from the Platform Irene.

MR. PICCIUOLO: Thank you.

MS. McCURDY: Is there anyone else?

MS. NASH: May I ask another question please.

I wondered why is there not another site located, say in the Santa Maria area where most of the activity, say the future activity might occur and even offshore activity if it -- you know, if you're going to bring everything through Irene and back, if for instance Unocal, if the Unocal activity diminishes and other companies come on board, is all of this going to be, is everything in the North County going to be processed through this plant?

MR. PEIRSON: Well, let me just put it this

way. When we went to all of the independent operators and asked them whether they would go to an expanded HS&P gas plant, they all said no, none of them would ever do that. It's too expensive.

MS. NASH: So the people are expendable and to the expense --

MR. PEIRSON: Well, you have to look at it, Unocal is looking out for their own, what is in their financial and best interests, that's just as any company would. And the local operators say they're not going to come down to an expanded HS&P because it's not economically attractive for them. Obviously what is most economically attractive to the other producers would be to have Unocal continue to operate Battles and allow them to continue to process their gas there which they've been doing for, you know, 30 to 40 years. That's, from other independents when they look at the numbers from their own economic perspective that's the preference that they prefer. Obviously Unocal has looked at it from their own perspective and must feel that HS&P is economically the most attractive, otherwise I wouldn't think that they would be pursuing it.

MS. NASH: I understand what you're saying. But I'm saying from the point of view of the residential community and human beings who are living near this, are we being weighed against the -- I mean, it's supposed to be a

socioeconomic impact, just not an economic impact. And it concerns me that also of course I think the County has this plan or had a policy at one point where all these --

MR. PEIRSON: Consolidation.

MS. NASH: Consolidation. And that's how we got Mariposa Reina down here. Are we going to have that in the back of Vandenberg Village and Mission Hills?

MS. McCURDY: I'd like to say just a little bit about the County policies that deal with the consolidation of oil and gas facilities. There are policies that deal with the South County and with the North County. Because the North County planning area is such a big one basically the policies that were adopted said that consolidation is a goal to the extent that there are benefits of consolidation. But because it's such a big area there is an acknowledgment that you wouldn't want to route gas from all over the North County to one processing site necessarily. But there was envisioned to be I think possibly two or three gas processing sites for the North County, one of which could be the HS&P, another one which could be the Battles site, and there could even be a third. So it's not quite the same, we're not talking about the same policies as are in place with the South Coast.

MR. PEIRSON: One thing also, you talked about or you mentioned Mariposa Reina and you talked about the

Chevron facility. That's designed for 60 million standard cubic feet and can be expanded to 120. Even under what I would call the wildest dreams of gas production from onshore in the North County and the central Santa Maria basin you are getting up around 20, nowhere near the volumes that they're talking about for the Chevron facility. There just isn't that. And that assumes that somebody is going to install another platform offshore in the central basin in the next few years. If you look at the history of offshore oil development here in the last 10 years from an economic perspective and given the current price of oil and gas, it's highly unlikely that any company is going to pursue offshore development in the near future. You cannot make any money doing it today.

MR. NASH: My name is Richard Nash. You mentioned that the sale gas would then leave the plant and go on out to where the customers are. Where are the customers? Which way does it go then?

MR. PEIRSON: Well, it goes into a distribution network that serves Lompoc and Orcutt and everybody in this local community.

MR. NASH: Well, I was wondering, does most of the gas for sale go let's say back up where it started? Or does it, in other words is the HS&P between the fields and the consumption or does it come from the, say the fields in

the North County and then go through HS&P and then back up to North County?

MR. PEIRSON: There is a map in the document.

MR. NASH: No, I mean back up to Santa Maria.

MR. PEIRSON: No, it doesn't go that far. What it is is there is a major distribution or transmission line that SoCalGas runs or PG&E, I don't know which.

MR. SAINZ: SoCal.

MR. PEIRSON: SoCal. That comes down through the North County and then down through Gaviota and along the south. And off of that they run a branch line and it drops down in pressure that comes down and into the Lompoc area which is strictly their end at all the homes in Lompoc, there's no way to get gas back up. And one of the problems with an expanded HS&P is you guys in the winter use somewhere around five to six I think it is million standard cubic feet a day of gas, the residents and the business communities in this area that serve off of this network.

And with Unocal building this facility, basically they will supply all of your gas and so SoCal would not have to let down any additional gas from their transmission line or may not have to let any down. If they do it appears to be very little. If you expand the HS&P to include another six million, it cannot go into the same SoCal line because you guys don't use that much gas. So

there would have to be a new line which we talked about in the document built back up toward Santa Maria to put this stuff into the transmission line.

So basically you can look at it as there is one line coming down and another one that comes off that then travels to all of your homes in this area and it doesn't go anywhere else, and they'll inject into that. It will flow to your homes. It cannot go back up into the Santa Maria area because that line is a much higher pressure. They have dropped the pressure down to feed your distribution network, and it turns out that this facility will end up being the supplier of your natural gas.

MR. NASH: Is that better than the way it is now?

MR. PEIRSON: It's the same, I mean it's gas. Gas is pretty much gas. It's not going to affect the rate you pay for your gas.

MR. NASH: I was just wondering -- well, I don't have gas. But I was just wondering if there would be some economic basis for even having the plant at all.

MR. PEIRSON: Well, obviously they're willing to buy the gas. SoCal is willing to buy the gas and Unocal must be negotiating or have negotiated a deal with them. And Unocal must have looked at what SoCal will do to pay them for the gas and said, we're going to make some money,

otherwise I doubt they would pursue this project.

MR. NASH: Well, I don't know, they're a regulated monopoly so I don't see how the customer has any choice.

MR. PEIRSON: But I would say I would be very surprised if you saw a reduction in your gas bill because you got local gas. I would be very surprised.

MS. NASH: What about Mrs. McCurdy's third option? It's either Battles or the HS&P or a third option.

MR. PEIRSON: Well, we looked at nine different locations I think it was -- don't hold me to that number, maybe it was eight sites -- and we ranked them. The County did a very good study called the North County Gas Siting Study that developed a set of criteria for ranking gas, potential gas processing sites within the North County, and the list of criteria are in Chapter 3 of this document. And we applied those criteria to I think it was eight different sites. And the proposed site came out ranking one of the highest.

Now, part of the reason is -- and this covers air quality, land use issues, hydrology issues, cultural, noise, aesthetics, biology, it was a very good study that the County did. And part of the benefit to this site was it is an existing site from these criteria's perspective. It also, you have to understand it's got a huge buffer around

it because Unocal conveyed to the state 5,000 acres around the site as a preserve, and they own an additional 2,000, about, acres around that site. Don't hold me to that number, I only remember the 5,000. So you've got a huge buffer which is not going to be developed in terms of residential or commercial that's protected, and this site sits in the middle of that.

And so at least from a safety perspective this is a, you know, sitting back, not being one who lives here, it from a safety perspective represents a reasonably good site with a large buffer around it. It's very rare that we find that. And because of that and it is an existing site, it is an existing oil field that has been operating since early in the 19th century, all of those things, it ranked very high based on the County's criteria for gas processing sites. But we did look at other sites in Cat Canyon and in Orcutt Hills. It's all in Chapter 3 where we did that ranking.

MS. NASH: You mean to tell me that Cat Canyon and all these areas don't have -- I mean, it seems to me that this is a much more highly populated area.

MR. PEIRSON: Well, again, you have to look at the specific criteria. One of the problems in moving this material to Cat Canyon is now we're running sour gas through pipelines a much greater distance. We've got to take it up

to Orcutt and then we've got to go across Highway 101, and you know, we've got all of this length of sour gas which is hazardous as we talked about earlier.

And that represents, one of the criteria said minimize the length of transmission of sour gas. So I mean, there is an example of one where this site obviously from Point Pedernales would be preferred over Orcutt Hills. Now for Orcutt Hills, Santa Maria field gas and maybe some of the Orcutt Hills and the Cat Canyon production would make a lot of sense to put into there and not bring down to the HS&P for the same reason. But for Platform Irene based on the County's siting criteria the proposed site is definitely preferred based on those criteria.

MR. NASH: But isn't Irene due to go off production around 2005?

MR. PEIRSON: I think that's about right.

MR. NASH: So would none of this plant be on-line?

MR. PEIRSON: Probably once it's approved it would probably take what, 18 months or so? So you could figure that if it's approved in what? When does it get to that?

MR. ZOROVICH: It's roughly scheduled to go to hearings in late October, say November of this year, so we'll just say the end of this year. If it was approved it

could be up and operational 18 months after that, so that would be mid-1995.

MS. NASH: And that's economically feasible for an oil company to go to that expense for that period of time?

MR. PEIRSON: It must be.

MR. NASH: And find something else to do with it?

MR. PEIRSON: It must be.

MS. NASH: And find something else for some other company to do with it or another platform to do with it from another area?

MR. PEIRSON: All I can tell you is that very few oil companies pursue projects of this nature based on speculative production. A number of companies in this county have been burned based on speculative production. And from an economic standpoint it's very rare that people will spend that kind of money to build a plant based on something that might happen or could happen in the future. So obviously they I would assume have done their own internal analysis.

MR. ZOROVICH: To go back, it's also driven by the Condition P-17, so there's a balancing of what they -- it seems kind of weird to spend this kind of money, to invest this amount of money in a gas plant that may only be

around for 5 or 10 years. However, they have to do something with their gas that they get from Irene. They have this condition also that they've agreed upon to upgrade Battles. So they have to weigh the expenditures of what they would have to do at Battles Gas Plant to bring it up to where the County would say that's a safe facility. So you have the expenditures of that versus the expenditures of the HS&P. So it's kind of a juggling or balancing act and you have to select one or the other.

MR. NASH: Could I make a comment though that in a normal competitive situation what you say is true. But at home in Louisiana natural gas is free, and some of the gas coming out of Canada was extremely cheap because they were making profits on other things. So to indicate that any gas company will be governed by the normal cost of production when it has no competition is a very naive way of looking at it.

MR. PEIRSON: Well, if they were just producing gas. I think that really you have to realize that this gas comes with the oil. If you can't do something with the gas then you don't get the oil. Now, I'm not saying that -- their main product from Point Irene is not the gas, they're in the business for the oil that's coming out of there. But with that they've got the problems of having to deal with the gas. They can't just walk away from -- you know, they

get the gas, they have to do something with it.

And so when I refer to the economics and stuff, while we're talking gas, they're also factoring in the dollars that they are making from the oil, and the whole production has to tie together in terms of dollars. Gas is the necessary, I guess in today's market may be viewed as a necessary evil of the oil production.

MS. NASH: You know that Vandenberg Village was, all the houses were golden medallion homes. That means no gas.

MR. BUTTNY: Maybe you can strike a deal with Unocal.

MR. NASH: We actually tried and they turned us down.

MR. PEIRSON: Actually I'll tell you, in today's market gas is cheaper than oil -- I assume they're electricity?

MR. NASH: Yes.

MR. PEIRSON: Yes, gas is cheaper, a lot cheaper.

MS. NASH: Well, it is a lot cheaper but that was a different slogan and a different approach and clean electricity, and all the homes there were golden medallion, it was wonderful I thought, no gas.

MR. PEIRSON: Supporting, what is it, the

nuclear power plant out there, Diablo Canyon.

MS. McCURDY: Is there anyone we haven't heard from who has anything they'd like to add?

(No response)

MS. McCURDY: Are there more questions from people who have joined in?

MR. BUTTNY: What's next?

MS. McCURDY: What's next is that the review period closes on the 30th, we take comments through 5:00 o'clock, that's a Monday, we take comments through 5:00 o'clock that day. And then we'll be deciding how to finalize the document, how it needs to be changed to respond to any comments we've received. We haven't gotten anything in writing yet so we won't know yet what types of changes we will be making.

But I think we're set to have a final document by the last week in September and then we'll be working on a staff report and making a recommendation to the Planning Commission. And as John said, we hope to schedule something with the Planning Commission for late October or else the first week in November. So that's a date to write on your calendars. And again if you're -- has the sign-up list gone all the way around? It might be up here in the front.

Again, if you've signed up we'll make sure you're notified of future hearings, and the Planning

Commission hearings are the decision-making hearings so those are definitely important for those of you who have any comments on the project. We will certainly be taking to heart the comments that were raised tonight, the comments about some of the impacts that are a little harder to quantify, the nighttime sky issues and some of the noise issues that perhaps don't relate to the County's noise thresholds but nonetheless have been viewed as having an impact on the environment of the people who live around this area. So we'll be working on addressing those comments too.

Do you have anything else?

MR. PEIRSON: No.

MS. McCURDY: How about you?

MR. BUTTNY: I question on the work you were talking about earlier, BAS --

MR. ZOROVICH: Oh, BAST, B-A-S-T.

MR. BUTTNY: You said there is work going on right now. Is a report coming out?

MR. ZOROVICH: Shortly.

MR. BUTTNY: When will that be available? I mean, is that something we would get ahold of?

MR. ZOROVICH: It's a public document. The System Safety and Reliability Review Committee has been working with Unocal and has gone out several times this year to do an audit. I think basically where we're at right now

is pretty much in the gathering stage mode, gathering each department's comments, anything they found out there and probably drafting up a report I would say in the next month or two. I would say some time in the early fall.

MS. McCURDY: Well, if there's nothing else we thank you all for attending and for your comments and have a good evening.

(WHEREUPON, at the hour of 8:22 p.m., the hearing was concluded.)

CERTIFICATION

STATE OF CALIFORNIA)
) ss.
COUNTY OF VENTURA)

I, DIANE LEDBETTER, hereby certify that the foregoing pages 1 through 57, inclusive, are a true and correct verbatim transcript of the proceedings as reported by me.

WITNESS my hand this 24th day of August, 1993, Ventura, California.

Diane Ledbetter
DIANE LEDBETTER

During the public hearing in August 1993, there were a number of comments raised by industry and the public. Most of these comments were addressed by staff and the consultant during the hearing. The reader is referred to the transcript of this hearing, which is included in the chapter, for the details of the comments and responses associated with this hearing. There were two comments raised during the hearing which need further response. These responses are provided below.

Comment: The existing HS&P facility presents a visual impact at night to the surrounding Lompoc Valley, as a result of the night lighting. This is particularly true for foggy nights.

Response: Based upon the County's visual impact criteria, the issue of night lighting would not be considered significant. The final SEIR has addressed the issue of night time glare from the facility. Given the adverse nature of this impact, a mitigation measure has been added to the document that requires Unocal to update their existing lighting plan for the facility. This mitigation measure will require that the nighttime glare be reduced to the maximum extent feasible. It should also be noted that the existing facility has 21 lights. The proposed gas plant will add approximately 4 new lights. This small increase in lighting fixtures would not lead to a significant increase in the nighttime glow from this site.

Comment: Sounds from the existing facility can be heard at night, which has created a significant impact on residences in the vicinity of the plant. The addition of the proposed gas plant will increase the night time noise levels.

Response: In response to previous comments, an analysis of noise from the HS&P facility was conducted as part of the Public Draft SEIR. This analysis showed that the addition of the proposed gas plant would not cause an increase in the noise levels from the existing facility and, therefore, the noise impact would not be considered significant based upon the County's significance criteria. Within the vicinity of a project, there can be an increase in nighttime noise that is considered adverse but insignificant. Text has been added to the noise section of the document to address this concern. A recommended mitigation measure involving the development and implementation of a noise reduction plan for the entire facility has been added to the Final SEIR to respond to this quality of life issue.

Appendix A
Initial Study

COUNTY OF SANTA BARBARA
RESOURCE MANAGEMENT DEPARTMENT
INITIAL STUDY CHECKLIST REPORT

REVISED 2/6/92

INITIAL STUDY

UNOCAL'S MODIFICATION TO THE HS&P, SANTA MARIA PUMP STATION, AND JIM HOPKINS FEE SITES 91-DP-017

INSTRUCTIONS:

This questionnaire is to be completed for all non-exempt projects requiring environmental review under the California Environmental Quality Act (CEQA) and the County of Santa Barbara CEQA Guidelines. All questions should be answered.

Clarification or supporting information should be provided for each issue area. Extra pages should be attached if necessary.

(Form Revised 6/91)

TABLE OF CONTENTS

COUNTY OF SANTA BARBARA
INITIAL STUDY CHECKLIST & REPORT

PROJECT INFORMATION

APPLICANT NAME AND ADDRESS:

Union Oil Company of California (Unocal)
c/o Richard T. Owens
201 S. Broadway
Orcutt, CA 93455
(805) 937-6376

ASSESSOR'S PARCEL NO., ACREAGE: **HSP**: 97-350-014 (257 acres); **SMPS**: 128-093-02, -03, -05 (site portion is 19 acres); **JHF**: 107-150-02, 107-240-05, -06 (267.5 acres)

PREVIOUS ENVIRONMENTAL DOCUMENTS:

1) Union Oil Project/Exxon Project Shamrock and Central Santa Maria Basin Area Study EIS/EIR (1985) (84-EIR-17), SCH# 84062703.

SUPERVISORIAL DISTRICT: All Sites: Fourth

COMPREHENSIVE PLAN LAND USE DESIGNATION: **HSP**: Agriculture II and General Industry; **SMPS**: Agriculture II with a Petroleum Resources Industry overlay, **JHF**: Agriculture II with a Mineral Resources overlay.

ZONING DISTRICT: **HSP**: M-2, General Industry; **SMPS**: M-2, General Industry; **JHF**: Agriculture 10-AG (Ord. 661).

LEAD DEPARTMENT CASE NO.: 91-DP-017

PROJECT LOCATION

The proposed project sites are located in the existing Unocal Heating, Separating, and Pumping (HSP) facility, commonly known as 3602 Harris Grade Road, located approximately 1.6 miles northeast of the City of Lompoc, the Santa Maria Pump Station (SMPS) located adjacent to the Battles Gas Plant between Betteravia and Battles Roads approximately 500 feet east of US 101, and Jim Hopkins Fee property (JHF) in the Santa Maria Valley Field approximately 4,600 feet east of the Santa Maria Way/US 101 junction (Figure 1).

PROJECT DESCRIPTION

This project includes improvements at three existing Unocal facilities in order to comply with condition P-17 of the Point Pedernales Project Final Development Plan (85-DP-71). These three areas and the associated proposed developments are discussed below.

HEATING, SEPARATION AND PUMPING FACILITY

Unocal proposes to install gas processing facilities at its Lompoc Heating, Separating and Pumping (HSP) facility. Currently, the HSP facility receives gas produced from Platform Irene and

subsequently the gas is pumped by pipeline to the Battles Gas Plant were it is processed to sales gas quality. Figure 2 illustrates the locations within the HSP of the proposed additional processing facilities. The existing facility was evaluated in 84-EIR-7. The proposed project is a result of Unocal's method of compliance with a condition of approval (Condition P-17) for 85-DP-17. Condition P-17 required that a safety audit be performed two years after the HSP facility became operational. The safety audit was completed in July of 1989, and several hazard reduction requirements were identified. Condition P-17 specifies that these hazard reductions must be completed within three years of release of the safety audit, i.e., July 1992. After a lengthy process of reviewing options for compliance, Unocal has decided to de-commission gas processing at the Battles Gas Plant near Santa Maria, and construct gas processing facilities at the HSP.

The facility additions at the HSP include the following main components: a sulfur removal system, a dew point depression system to remove hydrocarbon liquids and water, process gas compressors, carbon dioxide (CO_2) removal system, short connecting pipelines, and additional electrical facilities. The proposed project is intended to provide facilities at the HSP for processing all gas production from the offshore Point Pedernales field, and a limited amount of onshore gas, for sale to Southern California Gas Company (SoCal Gas), for onshore fuel use or onshore reinjection.

In addition, gas from Unocal's onshore Lompoc and northwest Lompoc fields would be gathered directly to the HSP. This would idle 8,800 feet of high pressure (300 psig) six-inch sour gas pipeline currently used to transport gas from the Lompoc compressor to its juncture with the gas pipeline leaving the HSP. A maximum of four (4) gas streams would enter the HSP facility and a maximum of three (3) gas streams would exit the facility, depending on the various flow rates (Figure 3). Gas streams 1, 2 and 6 are existing, while streams 3, 4, 5 and 7 are proposed; these streams are described below:

- Stream 1: Existing: Point Pedernales gas separated from produced fluids on Platform Irene would be compressed on the platform using existing compressors and sent through the existing 8-inch gas pipeline to HS&P at 500 pounds per square inch gauge (psig). Existing pressure in this line is 300 psig.

- Stream 2: Existing: Facility gas, liberated from the oil at HS&P, would be compressed to 500 psig using the existing booster compressors.

- Stream 3: Proposed: Gas from the Lompoc and northwest Lompoc fields would be gathered at 5 psig and sent to the HS&P and compressed to the existing 500 psig using the re-located, three-stage Lompoc compressor.

- Stream 4: Proposed: If more gas is gathered to the Orcutt Hill field than is required there for fuel, the excess would be transported to the HS&P at 100 psig via a portion of the existing six-inch pipeline currently used to transport gas from the Lompoc Field to Battles Gas Plant.

The following describes the three (3) gas streams exiting the facility:

- Stream 5: Proposed: Treated sales gas would be transported at 450 psig through a new six-inch pipeline tie-in to SoCal Gas line No. 1032. The tie-in point to SoCal Gas is

approximately 200 feet outside of the HS&P boundary. The rate of this stream would be between five and eight million standard cubic feet/day (MMscf/D) depending on the amount of gas SoCal Gas can accept into this distribution pipeline.

- Stream 6: Existing: If the Orcutt Hill field requires more gas for fuel than it gathers, sweet dehydrated gas from the HS&P would be transported to Orcutt Hill at 100 psig through the existing six-inch pipeline between Lompoc and the Battles Plant.

- Stream 7: Proposed: If more gas is gathered to the HS&P than can be sold to SoCal Gas or used as fuel, the remaining gas would be transported at 1800 psig through one of two (2) new four-inch pipeline tie-ins to nearby injection wells in the Lompoc field.

The *SulFerox* process would be used to convert the naturally-occurring H_2S in the gas to elemental sulfur. A secondary sulfur removal system (*SulfaTreat*) would be added downstream of the *SulFerox* unit to allow continued operation if the *SulFerox* unit malfunctions. Sulfur would be removed from two (2) separate gas streams using parallel processing trains:

- Train 1 would contain gas from Platform Irene (Stream 1), facility gas (Stream 2), and gas from Lompoc and Northwest Lompoc fields and other sources (Streams 3 and 4) and would be processed for sale to SoCal Gas.

- Train 2 would contain gas from the Lompoc/Northwest Lompoc fields and from Orcutt Hill Field (Streams 3 and 4), and be processed for fuel or reinjection.

The dew point depression system would use low temperature separation (LTS) to separate water and hydrocarbon liquids from the gas. The LTS unit would also have two (2) separate gas trains:

- Train 3 would contain gas going to SoCal Gas for sale and would be cooled to 10° F to meet water and hydrocarbon dewpoint requirements.

- Train 4 would contain gas going to fuel or reinjection and would be cooled to 20° F prevent liquid water from forming in the pipelines at high pressure.

Three (3) new process gas compressors with back-ups, an additional vapor recovery compressor, and one relocated compressor from the Lompoc field would be required to handle the proposed gas streams at the HS&P. All compressors would be powered by electric motors.

The sweet, dry gas coming from the LTS unit would enter a permeable membrane system for CO_2 removal. The CO_2 removal process creates two (2) gas streams which must be handled separately:

- *Residue gas* is the sales quality gas that emerges as a result of the CO_2 removal process.

- *Permeate gas* is the by-product of the CO_2 removal process and does not meet sales gas specifications.

Four (4) new pipeline tie-ins would be required: Pipelines 1 and 3 (described below) would not extend beyond the facility boundaries. Pipelines 2 and 4 would extend 200 feet and 100 feet beyond the facility boundaries respectively. Following is a brief description of these pipelines:

- Pipeline 1 would connect the Lompoc field gas gathering pipeline to the re-located gas gathering compressor at the HS&P (Stream 3). Pipeline 1 would be 600 feet long, and 8 inches in diameter. No portion of it would extend beyond the existing facility boundaries.

- Pipeline 2 would connect the new gas processing equipment to the SoCal Gas sales l (Stream 5). Pipeline 2 would be 700 feet long, six inches in diameter, and would extend approximately 200 feet beyond the existing facility boundaries.

- Pipeline 3 would connect the injection compressor and Natural Gas Liquids (NGL) injection pumps to injection well Purisima No. 73 (Stream 7). It would be 600 feet long, four inches in diameter, and not would extend beyond the existing facility boundaries.

- Pipeline 4 would connect the injection compressor and NGL injection pumps to injection well Purisima No. 33 (Stream 7). It would be 1000 feet long, four inches in diameter, and would extend approximately 100 feet beyond the existing facility boundaries.

The existing facility currently uses one 12.47 kilovolt (kv) (one kv is equivalent to one thousand volts) to 480 volt transformer. The new process equipment would require an additional 12.47 kv to 480 volt transformer to handle approximately 1500 kilovolt amps (kva) of small and medium sized electric motor loads, and one 12.47 kv to 4.16 kv transformer to handle approximately 1200 kva of large electric motor loads. A new motor control center (MCC) would be required to handle all the new electrical switchgear and circuitry required for the new equipment. The new MCC building would be approximately 900 square feet and would be constructed adjacent to the existing office (Figure 4).

The previously described facilities have been designed to accommodate the maximum expec flowrates, but actual flowrates may vary considerably. This equipment has also been designed to handle the least favorable gas composition; however, the future flowrates and gas composition are unknown, and depending on how these factors vary, some of the equipment previously described may not be required. Specifically, CO_2 removal and gas sales may not be part of the final project. Should that be the case, equipment associated with those processes would not be installed. This equipment is designed to be additive, so that if it is required in the future, it could be added. All potential aspects of the project will be considered for environmental review.

Construction would occur at the existing facility in an undeveloped area east of the existing process units. Construction would include the following:

- Reroute the fence, road, and drainage ditch and grade the area.

- Install the foundations for process equipment, skids, and new building.

- Set the process equipment and skids.

- Fabricate and install process piping.

- Construct 900 square foot MCC and Control Room addition.

- o Install and connect all instrumentation and complete electrical work.
- o Paint all new equipment and facilities.

Access to the site would continue to be via Harris Grade Road directly west of the site.

SANTA MARIA PUMP STATION

The SMPS modifications include: (1) the addition of steam generation as a heat source to operate the pump station, (2) upgrading of the fire protection system to replace the deficiencies identified in the 1989 safety audit of the Battles Gas Plant, (3) installation of a new firewater storage tank located outside the existing bermed area, (4) removal of the existing fire water storage tank, and (5) installation of an evaporation pond (Figure 3). These modifications are necessary because these two systems (steam and fire protection) currently are supplied to the pump station by the Battles Gas Plant. Thus, with the elimination of the Battles Gas Plant, the pump station is in need of a steam supply and fire protection to continue operating. The proposed modifications at the SMPS include:

Fire Protection

- o Removal of the existing fire water tank;
- o Installation of a new fire water tank and fire/pump engine;
- o Installation of a new fire water perimeter loop with additional fire hydrants.

New fire protection equipment would be located near the northeast corner of the pump station. The new fire water piping would supply the existing foam systems and monitors.

Steam Supply

- o Removal of all steam piping from the diked area surrounding the oil tanks;
- o Installation of two boilers with combined total capacity of 700 hp.
- o Installation of a triplex water softener system;
- o Installation of chemical storage tanks with injection pumps for oxygen removal and corrosion inhibition);

The two boilers would be refurbished with low NO_x control technology and relocated to the SMPS from Unocal's Santa Paula and Ventura pump stations. The boilers are ten years old. The boiler control systems would be upgraded to microprocessor-based Honeywell controllers.

Evaporation Pond

Unocal proposes to construct a 40-foot by 120-foot lined evaporation pond four feet deep for disposal of boiler blowdown water and water used in regeneration of water softener. Excavation of the pond will involve approximately 180 cubic yards of cut. The cut material will used to construct a 3-foot dike around the pond.

Grading

In addition to the grading for the evaporation pond, grading for foundations for the boiler equipment, fire pump equipment, and water tank will be conducted. Trenches for the fire water supply loop and the gas line for the boilers also will be excavated.

Other Construction Information

A new chain link fence also will be installed around the entire SMPS facility.

A peak work force of about 20 workers may be required during construction of the SMPS modifications. Workers would be drawn from the local labor pool. Unocal estimates a total of about 24 vehicle trips per day to and from the project site during construction. Construction is expected to last approximately 15 weeks. Equipment used will include: 2 or 3 backhoes, concrete delivery trucks, a dumptruck, and a bulldozer.

JIM HOPKINS FEE PROPERTY

Currently, gas from nine producing wells in the Santa Maria Valley Field is gathered to the Battles Gas Plant for processing. With the elimination of the Battles facility, Unocal proposes to dehydrate the produced gas at the Jim Hopkins Fee property (located approximately 1 mile east of Highway 101 and Orcutt) and use pit for fuel for the pumping units and tank heater. The amount of gas produced from Hopkins is approximately equal to the amount of gas required for fuel. If produced gas exceeds fuel requirements, excess gas will be sent to Unocal's Orcutt Hill operation through an existing pipeline. If fuel requirements are greater than produced gas, fuel gas can be sent to Hopkins from Orcutt Hill through the same existing pipeline.

Modifications to the Hopkins Fee property include:

- Installation of piping to connect the existing Hopkins gas gathering line to the existing Hopkins fuel gas pipeline;
- Isolation and idling of the existing Santa Maria Valley gas gathering line to the Battles Gas Plant;
- Tie-in at the Santa Maria Way valve box of the existing fuel gas pipeline (from Battles Gas Plant to the Hopkins Fee property) to the existing gas gathering line;
- Installation of a 10 x 6 x 7 foot refrigeration skid with a 5 hp electric motor to cool the gas to remove water;
- Installation of dew point and oxygen monitors for corrosion protection;
- Relocation of a gas flow meter to measure the amount of dehydrated gas from the new refrigeration skid to the Hopkins fuel gas distribution system. The meter currently is used to measure the amount of gas going to the Battles Gas Plant from the Hopkins Fee property.

ENVIRONMENTAL SETTING

HSP: The proposed project site is located in a small valley immediately south of the Purisima Hills on a broad alluvial surface that slopes gently to the south at approximately five degrees. Landforms to the east, south and west consist of relatively low, rolling hills. The Purisima Hills (elevation approximately 250 feet) lie approximately 500 feet north of the site. Slopes surrounding the project site are relatively flat, and reach heights of 40 to 80 feet above the site. The majority of the proposed site lies within the boundary of Unocal's HS&P facility. As a result, the site has been previously disturbed by oil and gas operations.

Soils in the vicinity of the project site include Arnold sand (ArD), Elder shaly loam (EnD2), and Botella clay loam (BtD2). Average slopes onsite are three to four percent, and drainage at the existing facility is to the south. Vegetation in the project vicinity consists mostly of oak woodland and Burton Mesa chaparral habitat including native grasses, with disturbed annual grasses adjacent to the existing facility. There area no creeks or open watercourses in the project vicinity, and the site is not located within any flood boundaries. The site has not been used for any farming activities; however, the project site and the vicinity were once used for grazing.

No known historical, paleontological or archaeological sites or artifacts were identified in either the EIR/EIS conducted for the Point Pedernales Project or during construction of the existing facility. However, Chumash representatives have indicated that a mature stand of oak trees located immediately south of the site is culturally sensitive.

The site lies within the Lompoc Oil Field; thus the surrounding land uses are mainly related to oil and gas development. Several oil wells and small diameter Unocal oil and gas gathering lines are near the site indicating past and present oil production land use.

SMPS: The site is nearly level, and is bordered/occupied by the Santa Maria Valley Tank Battery (SMVTB) to the northwest, and the Battles Gas Plant to the west.

Soils in the vicinity of the project site include Sorrento sandy loam (SuA), which consists of deep and moderately deep, well-drained sandy loams to loams that are underlain by a rapidly or very rapidly permeable sand or gravel substratum. The site is bordered on all four sides by agricultural land and the capability unit is IIs-0(14). Onsite slopes are 0.4 percent. There are no creeks or open watercourses in the project vicinity, and the site is not located within a 100-year floodplain.

No historic facilities occur onsite, although remains associated with the historic Battles homestead may occur within the project vicinity adjacent to the Battles Gas Plant.

JHF: The site is nearly level, and is bordered by U.S. Highway 101 to the southwest, and by grazing land to the north, east and west. Soils in the vicinity of the project site include Oceano sand (OcD) and possibly Marina sand (MaE). The Oceano soils are excessively drained sandy soils which formed in old coastal sand dunes, and are associated with Marina soils. OcD soils are characterized by gently sloping to strongly sloping terrain, rapid permeability, slow to medium runoff, and moderate erosion hazard. The capability unit is IVe-4(14), and VIe-4(15).

MaE soils are also excessively drained sandy soils , and are underlain by wind-deposited sand. They occur on dissected terraces, and is characterized by moderate permeability, rapid surface runoff, and high erosion hazard. The capability unit is VIIe-4(15).

MITIGATION MEASURES AND PROJECT DESCRIPTION:

The applicant has incorporated many features into the project design which are intended to reduce potentially adverse impacts to the environment.. Those identified by the applicant are listed as applicant proposed in the impact analysis. All others are identified as County proposed.

STATE REVIEW REQUIRED: Yes

Impacts have been assessed for each project site and follow each abbreviation: Heating, Separation an Pumping facility (HS&P), Santa Maria Pump Station (SMPS), and John Hopkins Fee (JHF).

GEOLOGIC PROCESSES

Previous Review: Impacts on geologic processes were identified as significant but mitigable (Class II) i 84-EIR-7.

		Known Sig.	Unkn. Pot. Sig.	Pot. Sig. and Mitig.	Not Sig.
a.	Exposure to or production of unstable earth conditions such as landslides, earthquakes, liquefaction, soil creep, mudslides, ground failure (including expansive, compressible, collapsible soils), or similar hazards?	___	___	X	___

HSP: Onsite soils are highly compressible and moderately sensitive to wetting, which can cause collapse unde large loads, and expansion at lesser pressures. Permeability is considered to be quite low. No earthquake fault are recorded onsite. The nearest fault is unnamed, and is located approximately 8,000 feet from the site. The project site is not considered susceptible to liquefaction due to the high clay content of the soils. Deeper soil are not susceptible to liquefaction due to the confining effect of the overlying materials. For similar reasons, earthquake-induced subsidence or collapse is not considered likely (Little, 1985).

According to the Seismic Safety Element, the proposed project is located in an area rated high for seismic activity.

SMPS: Onsite soils include the Sorrento series. Permeability of onsite soils is moderately rapid and rapid. Surface runoff is very slow and the erosion hazard is none to slight. No earthquake faults are recorded onsite. the nearest fault is the Bradley Canyon Fault, which is located approximately three miles east of the site. The potential hazard of earthquake ground shaking is considered low. Liquefaction potential is moderate.

JHF: Onsite soils include the Oceano series. Permeability is rapid, surface runoff is slow to medium, erosion hazard is moderate. Soil blowing hazard is very high. Onsite soils may also include Marina sand, which ha moderate permeability, medium to rapid surface runoff, and moderate erosion hazard.

b.	Disruptions, displacements, compaction or overcovering of the soil by cuts, fills, or extensive grading?	___	___	___	X

HSP: Grading for the proposed project includes site preparation for new process equipment and would involv a total of 9,389 cubic yards (yd^3) of cut and fill (5,235 yd^3 cut, and 4,154 yd^3 fill). After shrinkage due t compaction, 370 yd^3 of excess soil material would be transported offsite. An existing road and drainage ditch on the eastern periphery of the facility would be realigned outside expanded facilities, and the drainage channel

Sig	Pot Sig	Sig and Mitig	Sig

would be covered with gunnite. Sheet flow would continue to be directed southward toward a natural unnamed swale.

SMPS: *Grading would be performed to construct a 40 foot by 120 foot evaporation/disposal pond. Approximately 180 yd3 of cut would be required; this material would then be used to construct a 3 foot berm around the pond.*

JHF: *Existing topography is level. Grading for new facilities would be minimal for foundations.*

c. Permanent changes in topography? ___ ___ ___ X

HSP: *The site is relatively level (3-4% slope) so that required grading is not expected to result in permanent changes in topography.*

SMPS, JHF: *The site is nearly level (0.4 percent slope) so that required grading is not expected to result in permanent changes to topography.*

d. The destruction, covering or modification of any unique geologic, paleontologic, or physical features? ___ ___ ___ X

HSP, SMPS and JHF: *No unique geologic, paleontologic, or physical features are located within the proposed project site.*

e. Any increase in wind or water erosion of soils, either on or off the site? ___ ___ ___ X

HSP: *Grading of approximately 2 acres would not result in significant potential for erosion during construction.*

SMPS, JHF: *Grading of loamy soils equalling approximately 180 yd3, and small amounts of sands respectively, would not result in a significant potential for erosion.*

f. Changes in deposition or erosion of beach sands or dunes, or changes in siltation, deposition or erosion which may modify the channel of a river, or stream, or the bed of the ocean, or any bay, inlet or lake? ___ ___ ___ X

HSP, SMPS, and JHF: *No watercourses are located in the proposed project vicinity. The project is expected to result in an incremental increase in impermeable surface area (See 1b above). No changes in deposition, or modifications to any watercourses are expected.*

g. The placement of septic disposal systems in impermeable soils with severe constraints to disposal of liquid effluent? ___ ___ ___ X

	Known Sig	Unkn Pot Sig	Pot Sig and Mitig	Not Sig

HSP: The site is currently served by an existing septic disposal system. This system would not be expanded for the proposed project. Onsite soils are suitable for septic systems incorporating the normal leach line method (Pacific Materials Laboratory, 1986).

SMPS, JHF: Both sites are currently served by existing septic disposal systems; neither system would require expansion for the proposed project.

h.	Extraction of mineral or ore?	___	___	___	X

HSP, SMPS and JHF: There will be no extraction of mineral or ore.

i.	Excessive grading on slopes of over 20 percent?	___	___	___	X

HSP: Average onsite slopes are three to four percent. Grading for the proposed project is not considered excessive (See 1b above).

SMPS: Average onsite slopes are 0.4 percent. Project-related grading is not considered excessive. See 1b above.

JHF: Slopes are level. Project related grading is not considered excessive.

	Sand or gravel removal or loss of topsoil?	___	___	___	X

HSP: Grading activities include 5,235 yd^3 of cut, which includes some surface gravel, and also likely includes some topsoil.

SMPS: Grading activities include approximately 180 yd^3 of cut, which likely includes some topsoil. No soils would be removed.

JHF: No soils would be removed.

k.	Vibrations, from short-term construction or or long-term operation, which may effect adjoining areas?	___	___	___	X

HSP: Construction would utilize a variety of stationary and mobile equipment which may cause vibration. In particular, a concrete vibrator would be used for approximately 900 hours. However, the proposed project site is located in an isolated rural area, and the nearest sensitive receptors are located in Vandenberg Village, which is approximately one mile from the site. Impacts due to vibration are expected to be insignificant for all three sites.

SMPS: Construction would utilize a variety of stationary and mobile equipment which may cause vibration. e project site is located in a gas processing plant in an agricultural area, and the nearest sensitive receptors

Known Sig	Unkn. Pot. Sig	Pot. Sig and Mitig	Sig

are farm residences scattered throughout the project vicinity. The nearest residence is located approximately .025 miles northwest of the site.

JHF: *Construction would also utilize the types of equipment listed above, but to a lesser degree. The nearest sensitive receptors are located more than a mile from the site.*

l.	Excessive spoils, tailings or over-burden?	___	___	___	X

HSP: *Approximately 400 yd^3 of excess spoil would result from grading activities and would be transported offsite.*

SMPS, JHF: *No excessive spoils, tailings, or over-burden would result from the project.*

MITIGATION MEASURES:

County-proposed:

1. *The applicant shall construct all facilities in accordance with a Grading and Erosion Control Plan prepared by a State of California registered engineer and approved by the Public Works Department, Flood Control Department, and RMD.*

2. *Erosion control/sediment retention control devices shall be used to retain sediment onsite.*

3. *The applicant shall develop a Revegetation Plan that includes measures for soil stabilization.*

4. *Any topsoil excavated shall be retained for revegetation use.*

5. *Inspection of the pipeline trenches shall be made by a professional geologist or soils engineer approved by the Resource Management Department prior to installation of the pipeline. The timing of such inspections shall not result in any unreasonable delays in pipeline installation.*

2. WATER RESOURCES/FLOODING

Previous Review: Impacts on water quality were considered significant and unmitigable (Class I) and impacts on water quantity were considered significant, but feasibly mitigated (Class II) in 84-EIR-7.

a.	Changes in currents, or the course or direction of water movements, in either marine or fresh waters?	___	___	___	X

HSP, SMPS, and JHF: *No watercourses are located in the proposed project vicinity, and no changes to any watercourses are expected to result from the project.*

	Known Sig	Unkn Pot. Sig	Pot Sig and Mitig.	Not Sig
Changes in percolation rates, drainage patterns or the rate and amount of surface water runoff?	___	___	___	X

HSP, SMPS, and JHF: The proposed project would result in a slight increase in impermeable surface area, and is not expected to result in any significant changes to percolation rates, drainage patterns or surface water runoff.

c.	Change in the amount of surface water in any water body?	___	___	___	X

HSP, SMPS, and JHF: The project would not change the amount of surface water in any body of water.

d.	Discharge into surface waters, or alteration of surface water quality, including but not limited to temperature, dissolved oxygen, turbidity, or thermal water pollution (e.g., eutrophication)?	___	___	___	X

HSP: Increased amounts of produced water may be discharged into the ocean from Platform Irene or Purisima Well 33. This discharge is regulated through a National Pollutant Discharge Elimination System permit. Injection into Purisima Well 33 would not affect potential groundwaters located above the Lompoc Oil Field deposit (Brian Baca, RMD Geologist). A maximum of 8 MMscf/d of natural gas and 800 barrels day of hydrocarbon fluids would be injected into either Purisima Well 33 or 73. These wells are located [illegible]e Lompoc Field, and are located entirely within the Monterey Formation, at a depth of 3000 feet. The site is located within the northern portion of the Lompoc Uplands groundwater basin. The basin would not be affected by activity in these wells due to the depth of the wells (Baca, 1991).

SMPS and JHF: No additional discharge into surface waters would occur; impacts would be insignificant.

e.	Alterations to the course or flow of flood waters, or need for private or public flood control projects?	___	___	___	X

HSP, SMPS, and JHF: The County Flood Insurance Rate Map (FIRM) indicates that the proposed project site is not located within any potential flood boundaries.

f.	Exposure of people or property to water related hazards such as flooding (placement of project in 100 year flood plain), accelerated runoff or tsunamis?	___	___	___	X

HSP, SMPS, and JHF: See 2e above. No water courses are located on or near the site.

	Alteration of the direction or rate of flow of groundwaters?	___	___	___	X

HSP: Produced water and hydrocarbon fluids may be injected into Purisima wells Nos. 33 and 73. The

	Known Sig	Unkn Pot Sig	Pot Sig and Mitig.	Not Sig

project is located within the northern edge of the Lompoc Uplands groundwater basin. This would not impact the groundwater basin due to the depth of the wells (300 feet) (Baca, 1991).

SMPS and JHF: *No effect on groundwaters would occur.*

h. Change in the quantity of groundwaters, either through direct additions or withdrawals, or through interception of an aquifer by cuts or excavations or recharge interference? ___ ___ ___ X

HSP and JHF: *No change in the quantity of groundwaters or recharge interference is expected. Minimal change of impervious surfaces at HSP (0.60 acres) would insignificantly affect recharge.*

SMPS: *Two steam boilers would be removed upon decommissioning of Battles, and would be replaced with two new steam boilers at the SMPS; this is expected to slightly decrease water demand.*

i. Overdraft or overcommitment of any groundwater basin? Or, a significant increase in the existing overdraft or overcommitment of any groundwater basin? ___ ___ ___ X

HSP: *Water demand: Six employees = 0.12 Acre Feet per Year (AFY), operations = 0.22 AFY; total 0.36 AFY. According to the County Thresholds and Guidelines Manual, the Lompoc Groundwater Basin threshold is 6.[illegible] AFY; therefore, project-related water demand would not impact the Lompoc Groundwater Basin.*

SMPS and JHF: *No additional employees are proposed for either facility.*

j. The substantial degradation of groundwater quality including saltwater intrusion? ___ ___ ___ X

HSP, SMPS, and JHF: *See 2g and 2h above.*

k. Substantial reduction in the amount of water otherwise available for public water supplies? ___ ___ ___ X

HSP: *Project-related water demand would result in minor insignificant impacts.*

SMPS and JHF: *No additional demand on potable water supplies.*

MITIGATION MEASURES:

County-proposed:

1. *Construction and pipeline installation shall avoid the rainy season (November 1-April 1) unless erosion control devices approved by County Public Works Department are implemented.*

2. *The ground surface shall be restored to its pre-installation configuration prior to the rainy season.*

Known Sig	Unkn Pot Sig	Pot Sig and Mitig	Not Sig

Erosion control measures, including revegetation, landscaping and installation of sediment basins and desilting basins, shall be implemented to minimize surface drainage and erosion impacts.

4. *Reclaimed water, if available, shall be used for all dust suppression activities during grading and construction.*

3. TRANSPORTATION/CIRCULATION

Previous Review: Impacts on traffic were considered adverse but not significant (Class III) in 84-EIR-7.

a. Generation of substantial additional vehicular movement (daily, peak-hour, etc.) in relation to existing traffic load and capacity of the street system? ___ ___ X ___

HSP: According to the Public Works Department, Transportation Division, the portion of Harris Grade Road in the vicinity of the project is currently operating at better than acceptable levels of service (LOS A). The only long-term traffic generated by the project will be for occasional maintenance and by the addition of two permanent employee positions. This impact is considered to not be significant. Exportation of 370 of fill over an approximately 3-day period may impact intersections with poor LOS, depending upon haul route selected. Destination of fill has not been identified.

SMPS: Short-term construction impacts estimated at 24 peak hour trips (PHT) and 48 average daily trips (ADT) for 15 week period. Bradley/Betteravia intersection is two lane road intercepting four lane road at stop sign with acceptable LOS (Court Eilertson, Public Works Department 12/91). Impacts would be insignificant addition to LOS for short term. Long term impacts would be insignificant, as no new employees proposed.

JHF: Three man crew during 2 week construction period (3 PHT, 6 ADT).No significant impacts from short-term or long term operation. No new permanent employees.

b. A need for private or public road maintenance, or need for new road(s)? ___ ___ ___ X

HSP: Access to the project will be via Harris Grade Road and an existing 20' paved road which ties into Harris Grade Road. These roads are operating at better than acceptable levels of service. No new roads will be necessary. The proposed project will generate an additional two new permanent employees at the site and one truck trip per month to haul away the elemental sulfur which will be produced from the proposed project.

SMPS, JHF: No new permanent employees so no impacts anticipated.

		Sig	Pot Sig	Sig and Mitig	Sig
c.	Effects on existing parking facilities, or demand for new parking?	___	___	___	X

HSP: *The existing parking area and undeveloped space (over 15,000 square feet) at the HS&P facility is estimated to be large enough to serve as a parking lot for construction and maintenance crews for the project.*

SMPS, JHF: *Adequate parking area available for short term construction. No long term impacts with no increase in employees, deliveries.*

d.	Substantial impact upon existing transit systems (e.g. bus service) or alteration of present patterns of circulation or movement of people and/or goods?	___	___	___	X

HSP: *The crew for the six-month construction period of the project is estimated to peak at 91 PHT, 182 PHT during a 3-week period (week 7 to week 10). Given acceptable LOS on Harris Grade Road, impact is considered insignificant. Operational impacts of 2 PHT, 4 ADT are insignificant.*

SMPS, JHF: *Short term impacts of SMPS at Bradley and Betteravia, Bradley and Battles insignificant. US 101/ Santa Maria Way impacts of JHF also insignificant.*

e.	Alteration to waterborne, rail or air traffic?	___	___	___	X

HSP, SMPS, JHF: *Due to the nature of the project, there will be no affect or potential to generate additional water, rail or air traffic.*

f.	Increase in traffic hazards to motor vehicles, bicyclists or pedestrians (including short-term construction and long-term operational)?	___	___	___	X

HSP: *Construction vehicles and crews will use Harris Grade Road and the paved road off of Harris Grade Road. Access to the project will be through or around the HS&P facility on existing roads. Harris Grade Road not used significantly by non-vehicular traffic.*

SMPS, JHF: *Intersections at both sites have excellent site distance and very little non-vehicular traffic.*

g.	Inadequate sight distance?	___	___	X	___

HSP: *Sight distance on Harris Grade Road from the project site access road is approximately 500 feet to the north and 250 feet to the south, which is considered adequate (Barry Rolle, Public Works Department). Roadside vegetation to the south (coyote brush) obscures sight distance slightly in this direction.*

SMPS, JHF: *Both sites have excellent site distance at area intersections (more than 200 feet in each direction) and roads are level.*

h.	ingress/egress?	___	___	___	X

	Known Sig	Unkn Pot. Sig	Pot Sig and Mitig.	Not Sig

HSP: The ingress/egress is offset more that 100 feet from the nearest access road to the south.

SMPS, JHF: Intersections at both sites have established access without impediments.

i. general road capacity? ___ ___ ___ X

HSP: Road capacity is currently operating at better than normal levels of service (LOS A). A July 1990 traffic survey conducted on Harris Grade Road north of the Harris Grade Road/Burton Mesa Road intersection estimated the average daily trips (ADT) on this portion of Harris Grade Road to be 12,500. Traffic generated by the project's short-term construction period and the two new permanent employees at the site will not significantly change the road capacity ratings along Harris Grade Road.

SMPS, JHF: Short term impacts would be very limited; no long term impacts due to no new employees.

j. emergency access? ___ ___ ___ X

HSP: With the exception of a modification to the road on the east side of the facility, the emergency access will be similar to the existing emergency access route. The access road on the east site of the site will be modified as follows: currently, the road runs south for approximately 400' then turns and runs southwest for 700'. The proposed revision is to extend the existing southbound road an additional 300' before turning it southwest for another 200' where it will tie-into the existing roadway. The parking area is large enough to accommodate a fire truck and emergency vehicle in the event of an emergency. Emergency road capacity is sufficient for the existing and proposed project.

SMPS, JHF: Emergency access available from existing facilities' ingress/egress.

MITIGATION MEASURES:

Applicant-proposed:

1. *Parking shall be restricted to the existing HS&P facility site staging area.*

County-proposed:

2. *The applicant shall repair all damage to public roads caused by project-related construction activities, including damage caused by heavy loads.*

3. *The applicant shall reduce the height of existing vegetation 200 feet south of the entrance prior to construction to improve sight distance.*

4. *Truck trips associated with hauling excess site soils shall occur outside of peak traffic periods, and shall be limited to between 8:30 a.m. and 4:00 p.m.*

4. AIR QUALITY

Previous Review: Impacts on air quality were considered significant but subject to feasible mitigation (Class II) in 84-EIR-7.

a.	The violation of any ambient air quality standard, a substantial contribution to an existing or projected air quality violation including, CO hotspots, or exposure of sensitive receptors to substantial pollutant concentrations (emissions from direct, indirect, mobile and stationary sources)?	X	—	—	—

HSP: According to County APCD, HS&P modifications that are powered electrically could result in potentially significant fugitive hydrocarbon emissions in excess of 2.5 lbs./peak hour (D. Arons, APCD 12/11/91). Glycol considered toxic compound. Glycol reboiler emissions from boiler evaporation possible, which would potentially result in hot spots and odors (D. Arons, APCD).

SMPS: Replacement of two boilers at Battles with smaller, more efficient boilers at SMPS would result in reduction of emissions and would represent state of the art mitigation. If overlap of boiler use at both facilities prior to Battles decommissioning, possible emissions increase for this short term (D. Arons, APCD).

JHF: Transfer of dehydration activities from Battles to JHF would not likely result in increased emissio

HSP Total Quarterly Emissions
(Vehicle + Dust)

Tons/Quarter	NOx	ROC	PM_{10}
First Quarter	3.130	0.409	0.573
Second Quarter	1.480	0.140	0.128
Operational Emissions (lbs./hr.)	N/A	9.410	N/A

HSP: NOx construction impacts exceed RMD threshold of 1.5 tons/quarter, and ROC operational impacts exceed threshold of 2.5 lbs./peak hour. All data have been provided by the applicant and will require verification by APCD (D. Arons).

SMPS, JHF: Emissions not calculated. Would require evaluation in environmental document (D. Arons, APCD).

	Known Sig	Unkn Pot Sig	Pot Sig and Mitig	Not Sig
b. The creation of objectionable smoke, ash or odors?	___	X	___	___

HSP: *Sulfur removal system may generate potentially significant odor (D. Arons, APCD.*

SMPS: *Odor could result from glycol boiler and hydrocarbon evaporation (D. Arons, APCD).*

JHF: *No smoke, ash, or odors anticipated.*

c.	Extensive dust generation?	___	___	X	___

HSP: *Total PM10 emissions, including vehicle emissions, would exceed County threshold in first quarter (2 acres graded X 1.5 tons/acre/mo X .75 mo = 2.25 tons + .573 tons = 2.823 tons. Dust abatement measures, would reduce emission by 50% required by APCD.*

SMPS, JHF: *Due to small amounts of grading necessary on levels slopes at both facilities, no significant dust generation anticipated.*

MITIGATION MEASURES:

County-proposed

1. *APCD Standard Dust Control requirements shall be implemented.*

2. *Operational emission mitigation measures shall include proper design and maintenance of the seals and packing on the valves and pumps.*

3. *Prior to initiation of construction, including grading, of any facilities the applicant shall obtain an Authority to Construct and a Permit to Operate from the APCD.*

4. *Monitoring for operational air emissions will be conducted by using hand held monitoring devices.*

5. *If the project has the potential for long-term air quality impacts, the applicant shall implement an air quality monitoring system to be approved by the APCD.*

5. BIOLOGICAL RESOURCES:

Previous Review: Impacts on biological resources were considered significant and unavoidable (Class I) in 84-EIR-7.

FLORA:

a.	A loss or disturbance to a unique, rare or threatened plant community?	___	___	X	___

	Sig	Pot Sig	Sig and Mitig	Sig

HSP: The majority of the proposed project lies within the existing HS&P facility, and this area has already been disturbed: no sensitive vegetation or habitat is located within the facility. However, pipelines 2 and [redacted] would extend 200 feet and 100 feet outside of the facility boundaries respectively, and may impact sensitive habitat. Habitat surrounding the facility which may be affected by the proposed project includes Oak Woodland, and Burton Mesa Chaparral. The following sensitive species are found in these plant communities:

Shagbark Manzanita (Arctostaphylos rudis)	*State listed endangered species*
Manzanita (A. purissima)	*Local concern*
Coast Live Oak (Quercus agrifolia)	*Local concern*

The Shagbark Manzanita is a State-listed endangered species (State and Federal Status is C2; California Native Plant Society listing is 1B), and is located within the project vicinity.

SMPS, JHF: All proposed construction activities would occur within existing facility boundaries. Both sites are currently used for industrial purposes; no native or sensitive vegetation exists onsite.

b.	A reduction in the numbers or restriction in the range of any unique, rare or threatened species of plants?	___	___	X	___

HSP: The project may have an adverse impact on the sensitive species listed in 5a above.

SMPS, JHF: No unique, rare or threatened species exist onsite.

c.	A reduction in the extent, diversity, or quality of native vegetation (including brush removal for fire prevention and flood control improvements)?	___	___	X	___

HSP, SMPS and JHF: See 5a and b above.

d.	An impact on non-native vegetation whether naturalized or horticultural?	___	___	X	___

HSP, SMPS and JHF: No exotic vegetation is located within the vicinity of the proposed project.

e.	The loss of healthy specimen trees?	___	___	X	___

HSP: Several Coast Live Oaks are located along the western perimeter of the facility, as well as the southwest southeast, and the northeast portions of the facility. These trees may be impacted during construction.

	Known Sig	Unkn Pot. Sig.	Pot Sig and Mitig.	Not Sig

SMPS, JHF: No specimen trees would be impacted by the proposed project.

f. Introduction of herbicides, pesticides, animal life, human habitation, non-native plants, or other factors that would change or hamper the existing habitat? ___ ___ ___ X

HSP, SMPS and JHF: The project would not introduce any animal life, human habitation or any other factors which would change or hamper the existing habitat on a long-term basis.

FAUNA:

g. A reduction in the numbers, a restriction in the range, or an impact to the critical habitat of any unique, rare, threatened, or endangered species of animals? ___ X ___ ___

HSP: Pacific Kangaroo Rat habitat is located within the project vicinity. A small portion of this habitat may be impacted due to pipeline installation.

SMPS, JHF: Both sites have been used for industrial purposes for several years; neither site provides any valuable habitat.

h. A reduction in the diversity or numbers of animals onsite (including mammals, birds, reptiles, amphibians, fish or invertebrates)? ___ X ___ ___

HSP: The existing facility does not provide any habitat. However, the surrounding area is a chaparral plant and wildlife habitat which supports several diverse bird, amphibian and mammal communities. A small portion of these communities may be disturbed due to construction.

SMPS, JHF: Neither site supports any significant biological habitat.

i. A deterioration of existing fish or wildlife habitat (for foraging, breeding, roosting, nesting, etc.)? ___ X ___ ___

HSP, SMPS and JHF: See 5g and 5h above.

j. Introduction of barriers to movement of any resident or migratory fish or wildlife species? ___ ___ ___ X

HSP, SMPS and JHF: Neither construction or operation of the proposed project would create a barrier to wildlife movement.

		Sig	Pot Sig	Sig and Mitig	Sig
k.	Introduction of any factors (light, fencing, noise, human presence and/or domestic animals) which could hinder the normal activities of wildlife?	___	___	___	X

HSP, SMPS: *Additional lighting is proposed. The impact of additional lighting would likely be negligible as the facility is currently lit on a 24-hour basis.*

JHF: *No additional lighting is proposed.*

MITIGATION MEASURES:

County-proposed:

1. *All biologically sensitive vegetation onsite and all vegetation on less than 20% slopes shall be evaluated through a biological survey of the project site. This survey shall be conducted by an RMD approved biologist.*

2. *All oak trees shall be avoided. A tree protection and replacement plan shall be prepared and shall include the following:*

   a) *All trees shall be mapped at their driplines. Pipeline construction shall be designated on parcels located outside the driplines of all oak trees. All ground disturbances including gra[illegible] shall be prohibited outside of final plans.*

   b) *All oak trees within 25 feet of proposed ground disturbances shall be temporarily fenced with chain-link or other material satisfactory to DERC located 6 feet outside their driplines prior to and throughout all grading and construction activities. The fencing shall be staked every 8 feet. Trees and fencing shall be designated on all grading and building plans.*

   c) *All construction equipment shall not operate in the area within a 6 foot radius of all oak tree driplines. This includes parking as well as driving. Equipment storage and staging areas shall be designated on the tree protection plan and shown on all grading and building plans.*

   d) *No equipment or construction materials shall be stored within a 6 foot radius of the dripline of any oak tree.*

   e) *The plan shall provide for revegetation of graded areas.*

   f) *Any roots encountered shall be cleanly cut and sealed with a tree-seal compound. This shall be done under the direction of a DERC approved arborist/biologist.*

   g) *Drainage plans shall be designed so that oak tree trunk areas are properly drained to avoid[illegible]*

Known Sig	Unkn. Pot. Sig	Pot Sig and Mitig	Not Sig.

ponding. These plans shall be subject to review and approval by DERC or a DERC qualified biologist/arborist.

h) Any unanticipated damage that occurs to trees or sensitive habitats during construction activities shall be mitigated in a manner approved by DERC. This mitigation can include but is not limited to tree replacement on a 10:1 ratio and hiring of an outside consultant biologist to assess the damage and recommend mitigation. The required mitigation shall be done immediately under the direction of DERC prior to any further work occurring on site.

4. *Sedimentation, silt, and grease traps shall be installed in paved areas to act as filters to minimize pollution reaching downstream habitats. These filters will address short-term construction and long-term operational impacts. The filters shall be maintained in working order.*

5. *Washing of concrete, paint, or other equipment shall be allowed only in areas where polluted water and materials can be contained for subsequent removal from the site. Washing shall not be allowed near sensitive biological resources.*

6. *Prior to start up, the applicant shall post a bond or other security agreement approved by the County to ensure that all landscaping and revegetation programs are completed to the County's specifications.*

7. *A biological survey shall include trapping for Kangaroo rats to evaluate potential impacts from HSP pipeline development prior to construction.*

6. ARCHAEOLOGICAL RESOURCES:

Previous Review: Impacts on archaeological resources were considered significant but feasibly mitigated (Class II) in 84-EIR-7.

a.	Disruption, alteration, destruction, or adverse effect on a recorded prehistoric or historic archaeological site (note site number below)?	___	___	___	X

HSP: No known archaeological or historic sites were identified within the project area during the Union Oil Project/Exxon Project and Central Santa Maria Basin Area Study EIS/EIR. The two pipelines extending outside this area were surveyed by the County archaeologist (D. Stone) and no remains were identified. Chumash representatives have indicated that a mature stand of oak trees located south of the project site is culturally significant.

SMPS, JHF: Existing facilities developed. Likelihood low of any remains in areas.

b.	Disruption or removal of human remains?	___	___	___	X

HSP, SMPS, JHF: No known human remains exist in the project vicinity.

	Known Sig	Unkn. Pot Sig	Sig and Mitig	Sig

c. Increased potential for trespassing, vandalizing, or sabotaging archaeological resources? ___ ___ ___ X

HSP, SMPS, JHF: The project will not increase the risk of potential damage to archaeological resources.

d. Ground disturbances in an area with potential cultural resource sensitivity based on the location of known historic or prehistoric sites? ___ ___ ___ X

HSP, SMPS, JHF: There are no known archaeological sites located in the project area.

MITIGATION MEASURES:

County-proposed:

1. Contractors and construction personnel shall be alerted to the possibility of encountering subsurface cultural resources. If any resources are encountered, work will cease immediately and a professional archaeologist consulted.

7. ETHNIC RESOURCES:

Previous Review: Impacts on ethnic resources were considered significant but feasibly mitigated (Class II) in 84-EIR-7.

a. Disruption of or adverse effects upon a prehistoric or historic archaeological site or property of historic or cultural significance to a community or ethnic group? ___ ___ ___ X

HSP, SMPS, JHF: There are no known cultural resources on the project site.

b. Increased potential for trespassing, vandalizing, or sabotaging ethnic, sacred, or ceremonial places? ___ ___ ___ X

HSP, SMPS, JHF: The project will not increase potential for damage to cultural or ethnic resources.

c. The potential to conflict with or restrict existing religious, sacred, or educational uses of the area? ___ ___ ___ X

HSP, SMPS, JHF: The project will not conflict with any cultural or ethnic resource.

MITIGATION MEASURES:
County-proposed:

1. Contractors and construction personnel shall be alerted to the possibility of encountering subsurface

Known Sig	Unkn Pot Sig	Pot Sig and Mitig.	Not Sig

ethnic resources. If any resources are encountered, work will cease immediately and a professional archaeologist consulted.

8. HISTORIC RESOURCES

Previous Review: Impacts on historical resources were considered significant but feasibly mitigated (Class II) in 84-EIR-7.

a.	Adverse physical or aesthetic impacts on a structure or property at least 50 years old and/or of historic or cultural significance to the community, state or nation?	___	___	___	X

HSP, SMPS, JHF: There are no known historical sites in the project area.

b.	Beneficial impacts to a historic resource by providing rehabilitation, protection in a conservation/open easement, etc.?	___	___	___	X

HSP, SMPS, JHF: The project would not affect historical resources.

MITIGATION MEASURES:

No potential impacts have been identified; therefore, no mitigation measures are proposed.

9. NOISE

Previous Review: Impacts on noise were considered significant and unavoidable (Class I) in 84-EIR-7.

a.	Long-term exposure of people to noise levels exceeding County thresholds (e.g. locating noise sensitive uses next to an airport, etc.)	___	___	___	X

HSP: The existing noise sources in the area consist of traffic noise from operations of the existing HS&P facility and Harris Grade Road. Noise will be generated by construction equipment and operation of compressors, pumps, and fans. Short-term noise generated by construction activities will increase the ambient sound level in the immediate vicinity of the project. Long-term noise generated by operation of the compressors, will be dominated by noise generated by existing noise sources. Section 35-295.5 1(a) of the Article III Zoning Ordinance sets the County Threshold of Significance for noise generated at onshore processing facilities at 70 dB at the property boundary. The closest sensitive receptors are located in Vandenberg Village and Mission Hills, approximately 1 mile and 1-1/4 miles respectively from the site. Due to the distance from the noise source to the receptor there will be no significant noise impacts from the proposed project.

Known Sig	Could Pot Sig	Pot Sig and Mitig.	Not Sig

SMPS: The existing noise sources in the area are from the operations of Battles Gas Plant located adjacen to the Pump Station. Similar to the modifications at the HS&P, short-term noise generated by constru activities will increase the ambient sound level in the immediate vicinity of the project. Due to the distance from the noise source to any sensitive receptor, there will be no significant long-term noise impact from the proposed project.

JHF: Due to the projects remote location, impacts on noise are expected to be insignificant.

b. Short-term exposure of people to noise levels exceeding County thresholds? ___ ___ ___ X

HSP; SMPS; JHF: Short-term noise generated by construction activities will increase the ambient sound level in the immediate vicinity of the project. Standard safety measures should be adequate for construction workers. There are no residential projects and no noise sensitive land uses in proximity to the project's vicinity. Therefore, construction noise is not expected to result in a significant impact.

c. Project generated substantial increase in the ambient noise levels for adjoining areas (either day or night)? ___ ___ ___ X

HSP; SMPS; JHF: The surrounding land uses are industrial and noise generating in nature. There will be no substantial increase in ambient noise levels.

MITIGATION MEASURES:

Applicant-proposed:

1. Construction shall be limited to the hours from 7:00 am to 7:00 pm.

10. LAND USE

Previous review: Impacts on land use were considered significant and unavoidable (Class I) in 84-EIR-7.

a. Structures and/or land-use incompatible with existing land-use? ___ ___ ___ X

HSP; SMPS: The project area has a land use/zone designation of General Industry, M-2 which allows for permitting of energy and industrial uses such as gas processing facilities. Thus, the proposed project is compatible with existing land uses.

JHF: The project area consist of three parcels which have a land use/zone designation of Agricultural/AG-10 under Santa Barbara County Zoning Ordinance No. 661. The three parcels also have a Mineral Resource overlay which allows for the permitting of accessory equipment (such as water separation equipment) for onshore oil and gas production.

	Known Sig	Unkn Pot Sig	Pot Sig and Mitig.	Not Sig
The induction of substantial growth or concentration of population?	___	___	___	X

HSP: During the six-month construction period, staff requirements are estimated to peak at 91 people (during week 7 through week 10). The applicant estimates that most, if not all of the crew would be from the local labor pool. Once completed, the project will require an additional two permanent employees to be stationed at the site. The project will not generate substantial growth or concentration of population in the area.

SMPS: Midway through the 15 week construction period staffing requirements are estimated to peak at 20 people. The applicant estimates that most, if not all the crew would be from the local labor pool. Once construction is completed, the project is not expected to require any additional permanent employees at the site or any substantial growth or concentration of population in the area.

JHF: The applicant esitmates that the construction period will be two weeks and will involve one 3-man crew. The applicant estimates all crew members would be from the local labor pool. Once construction is completed, the project will not require any additional permanent employees at the site or any substantial growth or concentration of population in the area.

c.	The extension of sewer trunk lines or access roads with capacity to serve new development beyond this proposed project?	___	___	___	X

HSP; SMPS; JHF: The project will not lead to the generation of any new development which would require sewer trunk lines or access roads.

d.	The conversion of prime agricultural land to non-agricultural use, impairment of agricultural land productivity (whether prime or non-prime), or conflict with agricultural preserve programs?	___	___	___	X

HSP; SMPS: The proposed project is located on a portion of a parcel which has a General Industry, M-2 land use/zone designation and does not currently support agricultural uses. Therefore, there would be no loss of agricultural land from the development of this project.

JHF: The project area is located on three parcels which have a Agricultural (10-AG) land use/zone designation, thus, there would be no loss of agriculture from the development of this project.

e.	An effect upon any unique or other farmland of State or Local Importance?	___	___	___	X

HSP: The project is located adjacent to an oil processing facility. There is no unique or significantly important farmland identified in the historical land use evaluation.

SMPS: The project is located adjacent to a gas processing facility. There is no unique or significantly important farmland identified in the historical land use evaluation.

	Sig	Pot. Sig	Sig. and Mitig.	Sig

JHF: The project is located adjacent to other onshore oil and gas production equipment. There is no unique or significantly important farmland identified in the historical land use evaluation.

f. The loss of a substantial amount of open space? ___ ___ ___ X

HSP; SMPS; JHF: The project will not result in a loss of substantial open space.

g. Conflicts with adopted airport safety zones? ___ ___ ___ X

HSP: The closest airport is the Lompoc Airport located approximately 4 miles southwest of the project site. The proposed project is not within any adopted airport safety zone and thus, poses no additional risks to airport safety zones.

SMPS; JHF: The project is not located within any adopted airport safety zones. The closest airport is the Santa Maria Airport located over three miles away.

MITIGATION MEASURES:

County Recommended

1. Project development will be consistent with all applicable comprehensive plan policies.

11. PUBLIC FACILITIES

Previous Review: Impacts on Public Facilities (Socioeconomics) were considered significant but feasibly mitigated (Class II) in 84-EIR-7.

GENERAL SERVICES:

a. A need for new or altered police protection and/or health care services? ___ ___ ___ X

HSP: The project is not expected to increase the demand for police protection or public health care. There will be two new permanent employees at the site as a result of the project. The proposed project, as well as the existing facility will be fenced and manned 24 hours per day, 365 days per year. Access to the site is via a gate which is controlled by plant personnel.

SMPS; JHF: The project is not expected to increase the demand for police protection or public health care. Additionally, the project is not expected to require additional permanent employees at the site.

b. Would the project result in student generation exceeding school capacity? ___ ___ ___ X

HSP: The addition of two new permanent employees at the site is not expected to impact local schools in short or long-term.

	Known Sig	Unkn Pot Sig	Pot Sig and Mitig	Not Sig

MPS; JHF: Since no new employees are expected from the proposed project impacts to local schools for the short and long-term are insignificant.

c. Will the proposal generate significant amounts of solid waste or breach any national, state, or local standards or thresholds relating to solid waste disposal and generation (including recycling facilities and existing landfill capacity)? ___ ___ ___ X

HSP: The proposed project will generate 1/2 ton of produced sulfur per day. This produced sulfur is not considered to be a hazardous material and will be stored onsite in reinforced plastic storage bags until a truckload is accumulated. (The applicant estimates that approximately 12 truck trips per year will be required to remove the produced sulfur from the site.) The produced sulfur will be sold to agricultural businesses in the Kern and Tri-Counties area.

SMPS; JHF: The project is not expected to generate solid waste.

d. A need for new or altered sewer system facilities (sewer lines, lift-stations, etc.)? ___ ___ ___ X

HSP: The proposed project will use the existing HS&P facility's private septic system. Therefore, no new septic system will be required.

SMPS: The proposed project will use the existing SMPS private septic system. Therefore, no new septic system will be required.

JHF: No new septic system will be required.

MITIGATION MEASURES:

As no impacts are considered potentially significant, no mitigation measures are required.

12. ENERGY

Previous Review: Impacts on energy consumption were not identified in 84-EIR-7.

a. Substantial increase in demand, especially during peak periods, upon existing sources of energy? ___ ___ ___ X

HSP: The new processing equipment at the HS&P facility will require one 12.47 kv to 480 volt transformer to handle approximately 1500 kva of small and medium size electric motor loads, and one 12.47 kv to 4.16 kv transformer to handle approximately 1200 kva of large electric motor loads.

SMPS: Electrical power will be supplied by existing power generating facilities. The project will not require a substantial increase in demand on existing sources of energy.

	Sig	Pot Sig	Sig and Mitig	Sig

JHF: Electrical power will be supplied by three existing 75 kva transformers. The project will not require a substantial increase in demand on existing sources of energy.

b. Requirement for the development or extension of new sources of energy? ___ ___ ___ X

HSP; SMPS: Electrical service will be provided by Pacific Gas and Electric Company (PG&E). A representative from PG&E confirmed (John Sumner 12/4/91) that the demand level and operating load is acceptable and can be met with existing energy sources. The project will not require the development or extension of new energy sources.

JHF: The project will not require the development or extension of new energy sources.

MITIGATION MEASURES:

Applicant-proposed:

1. The project will be installed with emergency shut-off valves in case of a power related emergency.

County-recommended:

2. *Cost effective energy conservation techniques shall be incorporated into the project design.*

13. FIRE PROTECTION

Previous Review: Impacts on fire protection were considered significant but feasibly mitigated (Class II) in 84-EIR-7.

a. Introduction of development into an existing high fire hazard area? X ___ ___ ___

HSP: The area is designated a high fire risk zone due to the seasonally dry foothills behind the project. The fire risk is also heightened by the adjacent oil processing facility.

SMPS, JHF: Due to the lack of surrounding vegetation and relatively flat topography, the area is not considered to be a high fire risk zone.

b. Project-caused high fire hazard? X ___ ___ ___

HSP: There is a risk of project-caused fire due to gas compressors, vapor recovery, etc. (Glenn Odell SBCFD).

SMPS: Fire protection system would be upgraded to address deficiencies identified in Battles Gas Plant

	Known Sig.	Unkn Pot. Sig	Pot Sig and Mitig.	Not Sig

fire protection plan would have to be approved by SB County Fire Department.

JHF: No increase in use or storage of flammable materials proposed. No impacts.

c. Introduction of development into an area without adequate water pressure, fire hydrants or adequate access for fire fighting? X ___ ___ ___

HSP: Fire protection water for the proposed project will be provided by the existing fire protection system at the HS&P facility. The existing firewater system consists of two 3,000 gallon per minute (gpm) diesel powered pumps (one of which is maintained as backup) taking suction from two firewater storage tanks of 5,000 and 10,000 barrel capacity. Water for these two storage tanks is provided by a 5,000 barrel storage water tank which is located on a hilltop approximately 2,000 feet north of the proposed project.

The site will be accessible to fire department and other emergency vehicles from Harris Grade Road via an existing 20' paved road around the perimeter of the project site. The maximum slope of the 20' paved road is 3%. The existing Fire and Gas Protection Plan was not designed to accommodate proposed improvements. A risk assessment would be required to evaluate the need for additional protection facilities (G. Odell 12/11/91)

SMPS: The project would locate a new 10,000 barrel (420,000 gallons) storage water tank near the northeast corner of the pump station. The lower 410,000 gallons will be reserved for fire protection, while the upper 10,000 gallons can be used for both the boilers and fire protection. The new tank will feed one 1,500 gpm diesel powered pump for fire protection.

JHF: Details are unavailable at this time. Proposed facilities would require approval by SB County Fire Department.

d. Introduction of development that will hamper fire prevention techniques such as controlled burns or backfiring in high fire hazard areas? ___ ___ X ___

HSP: The proposed project is not expected to hamper fire prevention techniques since the project site will be located within the existing HSP facility boundary.

SMPS: The proposed project is not expected to hamper fire prevention techniques since the project site will be located within the existing SMPS facility boundary.

JHF: The proposed project is not expected to hamper fire prevention techniques since the project site will be located within the existing oil and gas production area.

e. Development of structures beyond safe Fire Dept. response time? ___ ___ ___ X

HSP: Fire station No. 51, at 749 Burton Mesa Road, is the closest station to respond to an emergency at the proposed site. Response time from Station 51 to the project site is approximately four minutes. Due to the hazards of operating a gas processing facility an emergency response personnel manpower assessment should

be conducted to assess the current capability of Station 51.

SMPS: Fire station 21, at 3339 Skyway Drive, Santa Maria, is the closest station to respond to an emerg at the proposed site . Response time from station 21 is approximately 7-10 minutes.

JHF: Fire station 21 is the closest station to respond to an emergency at the proposed site . Response time from station 21 is approximately five minutes..

MITIGATION MEASURES:

County-proposed:

1. *Fire protection and control monitoring for all components of the proposed project shall meet the requirements of the Santa Barbara County Fire Department.*

2. *The applicant shall modify their existing Safety, Inspection, Maintenance and Quality Assurance Program (SIMQAP) for their HS&P facility. The plan shall be approved by the County.*

3. *The applicant shall develop a Fire Protection Plan which shall be approved by the Resource Management Department and the Fire Department.*

4. *The applicant shall modify their existing draft Emergency Response Plan for the HS&P detailin procedure to be implemented for accidental events affecting public safety and the environment. Plan shall be approved by the County Office of Emergency Services, the Fire Department and the Resource Management Department.*

14. RECREATION

Previous Review: Impacts on recreation were considered adverse, but not significant (Class III).

a. Conflict with established recreation uses of the area? ___ ___ ___ X

HSP, SMPS and JHF: None of the sites have any established recreational uses.

b. Conflict with biking, equestrian, and hiking trails? ___ ___ ___ X

HSP, SMPS and JHF: There are no recreational trails within the vicinity of any of the project sites.

c. Substantial impact on the quality or quantity of existing recreational opportunities (e.g., over use of an area with constraints on numbers of people, vehicles, animals, etc. which might safely

	Known Sig	Unkn Pot Sig	Pot Sig and Mitig	Not Sig
use the area)?	___	___	___	X

HSP, SMPS: The area is zoned M-2, General Industry. There are no recreational areas on or near the immediate project site.

JHF: The area is zoned 10-AG. There are no recreational areas on or near the immediate project site.

MITIGATION MEASURES:

No potentially significant impacts have been identified; therefore, no mitigation measures are proposed.

15. AESTHETIC/VISUAL RESOURCES

Previous Review: Impacts on aesthetic resources were considered significant and unavoidable (Class I) in 84-EIR-7.

	Known Sig	Unkn Pot Sig	Pot Sig and Mitig	Not Sig
a. The obstruction of any scenic vista or view open to the public, or will the proposal result in the creation of an aesthetically offensive site open to public view?	___	___	___	X

HSP: 84-EIR-17 described potential impacts to visual resources at two main viewing locations due to construction of the existing HS&P facility. Short-term impacts to viewers in the northbound lane of Harris Grade Road were considered potentially significant, adverse, and unmitigable (Class 1). Once screening vegetation took effect, which was expected to be within two to five years after start-up. These impacts were considered to be mitigated to a less than significant level. Impacts to the viewers in the southbound lane of Harris Grade Road were considered to be negligible (Class III).

According to the County's Guidelines for Environmental Thresholds, aesthetic impacts are subjective to personal and cultural interpretation. To assess the visual impacts of a project three aspects must be investigated: the visual resources of the site, the potential impact of the project, and thirdly, compliance with local and state policies regarding visual resources. When evaluating the site, factors to be included in the evaluation are the physical attributes of the site, its relative visibility and relative uniqueness. In terms of visibility, four types of areas are especially important: coastal and mountainous areas, the urban fringe, and travel corridors.

The overall visual setting of the proposed project area is characterized by native vegetation (Coastal Sage Scrub and scattered oaks), and varied topographical relief. The Purisima Hills, characterized by vertical relief, abut the site to the north. To the west, south and east the terrain is gently sloping, and the vegetation consists mainly of low scrub. Harris Grade Road is the only travel corridor in the vicinity of the site, and it runs in a north-south direction just west of the sit. The site is visible for a very brief period (2 to 8 seconds) to north- and southbound motorists. The proposed project site itself is nearly level, and is highly developed with an industrial use. The proposed project represents an incremental increase in developed area, and would only be

Known Sig	Unk Pot Sig	Pot Sig and Mitig	Not Sig

slightly visible to passing motorists as it would be almost entirely obscured by the existing facility. Harris Grade Road is not a designated Scenic Highway. Visual impacts would be insignificant.

SMPS: *The site has been used for intensive industrial purposes for several decades, and no aesthetic resources are located onsite. The proposed project would likely result in a slight aesthetic improvement, as developed area would decrease with the decommissioning of Battles. No sensitive receptors would be impacted by the proposed project.*

JHF: *This site has also been used for industrial purposes for several years, and is surrounded by grazing land, and some crop cultivation. The site is bordered to the west by U.S. Highway 101; however, the developed portions of the site are not visible from Highway 101 due to topographical relief. Construction of the proposed project represents an incremental change in the appearance of the site. No sensitive receptors would be impacted by the project.*

b. Change to the visual character of an area? ___ ___ ___ X

HSP, SMPS and JHF: *The proposed project would not change the visual character of any of the project areas.*

c. Glare or nightlighting which may effect adjoining areas? ___ ___ ___ X

HSP; SMPS: *Additional lighting is proposed. The impact of additional lighting would likely be negligible, both facilities are currently lighted on a 24-hour basis.*

JHF: *No additional lighting is proposed.*

d. Visually incompatible structures? ___ ___ ___ X

HSP, SMPS and JHF: *The proposed project is compatible with the existing facilities at all three sites.*

e. Consistency with existing plans and policies:

HSP: *Harris Grade Road is not a designated scenic highway. The proposed project is not inconsistent with existing plans and policies related to aesthetic resources.*

SMPS, JHF: *There are no designated scenic highways within the vicinity of the project sites. The proposed project is not inconsistent with existing plans and policies related to aesthetic resources.*

MITIGATION MEASURES:

As impacts are considered adverse, but not significant, no mitigation measures are proposed.

16. HOUSING

	Known Sig	Unkn Pot Sig	Pot Sig and Mitig	Not Sig

Previous Review: Impacts on housing were considered significant but feasibly mitigated (Class II) in 84-EIR-7.

a.	Loss of existing affordable dwellings through demolition, conversion, or removal?	___	___	___	X

HSP, SMPS and JHF: *The project would not disrupt or destroy any existing dwellings.*

b.	Displacement of current residents?	___	___	___	X

HSP, SMPS and JHF: *The project would not result in the generation of new residents in the area and would not displace current residents. The project would not have an effect on local housing.*

MITIGATION MEASURES:

No potentially significant impacts have been identified; therefore, no mitigation measures are proposed.

17. ECONOMICS

Previous Review: Impacts on economics (socioeconomics) were considered beneficial (Class IV) in 84-EIR-7.

a.	Need for new employment? (Include rough calculations if available)	___	___	___	X

HSP: *The labor force for the project is estimated to be approximately 151 people, phased over a six-month construction period. During operations, the project will require two new permanent employees.*

SMPS: *The labor force is estimated to peak during the 15-week construction period to 20 people. Once constructed, the project will not require any new permanent employees.*

JHF: *No additional permanent employees are expected as a result of this project.*

b.	Project costs to local government exceeding project revenues (including increased demand on social services)?	___	___	___	X

HSP, SMPS, JHF: *The project will not significantly increase demand for social services.*

Sig	Pot Sig	Sig and Mitig.	Sig

GATION MEASURES:

· are no proposed mitigation measures as the project is not expected to create adverse economic impacts.

18. RISK OF UPSET/HAZARDOUS MATERIALS

ious Review: Impacts on risk of upset were considered significant but not subject to feasible mitigation -EIR-7 (Class I).

In the known history of this property, have there been any past uses, storage, or discharge of hazardous materials? Examples of hazardous materials include, but are not limited to, fuel or oil stored in underground tanks, pesticides, solvents, or other chemicals.	___	___	___	X

: According to the applicant, there has been one spill of hazardous material since the facility started ations in 1987. Approximately 50 barrels of oil overflowed the HS&P's reject tank. The spilled oil, ever, was contained within the concrete containment walls surrounding the reject tank and was cleaned ith vacuum trucks.

S, JHF: Both facilities involve storage of gas and/or oil.

Will the proposed project involve the use, storage, or distribution of hazardous or toxic materials?	___	___	X	___

: The proposed project will process all gas production from the offshore Point Pedernales field, and a ted amount of onshore gas. Both offshore and onshore gas production contain significant quantities of rogen Sulfide (H_2S). Hydrogen sulfide is a colorless, acidic gas that is lethal at relatively low centrations. The U.S. Environmental Protection Agency (EPA) includes hydrogen sulfide on its List of emely Hazardous Substances. Currently, Unocal's Platform Irene, located in the central Santa Maria in, produces sour gas that contains about 800 parts per million (ppm) of H_2S. The H_2S concentration for ocal's onshore gas production varies from 4,700 ppm (Lompoc field) to 400 ppm (Orcutt field).

PS: Ongoing activities would continue, with increased steam generation and chemical storage tanks for gen removal.

F: Onsite dehydration of gas from Santa Maria Valley Field wells.

A risk of an explosion or the release of hazardous substances (including, but not limited to oil, gas, biocides, bacteria, pesticides, chemicals or radiation) in the event of an accident or upset conditions?	___	X	___	

	Known Sig	Unkn Pot. Sig	Pot Sig and Mitig	Not Sig

HSP: The risks associated with the project that could result in the release of release of hazardous substances include:

1. *Seal or gasket failure at pipe flanges.*
2. *Overheating of mechanical devices such as pump bearings and seals.*
3. *Overheated motor failure or fire.*
4. *Wiring or electrical equipment fire.*
5. *Lightning strike (particularly floating roof rim seal fires).*
6. *Earthquake.*
7. *Wildland fire.*
8. *Welding and smoking.*
9. *Physical impact and potential ignition source by vehicle driving on site.*
10. *Sabotage or malicious mischief.*
11. *Pipe seam or welding failure.*
12. *Corrosion.*
13. *Flow control error.*
14. *Spontaneous rupture.*

The Unocal Point Pedernales Final EIR/S (1985), Technical Appendix M on System Safety and Reliability analyzed the risk of an accident at a consolidated gas processing facility located at the same site as the proposed project. The analysis identified gas pipeline releases, storage tank and major processing equipment failures as potentially significant accidents which could occur at a gas processing facility. The analysis concluded that the overall likelihood of public injuries or fatalities associated with the processing activities would fall between unlikely and rare. (p.10-4).

SMPS: Placement of new boilers adjacent to existing facilities could result in increased risk of upset from equipment malfunction.

JHF: No additional importation of gas or oil onsite. Onsite gas dehydration is not expected to increase significantly risk of upset.

d.	Possible interference with an emergency response plan or an emergency evacuation plan?	___	___	X	___

HSP, SMPS: The current draft emergency response plan (ERP) for the existing HS&P facility will be modified to incorporate the addition of a new gas processing facility at the site and will be reviewed by the County for consistency with the County model ERP.

JHF: No ERP exists for this facility.

e.	The creation of a potential public health hazard?	___	___	X	___

HSP, SMPS: The project could result in the creation of a public health hazard in the event of a gas leak or explosion. The potential for a risk of upset to occur has been reduced through appropriate design standards, including automatic shut-off valves at HSP. A County-approved ERP and Risk Management Plan for the site

	Sig	Pot Sig	Sig and Mitig.	Sig

will further ensure the avoidance of public risk impacts. The potential hazard to public health is limited somewhat by the relatively low population levels in the area surrounding the proposed project.

JHF: Due to remote locate from population centers, no significant impact anticipated.

f. Public Safety hazards (e.g., due to development near existing chemical or industrial activity, producing oil wells, toxic disposal sites, etc.)? ___ X ___

HSP, SMPS: The project poses a risk to people in the general vicinity of the project if an accidental sour gas release or failure of major processing equipment were to occur. Accidents such as these could result in fires, explosions, and/or toxic cloud formations with effective footprints of serious impact extending, in some cases, as far as a mile or more (HSP). Vehicles traveling on Harris Grade Road (HSP) and Battles, Betteravia, and U.S. 101 (SMPS) would be the closest public use to the project.

JHF: Due to remote locate from population centers, no significant impact anticipated.

g. Exposure to hazards from oil or gas pipelines or oil well facilities? ___ X ___

HSP: HSP is adjacent to Unocal's existing, operating oil processing facility. The HS&P facility poses a significant risk to the proposed project. Although the project is located in a heavily industrialized, oil and gas facilities area, there are few people residing in this area. Due to the rural character of the area, and confinement of the project area, the proposed project will not expose large numbers of people to oil and gas related hazards.

SMPS: Project located adjacent to Battles Gas Plant and Santa Maria Tank Farm and existing SMPS tanks. No increase to hazards over existing setting. Although the project is located in a heavily industrialized, oil and gas facilities area, there are few people residing in this area. Due to the rural character of the area, and confinement of the project area, the proposed project will not expose large numbers of people to oil and gas related hazards.

JHF: Project located within existing oil and gas production site. Although the project is located in a heavily industrialized, oil and gas facilities area, there are few people residing in this area. Due to the rural character of the area, and confinement of the project area, the proposed project will not expose large numbers of people to oil and gas related hazards.

h. The contamination of a public water supply? ___ ___ ___ X

HSP: The project site is located within the northern portion of the Lompoc Uplands groundwater basin. Potential injection of excess gas and hydrocarbon fluids into Purisima wells 33 and 73 is not expected to impact the groundwater basin due to the depth of the wells (3000 feet) (Baca, 1991).

SMPS, JHF: The projects would not affect public water supply as no injection is proposed.

Known Sig	Unkn. Pot. Sig	Pot Sig and Mitig.	Not Sig

MITIGATION MEASURES:

1. *The project will be designed with safety features for all project components, including shut off valves, fire monitoring devices, etc.*

2. *The applicant shall prepare a Risk Assessment and Mitigation Plan to be approved by the SSRRC. The applicant shall submit construction and process diagrams and operating manuals to a third-party technical review to help identify and correct possible design hazards and ensure mitigation of public risk prior to construction and modification. The third party review shall be coordinated by the Santa Barbara County System Safety and Reliability Review Committee (SSRRC). All costs associated with the third party review shall be borne by Unocal.*

3. *Applicant shall prepare a Site Security Plan to be approved by the County.*

4. *The applicant shall prepare a Hazardous Material and Waste Management Plan to be approved by the County.*

INFORMATION SOURCES

A. County Departments Consulted (underline):

Police, Fire, Public Works, Flood Control, Parks, Environmental Health, Air Pollution Control District, Building and Development, Special Districts, Regional Programs.

B. Other Sources (check those sources used):

___ Field work
_X_ calculations
_X_ project plans
_X_ Ag preserve maps
_X_ flood control maps
_X_ other technical references (reports, survey, etc.)

COMPREHENSIVE PLAN:*

_X_ Seismic Safety/ Safety Element*
___ Conservation Element*
_X_ Noise Element*
_X_ Open Space Element*
___ Coastal Plan and Maps*
_X_ Circulation Element*
___ ERME*
_X_ plants maps
_X_ archaeological maps and reports
_X_ topographical maps
traffic studies/ ___ records
___ planning files
_X_ grading plans
___ elevation/ architectural renderings
___ published geological maps, reports
_X_ zoning maps
_X_ soils maps/reports
___ (other) _____
_____

PROJECT SPECIFIC AND CUMULATIVE IMPACT SUMMARY

KNOWN SIGNIFICANT:

Fire Protection: HSP; SMPS: Because of the projects close proximity to existing oil and gas facilities, known significant impacts on fire protection are expected. JHF: Impacts on fire protection are not expected to be significant.

Air Quality: HSP: Long-term impacts exceed RMD threshold for NO_x. Glycol reboiler odor potentially significant. SMPS;JHF: Impacts not yet assessed completely. Could be significant.

UNKNOWN POTENTIALLY SIGNIFICANT:

Risk of Upset: HSP; SMPS: Introduction of gas processing at HSP and boilers at SMPS could increase risk of upset adjacent to urban centers. JHF: No increased impact anticipated.

POTENTIALLY SIGNIFICANT AND MITIGABLE:

Transportation/Circulation: HSP: Short-term impacts at HSP could be affected by vegetation obscuring

distance. No long-term significant impacts. SMPS; JHF: No short-term or long term significant impacts.

Geologic Processes: HSP; SMPS; JHF: All three sites are developed and would require relatively minor grading to accommodate new facilities. No significant geological impacts are expected.

Biological Resources: HSP: The project may result in impacts to Burton Mesa Chaparral and Oak Woodland. SMPS; JHF: No sensitive biological resources are located within the vicinity of either site; no significant impacts are expected.

NOT SIGNIFICANT:

Water Resources/Flooding: HSP; SMPS; JHF: No watercourses or floodplains are located within the vicinity of any of the project sites. No significant increase in water demand would result at any of the project sites; no significant impacts are expected.

Noise: HSP; SMPS; JHF: The surrounding land uses are industrial and noise generating in nature; no substantial increase in ambient noise levels.

Land Use: HSP; SMPS; JHF: The project is compatible with existing surrounding land uses; will not result in loss of open space, agricultural land or substantial increase in growth.

Public Facilities: HSP; SMPS; JHF: The project is not expected to require additional police protection, student generation, solid waste, and new sewer system facilities.

Energy: HSP; SMPS; JHF: The energy demand level and operating load for the project can be met with existing energy sources.

Recreation: HSP; SMPS; JHF: No established recreational uses are located within the vicinity of any of the project sites; no significant impacts are expected.

Aesthetics/Visual Resources: HSP; SMPS; JHF: No designated scenic highways are located within the vicinity of any of the project sites; no significant impacts are expected.

Housing: HSP; SMPS; JHF: The project would not affect housing.

Economics: HSP; SMPS; JHF: The project is not expected to create adverse economic impacts.

Archaeological Resources: HSP; SMPS; JHF: No resources identified onsite. Due to previous disturbance and low sensitivity of area, impacts considered insignificant.

MANDATORY FINDINGS OF SIGNIFICANCE (Section 15065)

1.	Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of Calif. history or prehistory?	___	X	___	___
2.	Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals?	___	X	___	___
3.	May any aspect of the project either individually or cumulatively cause a significant effect on the environment, regardless of whether the overall effect of the project is adverse or beneficial?	___	X	___	___
4.	Does the project have environmental effects which can cause substantial adverse effects on human beings, either directly or indirectly?	___	X	___	___
5.	Is there serious public controversy over the project's environmental effects or a disagreement between experts over the significance of an effect which would require investigation of potentially significant adverse impacts in an EIR (Section 15064(h))?	___	___	___	X
6.	Does the project have the potential to result in any of the significant effects outlined in Appendix G of the State CEQA Guidelines?	___	X	___	___

Recommendation by RMD Staff: On the basis of the Initial Study, the Staff of the Energy Division:

___ Finds that the proposed project WILL NOT have a significant effect on the environment and, therefore, recommends that a Negative Declaration (ND) be prepared.

___ Finds that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because the mitigation measures incorporated into the REVISED PROJECT DESCRIPTION would successfully mitigate the potentially significant impacts. Staff recommends the preparation of an ND.

___ Finds that the proposed project MAY have a significant effect on the environment, and recommends that an EIR be prepared.

X Finds that from existing documents (previous EIR's, etc.) that a subsequent document (containing updated and site-specific information, etc.) pursuant to CEQA Sections 15162/15163/15164 should be prepared.

Potentially significant adverse impact areas: Fire Protection, Risk. Impacts from an gas release or explosion

X With Public Hearing ___ Without Public Hearing

An additional deposit of money should be requested YES___ NO___

Previous document: Final EIR/S for the Union Point Pedernales Project (1985), SCH# 84062703, County EIR # 84-EIR-7

PROJECT EVALUATOR: _____ DATE:_____
David Stone/John Zorovich/Pat Maurice

SUPERVISOR: _____ DATE:_____
Nancy Minick

IX. Determination by Deputy Director, Division of Environmental Review, RMD Environmental Officer

___ I agree with staff conclusions. Preparation of the appropriate document may proceed.
___ I DO NOT agree with staff conclusions. The following actions will be taken:
___ I require consultation and further information prior to making my determination.

DATE: 1/6/92 SIGNATURE: _____
Jeffrey T. Harris

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Appendix B
Response to NOP

County of Santa Barbara

RESOURCE MANAGEMENT DEPARTMENT

John Patton, Director Phil Overeynder, Assistant Director

NOTICE OF PREPARATION

TO: INTERESTED PARTIES

FROM: John Zorovich, Planner
Energy Division
Resource Management Department
1226 Anacapa Street, 2nd Floor
Santa Barbara, CA 93101

SUBJECT: **Notice of Preparation of a Draft Supplemental Environmental Impact Report**

The Resource Management Department will be the Lead Agency and will prepare an environmental impact report for the project identified below. We need to know the views of your agency as to the scope and content of the environmental information which is germane to your agency's statutory responsibilities in connection with the proposed project. Your agency will need to use the EIR prepared by our agency when considering your permit or other approval for the project.

The project description, location and the probable environmental effects are contained in the attached materials. A copy of the Initial Study is attached.

Due to the time limits mandated by State law, your response must be sent at the earliest possible date but not later than 30 days after receipt of this notice.

Please send your response to John Zorovich at the address shown above. We will need the name for a contact person in your agency.

PROJECT TITLE: **Unocal's Modification to the HS&P, Santa Maria Pump Station, and Jim Hopkins Fee Sites, 91-FDP-017**

PROJECT APPLICANT: Union Oil Company of California (Unocal)
(see initial study)

DATE: February 14, 1992 Signature: John Zorovich

Title: Planner II

Telephone: (805) 568-2045

cc: Clerk of the Board (please post for 30 days)
unocal\4ghsp.nop

Energy Division
1226 Anacapa Street, 2nd Floor, Santa Barbara, CA 93101
PHONE (805) 568-2040 FAX (805) 568-2622

STATE OF CALIFORNIA—THE RESOURCES AGENCY PETE WILSON, Governor

DEPARTMENT OF FISH AND GAME
330 Golden Shore, Suite 50
[illegible]ng Beach, California 90802
[illegible]10) 590-5113

March 20, 1992

Mr. John Zorovich
County of Santa Barbara
Resource Management Department
1226 Anacapa Street
Santa Barbara, California 93001

Dear Mr. Zorovich:

Notice of Preparation for Unocal's Modification to the HS&P, Santa Maria Pump Station, Santa Barbara County - SCH 92021083

To enable our staff to adequately review and comment on subject project, we recommend the following information be included in the Draft Environmental Impact Report:

1. A complete assessment of flora and fauna within and adjacent to the project area, with particular emphasis upon identifying endangered, threatened and locally unique species and sensitive and critical habitats.

2. A discussion of direct, indirect, and cumulative impacts expected to adversely affect biological resources, with specific measures to offset such impacts.

3. A discussion of potential adverse impacts from any increased runoff, sedimentation, soil erosion, and/or urban pollutants on streams and watercourses on or near the project site, with mitigation measures proposed to alleviate such impacts. Stream buffer areas and maintenance in their natural condition through non-structural flood control methods should also be considered in order to continue their high value as wildlife corridors.

More generally, there should be discussion of alternatives to not only minimize adverse impacts to wildlife, but to include direct benefit to wildlife and wildlife habitat. Those discussions should consider the Department of Fish and Game's policy that there should be no net loss of wetland acreage or habitat values. We oppose projects which do not provide adequate mitigation for such losses.

County of Santa Barbara
AIR POLLUTION CONTROL DISTRICT

26 CASTILIAN DRIVE B-23, GOLETA, CALIFORNIA 93117
PHONE: (805) 961-8800 FAX (805) 961-8801

JAMES M. RYERSON
Air Pollution Control Officer

WILLIAM A. MASTER
Assistant Director

MEMORANDUM

TO: John Zorovich
Energy Division

FROM: Dolly I. Arons
Air Pollution Control District

DATE: February 19, 1992

SUBJECT: Request for Proposal: EIR for Modifications to the Lompoc HS&P 85-DP-71, Santa Maria Pump Station and Jim Hopkins Fee

The Air Pollution Control District recommends that the following discussion be included in the Request for Proposal for preparation of an EIR for Modifications to the Lompoc HS&P.

The air quality section of the EIR should contain the following information:

1. A comparison between operational emissions from the proposed modification with existing operational emissions;

2. Construction emissions associated with the modification;

3. A determination of significance, and;

4. A finding of consistency with the Air Quality Management Plan.

Each of the above items are discussed in detail below.

Operational Emissions From the Modification

Operational emissions consist primarily of fugitive emissions from valves and flanges at the HS&P facility and the Jim Hopkins Fee in the Santa Maria Field. Emissions should be evaluated assuming the continued operation of Battles (since all facilities are expected to operate simultaneously for a short period of time) and the closure of Battles. The fugitive hydrocarbon emissions reflected in Table 2.2 of the *Response to Comments for Application to Modify Final Development Plan 85-DP-71* have been reviewed and correspond very closely with numbers estimated by the Santa Barbara APCD. The District has recalculated the fugitive hydrocarbon emissions according to the District procedure and will provide them to UNOCAL

and the consultant responsible for preparing the EIR.

Other operational emissions include the use of a glycol reboiler. Glycol is considered to be a toxic contaminant and should be evaluated in the EIR. Potential odor concerns also should be addressed. Subsequent to preparation of the Final Development Plan, UNOCAL indicated that the existing glycol reboiler will not be moved or modified. If this is the case, it is not necessary to assess the emissions since it is considered part of the existing project.

An emissions estimate for all equipment (e.g; a surge tank) that is not powered by commercial electricity should be provided. The EIR should address the replacement of two older boilers at Battles with two new boilers at the Santa Maria Pump Station. Since the new boilers emit considerably less NOx emissions than the older ones, overall emissions should be reduced.

In addition, the Supplemental EIR should address any potential changes that may be necessary to Platform Irene to accommodate modifications to the HS&P and assess the onshore impacts.

Existing Emissions

In order to compare emissions from the proposed modification with existing emissions, it will be necessary to establish baseline operating emissions. Several operational changes have been made to the Lompoc HS&P since 1987 which have increased emissions beyond those reflected in the existing EIR, thereby changing the emissions baseline. For example, H_2S emissions from flaring have increased substantially. It will be necessary to determine all changes that have been made and discuss the emissions associated with those changes. Since the air quality impacts associated with these emission increases are not reflected in the existing EIR, they must be addressed in the Supplemental EIR. In addition, any operational changes to Platform Irene need to be analyzed and any onshore impacts need to be reflected in the Supplemental EIR.

Determination of Significance and Consistency

To comply with CEQA, a determination of significance needs to be made. A separate determination should be made for operational emissions and construction emissions. A consistency determination should be made by comparing operational emissions with emission forecasts in the 1991 Air Quality Attainment Plan.

Construction Emissions

Air Pollution Control District staff was unable to verify construction emissions presented in the *Response to Comments for Application to Modify Final Development Plan 85-DP-71*.

Construction emissions from the project should be estimated using

AP-42 emission factors or the *Environmental Thresholds and Guidelines Manual, County of Santa Barbara, 1990*. Emissions should be expressed in tons per quarter for all construction equipment. The number of hours each piece of equipment will be operated and how many pieces of equipment will be operated simultaneously should be specified. The use of 2 degrees timing retard, high pressure fuel injectors and reformulated diesel fuel should be considered to mitigate NOX emissions from construction.

Santa Barbara County exceeds both the State 24-hour and annual average ambient air quality standards for particulate matter less than 10 microns in diameter (PM_{10}). PM_{10} emissions from construction projects occurring simultaneously within the county may be exacerbating the problem. The standard dust mitigation measures to reduce PM_{10} emissions should be reflected in the scope of work contained in the request for proposal. The District is currently evaluating the feasibility of recommending additional dust control measures.

Please feel free to call me at extension 8873 if you need any additional information or require clarification.

cc: Project File
Chron File
Phil Sheehan

Appendix C
Air Emission Calculations

Appendix C - Air Emission Calculations *

Table of Contents

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* See Technical Documentation Volume I for the air modeling data and computer inputs and outputs. These can be obtained from the County of Santa Barbara Energy Division.

UNOCAL POINT PEDERNALAS MODIFICATION SEIR
HS&P CONSTRUCTION EQUIPMENT EMISSION FACTORS

Equipment	Fuel Type	HP	Load Factor	Emission Factors (gr/hr/bhp)						Total Hours
				ROC	NOx	SO2	CO	PM	PM10	
Backhoe	D	80	0.60	1.68	9.50	0.85	7.34	1.27	1.22	827
5-Ton Roller	D	73	0.60	0.93	10.40	1.00	6.03	0.78	0.75	160
Bulldozer	D	250	0.60	0.72	6.30	0.85	2.15	0.69	0.66	116
Scraper	D	550	0.60	0.52	6.00	0.90	2.45	0.79	0.76	80
Road Grader	D	250	0.60	0.34	5.70	0.87	1.54	0.63	0.60	80
Water Truck	D	200	0.50	0.35	6.52	0.89	2.28	0.50	0.48	30
Dump Truck	D	200	0.50	0.35	6.52	0.89	2.28	0.50	0.48	610
Concrete Truck	D	200	0.50	0.35	6.52	0.89	2.28	0.50	0.48	543
Concrete Vibrator	G	5	0.60	6.06	5.20	0.27	199.00	0.33	0.33	670
Concrete Finisher	G	20	0.60	6.06	5.20	0.27	199.00	0.33	0.33	245
40-Ton Crane	D	200	0.60	1.07	11.20	0.93	3.03	1.00	0.96	180
15-Ton Crane	D	130	0.60	1.07	11.20	0.93	3.03	1.00	0.96	1356
Welding Machine	D	40	0.50	1.07	11.20	0.93	3.03	1.00	0.96	1476

NOTES:

For conversion to a lbs/gallon of fuel emission factor, assume 0.055 gallons/bhp-hr

The equation used to calculate the emissions is a s follows: HP * LF * EF * HOURS /1000 = KG

The emissions factors were taken from AP-42 Table II-7.1 for the diesel equipment except the cranes and the welding machines and AP-42 table 3.3-1 for the gasoline equipment and the cranes and the welding machines. D = diesel and G = gasoline

Fugitive emissions were calculated using the AP-42 section 11.2-4 factor of 1.2 tons/acre/month, assuming 1.93 acres, 7 days per week, 24 hours per day

UNOCAL POINT PEDERNALAS MODIFICATION SEIR
HS&P CONSTRUCTION EQUIPMENT USAGE BY WEEK (hrs)

Equipment	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9
Backhoe	12.50	12.50	12.50	85.80	125.80	85.80	153.30	153.30	73.30
5-Ton Roller	0.00	0.00	40.00	40.00	40.00	40.00	0.00	0.00	0.00
Bulldozer	29.00	29.00	29.00	29.00	0.00	0.00	0.00	0.00	0.00
Scraper	20.00	20.00	20.00	20.00	0.00	0.00	0.00	0.00	0.00
Road Grader	0.00	0.00	20.00	20.00	20.00	20.00	0.00	0.00	0.00
Water Truck	5.00	5.00	5.00	5.00	5.00	5.00	0.00	0.00	0.00
Dump Truck	17.00	17.00	17.00	108.70	51.70	51.70	91.70	91.70	51.70
Concrete Truck	0.00	0.00	0.00	122.20	122.20	162.20	43.50	43.50	43.50
Concrete Vibrator	0.00	0.00	0.00	95.70	95.70	95.70	95.70	95.70	95.70
Concrete Finisher	0.00	0.00	0.00	35.00	35.00	35.00	35.00	35.00	35.00
40-Ton Crane	0.00	0.00	0.00	0.00	0.00	0.00	0.00	30.00	30.00
15-Ton Crane	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Welding Machine	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

UNOCAL POINT PEDERNALAS MODIFICATION SEIR
HS&P CONSTRUCTION EQUIPMENT USAGE BY WEEK (hrs)

Equipment	Week 10	Week 11	Week 12	Week 13	Week 14	Week 15	Week 16	Week 17	Week 18
Backhoe	0.00	8.62	8.62	8.62	8.62	8.62	8.62	8.62	8.62
5-Ton Roller	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bulldozer	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Scraper	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Road Grader	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dump Truck	0.00	8.62	8.62	8.62	8.62	8.62	8.62	8.62	8.62
Concrete Truck	6.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Concrete Vibrator	95.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Concrete Finisher	35.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40-Ton Crane	30.00	30.00	30.00	30.00	0.00	0.00	0.00	0.00	0.00
15-Ton Crane	0.00	113.00	113.00	113.00	113.00	113.00	113.00	113.00	113.00
Welding Machine	0.00	123.00	123.00	123.00	123.00	123.00	123.00	123.00	123.00

UNOCAL POINT PEDERNALAS MODIFICATION SEIR
HS&P CONSTRUCTION EQUIPMENT USAGE BY WEEK (hrs)

Equipment	Week 19	Week 20	Week 21	Week 22	Week 23	Week 24	Week 25	Week 26
Backhoe	8.62	8.62	8.62	8.62	8.62	0.00	0.00	0.00
5-Ton Roller	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bulldozer	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Scraper	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Road Grader	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dump Truck	8.62	8.62	8.62	8.62	8.62	0.00	0.00	0.00
Concrete Truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Concrete Vibrator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Concrete Finisher	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40-Ton Crane	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15-Ton Crane	113.00	113.00	113.00	113.00	0.00	0.00	0.00	0.00
Welding Machine	123.00	123.00	123.00	123.00	0.00	0.00	0.00	0.00

UNOCAL POINT PEDERNALAS MODIFICATION SEIR
HS&P ROC EMISSIONS BY WEEK

ROC Emissions	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9
Backhoe	1.01	1.01	1.01	6.92	10.14	6.92	12.36	12.36	5.91
5-Ton Roller	0.00	0.00	1.63	1.63	1.63	1.63	0.00	0.00	0.00
Bulldozer	3.13	3.13	3.13	3.13	0.00	0.00	0.00	0.00	0.00
Scraper	3.43	3.43	3.43	3.43	0.00	0.00	0.00	0.00	0.00
Road Grader	0.00	0.00	1.02	1.02	1.02	1.02	0.00	0.00	0.00
Water Truck	0.18	0.18	0.18	0.18	0.18	0.18	0.00	0.00	0.00
Dump Truck	0.60	0.60	0.60	3.80	1.81	1.81	3.21	3.21	1.81
Concrete Truck	0.00	0.00	0.00	4.28	4.28	5.68	1.52	1.52	1.52
Concrete Vibrator	0.00	0.00	0.00	1.74	1.74	1.74	1.74	1.74	1.74
Concrete Finisher	0.00	0.00	0.00	2.55	2.55	2.55	2.55	2.55	2.55
40-Ton Crane	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.85	3.85
15-Ton Crane	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Welding Machine	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Emmisions (kg)	8.34	8.34	10.99	28.67	23.34	21.51	21.38	25.23	17.38
Total Emissions (lbs)	18.39	18.39	24.24	63.23	51.47	47.44	47.14	55.63	38.32

UNOCAL POINT PEDERNALAS MODIFICATION SEIR
HS&P ROC EMISSIONS BY WEEK

ROC Emissions	Week 10	Week 11	Week 12	Week 13	Week 14	Week 15	Week 16	Week 17	Week 18
Backhoe	0.00	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
5-Ton Roller	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bulldozer	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Scraper	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Road Grader	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dump Truck	0.00	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
Concrete Truck	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Concrete Vibrator	1.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Concrete Finisher	2.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40-Ton Crane	3.85	3.85	3.85	3.85	0.00	0.00	0.00	0.00	0.00
15-Ton Crane	0.00	9.43	9.43	9.43	9.43	9.43	9.43	9.43	9.43
Welding Machine	0.00	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.63
Total Emmisions (kg)	8.35	16.91	16.91	16.91	13.06	13.06	13.06	13.06	13.06
Total Emissions (lbs)	18.41	37.29	37.29	37.29	28.80	28.80	28.80	28.80	28.80

UNOCAL POINT PEDERNALAS MODIFICATION SEIR
HS&P ROC EMISSIONS BY WEEK

ROC Emissions	Week 19	Week 20	Week 21	Week 22	Week 23	Week 24	Week 25	Week 26
Backhoe	0.70	0.70	0.70	0.70	0.70	0.00	0.00	0.00
5-Ton Roller	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bulldozer	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Scraper	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Road Grader	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dump Truck	0.30	0.30	0.30	0.30	0.30	0.00	0.00	0.00
Concrete Truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Concrete Vibrator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Concrete Finisher	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40-Ton Crane	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15-Ton Crane	9.43	9.43	9.43	9.43	0.00	0.00	0.00	0.00
Welding Machine	2.63	2.63	2.63	2.63	0.00	0.00	0.00	0.00
Total Emmisions (kg)	13.06	13.06	13.06	13.06	1.00	0.00	0.00	0.00
Total Emissions (lbs)	28.80	28.80	28.80	28.80	2.20	0.00	0.00	0.00

UNOCAL POINT PEDERNALAS MODIFICATION SEIR
HS&P NOx EMISSIONS BY WEEK

NOx Emissions	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9
Backhoe	5.70	5.70	5.70	39.12	57.36	39.12	69.90	69.90	33.42
5-Ton Roller	0.00	0.00	18.22	18.22	18.22	18.22	0.00	0.00	0.00
Bulldozer	27.41	27.41	27.41	27.41	0.00	0.00	0.00	0.00	0.00
Scraper	39.60	39.60	39.60	39.60	0.00	0.00	0.00	0.00	0.00
Road Grader	0.00	0.00	17.10	17.10	17.10	17.10	0.00	0.00	0.00
Water Truck	3.26	3.26	3.26	3.26	3.26	3.26	0.00	0.00	0.00
Dump Truck	11.08	11.08	11.08	70.87	33.71	33.71	59.79	59.79	33.71
Concrete Truck	0.00	0.00	0.00	79.67	79.67	105.75	28.36	28.36	28.36
Concrete Vibrator	0.00	0.00	0.00	1.49	1.49	1.49	1.49	1.49	1.49
Concrete Finisher	0.00	0.00	0.00	2.18	2.18	2.18	2.18	2.18	2.18
40-Ton Crane	0.00	0.00	0.00	0.00	0.00	0.00	0.00	40.32	40.32
15-Ton Crane	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Welding Machine	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Emmisions (kg)	87.05	87.05	122.37	298.93	213.01	220.85	161.73	202.05	139.49
Total Emissions (lbs)	191.94	191.94	269.83	659.15	469.68	486.96	356.62	445.52	307.58

UNOCAL POINT PEDERNALAS MODIFICATION SEIR
HS&P NOx EMISSIONS BY WEEK

NOx Emissions	Week 10	Week 11	Week 12	Week 13	Week 14	Week 15	Week 16	Week 17	Week 18
Backhoe	0.00	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93
5-Ton Roller	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bulldozer	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Scraper	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Road Grader	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dump Truck	0.00	5.62	5.62	5.62	5.62	5.62	5.62	5.62	5.62
Concrete Truck	3.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Concrete Vibrator	1.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Concrete Finisher	2.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40-Ton Crane	40.32	40.32	40.32	40.32	0.00	0.00	0.00	0.00	0.00
15-Ton Crane	0.00	98.72	98.72	98.72	98.72	98.72	98.72	98.72	98.72
Welding Machine	0.00	27.55	27.55	27.55	27.55	27.55	27.55	27.55	27.55
Total Emmisions (kg)	47.91	176.14	176.14	176.14	135.82	135.82	135.82	135.82	135.82
Total Emissions (lbs)	105.64	388.39	388.39	388.39	299.48	299.48	299.48	299.48	299.48

UNOCAL POINT PEDERNALAS MODIFICATION SEIR
HS&P NOx EMISSIONS BY WEEK

NOx Emissions	Week 19	Week 20	Week 21	Week 22	Week 23	Week 24	Week 25	Week 26
Backhoe	3.93	3.93	3.93	3.93	3.93	0.00	0.00	0.00
5-Ton Roller	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bulldozer	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Scraper	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Road Grader	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dump Truck	5.62	5.62	5.62	5.62	5.62	0.00	0.00	0.00
Concrete Truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Concrete Vibrator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Concrete Finisher	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40-Ton Crane	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15-Ton Crane	98.72	98.72	98.72	98.72	0.00	0.00	0.00	0.00
Welding Machine	27.55	27.55	27.55	27.55	0.00	0.00	0.00	0.00
Total Emmisions (kg)	135.82	135.82	135.82	135.82	9.55	0.00	0.00	0.00
Total Emissions (lbs)	299.48	299.48	299.48	299.48	21.06	0.00	0.00	0.00

UNOCAL POINT PEDERNALAS MODIFICATION SEIR
HS&P SO2 EMISSIONS BY WEEK

SO2 Emissions	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9
Backhoe	0.51	0.51	0.51	3.50	5.13	3.50	6.25	6.25	2.99
5-Ton Roller	0.00	0.00	1.75	1.75	1.75	1.75	0.00	0.00	0.00
Bulldozer	3.70	3.70	3.70	3.70	0.00	0.00	0.00	0.00	0.00
Scraper	5.94	5.94	5.94	5.94	0.00	0.00	0.00	0.00	0.00
Road Grader	0.00	0.00	2.61	2.61	2.61	2.61	0.00	0.00	0.00
Water Truck	0.45	0.45	0.45	0.45	0.45	0.45	0.00	0.00	0.00
Dump Truck	1.51	1.51	1.51	9.67	4.60	4.60	8.16	8.16	4.60
Concrete Truck	0.00	0.00	0.00	10.88	10.88	14.44	3.87	3.87	3.87
Concrete Vibrator	0.00	0.00	0.00	0.08	0.08	0.08	0.08	0.08	0.08
Concrete Finisher	0.00	0.00	0.00	0.11	0.11	0.11	0.11	0.11	0.11
40-Ton Crane	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.35	3.35
15-Ton Crane	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Welding Machine	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Emmisions (kg)	12.11	12.11	16.47	38.69	25.61	27.54	18.48	21.83	15.00
Total Emissions (lbs)	26.69	26.69	36.31	85.30	56.46	60.72	40.74	48.13	33.08

UNOCAL POINT PEDERNALAS MODIFICATION SEIR
HS&P SO2 EMISSIONS BY WEEK

SO2 Emissions	Week 10	Week 11	Week 12	Week 13	Week 14	Week 15	Week 16	Week 17	Week 18
Backhoe	0.00	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35
5-Ton Roller	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bulldozer	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Scraper	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Road Grader	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dump Truck	0.00	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Concrete Truck	0.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Concrete Vibrator	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Concrete Finisher	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40-Ton Crane	3.35	3.35	3.35	3.35	0.00	0.00	0.00	0.00	0.00
15-Ton Crane	0.00	8.20	8.20	8.20	8.20	8.20	8.20	8.20	8.20
Welding Machine	0.00	2.29	2.29	2.29	2.29	2.29	2.29	2.29	2.29
Total Emmisions (kg)	4.07	14.95	14.95	14.95	11.60	11.60	11.60	11.60	11.60
Total Emissions (lbs)	8.98	32.97	32.97	32.97	25.59	25.59	25.59	25.59	25.59

UNOCAL POINT PEDERNALAS MODIFICATION SEIR
HS&P SO2 EMISSIONS BY WEEK

SO2 Emissions	Week 19	Week 20	Week 21	Week 22	Week 23	Week 24	Week 25	Week 26
Backhoe	0.35	0.35	0.35	0.35	0.35	0.00	0.00	0.00
5-Ton Roller	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bulldozer	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Scraper	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Road Grader	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dump Truck	0.77	0.77	0.77	0.77	0.77	0.00	0.00	0.00
Concrete Truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Concrete Vibrator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Concrete Finisher	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40-Ton Crane	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15-Ton Crane	8.20	8.20	8.20	8.20	0.00	0.00	0.00	0.00
Welding Machine	2.29	2.29	2.29	2.29	0.00	0.00	0.00	0.00
Total Emmisions (kg)	11.60	11.60	11.60	11.60	1.12	0.00	0.00	0.00
Total Emissions (lbs)	25.59	25.59	25.59	25.59	2.47	0.00	0.00	0.00

UNOCAL POINT PEDERNALAS MODIFICATION SEIR
HS&P CO EMISSIONS BY WEEK

CO Emissions	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9
Backhoe	4.40	4.40	4.40	30.23	44.32	30.23	54.01	54.01	25.83
5-Ton Roller	0.00	0.00	10.56	10.56	10.56	10.56	0.00	0.00	0.00
Bulldozer	9.35	9.35	9.35	9.35	0.00	0.00	0.00	0.00	0.00
Scraper	16.17	16.17	16.17	16.17	0.00	0.00	0.00	0.00	0.00
Road Grader	0.00	0.00	4.62	4.62	4.62	4.62	0.00	0.00	0.00
Water Truck	1.14	1.14	1.14	1.14	1.14	1.14	0.00	0.00	0.00
Dump Truck	3.88	3.88	3.88	24.78	11.79	11.79	20.91	20.91	11.79
Concrete Truck	0.00	0.00	0.00	27.86	27.86	36.98	9.92	9.92	9.92
Concrete Vibrator	0.00	0.00	0.00	57.13	57.13	57.13	57.13	57.13	57.13
Concrete Finisher	0.00	0.00	0.00	83.58	83.58	83.58	83.58	83.58	83.58
40-Ton Crane	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.91	10.91
15-Ton Crane	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Welding Machine	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Emmisions (kg)	34.94	34.94	50.13	265.43	241.01	236.04	225.55	236.46	199.15
Total Emissions (lbs)	77.05	77.05	110.53	585.28	531.42	520.46	497.34	521.39	439.13

UNOCAL POINT PEDERNALAS MODIFICATION SEIR
HS&P CO EMISSIONS BY WEEK

CO Emissions	Week 10	Week 11	Week 12	Week 13	Week 14	Week 15	Week 16	Week 17	Week 18
Backhoe	0.00	3.04	3.04	3.04	3.04	3.04	3.04	3.04	3.04
5-Ton Roller	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bulldozer	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Scraper	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Road Grader	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dump Truck	0.00	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.97
Concrete Truck	1.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Concrete Vibrator	57.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Concrete Finisher	83.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40-Ton Crane	10.91	10.91	10.91	10.91	0.00	0.00	0.00	0.00	0.00
15-Ton Crane	0.00	26.71	26.71	26.71	26.71	26.71	26.71	26.71	26.71
Welding Machine	0.00	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45
Total Emmisions (kg)	152.99	50.07	50.07	50.07	39.16	39.16	39.16	39.16	39.16
Total Emissions (lbs)	337.34	110.41	110.41	110.41	86.35	86.35	86.35	86.35	86.35

UNOCAL POINT PEDERNALAS MODIFICATION SEIR
HS&P CO EMISSIONS BY WEEK

CO Emissions	Week 19	Week 20	Week 21	Week 22	Week 23	Week 24	Week 25	Week 26
Backhoe	3.04	3.04	3.04	3.04	3.04	0.00	0.00	0.00
5-Ton Roller	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bulldozer	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Scraper	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Road Grader	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dump Truck	1.97	1.97	1.97	1.97	1.97	0.00	0.00	0.00
Concrete Truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Concrete Vibrator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Concrete Finisher	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40-Ton Crane	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15-Ton Crane	26.71	26.71	26.71	26.71	0.00	0.00	0.00	0.00
Welding Machine	7.45	7.45	7.45	7.45	0.00	0.00	0.00	0.00
Total Emmisions (kg)	39.16	39.16	39.16	39.16	5.00	0.00	0.00	0.00
Total Emissions (lbs)	86.35	86.35	86.35	86.35	11.03	0.00	0.00	0.00

UNOCAL POINT PEDERNALAS MODIFICATION SEIR
HS&P PM EMISSIONS BY WEEK

PM Emissions	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9
Backhoe	0.76	0.76	0.76	5.23	7.67	5.23	9.35	9.35	4.47
5-Ton Roller	0.00	0.00	1.37	1.37	1.37	1.37	0.00	0.00	0.00
Bulldozer	3.00	3.00	3.00	3.00	0.00	0.00	0.00	0.00	0.00
Scraper	5.21	5.21	5.21	5.21	0.00	0.00	0.00	0.00	0.00
Road Grader	0.00	0.00	1.89	1.89	1.89	1.89	0.00	0.00	0.00
Water Truck	0.25	0.25	0.25	0.25	0.25	0.25	0.00	0.00	0.00
Dump Truck	0.85	0.85	0.85	5.44	2.59	2.59	4.59	4.59	2.59
Concrete Truck	0.00	0.00	0.00	6.11	6.11	8.11	2.18	2.18	2.18
Concrete Vibrator	0.00	0.00	0.00	0.09	0.09	0.09	0.09	0.09	0.09
Concrete Finisher	0.00	0.00	0.00	0.14	0.14	0.14	0.14	0.14	0.14
40-Ton Crane	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.60	3.60
15-Ton Crane	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Welding Machine	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fugitive Emissions	490.16	490.16	490.16	490.16	490.16	490.16	490.16	490.16	490.16
Total Emmisions (kg)	500.24	500.24	503.49	518.89	510.26	509.82	506.50	510.10	503.22
Total Emissions (lbs)	1103.02	1103.02	1110.20	1144.15	1125.13	1124.16	1116.83	1124.76	1109.60

UNOCAL POINT PEDERNALAS MODIFICATION SEIR
HS&P PM EMISSIONS BY WEEK

PM Emissions	Week 10	Week 11	Week 12	Week 13	Week 14	Week 15	Week 16	Week 17	Week 18
Backhoe	0.00	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53
5-Ton Roller	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bulldozer	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Scraper	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Road Grader	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dump Truck	0.00	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43
Concrete Truck	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Concrete Vibrator	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Concrete Finisher	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40-Ton Crane	3.60	3.60	3.60	3.60	0.00	0.00	0.00	0.00	0.00
15-Ton Crane	0.00	8.81	8.81	8.81	8.81	8.81	8.81	8.81	8.81
Welding Machine	0.00	2.46	2.46	2.46	2.46	2.46	2.46	2.46	2.46
Fugitive Emissions	490.16	490.16	490.16	490.16	490.16	490.16	490.16	490.16	490.16
Total Emmisions (kg)	494.29	505.99	505.99	505.99	502.39	502.39	502.39	502.39	502.39
Total Emissions (lbs)	1089.91	1115.71	1115.71	1115.71	1107.77	1107.77	1107.77	1107.77	1107.77

UNOCAL POINT PEDERNALAS MODIFICATION SEIR
HS&P PM EMISSIONS BY WEEK

PM Emissions	Week 19	Week 20	Week 21	Week 22	Week 23	Week 24	Week 25	Week 26
Backhoe	0.53	0.53	0.53	0.53	0.53	0.00	0.00	0.00
5-Ton Roller	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bulldozer	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Scraper	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Road Grader	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dump Truck	0.43	0.43	0.43	0.43	0.43	0.00	0.00	0.00
Concrete Truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Concrete Vibrator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Concrete Finisher	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40-Ton Crane	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15-Ton Crane	8.81	8.81	8.81	8.81	0.00	0.00	0.00	0.00
Welding Machine	2.46	2.46	2.46	2.46	0.00	0.00	0.00	0.00
Fugitive Emissions	490.16	490.16	490.16	490.16	490.16	0.00	0.00	0.00
Total Emmisions (kg)	502.39	502.39	502.39	502.39	491.12	0.00	0.00	0.00
Total Emissions (lbs)	1107.77	1107.77	1107.77	1107.77	1082.91	0.00	0.00	0.00

UNOCAL POINT PEDERNALAS MODIFICATION SEIR
HS&P PM10 EMISSIONS BY WEEK

PM 10 Emissions	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9
Backhoe	0.73	0.73	0.73	5.02	7.37	5.02	8.98	8.98	4.29
5-Ton Roller	0.00	0.00	1.31	1.31	1.31	1.31	0.00	0.00	0.00
Bulldozer	2.87	2.87	2.87	2.87	0.00	0.00	0.00	0.00	0.00
Scraper	5.02	5.02	5.02	5.02	0.00	0.00	0.00	0.00	0.00
Road Grader	0.00	0.00	1.80	1.80	1.80	1.80	0.00	0.00	0.00
Water Truck	0.24	0.24	0.24	0.24	0.24	0.24	0.00	0.00	0.00
Dump Truck	0.82	0.82	0.82	5.22	2.48	2.48	4.40	4.40	2.48
Concrete Truck	0.00	0.00	0.00	5.87	5.87	7.79	2.09	2.09	2.09
Concrete Vibrator	0.00	0.00	0.00	0.09	0.09	0.09	0.09	0.09	0.09
Concrete Finisher	0.00	0.00	0.00	0.14	0.14	0.14	0.14	0.14	0.14
40-Ton Crane	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.46	3.46
15-Ton Crane	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Welding Machine	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fugitive Emissions	470.55	470.55	470.55	470.55	470.55	470.55	470.55	470.55	470.55
Total Emmisions (kg)	480.23	480.23	483.34	498.13	489.85	489.43	486.25	489.71	483.10
Total Emissions (lbs)	1058.90	1058.90	1065.77	1098.39	1080.13	1079.20	1072.19	1079.81	1065.24

UNOCAL POINT PEDERNALAS MODIFICATION SEIR
HS&P PM10 EMISSIONS BY WEEK

PM 10 Emissions	Week 10	Week 11	Week 12	Week 13	Week 14	Week 15	Week 16	Week 17	Week 18
Backhoe	0.00	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
5-Ton Roller	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bulldozer	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Scraper	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Road Grader	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dump Truck	0.00	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41
Concrete Truck	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Concrete Vibrator	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Concrete Finisher	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40-Ton Crane	3.46	3.46	3.46	3.46	0.00	0.00	0.00	0.00	0.00
15-Ton Crane	0.00	8.46	8.46	8.46	8.46	8.46	8.46	8.46	8.46
Welding Machine	0.00	2.36	2.36	2.36	2.36	2.36	2.36	2.36	2.36
Fugitive Emissions	470.55	470.55	470.55	470.55	470.55	470.55	470.55	470.55	470.55
Total Emmisions (kg)	474.53	485.75	485.75	485.75	482.29	482.29	482.29	482.29	482.29
Total Emissions (lbs)	1046.34	1071.08	1071.08	1071.08	1063.46	1063.46	1063.46	1063.46	1063.46

UNOCAL POINT PEDERNALAS MODIFICATION SEIR
HS&P PM10 EMISSIONS BY WEEK

PM 10 Emissions	Week 19	Week 20	Week 21	Week 22	Week 23	Week 24	Week 25	Week 26
Backhoe	0.50	0.50	0.50	0.50	0.50	0.00	0.00	0.00
5-Ton Roller	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bulldozer	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Scraper	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Road Grader	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dump Truck	0.41	0.41	0.41	0.41	0.41	0.00	0.00	0.00
Concrete Truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Concrete Vibrator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Concrete Finisher	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40-Ton Crane	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15-Ton Crane	8.46	8.46	8.46	8.46	0.00	0.00	0.00	0.00
Welding Machine	2.36	2.36	2.36	2.36	0.00	0.00	0.00	0.00
Fugitive Emissions	470.55	470.55	470.55	470.55	470.55	0.00	0.00	0.00
Total Emmisions (kg)	482.29	482.29	482.29	482.29	471.47	0.00	0.00	0.00
Total Emissions (lbs)	1063.46	1063.46	1063.46	1063.46	1039.59	0.00	0.00	0.00

UNOCAL POINT PERDERNALAS FILED MODIFICATIONS SEIR
SMPS CONSTRUCTION EQUIPMENT EMISSION FACTORS

				Emission Factors, gr/hp-hr					
Equipment	*FUEL*	*HP*	*Load Factor*	*ROC*	*NOx*	*SO2*	*CO*	*PM*	*PM10*
Backhoe 1	D	135	0.60	1.68	9.50	0.85	7.34	1.27	1.22
Backhoe 2	D	135	0.60	1.68	9.50	0.85	7.34	1.27	1.22
Dump Truck	D	200	0.50	0.35	6.52	0.89	2.28	0.50	0.48
Concrete Truck	D	200	0.50	0.35	6.52	0.89	2.28	0.50	0.48
40-Ton Crane	D	200	0.60	1.07	11.20	0.93	3.03	1.00	0.96
15-Ton Crane 1	D	135	0.60	1.07	11.20	0.93	3.03	1.00	0.96
15-Ton Crane 2	D	135	0.60	1.07	11.20	0.93	3.03	1.00	0.96
Bull Dozer	D	200	0.60	0.72	6.30	0.85	2.15	0.69	0.66
Fugitve Dust									

Equipment data taken from Unocal application.
For conversion to a lbs/gallon of fuel emission factor, assume 0.055 gallons/bhp-hr
The equation used to calculate the emissions is a s follows: HP * LF * EF * HOURS *2.2/1000 = LBS
The emissions factors were taken from AP-42 Table II-7.1 for the diesel equipment except the cranes and the welding machine and AP-42 table 3.3-1 for the gasoline equipment and the cranes and the welding machines.
Fugitive emissions were calculated using the AP-42 section 11.2-4 factor of 1.2 tons/acre/month, assuming 4 acres, 7 days per week, 24 hours per day
D = diesel and G = gasoline

UNOCAL POINT PERDERNALAS FILED MODIFICATIONS SEIR
SMPS CONSTRUCTION EQUIPMENT USAGE BY WEEK (hours)

Equipment	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13	Week 14	Total
Backhoe 1	10	15	15	15	10	10	10	10	10	3	3	3	3	3	120
Backhoe 2		4	4	4	4										16
Dump Truck									2	2	2	4	4	2	16
Concrete Truck	4	6	6	4					4	4	4				32
40-Ton Crane		3													3
15-Ton Crane 1				5	10	10	10	10	5			5	5		60
15-Ton Crane 2	5	10	15	15	15	15	15	10	10	10	10	5	5		140
Bull Dozer								8				4	4		16

UNOCAL POINT PERDERNALAS FILED MODIFICATIONS SEIR
SMPS ROC CONSTRUCTION EMISSIONS (LBS)

ROC Emissions	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13	Week 14	Total
Backhoe 1	3.00	4.50	4.50	4.50	3.00	3.00	3.00	3.00	3.00	0.90	0.90	0.90	0.90	0.90	36.01
Backhoe 2	0.00	1.20	1.20	1.20	1.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.80
Dump Truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.15	0.15	0.31	0.31	0.15	1.23
Concrete Truck	0.31	0.46	0.46	0.31	0.00	0.00	0.00	0.00	0.31	0.31	0.31	0.00	0.00	0.00	2.47
40-Ton Crane	0.00	0.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.85
15-Ton Crane 1	0.00	0.00	0.00	0.96	1.91	1.91	1.91	1.91	0.96	0.00	0.00	0.96	0.96	0.00	11.47
15-Ton Crane 2	0.96	1.91	2.87	2.87	2.87	2.87	2.87	1.91	1.91	1.91	1.91	0.96	0.96	0.00	26.76
Bull Dozer	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.52	0.00	0.00	0.00	0.76	0.76	0.00	3.05
Total Emissions ((	4.26	8.92	9.03	9.83	8.98	7.78	7.78	8.35	6.33	3.27	3.27	3.88	3.88	1.05	86.63

UNOCAL POINT PERDERNALAS FILED MODIFICATIONS SEIR
SMPS NOx CONSTRUCTION EMISSIONS (LBS)

NOx Emissions	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13	Week 14	Total
Backhoe 1	16.97	25.45	25.45	25.45	16.97	16.97	16.97	16.97	16.97	5.09	5.09	5.09	5.09	5.09	203.61
Backhoe 2	0.00	6.79	6.79	6.79	6.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	27.15
Dump Truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.88	2.88	2.88	5.75	5.75	2.88	23.00
Concrete Truck	5.75	8.63	8.63	5.75	0.00	0.00	0.00	0.00	5.75	5.75	5.75	0.00	0.00	0.00	46.01
40-Ton Crane	0.00	8.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.89
15-Ton Crane 1	0.00	0.00	0.00	10.00	20.00	20.00	20.00	20.00	10.00	0.00	0.00	10.00	10.00	0.00	120.02
15-Ton Crane 2	10.00	20.00	30.01	30.01	30.01	30.01	30.01	20.00	20.00	20.00	20.00	10.00	10.00	0.00	280.05
Bull Dozer	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.34	0.00	0.00	0.00	6.67	6.67	0.00	26.67
Total Emissions ((	32.72	69.76	70.87	78.00	73.76	66.98	66.98	70.31	55.60	33.72	33.72	37.51	37.51	7.97	735.40

UNOCAL POINT PERDERNALAS FILED MODIFICATIONS SEIR
SMPS SO2 CONSTRUCTION EMISSIONS (LBS)

SO2 Emissions	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13	Week 14	Total
Backhoe 1	1.52	2.28	2.28	2.28	1.52	1.52	1.52	1.52	1.52	0.46	0.46	0.46	0.46	0.46	18.22
Backhoe 2	0.00	0.61	0.61	0.61	0.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.43
Dump Truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.39	0.39	0.39	0.78	0.78	0.39	3.14
Concrete Truck	0.78	1.18	1.18	0.78	0.00	0.00	0.00	0.00	0.78	0.78	0.78	0.00	0.00	0.00	6.28
40-Ton Crane	0.00	0.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.74
15-Ton Crane 1	0.00	0.00	0.00	0.83	1.66	1.66	1.66	1.66	0.83	0.00	0.00	0.83	0.83	0.00	9.97
15-Ton Crane 2	0.83	1.66	2.49	2.49	2.49	2.49	2.49	1.66	1.66	1.66	1.66	0.83	0.83	0.00	23.25
Bull Dozer	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.80	0.00	0.00	0.00	0.90	0.90	0.00	3.60
Total Emissions (	3.13	6.46	6.55	6.99	6.28	5.67	5.67	6.64	5.19	3.29	3.29	3.80	3.80	0.85	67.62

UNOCAL POINT PERDERNALAS FILED MODIFICATIONS SEIR
SMPS CO CONSTRUCTION EMISSIONS (LBS)

CO Emissions	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13	Week 14	Total
Backhoe 1	13.11	19.66	19.66	19.66	13.11	13.11	13.11	13.11	13.11	3.93	3.93	3.93	3.93	3.93	157.32
Backhoe 2	0.00	5.24	5.24	5.24	5.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.98
Dump Truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.01	1.01	1.01	2.01	2.01	1.01	8.04
Concrete Truck	2.01	3.02	3.02	2.01	0.00	0.00	0.00	0.00	2.01	2.01	2.01	0.00	0.00	0.00	16.09
40-Ton Crane	0.00	2.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.41
15-Ton Crane 1	0.00	0.00	0.00	2.71	5.41	5.41	5.41	5.41	2.71	0.00	0.00	2.71	2.71	0.00	32.47
15-Ton Crane 2	2.71	5.41	8.12	8.12	8.12	8.12	8.12	5.41	5.41	5.41	5.41	2.71	2.71	0.00	75.76
Bull Dozer	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.55	0.00	0.00	0.00	2.28	2.28	0.00	9.10
Total Emissions (	17.83	35.74	36.04	37.74	31.88	26.64	26.64	28.48	24.24	12.36	12.36	13.63	13.63	4.94	322.16

UNOCAL POINT PERDERNALAS FILED MODIFICATIONS SEIR
SMPS PM CONSTRUCTION EMISSIONS (LBS)

PM Emissions	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13	Week 14	Total
Backhoe 1	2.27	3.40	3.40	3.40	2.27	2.27	2.27	2.27	2.27	0.68	0.68	0.68	0.68	0.68	27.22
Backhoe 2	0.00	0.91	0.91	0.91	0.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.63
Dump Truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.22	0.22	0.44	0.44	0.22	1.76
Concrete Truck	0.44	0.66	0.66	0.44	0.00	0.00	0.00	0.00	0.44	0.44	0.44	0.00	0.00	0.00	3.53
40-Ton Crane	0.00	0.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.79
15-Ton Crane 1	0.00	0.00	0.00	0.89	1.79	1.79	1.79	1.79	0.89	0.00	0.00	0.89	0.89	0.00	10.72
15-Ton Crane 2	0.89	1.79	2.68	2.68	2.68	2.68	2.68	1.79	1.79	1.79	1.79	0.89	0.89	0.00	25.00
Bull Dozer	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.46	0.00	0.00	0.00	0.73	0.73	0.00	2.92
Fugitive Dust	2240	2240	2240	2240	2240	2240	2240	2240	2240	2240	2240	2240	2240	2240	31,360
Total Emissions (	2244	2248	2248	2248	2248	2247	2247	2247	2246	2243	2243	2244	2244	2241	31,436

UNOCAL POINT PERDERNALAS FILED MODIFICATIONS SEIR
SMPS PM10 CONSTRUCTION EMISSIONS

PM 10 Emissions	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13	Week 14	Total
Backhoe 1	2.18	3.27	3.27	3.27	2.18	2.18	2.18	2.18	2.18	0.65	0.65	0.65	0.65	0.65	26.15
Backhoe 2	0.00	0.87	0.87	0.87	0.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.49
Dump Truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.21	0.21	0.21	0.42	0.42	0.21	1.69
Concrete Truck	0.42	0.64	0.64	0.42	0.00	0.00	0.00	0.00	0.42	0.42	0.42	0.00	0.00	0.00	3.39
40-Ton Crane	0.00	0.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.76
15-Ton Crane 1	0.00	0.00	0.00	0.86	1.71	1.71	1.71	1.71	0.86	0.00	0.00	0.86	0.86	0.00	10.29
15-Ton Crane 2	0.86	1.71	2.57	2.57	2.57	2.57	2.57	1.71	1.71	1.71	1.71	0.86	0.86	0.00	24.00
Bull Dozer	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.40	0.00	0.00	0.00	0.70	0.70	0.00	2.79
Fugitive Dust	2150	2150	2150	2150	2150	2150	2150	2150	2150	2150	2150	2150	2150	2150	30106
Total Emissions (	2154	2158	2158	2158	2158	2157	2157	2157	2156	2153	2153	2154	2154	2151	30178

UNOCAL POINT PERDERNALAS FILED MODIFICATIONS SEIR
JHF CONSTRUCTION EQUIPMENT EMISSION FACTORS

				Emission Factors gr/hp-hr					
Equipment	Fuel	HP	Load Factor	ROC	NOx	SO2	CO	PM	PM10
Backhoe 1	D	135	0.60	1.68	9.50	0.85	7.34	1.27	1.22
5-Ton Roller	D	75	0.60	1.68	9.50	0.85	7.34	1.27	1.22
Water Truck	D	200	0.50	0.35	6.52	0.89	2.28	0.50	0.48
Concrete Truck	D	200	0.50	0.35	6.52	0.89	2.28	0.50	0.48
40-Ton Crane	D	200	0.60	1.07	11.20	0.93	3.03	1.00	0.96
15-Ton Crane 1	D	135	0.60	1.07	11.20	0.93	3.03	1.00	0.96
Dump Truck	D	135	0.60	1.07	11.20	0.93	3.03	1.00	0.96
Concrete Finisher	G	200	0.60	0.72	6.30	0.85	2.15	0.69	0.66
Concrete Vibrator	G								
Fugitve Dust									

Equipment data taken from Unocal application.

For conversion to a lbs/gallon of fuel emission factor, assume 0.055 gallons/bhp-hr

*The equation used to calculate the emissions is a s follows: HP * LF * EF * HOURS * 2.2/1000 = LBS*

The emissions factors were taken from AP-42 Table II-7.1 for the diesel equipment except the cranes and the welding machines and AP-42 table 3.3-1 for the gasoline equipment and the cranes and the welding machines. D = diesel and G = gasoline

Fugitive emissions were calculated using the AP-42 section 11.2-4 factor of 1.2 tons/acre/month, assuming 4 acres, 7 days per week, 24 hours per day

UNOCAL POINT PERDERNALAS FILED MODIFICATIONS SEIR
JHF CONSTRUCTION EQUIPMENT USAGE BY WEEK (hours)

Equipment	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13	Week 14	Total
Backhoe 1	10	15	15	15	10	10	10	10	10	3	3	3	3	3	120
5-Ton Roller		4	4	4	4										16
Water Truck									2	2	2	4	4	2	16
Concrete Truck	4	6	6	4					4	4	4				32
40-Ton Crane		3													3
15-Ton Crane 1				5	10	10	10	10	5			5	5		60
Dump Truck	5	10	15	15	15	15	15	10	10	10	10	5	5		140
Concrete Finisher								8				4	4		16
Concrete Vibrator												4	4		8

UNOCAL POINT PERDERNALAS FILED MODIFICATIONS SEIR
JHF ROC CONSTRUCTION EMISSIONS (LBS)

ROC Emissions	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13	Week 14	Total
Backhoe 1	3.00	4.50	4.50	4.50	3.00	3.00	3.00	3.00	3.00	0.90	0.90	0.90	0.90	0.90	36.01
5-Ton Roller	0.00	0.67	0.67	0.67	0.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.67
Water Truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.15	0.15	0.31	0.31	0.15	1.23
Concrete Truck	0.31	0.46	0.46	0.31	0.00	0.00	0.00	0.00	0.31	0.31	0.31	0.00	0.00	0.00	2.47
40-Ton Crane	0.00	0.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.85
15-Ton Crane 1	0.00	0.00	0.00	0.96	1.91	1.91	1.91	1.91	0.96	0.00	0.00	0.96	0.96	0.00	11.47
Dump Truck	0.96	1.91	2.87	2.87	2.87	2.87	2.87	1.91	1.91	1.91	1.91	0.96	0.96	0.00	26.76
Concrete Finisher	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.52	0.00	0.00	0.00	0.76	0.76	0.00	3.05
Concrete Vibrator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Emissions (lbs)	4.26	8.39	8.50	9.30	8.45	7.78	7.78	8.35	6.33	3.27	3.27	3.88	3.88	1.05	84.50

UNOCAL POINT PERDERNALAS FILED MODIFICATIONS SEIR
JHF NOx CONSTRUCTION EMISSIONS (LBS)

NOx Emissions	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13	Week 14	Total
Backhoe 1	16.97	25.45	25.45	25.45	16.97	16.97	16.97	16.97	16.97	5.09	5.09	5.09	5.09	5.09	203.61
5-Ton Roller	0.00	3.77	3.77	3.77	3.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.08
Water Truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.88	2.88	2.88	5.75	5.75	2.88	23.00
Concrete Truck	5.75	8.63	8.63	5.75	0.00	0.00	0.00	0.00	5.75	5.75	5.75	0.00	0.00	0.00	46.01
40-Ton Crane	0.00	8.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.89
15-Ton Crane 1	0.00	0.00	0.00	10.00	20.00	20.00	20.00	20.00	10.00	0.00	0.00	10.00	10.00	0.00	120.02
Dump Truck	10.00	20.00	30.01	30.01	30.01	30.01	30.01	20.00	20.00	20.00	20.00	10.00	10.00	0.00	280.05
Concrete Finisher	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.34	0.00	0.00	0.00	6.67	6.67	0.00	26.67
Concrete Vibrator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Emissions (lbs)	32.72	66.74	67.85	74.98	70.75	66.98	66.98	70.31	55.60	33.72	33.72	37.51	37.51	7.97	723.34

UNOCAL POINT PERDERNALAS FILED MODIFICATIONS SEIR
JHF SO2 CONSTRUCTION EMISSIONS (LBS)

SO2 Emissions	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13	Week 14	Total
Backhoe 1	1.52	2.28	2.28	2.28	1.52	1.52	1.52	1.52	1.52	0.46	0.46	0.46	0.46	0.46	18.22
5-Ton Roller	0.00	0.34	0.34	0.34	0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.35
Water Truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.39	0.39	0.39	0.78	0.78	0.39	3.14
Concrete Truck	0.78	1.18	1.18	0.78	0.00	0.00	0.00	0.00	0.78	0.78	0.78	0.00	0.00	0.00	6.28
40-Ton Crane	0.00	0.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.74
15-Ton Crane 1	0.00	0.00	0.00	0.83	1.66	1.66	1.66	1.66	0.83	0.00	0.00	0.83	0.83	0.00	9.97
Dump Truck	0.83	1.66	2.49	2.49	2.49	2.49	2.49	1.66	1.66	1.66	1.66	0.83	0.83	0.00	23.25
Concrete Finisher	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.80	0.00	0.00	0.00	0.90	0.90	0.00	3.60
Concrete Vibrator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Emissions (lbs)	3.13	6.19	6.28	6.72	6.01	5.67	5.67	6.64	5.19	3.29	3.29	3.80	3.80	0.85	66.54

UNOCAL POINT PERDERNALAS FILED MODIFICATIONS SEIR
JHF CO CONSTRUCTION EMISSIONS (LBS)

CO Emissions	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13	Week 14	Total
Backhoe 1	13.11	19.66	19.66	19.66	13.11	13.11	13.11	13.11	13.11	3.93	3.93	3.93	3.93	3.93	157.32
5-Ton Roller	0.00	2.91	2.91	2.91	2.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.65
Water Truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.01	1.01	1.01	2.01	2.01	1.01	8.04
Concrete Truck	2.01	3.02	3.02	2.01	0.00	0.00	0.00	0.00	2.01	2.01	2.01	0.00	0.00	0.00	16.09
40-Ton Crane	0.00	2.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.41
15-Ton Crane 1	0.00	0.00	0.00	2.71	5.41	5.41	5.41	5.41	2.71	0.00	0.00	2.71	2.71	0.00	32.47
Dump Truck	2.71	5.41	8.12	8.12	8.12	8.12	8.12	5.41	5.41	5.41	5.41	2.71	2.71	0.00	75.76
Concrete Finisher	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.55	0.00	0.00	0.00	2.28	2.28	0.00	9.10
Concrete Vibrator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Emissions (lbs)	17.83	33.41	33.71	35.41	29.55	26.64	26.64	28.48	24.24	12.36	12.36	13.63	13.63	4.94	312.84

UNOCAL POINT PERDERNALAS FILED MODIFICATIONS SEIR
JHF PM CONSTRUCTION EMISSIONS (LBS)

PM Emissions	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13	Week 14	Total
Backhoe 1	2.27	3.40	3.40	3.40	2.27	2.27	2.27	2.27	2.27	0.68	0.68	0.68	0.68	0.68	27.22
5-Ton Roller	0.00	0.50	0.50	0.50	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.02
Water Truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.22	0.22	0.44	0.44	0.22	1.76
Concrete Truck	0.44	0.66	0.66	0.44	0.00	0.00	0.00	0.00	0.44	0.44	0.44	0.00	0.00	0.00	3.53
40-Ton Crane	0.00	0.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.79
15-Ton Crane 1	0.00	0.00	0.00	0.89	1.79	1.79	1.79	1.79	0.89	0.00	0.00	0.89	0.89	0.00	10.72
Dump Truck	0.89	1.79	2.68	2.68	2.68	2.68	2.68	1.79	1.79	1.79	1.79	0.89	0.89	0.00	25.00
Concrete Finisher	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.46	0.00	0.00	0.00	0.73	0.73	0.00	2.92
Concrete Vibrator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fugitive Dust	2240	2240	2240	2240	2240	2240	2240	2240	2240	2240	2240	2240	2240	2240	31360
Total Emissions (lbs)	2244	2247	2247	2248	2247	2247	2247	2247	2246	2243	2243	2244	2244	2241	31434

UNOCAL POINT PERDERNALAS FILED MODIFICATIONS SEIR
JHF PM10 CONSTRUCTION EMISSIONS (LBS)

PM 10 Emissions	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13	Week 14	Total
Backhoe 1	2.18	3.27	3.27	3.27	2.18	2.18	2.18	2.18	2.18	0.65	0.65	0.65	0.65	0.65	26.15
5-Ton Roller	0.00	0.48	0.48	0.48	0.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.94
Water Truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.21	0.21	0.21	0.42	0.42	0.21	1.69
Concrete Truck	0.42	0.64	0.64	0.42	0.00	0.00	0.00	0.00	0.42	0.42	0.42	0.00	0.00	0.00	3.39
40-Ton Crane	0.00	0.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
15-Ton Crane 1	0.00	0.00	0.00	0.86	1.71	1.71	1.71	1.71	0.86	0.00	0.00	0.86	0.86	0.00	10.29
Dump Truck	0.86	1.71	2.57	2.57	2.57	2.57	2.57	1.71	1.71	1.71	1.71	0.86	0.86	0.00	24.00
Concrete Finisher	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.40	0.00	0.00	0.00	0.70	0.70	0.00	2.79
Concrete Vibrator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fugitive Dust	2150	2150	2150	2150	2150	2150	2150	2150	2150	2150	2150	2150	2150	2150	30106
Total Emissions (lbs)	2154	2157	2157	2158	2157	2157	2157	2157	2156	2153	2153	2154	2154	2151	30177

UNOCAL POINT PERDERNALAS FILED MODIFICATIONS SEIR

HS&P Operational Fugitive Emissions for the Proposed New Equipment

Component	Component Count	THC lbs/unit-day	ROC lbs/unit-day	I&M Control (%)	Total ROC's (lbs/hr)	Total ROC's (tons/qtr)	Total ROC's (tons/yr)
Gas Service (a)							
Valve Stems	1110	1.06	0.48	78	4.88	5.33	21.39
Relief Valves (b)	48	1.93	0.876	100			
Compressor Seals (c)	24	5.85	2.65	100			
Connections	6889	0.057	0.0288	77	1.90	2.08	8.33
Light Liquid Service (a)							
Valve Stems	370	1.06	0.48	78	1.63	1.78	7.13
Relief Valves (d)	6	1.93	0.876	100			
Compressor Seals	6	5.85	2.65	100			
Connections	2190	0.057	0.0288	77	0.60	0.66	2.65
Total					9.02	9.85	39.50

a. Gas component emission factors from EPA/Radian Study.
b. Relief valves vented to flare system; therefore assume no emissions.
c. Compressor seals vented to vapor recovery; therefore assume no emissions.
d. Relief valves vented to liquid relief system, then to flare; therefore assume no emissions.

UNOCAL POINT PERDERNALAS FILED MODIFICATIONS SEIR

JHF Operational Fugitive Emissions for the Proposed New Equipment

Component	Component Count	THC lbs/unit-day	ROC lbs/unit-day	I&M Control (%)	Total ROC's		
					(lbs/hr)	(tons/qtr)	(tons/yr)
Gas Service (a)							
Valve Stems	222	1.06	0.48	78	0.98	1.07	4.28
Relief Valves (b)	10	1.93	0.876	100			
Compressor Seals (c)	5	5.85	2.65	100			
Connections	1379	0.057	0.0288	77	0.38	0.42	1.67
Light Liquid Service (a)							
Valve Stems	74	1.06	0.48	78	0.33	0.36	1.43
Relief Valves (d)	1	1.93	0.876	100			
Compressor Seals	1	5.85	2.65	100			
Connections	438	0.057	0.0288	77	0.11	0.11	0.46
Total					1.79	1.95	7.83

a. Gas component emission factors from EPA/Radian Study.
b. Relief valves vented to flare system; therefore assume no emissions.
c. Compressor seals vented to vapor recovery; therefore assume no emissions.
d. Relief valves vented to liquid relief system, then to flare; therefore assume no emissions.

UNOCAL POINT PERDERNALAS FILED MODIFICATIONS SEIR

Santa Maria Pump Station Operation Emissions for the Proposed New Boilers

Equipment	Maximum Firing Rate (MMBTU/hr)	Emission Rates (lbs/MM BTUH)				Emission Rates (lbs/hr)	
		ROC	NOx	SO2	CO	PM	PM 10
Boiler 1	16.4	0.001829	0.03125	0.00061	0.0195	0.05	0.05
Boiler 2	12.3	0.001829	0.03125	0.00061	0.0195	0.05	0.05
	Boiler 1 (lbs/hr)	0.03	0.51	0.01	0.32	0.05	0.05
	Boiler 2 (lbs/hr)	0.02	0.38	0.01	0.24	0.05	0.05
	Total Emissions (lbs/hr)	0.05	0.90	0.02	0.56	0.10	0.10

Note: NOx and CO emissions rates based upon manufactures data for the proposed boilers.
ROC, SO2, Pm and PM10 emission factors are based upon AP-42 emission factors for boilers.
The boilers are guaranteed to 25 ppm Nox and 30 ppm CO at the maximum firing rate.

Lbs/hr= (emission factor)*(maximum firing rate)

UNOCAL HS&P SEIR:
ALL BATTLES USERS FLARING SCENARIO
Open Pipe Flare Unassisted

Owner	Field	Lease	Gas Production (MCFD) 1991	1992	1993	1994	1995	1996	1997	1998	FLARE H2S (ppm)
City Oil Corp	Orcutt	Careaga	427	389	550	1,000	2,000	2,000	2,000	2,000	10
Conway	Casmalia	Newhall	56	82	59	60	60	60	60	60	10
Conway	Cat Canyon	Waite Bradley	0	0	5	5	5	5	5	5	750
Conway	Santa Maria	Union Sugar	36	28	23.4	25	25	25	25	25	750
Conway	Santa Maria	Enos	114	118	100	100	100	100	100	100	65
Crimson	Santa Maria		6	6	6	6	6	6	6	6	750
Dominion Oil Co	Cat Canyon West	Los Flores	58	118	118	118	118	118	118	118	10
D&S Serv./SABA	Cat Canyon		1,485	1,500	1,425	1,354	1,286	1,222	1,161	1,103	750
Geo Production	Orcutt Hill	Coreaga	89	71	60	60	60	60	60	60	10
Geo Production	Orcutt Hill	Barbara Investmen	0	0	0	0	0	0	0	0	750
Petromineral Corp.	Santa Maria	Hancock	7	12	7	7	7	7	7	7	10
Petromineral Corp.	Santa Maria	Magenheimer	7	12	19	19	19	19	19	19	10
Petrominerals	Cat Canyon	Arata	17	20	0	0	0	0	0	0	500
Texaco	Orcutt		124	118	118	118	118	118	118	118	100
Vintage	Cat Canyon		412	575	740	740	740	740	740	740	750
Vintage	Santa Maria Valley		657	686	700	700	700	700	700	700	750
TOTALS			**3,496**	**3,734**	**3,930**	**4,312**	**5,244**	**5,180**	**5,119**	**5,061**	

OPF: Unassisted

Assumed Gas HV, Btu/ft3	Emission Factors (lb/MMBtu) NOx	CO	PM10	ROC
900	0.0725	1.57	0.0202	0.099

NOTES:
Flare emission factors taken from the SBCAPCD Flare Study Report, July 1991

UNOCAL HS&P SEIR:
ALL BATTLES USERS FLARING SCENARIO
Open Pipe Flare Unassisted

Owner	Field	1993 Flare Emissions (Tons/Year) NOx	CO	PM10	ROC	SO2	1994 Flare Emissions (Tons/Year) NOx	CO	PM10	ROC	SO2
City Oil Corp	Orcutt	6.55	141.83	1.82	8.94	0.18	11.91	257.87	3.32	16.26	0.33
Conway	Casmalia	0.70	15.16	0.20	0.96	0.02	0.71	15.47	0.20	0.98	0.02
Conway	Cat Canyon	0.06	1.29	0.02	0.08	0.12	0.06	1.29	0.02	0.08	0.12
Conway	Santa Maria	0.28	6.03	0.08	0.38	0.58	0.30	6.45	0.08	0.41	0.62
Conway	Santa Maria	1.19	25.79	0.33	1.63	0.21	1.19	25.79	0.33	1.63	0.21
Crimson	Santa Maria	0.07	1.55	0.02	0.10	0.15	0.07	1.55	0.02	0.10	0.15
Dominion Oil Co	Cat Canyon West	1.41	30.43	0.39	1.92	0.04	1.41	30.43	0.39	1.92	0.04
D&S Serv./SABA	Cat Canyon	16.97	367.47	4.73	23.17	35.11	16.12	349.09	4.49	22.01	33.35
Geo Production	Orcutt Hill	0.71	15.47	0.20	0.98	0.02	0.71	15.47	0.20	0.98	0.02
Geo Production	Orcutt Hill	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Petromineral Corp.	Santa Maria	0.08	1.81	0.02	0.11	0.00	0.08	1.81	0.02	0.11	0.00
Petromineral Corp.	Santa Maria	0.23	4.90	0.06	0.31	0.01	0.23	4.90	0.06	0.31	0.01
Petrominerals	Cat Canyon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Texaco	Orcutt	1.41	30.43	0.39	1.92	0.39	1.41	30.43	0.39	1.92	0.39
Vintage	Cat Canyon	8.81	190.83	2.46	12.03	18.23	8.81	190.83	2.46	12.03	18.23
Vintage	Santa Maria Valley	8.34	180.51	2.32	11.38	17.25	8.34	180.51	2.32	11.38	17.25
TOTALS		**47**	**1013**	**13**	**64**	**72**	**51**	**1112**	**14**	**70**	**71**

UNOCAL HS&P SEIR:
ALL BATTLES USERS FLARING SCENARIO
Open Pipe Flare Unassisted

		1995 Flare Emissions (Tons/Year)					1996 Flare Emissions (Tons/Year)				
Owner	Field	NOx	CO	PM10	ROC	SO2	NOx	CO	PM10	ROC	SO2
City Oil Corp	Orcutt	23.82	515.75	6.64	32.52	0.66	23.82	515.75	6.64	32.52	0.66
Conway	Casmalia	0.71	15.47	0.20	0.98	0.02	0.71	15.47	0.20	0.98	0.02
Conway	Cat Canyon	0.06	1.29	0.02	0.08	0.12	0.06	1.29	0.02	0.08	0.12
Conway	Santa Maria	0.30	6.45	0.08	0.41	0.62	0.30	6.45	0.08	0.41	0.62
Conway	Santa Maria	1.19	25.79	0.33	1.63	0.21	1.19	25.79	0.33	1.63	0.21
Crimson	Santa Maria	0.07	1.55	0.02	0.10	0.15	0.07	1.55	0.02	0.10	0.15
Dominion Oil Co	Cat Canyon West	1.41	30.43	0.39	1.92	0.04	1.41	30.43	0.39	1.92	0.04
D&S Serv./SABA	Cat Canyon	15.31	331.64	4.27	20.91	31.69	14.55	315.06	4.05	19.87	30.10
Geo Production	Orcutt Hill	0.71	15.47	0.20	0.98	0.02	0.71	15.47	0.20	0.98	0.02
Geo Production	Orcutt Hill	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Petromineral Corp.	Santa Maria	0.08	1.81	0.02	0.11	0.00	0.08	1.81	0.02	0.11	0.00
Petromineral Corp.	Santa Maria	0.23	4.90	0.06	0.31	0.01	0.23	4.90	0.06	0.31	0.01
Petrominerals	Cat Canyon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Texaco	Orcutt	1.41	30.43	0.39	1.92	0.39	1.41	30.43	0.39	1.92	0.39
Vintage	Cat Canyon	8.81	190.83	2.46	12.03	18.23	8.81	190.83	2.46	12.03	18.23
Vintage	Santa Maria Valley	8.34	180.51	2.32	11.38	17.25	8.34	180.51	2.32	11.38	17.25
TOTALS		**62**	**1352**	**17**	**85**	**69**	**62**	**1336**	**17**	**84**	**68**

UNOCAL HS&P SEIR:
ALL BATTLES USERS FLARING SCENARIO
Open Pipe Flare Unassisted

Owner	Field	1997 Flare Emissions (Tons/Year) NOx	CO	PM10	ROC	SO2	1998 Flare Emissions (Tons/Year) NOx	CO	PM10	ROC	SO2
City Oil Corp	Orcutt	23.82	515.75	6.64	32.52	0.66	23.82	515.75	6.64	32.52	0.66
Conway	Casmalia	0.71	15.47	0.20	0.98	0.02	0.71	15.47	0.20	0.98	0.02
Conway	Cat Canyon	0.06	1.29	0.02	0.08	0.12	0.06	1.29	0.02	0.08	0.12
Conway	Santa Maria	0.30	6.45	0.08	0.41	0.62	0.30	6.45	0.08	0.41	0.62
Conway	Santa Maria	1.19	25.79	0.33	1.63	0.21	1.19	25.79	0.33	1.63	0.21
Crimson	Santa Maria	0.07	1.55	0.02	0.10	0.15	0.07	1.55	0.02	0.10	0.15
Dominion Oil Co	Cat Canyon West	1.41	30.43	0.39	1.92	0.04	1.41	30.43	0.39	1.92	0.04
D&S Serv./SABA	Cat Canyon	13.82	299.31	3.85	18.87	28.60	13.13	284.34	3.66	17.93	27.17
Geo Production	Orcutt Hill	0.71	15.47	0.20	0.98	0.02	0.71	15.47	0.20	0.98	0.02
Geo Production	Orcutt Hill	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Petromineral Corp.	Santa Maria	0.08	1.81	0.02	0.11	0.00	0.08	1.81	0.02	0.11	0.00
Petromineral Corp.	Santa Maria	0.23	4.90	0.06	0.31	0.01	0.23	4.90	0.06	0.31	0.01
Petrominerals	Cat Canyon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Texaco	Orcutt	1.41	30.43	0.39	1.92	0.39	1.41	30.43	0.39	1.92	0.39
Vintage	Cat Canyon	8.81	190.83	2.46	12.03	18.23	8.81	190.83	2.46	12.03	18.23
Vintage	Santa Maria Valley	8.34	180.51	2.32	11.38	17.25	8.34	180.51	2.32	11.38	17.25
TOTALS		**61**	**1320**	**17**	**83**	**66**	**60**	**1305**	**17**	**82**	**65**

UNOCAL HS&P SEIR
All Battles Users Flaring
OPF Steam Assisted

Owner	Field	Lease	Gas Production (MCFD) 1991	1992	1993	1994	1995	1996	1997	1998	FLARE H2S (ppm)
City Oil Corp	Orcutt	Careaga	427	389	550	1000	2000	2000	2000	2000	10
Conway	Casmalia	Newhall	56	82	59	60	60	60	60	60	10
Conway	Cat Canyon	Brookings	0	0	5	5	5	5	5	5	750
Conway	Santa Maria	Union Sugar	36	28	23	25	25	25	25	25	750
Conway	Santa Maria	Enos	114	118	100	100	100	100	100	100	65
Crimson	Santa Maria		6	6	6	6	6	6	6	6	750
Dominion Oil Co	Cat Canyon	Los Flores	58	118	118	118	118	118	118	118	10
D&S Serv./SABA	Cat Canyon		1,485	1,500	1,425	1,354	1,286	1,222	1,161	1,103	750
Geo Production	Orcutt Hill	Coreaga	89	71	60	60	60	60	60	60	10
Geo Production	Orcutt Hill	Barbara Invest	0	0	0	0	0	0	0	0	750
Petromineral Corp.	Santa Maria	Hancock	7	12	7	7	7	7	7	7	10
Petromineral Corp.	Santa Maria	Magenheimer	7	12	19	19	19	19	19	19	10
Petrominerals	Cat Canyon	Arata	17	20	0	0	0	0	0	0	500
Texaco	Orcutt		124	118	118	118	118	118	118	118	100
Vintage	Cat Canyon		412	575	740	740	740	740	740	740	750
Vintage	Santa Maria		657	686	700	700	700	700	700	700	750
TOTAL			**3,496**	**3,734**	**3,930**	**4,312**	**5,244**	**5,180**	**5,119**	**5,061**	

OPF: Steam Assisted

Assumed Gas HV, Btu/ft3	Emission Factors (lb/MMBtu) NOx	CO	PM10	ROC
900	0.0568	1.57	0.0202	0.066

UNOCAL HS&P SEIR
All Battles Users Flaring
OPF Steam Assisted

		1993 Flare Emissions (Tons/Year)					1994 Flare Emissions (Tons/Year)				
Owner	Field	NOx	CO	PM10	ROC	SO2	NOx	CO	PM10	ROC	SO2
City Oil Corp	Orcutt	5.13	141.83	1.82	5.96	0.18	9.33	257.87	3.32	10.84	0.33
Conway	Casmalia	0.55	15.16	0.20	0.64	0.02	0.56	15.47	0.20	0.65	0.02
Conway	Cat Canyon	0.05	1.29	0.02	0.05	0.12	0.05	1.29	0.02	0.05	0.12
Conway	Santa Maria	0.22	6.03	0.08	0.25	0.58	0.23	6.45	0.08	0.27	0.62
Conway	Santa Maria	0.93	25.79	0.33	1.08	0.21	0.93	25.79	0.33	1.08	0.21
Crimson	Santa Maria	0.06	1.55	0.02	0.07	0.15	0.06	1.55	0.02	0.07	0.15
Dominion Oil Co	Cat Canyon	1.10	30.43	0.39	1.28	0.04	1.10	30.43	0.39	1.28	0.04
D&S Serv./SABA	Cat Canyon	13.29	367.47	4.73	15.45	35.11	12.63	349.09	4.49	14.68	33.35
Geo Production	Orcutt Hill	0.56	15.47	0.20	0.65	0.02	0.56	15.47	0.20	0.65	0.02
Geo Production	Orcutt Hill	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Petromineral Corp.	Santa Maria	0.07	1.81	0.02	0.08	0.00	0.07	1.81	0.02	0.08	0.00
Petromineral Corp.	Santa Maria	0.18	4.90	0.06	0.21	0.01	0.18	4.90	0.06	0.21	0.01
Petrominerals	Cat Canyon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Texaco	Orcutt	1.10	30.43	0.39	1.28	0.39	1.10	30.43	0.39	1.28	0.39
Vintage	Cat Canyon	6.90	190.83	2.46	8.02	18.23	6.90	190.83	2.46	8.02	18.23
Vintage	Santa Maria	6.53	180.51	2.32	7.59	17.25	6.53	180.51	2.32	7.59	17.25
TOTAL		**37**	**1013**	**13**	**43**	**72**	**40**	**1112**	**14**	**47**	**71**

UNOCAL HS&P SEIR
All Battles Users Flaring
OPF Steam Assisted

		1995 Flare Emissions (Tons/Year)					1996 Flare Emissions (Tons/Year)				
Owner	Field	NOx	CO	PM10	ROC	SO2	NOx	CO	PM10	ROC	SO2
City Oil Corp	Orcutt	18.66	515.75	6.64	21.68	0.66	18.66	515.75	6.64	21.68	0.66
Conway	Casmalia	0.56	15.47	0.20	0.65	0.02	0.56	15.47	0.20	0.65	0.02
Conway	Cat Canyon	0.05	1.29	0.02	0.05	0.12	0.05	1.29	0.02	0.05	0.12
Conway	Santa Maria	0.23	6.45	0.08	0.27	0.62	0.23	6.45	0.08	0.27	0.62
Conway	Santa Maria	0.93	25.79	0.33	1.08	0.21	0.93	25.79	0.33	1.08	0.21
Crimson	Santa Maria	0.06	1.55	0.02	0.07	0.15	0.06	1.55	0.02	0.07	0.15
Dominion Oil Co	Cat Canyon	1.10	30.43	0.39	1.28	0.04	1.10	30.43	0.39	1.28	0.04
D&S Serv./SABA	Cat Canyon	12.00	331.64	4.27	13.94	31.69	11.40	315.06	4.05	13.24	30.10
Geo Production	Orcutt Hill	0.56	15.47	0.20	0.65	0.02	0.56	15.47	0.20	0.65	0.02
Geo Production	Orcutt Hill	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Petromineral Corp.	Santa Maria	0.07	1.81	0.02	0.08	0.00	0.07	1.81	0.02	0.08	0.00
Petromineral Corp.	Santa Maria	0.18	4.90	0.06	0.21	0.01	0.18	4.90	0.06	0.21	0.01
Petrominerals	Cat Canyon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Texaco	Orcutt	1.10	30.43	0.39	1.28	0.39	1.10	30.43	0.39	1.28	0.39
Vintage	Cat Canyon	6.90	190.83	2.46	8.02	18.23	6.90	190.83	2.46	8.02	18.23
Vintage	Santa Maria	6.53	180.51	2.32	7.59	17.25	6.53	180.51	2.32	7.59	17.25
TOTAL		**49**	**1352**	**17**	**57**	**69**	**48**	**1336**	**17**	**56**	**68**

UNOCAL HS&P SEIR
All Battles Users Flaring
OPF Steam Assisted

Owner	Field	1997 Flare Emissions (Tons/Year) NOx	CO	PM10	ROC	SO2	1998 Flare Emissions (Tons/Year) NOx	CO	PM10	ROC	SO2
City Oil Corp	Orcutt	18.66	515.75	6.64	21.68	0.66	18.66	515.75	6.64	21.68	0.66
Conway	Casmalia	0.56	15.47	0.20	0.65	0.02	0.56	15.47	0.20	0.65	0.02
Conway	Cat Canyon	0.05	1.29	0.02	0.05	0.12	0.05	1.29	0.02	0.05	0.12
Conway	Santa Maria	0.23	6.45	0.08	0.27	0.62	0.23	6.45	0.08	0.27	0.62
Conway	Santa Maria	0.93	25.79	0.33	1.08	0.21	0.93	25.79	0.33	1.08	0.21
Crimson	Santa Maria	0.06	1.55	0.02	0.07	0.15	0.06	1.55	0.02	0.07	0.15
Dominion Oil Co	Cat Canyon	1.10	30.43	0.39	1.28	0.04	1.10	30.43	0.39	1.28	0.04
D&S Serv./SABA	Cat Canyon	10.83	299.31	3.85	12.58	28.60	10.29	284.34	3.66	11.95	27.17
Geo Production	Orcutt Hill	0.56	15.47	0.20	0.65	0.02	0.56	15.47	0.20	0.65	0.02
Geo Production	Orcutt Hill	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Petromineral Corp.	Santa Maria	0.07	1.81	0.02	0.08	0.00	0.07	1.81	0.02	0.08	0.00
Petromineral Corp.	Santa Maria	0.18	4.90	0.06	0.21	0.01	0.18	4.90	0.06	0.21	0.01
Petrominerals	Cat Canyon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Texaco	Orcutt	1.10	30.43	0.39	1.28	0.39	1.10	30.43	0.39	1.28	0.39
Vintage	Cat Canyon	6.90	190.83	2.46	8.02	18.23	6.90	190.83	2.46	8.02	18.23
Vintage	Santa Maria	6.53	180.51	2.32	7.59	17.25	6.53	180.51	2.32	7.59	17.25
TOTAL		**48**	**1320**	**17**	**55**	**66**	**47**	**1305**	**17**	**55**	**65**

UNOCAL HS&P SEIR
All Battles Users Flaring
OPF Air Assisted

Owner	Field	Lease	Gas Production (MCFD) 1991	1992	1993	1994	1995	1996	1997	1998	FLARE H2S (ppm)
City Oil Corp	Orcutt	Careaga	427	389	550	1000	2000	2000	2000	2000	10
Conway	Casmalia	Newhall	56	82	59	60	60	60	60	60	10
Conway	Cat Canyon	Brookings	0	0	5	5	5	5	5	5	750
Conway	Santa Maria	Union Sugar	36	28	23	25	25	25	25	25	750
Conway	Santa Maria	Enos	114	118	100	100	100	100	100	100	65
Crimson	Santa Maria		6	6	6	6	6	6	6	6	750
Dominion Oil Co	Cat Canyon	Los Flores	58	118	118	118	118	118	118	118	10
D&S Serv./SABA	Cat Canyon		1,485	1,500	1,425	1,354	1,286	1,222	1,161	1,103	750
Geo Production	Orcutt Hill	Coreaga	89	71	60	60	60	60	60	60	10
Geo Production	Orcutt Hill	Barbara Invest	0	0	0	0	0	0	0	0	750
Petromineral Corp.	Santa Maria	Hancock	7	12	7	7	7	7	7	7	10
Petromineral Corp.	Santa Maria	Magenheimer	7	12	19	19	19	19	19	19	10
Petrominerals	Cat Canyon	Arata	17	20	0	0	0	0	0	0	500
Texaco	Orcutt		124	118	118	118	118	118	118	118	100
Vintage	Cat Canyon		412	575	740	740	740	740	740	740	750
Vintage	Santa Maria		657	686	700	700	700	700	700	700	750
TOTAL EMISSIONS (TONS/YEAR)			**3,496**	**3,734**	**3,930**	**4,312**	**5,244**	**5,180**	**5,119**	**5,061**	

OPF: Air Assisted

Assumed Gas HV, Btu/ft3	Emission Factors (lb/MMBtu) NOx	CO	PM10	ROC
900	0.0881	1.57	0.0202	0.084

NOTES:
Flare emission factors taken from the SBCAPCD Flare Study Report, July 1991

UNOCAL HS&P SEIR
All Battles Users Flaring
OPF Air Assisted

Owner	Field	1993 Flare Emissions (Tons/Year) NOx	CO	PM10	ROC	SO2	1994 Flare Emissions (Tons/Year) NOx	CO	PM10	ROC	SO2
City Oil Corp	Orcutt	7.96	141.83	1.82	7.59	0.18	14.47	257.87	3.32	13.80	0.33
Conway	Casmalia	0.85	15.16	0.20	0.81	0.02	0.87	15.47	0.20	0.83	0.02
Conway	Cat Canyon	0.07	1.29	0.02	0.07	0.12	0.07	1.29	0.02	0.07	0.12
Conway	Santa Maria	0.34	6.03	0.08	0.32	0.58	0.36	6.45	0.08	0.34	0.62
Conway	Santa Maria	1.45	25.79	0.33	1.38	0.21	1.45	25.79	0.33	1.38	0.21
Crimson	Santa Maria	0.09	1.55	0.02	0.08	0.15	0.09	1.55	0.02	0.08	0.15
Dominion Oil Co	Cat Canyon	1.71	30.43	0.39	1.63	0.04	1.71	30.43	0.39	1.63	0.04
D&S Serv./SABA	Cat Canyon	20.62	367.47	4.73	19.66	35.11	19.59	349.09	4.49	18.68	33.35
Geo Production	Orcutt Hill	0.87	15.47	0.20	0.83	0.02	0.87	15.47	0.20	0.83	0.02
Geo Production	Orcutt Hill	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Petromineral Corp.	Santa Maria	0.10	1.81	0.02	0.10	0.00	0.10	1.81	0.02	0.10	0.00
Petromineral Corp.	Santa Maria	0.27	4.90	0.06	0.26	0.01	0.27	4.90	0.06	0.26	0.01
Petrominerals	Cat Canyon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Texaco	Orcutt	1.71	30.43	0.39	1.63	0.39	1.71	30.43	0.39	1.63	0.39
Vintage	Cat Canyon	10.71	190.83	2.46	10.21	18.23	10.71	190.83	2.46	10.21	18.23
Vintage	Santa Maria	10.13	180.51	2.32	9.66	17.25	10.13	180.51	2.32	9.66	17.25
TOTAL EMISSIONS (TONS/YEAR)		**57**	**1013**	**13**	**54**	**72**	**62**	**1112**	**14**	**59**	**71**

UNOCAL HS&P SEIR
All Battles Users Flaring
OPF Air Assisted

		1995 Flare Emissions (Tons/Year)					1996 Flare Emissions (Tons/Year)				
Owner	Field	NOx	CO	PM10	ROC	SO2	NOx	CO	PM10	ROC	SO2
City Oil Corp	Orcutt	28.94	515.75	6.64	27.59	0.66	28.94	515.75	6.64	27.59	0.66
Conway	Casmalia	0.87	15.47	0.20	0.83	0.02	0.87	15.47	0.20	0.83	0.02
Conway	Cat Canyon	0.07	1.29	0.02	0.07	0.12	0.07	1.29	0.02	0.07	0.12
Conway	Santa Maria	0.36	6.45	0.08	0.34	0.62	0.36	6.45	0.08	0.34	0.62
Conway	Santa Maria	1.45	25.79	0.33	1.38	0.21	1.45	25.79	0.33	1.38	0.21
Crimson	Santa Maria	0.09	1.55	0.02	0.08	0.15	0.09	1.55	0.02	0.08	0.15
Dominion Oil Co	Cat Canyon	1.71	30.43	0.39	1.63	0.04	1.71	30.43	0.39	1.63	0.04
D&S Serv./SABA	Cat Canyon	18.61	331.64	4.27	17.74	31.69	17.68	315.06	4.05	16.86	30.10
Geo Production	Orcutt Hill	0.87	15.47	0.20	0.83	0.02	0.87	15.47	0.20	0.83	0.02
Geo Production	Orcutt Hill	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Petromineral Corp.	Santa Maria	0.10	1.81	0.02	0.10	0.00	0.10	1.81	0.02	0.10	0.00
Petromineral Corp.	Santa Maria	0.27	4.90	0.06	0.26	0.01	0.27	4.90	0.06	0.26	0.01
Petrominerals	Cat Canyon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Texaco	Orcutt	1.71	30.43	0.39	1.63	0.39	1.71	30.43	0.39	1.63	0.39
Vintage	Cat Canyon	10.71	190.83	2.46	10.21	18.23	10.71	190.83	2.46	10.21	18.23
Vintage	Santa Maria	10.13	180.51	2.32	9.66	17.25	10.13	180.51	2.32	9.66	17.25
TOTAL EMISSIONS (TONS/YEAR)		**76**	**1352**	**17**	**72**	**69**	**75**	**1336**	**17**	**71**	**68**

UNOCAL HS&P SEIR
All Battles Users Flaring
OPF Air Assisted

Owner	Field	1997 Flare Emissions (Tons/Year) NOx	CO	PM10	ROC	SO2	1998 Flare Emissions (Tons/Year) NOx	CO	PM10	ROC	SO2
City Oil Corp	Orcutt	28.94	515.75	6.64	27.59	0.66	28.94	515.75	6.64	27.59	0.66
Conway	Casmalia	0.87	15.47	0.20	0.83	0.02	0.87	15.47	0.20	0.83	0.02
Conway	Cat Canyon	0.07	1.29	0.02	0.07	0.12	0.07	1.29	0.02	0.07	0.12
Conway	Santa Maria	0.36	6.45	0.08	0.34	0.62	0.36	6.45	0.08	0.34	0.62
Conway	Santa Maria	1.45	25.79	0.33	1.38	0.21	1.45	25.79	0.33	1.38	0.21
Crimson	Santa Maria	0.09	1.55	0.02	0.08	0.15	0.09	1.55	0.02	0.08	0.15
Dominion Oil Co	Cat Canyon	1.71	30.43	0.39	1.63	0.04	1.71	30.43	0.39	1.63	0.04
D&S Serv./SABA	Cat Canyon	16.80	299.31	3.85	16.01	28.60	15.96	284.34	3.66	15.21	27.17
Geo Production	Orcutt Hill	0.87	15.47	0.20	0.83	0.02	0.87	15.47	0.20	0.83	0.02
Geo Production	Orcutt Hill	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Petromineral Corp.	Santa Maria	0.10	1.81	0.02	0.10	0.00	0.10	1.81	0.02	0.10	0.00
Petromineral Corp.	Santa Maria	0.27	4.90	0.06	0.26	0.01	0.27	4.90	0.06	0.26	0.01
Petrominerals	Cat Canyon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Texaco	Orcutt	1.71	30.43	0.39	1.63	0.39	1.71	30.43	0.39	1.63	0.39
Vintage	Cat Canyon	10.71	190.83	2.46	10.21	18.23	10.71	190.83	2.46	10.21	18.23
Vintage	Santa Maria	10.13	180.51	2.32	9.66	17.25	10.13	180.51	2.32	9.66	17.25
TOTAL EMISSIONS (TONS/YEAR)		**74**	**1320**	**17**	**71**	**66**	**73**	**1305**	**17**	**70**	**65**

UNOCAL HS&P SEIR
All Battles Users Flaring
Cascade Flow Control Unassisted

Owner	Field	Lease	Gas Production (MCFD) 1991	1992	1993	1994	1995	1996	1997	1998	Gas H2S (ppm)
City Oil Corp	Orcutt	Careaga	427	389	550	1000	2000	2000	2000	2000	10
Conway	Casmalia	Newhall	56	82	59	60	60	60	60	60	10
Conway	Cat Canyon	Brookings	0	0	5	5	5	5	5	5	750
Conway	Santa Maria	Union Sugar	36	28	23	25	25	25	25	25	750
Conway	Santa Maria	Enos	114	118	100	100	100	100	100	100	65
Crimson	Santa Maria		6	6	6	6	6	6	6	6	750
Dominion Oil Co	Cat Canyon	Los Flores	58	118	118	118	118	118	118	118	10
D&S Serv./SABA	Cat Canyon		1,485	1,500	1,425	1,354	1,286	1,222	1,161	1,103	750
Geo Production	Orcutt Hill	Coreaga	89	71	60	60	60	60	60	60	10
Geo Production	Orcutt Hill	Barbara Invest	0	0	0	0	0	0	0	0	750
Petromineral Corp.	Santa Maria	Hancock	7	12	7	7	7	7	7	7	10
Petromineral Corp.	Santa Maria	Magenheimer	7	12	19	19	19	19	19	19	10
Petrominerals	Cat Canyon	Arata	17	20	0	0	0	0	0	0	500
Texaco	Orcutt		124	118	118	118	118	118	118	118	100
Vintage	Cat Canyon		412	575	740	740	740	740	740	740	750
Vintage	Santa Maria		657	686	700	700	700	700	700	700	750
TOTAL EMISSIONS (TONS/YEAR)			**3,496**	**3,734**	**3,930**	**4,312**	**5,244**	**5,180**	**5,119**	**5,061**	

Assumed Gas HV, Btu/ft³	CFCF: Unassisted < 266 MCFD Emission Factors (lb/MMBtu) NOx	CO	PM10	ROC	CFCF: Unassisted < 2660 MCFD Emission Factors (lb/MMBtu) NOx	CO	PM10	ROC
900	0.0952	0.019	0.0048	0.0051	0.133	0.0333	0.0048	0.0027

NOTES:
Flare emission factors taken from the SBCAPCD Flare Study Report, July 1991

UNOCAL HS&P SEIR
All Battles Users Flaring
Cascade Flow Control Unassiste

Owner	Field	1993 Flare Emissions (Tons/Year) NOx	CO	PM10	ROC	SO2	1994 Flare Emissions (Tons/Year) NOx	CO	PM10	ROC	SO2
City Oil Corp	Orcutt	8.60	1.72	0.43	0.46	0.18	15.64	3.12	0.79	0.84	0.33
Conway	Casmalia	0.92	0.18	0.05	0.05	0.02	0.94	0.19	0.05	0.05	0.02
Conway	Cat Canyon	0.08	0.02	0.00	0.00	0.12	0.08	0.02	0.00	0.00	0.12
Conway	Santa Maria	0.37	0.07	0.02	0.02	0.58	0.39	0.08	0.02	0.02	0.62
Conway	Santa Maria	1.56	0.31	0.08	0.08	0.21	1.56	0.31	0.08	0.08	0.21
Crimson	Santa Maria	0.09	0.02	0.00	0.01	0.15	0.09	0.02	0.00	0.01	0.15
Dominion Oil Co	Cat Canyon	1.85	0.37	0.09	0.10	0.04	1.85	0.37	0.09	0.10	0.04
D&S Serv./SABA	Cat Canyon	22.28	4.45	1.12	1.19	35.11	21.17	4.22	1.07	1.13	33.35
Geo Production	Orcutt Hill	0.94	0.19	0.05	0.05	0.02	0.94	0.19	0.05	0.05	0.02
Geo Production	Orcutt Hill	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Petromineral Corp.	Santa Maria	0.11	0.02	0.01	0.01	0.00	0.11	0.02	0.01	0.01	0.00
Petromineral Corp.	Santa Maria	0.30	0.06	0.01	0.02	0.01	0.30	0.06	0.01	0.02	0.01
Petrominerals	Cat Canyon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Texaco	Orcutt	1.85	0.37	0.09	0.10	0.39	1.85	0.37	0.09	0.10	0.39
Vintage	Cat Canyon	11.57	2.31	0.58	0.62	18.23	11.57	2.31	0.58	0.62	18.23
Vintage	Santa Maria	10.95	2.18	0.55	0.59	17.25	10.95	2.18	0.55	0.59	17.25
TOTAL EMISSIONS (TONS/YEAR)		**61**	**12**	**3**	**3**	**72**	**67**	**13**	**3**	**4**	**71**

UNOCAL HS&P SEIR
All Battles Users Flaring
Cascade Flow Control Unassiste

		1995 Flare Emissions (Tons/Year)					1996 Flare Emissions (Tons/Year)				
Owner	Field	NOx	CO	PM10	ROC	SO2	NOx	CO	PM10	ROC	SO2
City Oil Corp	Orcutt	31.27	6.24	1.58	1.68	0.66	31.27	6.24	1.58	1.68	0.66
Conway	Casmalia	0.94	0.19	0.05	0.05	0.02	0.94	0.19	0.05	0.05	0.02
Conway	Cat Canyon	0.08	0.02	0.00	0.00	0.12	0.08	0.02	0.00	0.00	0.12
Conway	Santa Maria	0.39	0.08	0.02	0.02	0.62	0.39	0.08	0.02	0.02	0.62
Conway	Santa Maria	1.56	0.31	0.08	0.08	0.21	1.56	0.31	0.08	0.08	0.21
Crimson	Santa Maria	0.09	0.02	0.00	0.01	0.15	0.09	0.02	0.00	0.01	0.15
Dominion Oil Co	Cat Canyon	1.85	0.37	0.09	0.10	0.04	1.85	0.37	0.09	0.10	0.04
D&S Serv./SABA	Cat Canyon	20.11	4.01	1.01	1.08	31.69	19.10	3.81	0.96	1.02	30.10
Geo Production	Orcutt Hill	0.94	0.19	0.05	0.05	0.02	0.94	0.19	0.05	0.05	0.02
Geo Production	Orcutt Hill	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Petromineral Corp.	Santa Maria	0.11	0.02	0.01	0.01	0.00	0.11	0.02	0.01	0.01	0.00
Petromineral Corp.	Santa Maria	0.30	0.06	0.01	0.02	0.01	0.30	0.06	0.01	0.02	0.01
Petrominerals	Cat Canyon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Texaco	Orcutt	1.85	0.37	0.09	0.10	0.39	1.85	0.37	0.09	0.10	0.39
Vintage	Cat Canyon	11.57	2.31	0.58	0.62	18.23	11.57	2.31	0.58	0.62	18.23
Vintage	Santa Maria	10.95	2.18	0.55	0.59	17.25	10.95	2.18	0.55	0.59	17.25
TOTAL EMISSIONS (TONS/YEAR)		**82**	**16**	**4**	**4**	**69**	**81**	**16**	**4**	**4**	**68**

UNOCAL HS&P SEIR
All Battles Users Flaring
Cascade Flow Control Unassiste

		1997 Flare Emissions (Tons/Year)					1998 Flare Emissions (Tons/Year)				
Owner	Field	NOx	CO	PM10	ROC	SO2	NOx	CO	PM10	ROC	SO2
City Oil Corp	Orcutt	31.27	6.24	1.58	1.68	0.66	31.27	6.24	1.58	1.68	0.66
Conway	Casmalia	0.94	0.19	0.05	0.05	0.02	0.94	0.19	0.05	0.05	0.02
Conway	Cat Canyon	0.08	0.02	0.00	0.00	0.12	0.08	0.02	0.00	0.00	0.12
Conway	Santa Maria	0.39	0.08	0.02	0.02	0.62	0.39	0.08	0.02	0.02	0.62
Conway	Santa Maria	1.56	0.31	0.08	0.08	0.21	1.56	0.31	0.08	0.08	0.21
Crimson	Santa Maria	0.09	0.02	0.00	0.01	0.15	0.09	0.02	0.00	0.01	0.15
Dominion Oil Co	Cat Canyon	1.85	0.37	0.09	0.10	0.04	1.85	0.37	0.09	0.10	0.04
D&S Serv./SABA	Cat Canyon	18.15	3.62	0.92	0.97	28.60	17.24	3.44	0.87	0.92	27.17
Geo Production	Orcutt Hill	0.94	0.19	0.05	0.05	0.02	0.94	0.19	0.05	0.05	0.02
Geo Production	Orcutt Hill	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Petromineral Corp.	Santa Maria	0.11	0.02	0.01	0.01	0.00	0.11	0.02	0.01	0.01	0.00
Petromineral Corp.	Santa Maria	0.30	0.06	0.01	0.02	0.01	0.30	0.06	0.01	0.02	0.01
Petrominerals	Cat Canyon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Texaco	Orcutt	1.85	0.37	0.09	0.10	0.39	1.85	0.37	0.09	0.10	0.39
Vintage	Cat Canyon	11.57	2.31	0.58	0.62	18.23	11.57	2.31	0.58	0.62	18.23
Vintage	Santa Maria	10.95	2.18	0.55	0.59	17.25	10.95	2.18	0.55	0.59	17.25
TOTAL EMISSIONS (TONS/YEAR)		**80**	**16**	**4**	**4**	**66**	**79**	**16**	**4**	**4**	**65**

UNOCAL HS&P SEIR
All Battles Users Flaring
Cascade Flow Control Assisted

Owner	Field	Lease	Gas Production (MCFD) 1991	1992	1993	1994	1995	1996	1997	1998	FLARE H2S (ppm)
City Oil Corp	Orcutt	Careaga	427	389	550	1000	2000	2000	2000	2000	10
Conway	Casmalia	Newhall	56	82	59	60	60	60	60	60	10
Conway	Cat Canyon	Brookings	0	0	5	5	5	5	5	5	750
Conway	Santa Maria	Union Sugar	36	28	23	25	25	25	25	25	750
Conway	Santa Maria	Enos	114	118	100	100	100	100	100	100	65
Crimson	Santa Maria		6	6	6	6	6	6	6	6	750
Dominion Oil Co	Cat Canyon	Los Flores	58	118	118	118	118	118	118	118	10
D&S Serv./SABA	Cat Canyon		1,485	1,500	1,425	1,354	1,286	1,222	1,161	1,103	750
Geo Production	Orcutt Hill	Coreaga	89	71	60	60	60	60	60	60	10
Geo Production	Orcutt Hill	Barbara Invest	0	0	0	0	0	0	0	0	750
Petromineral Corp.	Santa Maria	Hancock	7	12	7	7	7	7	7	7	10
Petromineral Corp.	Santa Maria	Magenheimer	7	12	19	19	19	19	19	19	10
Petrominerals	Cat Canyon	Arata	17	20	0	0	0	0	0	0	500
Texaco	Orcutt		124	118	118	118	118	118	118	118	100
Vintage	Cat Canyon		412	575	740	740	740	740	740	740	750
Vintage	Santa Maria		657	686	700	700	700	700	700	700	750
TOTAL EMISSIONS (TONS/YEAR)			**3,496**	**3,734**	**3,930**	**4,312**	**5,244**	**5,180**	**5,119**	**5,061**	

Assumed GAS HV, Btu/ft3	CFCF: Assisted < 266 MCFD Emission Factors (lb/MMBtu) NOx	CO	PM10	ROC	CFCF: Assisted < 2660 MCFD Emission Factors (lb/MMBtu) NOx	CO	PM10	ROC
900	0.0568	0.019	0.0048	0.0051	0.0568	0.0333	0.0048	0.0027

NOTES:
Flare emission factors taken from the SBCAPCD Flare Study Report, July 1991

UNOCAL HS&P SEIR
All Battles Users Flaring
Cascade Flow Control Assisted

		1993 Flare Emissions (Tons/Year)					1994 Flare Emissions (Tons/Year)				
Owner	Field	NOx	CO	PM10	ROC	SO2	NOx	CO	PM10	ROC	SO2
City Oil Corp	Orcutt	5.13	1.72	0.43	0.46	0.18	9.33	3.12	0.79	0.84	0.33
Conway	Casmalia	0.55	0.18	0.05	0.05	0.02	0.56	0.19	0.05	0.05	0.02
Conway	Cat Canyon	0.05	0.02	0.00	0.00	0.12	0.05	0.02	0.00	0.00	0.12
Conway	Santa Maria	0.22	0.07	0.02	0.02	0.58	0.23	0.08	0.02	0.02	0.62
Conway	Santa Maria	0.93	0.31	0.08	0.08	0.21	0.93	0.31	0.08	0.08	0.21
Crimson	Santa Maria	0.06	0.02	0.00	0.01	0.15	0.06	0.02	0.00	0.01	0.15
Dominion Oil Co	Cat Canyon	1.10	0.37	0.09	0.10	0.04	1.10	0.37	0.09	0.10	0.04
D&S Serv./SABA	Cat Canyon	13.29	4.45	1.12	1.19	35.11	12.63	4.22	1.07	1.13	33.35
Geo Production	Orcutt Hill	0.56	0.19	0.05	0.05	0.02	0.56	0.19	0.05	0.05	0.02
Geo Production	Orcutt Hill	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Petromineral Corp.	Santa Maria	0.07	0.02	0.01	0.01	0.00	0.07	0.02	0.01	0.01	0.00
Petromineral Corp.	Santa Maria	0.18	0.06	0.01	0.02	0.01	0.18	0.06	0.01	0.02	0.01
Petrominerals	Cat Canyon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Texaco	Orcutt	1.10	0.37	0.09	0.10	0.39	1.10	0.37	0.09	0.10	0.39
Vintage	Cat Canyon	6.90	2.31	0.58	0.62	18.23	6.90	2.31	0.58	0.62	18.23
Vintage	Santa Maria	6.53	2.18	0.55	0.59	17.25	6.53	2.18	0.55	0.59	17.25
TOTAL EMISSIONS (TONS/YEAR)		**37**	**12**	**3**	**3**	**72**	**40**	**13**	**3**	**4**	**71**

UNOCAL HS&P SEIR
All Batties Users Flaring
Cascade Flow Control Assisted

		1995 Flare Emissions (Tons/Year)					1996 Flare Emissions (Tons/Year)				
Owner	Field	NOx	CO	PM10	ROC	SO2	NOx	CO	PM10	ROC	SO2
City Oil Corp	Orcutt	18.66	6.24	1.58	1.68	0.66	18.66	6.24	1.58	1.68	0.66
Conway	Casmalia	0.56	0.19	0.05	0.05	0.02	0.56	0.19	0.05	0.05	0.02
Conway	Cat Canyon	0.05	0.02	0.00	0.00	0.12	0.05	0.02	0.00	0.00	0.12
Conway	Santa Maria	0.23	0.08	0.02	0.02	0.62	0.23	0.08	0.02	0.02	0.62
Conway	Santa Maria	0.93	0.31	0.08	0.08	0.21	0.93	0.31	0.08	0.08	0.21
Crimson	Santa Maria	0.06	0.02	0.00	0.01	0.15	0.06	0.02	0.00	0.01	0.15
Dominion Oil Co	Cat Canyon	1.10	0.37	0.09	0.10	0.04	1.10	0.37	0.09	0.10	0.04
D&S Serv./SABA	Cat Canyon	12.00	4.01	1.01	1.08	31.69	11.40	3.81	0.96	1.02	30.10
Geo Production	Orcutt Hill	0.56	0.19	0.05	0.05	0.02	0.56	0.19	0.05	0.05	0.02
Geo Production	Orcutt Hill	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Petromineral Corp.	Santa Maria	0.07	0.02	0.01	0.01	0.00	0.07	0.02	0.01	0.01	0.00
Petromineral Corp.	Santa Maria	0.18	0.06	0.01	0.02	0.01	0.18	0.06	0.01	0.02	0.01
Petrominerals	Cat Canyon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Texaco	Orcutt	1.10	0.37	0.09	0.10	0.39	1.10	0.37	0.09	0.10	0.39
Vintage	Cat Canyon	6.90	2.31	0.58	0.62	18.23	6.90	2.31	0.58	0.62	18.23
Vintage	Santa Maria	6.53	2.18	0.55	0.59	17.25	6.53	2.18	0.55	0.59	17.25
TOTAL EMISSIONS (TONS/YEAR)		**49**	**16**	**4**	**4**	**69**	**48**	**16**	**4**	**4**	**68**

UNOCAL HS&P SEIR
All Battles Users Flaring
Cascade Flow Control Assisted

		1997 Flare Emissions (Tons/Year)					1998 Flare Emissions (Tons/Year)				
Owner	Field	NOx	CO	PM10	ROC	SO2	NOx	CO	PM10	ROC	SO2
City Oil Corp	Orcutt	18.66	6.24	1.58	1.68	0.66	18.66	6.24	1.58	1.68	0.66
Conway	Casmalia	0.56	0.19	0.05	0.05	0.02	0.56	0.19	0.05	0.05	0.02
Conway	Cat Canyon	0.05	0.02	0.00	0.00	0.12	0.05	0.02	0.00	0.00	0.12
Conway	Santa Maria	0.23	0.08	0.02	0.02	0.62	0.23	0.08	0.02	0.02	0.62
Conway	Santa Maria	0.93	0.31	0.08	0.08	0.21	0.93	0.31	0.08	0.08	0.21
Crimson	Santa Maria	0.06	0.02	0.00	0.01	0.15	0.06	0.02	0.00	0.01	0.15
Dominion Oil Co	Cat Canyon	1.10	0.37	0.09	0.10	0.04	1.10	0.37	0.09	0.10	0.04
D&S Serv./SABA	Cat Canyon	10.83	3.62	0.92	0.97	28.60	10.29	3.44	0.87	0.92	27.17
Geo Production	Orcutt Hill	0.56	0.19	0.05	0.05	0.02	0.56	0.19	0.05	0.05	0.02
Geo Production	Orcutt Hill	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Petromineral Corp.	Santa Maria	0.07	0.02	0.01	0.01	0.00	0.07	0.02	0.01	0.01	0.00
Petromineral Corp.	Santa Maria	0.18	0.06	0.01	0.02	0.01	0.18	0.06	0.01	0.02	0.01
Petrominerals	Cat Canyon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Texaco	Orcutt	1.10	0.37	0.09	0.10	0.39	1.10	0.37	0.09	0.10	0.39
Vintage	Cat Canyon	6.90	2.31	0.58	0.62	18.23	6.90	2.31	0.58	0.62	18.23
Vintage	Santa Maria	6.53	2.18	0.55	0.59	17.25	6.53	2.18	0.55	0.59	17.25
TOTAL EMISSIONS (TONS/YEAR)		**48**	**16**	**4**	**4**	**66**	**47**	**16**	**4**	**4**	**65**

UNOCAL HS&P SEIR: All Battles
Electrical Generation
With NSCR

Owner	Field	Lease	Gas Production (MCFD) 1991	1992	1993	1994	1995	1996	1997	1998	FLARE H2S (ppm)
City Oil Corp	Orcutt	Careaga	427	389	550	1000	2000	2000	2000	2000	10
Conway	Casmalia	Newhall	56	82	59	60	60	60	60	60	750
Conway	Cat Canyon	Brookings	0	0	5	5	5	5	5	5	750
Conway	Santa Maria	Union Sugar	36	28	23	25	25	25	25	25	750
Conway	Santa Maria	Enos	114	118	100	100	100	100	100	100	10
Crimson	Santa Maria		6	6	6	6	6	6	6	6	750
Dominion Oil Co	Cat Canyon	Los Flores	58	118	118	118	118	118	118	118	750
D&S Serv./SABA	Cat Canyon		1,485	1,500	1,425	1,354	1,286	1,222	1,161	1,103	750
Geo Production	Orcutt Hill	Coreaga	89	71	60	60	60	60	60	60	10
Geo Production	Orcutt Hill	Barbara Invest	0	0	0	0	0	0	0	0	750
Petromineral Corp.	Santa Maria	Hancock	7	12	7	7	7	7	7	7	750
Petromineral Corp.	Santa Maria	Magenheimer	7	12	19	19	19	19	19	19	750
Petrominerals	Cat Canyon	Arata	17	20	0	0	0	0	0	0	500
Texaco	Orcutt		124	118	118	118	118	118	118	118	100
Vintage	Cat Canyon		412	575	740	740	740	740	740	740	750
Vintage	Santa Maria		657	686	700	700	700	700	700	700	750
Total			**3496**	**3734**	**3930**	**4312**	**5244**	**5180**	**5119**	**5061**	

NSCR

Assumed Gas HV, Btu/ft3	Emission Factors (lb/MMBtu) NOx	CO	PM10	ROC
900.0	0.32	0.41	0.01	0.27

NOTES:

Engine emission factors taken from AP-42 section 3.2-2 and assumed NSCR reduction 0f 90%

Emissions are calculated as EF * FUEL * HV*365/2000/1000 = tons/year, for NOx multiply by 0.1

UNOCAL HS&P SEIR: All Battles
Electrical Generation
With NSCR

Owner	Field	1993 Engine Emissions (Tons/Year) NOx	CO	PM10	ROC	SO2	1994 Engine Emissions (Tons/Year) NOx	CO	PM10	ROC	SO2
City Oil Corp	Orcutt	29.3	37.0	1.2	24.1	0.2	53.2	67.3	2.2	43.8	0.3
Conway	Casmalia	3.1	4.0	0.1	2.6	1.4	3.2	4.0	0.1	2.6	1.5
Conway	Cat Canyon	0.3	0.3	0.0	0.2	0.1	0.3	0.3	0.0	0.2	0.1
Conway	Santa Maria	1.2	1.6	0.1	1.0	0.6	1.3	1.7	0.1	1.1	0.6
Conway	Santa Maria	5.3	6.7	0.2	4.4	0.0	5.3	6.7	0.2	4.4	0.0
Crimson	Santa Maria	0.3	0.4	0.0	0.3	0.1	0.3	0.4	0.0	0.3	0.1
Dominion Oil Co	Cat Canyon	6.3	7.9	0.3	5.2	2.9	6.3	7.9	0.3	5.2	2.9
D&S Serv./SABA	Cat Canyon	75.8	95.9	3.1	62.4	35.1	72.0	91.1	3.0	59.3	33.4
Geo Production	Orcutt Hill	3.2	4.0	0.1	2.6	0.0	3.2	4.0	0.1	2.6	0.0
Geo Production	Orcutt Hill	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Petromineral Corp.	Santa Maria	0.4	0.5	0.0	0.3	0.2	0.4	0.5	0.0	0.3	0.2
Petromineral Corp.	Santa Maria	1.0	1.3	0.0	0.8	0.5	1.0	1.3	0.0	0.8	0.5
Petrominerals	Cat Canyon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Texaco	Orcutt	6.3	7.9	0.3	5.2	0.4	6.3	7.9	0.3	5.2	0.4
Vintage	Cat Canyon	39.4	49.8	1.6	32.4	18.2	39.4	49.8	1.6	32.4	18.2
Vintage	Santa Maria	37.2	47.1	1.5	30.7	17.2	37.2	47.1	1.5	30.7	17.2
Total		**209.0**	**264.4**	**8.6**	**172.1**	**77.1**	**229.3**	**290.0**	**9.4**	**188.9**	**75.5**

UNOCAL HS&P SEIR: All Battles
Electrical Generation
With NSCR

		1995 Engine Emissions (Tons/Year)					1996 Engine Emissions (Tons/Year)				
Owner	Field	NOx	CO	PM10	ROC	SO2	NOx	CO	PM10	ROC	SO2
City Oil Corp	Orcutt	106.4	134.5	4.4	87.6	0.7	106.4	134.5	4.4	87.6	0.7
Conway	Casmalia	3.2	4.0	0.1	2.6	1.5	3.2	4.0	0.1	2.6	1.5
Conway	Cat Canyon	0.3	0.3	0.0	0.2	0.1	0.3	0.3	0.0	0.2	0.1
Conway	Santa Maria	1.3	1.7	0.1	1.1	0.6	1.3	1.7	0.1	1.1	0.6
Conway	Santa Maria	5.3	6.7	0.2	4.4	0.0	5.3	6.7	0.2	4.4	0.0
Crimson	Santa Maria	0.3	0.4	0.0	0.3	0.1	0.3	0.4	0.0	0.3	0.1
Dominion Oil Co	Cat Canyon	6.3	7.9	0.3	5.2	2.9	6.3	7.9	0.3	5.2	2.9
D&S Serv./SABA	Cat Canyon	68.4	86.5	2.8	56.3	31.7	65.0	82.2	2.7	53.5	30.1
Geo Production	Orcutt Hill	3.2	4.0	0.1	2.6	0.0	3.2	4.0	0.1	2.6	0.0
Geo Production	Orcutt Hill	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Petromineral Corp.	Santa Maria	0.4	0.5	0.0	0.3	0.2	0.4	0.5	0.0	0.3	0.2
Petromineral Corp.	Santa Maria	1.0	1.3	0.0	0.8	0.5	1.0	1.3	0.0	0.8	0.5
Petrominerals	Cat Canyon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Texaco	Orcutt	6.3	7.9	0.3	5.2	0.4	6.3	7.9	0.3	5.2	0.4
Vintage	Cat Canyon	39.4	49.8	1.6	32.4	18.2	39.4	49.8	1.6	32.4	18.2
Vintage	Santa Maria	37.2	47.1	1.5	30.7	17.2	37.2	47.1	1.5	30.7	17.2
Total		**278.9**	**352.7**	**11.5**	**229.7**	**74.2**	**275.5**	**348.4**	**11.3**	**226.9**	**72.6**

UNOCAL HS&P SEIR: All Battles
Electrical Generation
With NSCR

		1997 Engine Emissions (Tons/Year)					1998 Engine Emissions (Tons/Year)				
Owner	Field	NOx	CO	PM10	ROC	SO2	NOx	CO	PM10	ROC	SO2
City Oil Corp	Orcutt	106.4	134.5	4.4	87.6	0.7	106.4	134.5	4.4	87.6	0.7
Conway	Casmalia	3.2	4.0	0.1	2.6	1.5	3.2	4.0	0.1	2.6	1.5
Conway	Cat Canyon	0.3	0.3	0.0	0.2	0.1	0.3	0.3	0.0	0.2	0.1
Conway	Santa Maria	1.3	1.7	0.1	1.1	0.6	1.3	1.7	0.1	1.1	0.6
Conway	Santa Maria	5.3	6.7	0.2	4.4	0.0	5.3	6.7	0.2	4.4	0.0
Crimson	Santa Maria	0.3	0.4	0.0	0.3	0.1	0.3	0.4	0.0	0.3	0.1
Dominion Oil Co	Cat Canyon	6.3	7.9	0.3	5.2	2.9	6.3	7.9	0.3	5.2	2.9
D&S Serv./SABA	Cat Canyon	61.7	78.1	2.5	50.8	28.6	58.6	74.2	2.4	48.3	27.2
Geo Production	Orcutt Hill	3.2	4.0	0.1	2.6	0.0	3.2	4.0	0.1	2.6	0.0
Geo Production	Orcutt Hill	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Petromineral Corp.	Santa Maria	0.4	0.5	0.0	0.3	0.2	0.4	0.5	0.0	0.3	0.2
Petromineral Corp.	Santa Maria	1.0	1.3	0.0	0.8	0.5	1.0	1.3	0.0	0.8	0.5
Petrominerals	Cat Canyon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Texaco	Orcutt	6.3	7.9	0.3	5.2	0.4	6.3	7.9	0.3	5.2	0.4
Vintage	Cat Canyon	39.4	49.8	1.6	32.4	18.2	39.4	49.8	1.6	32.4	18.2
Vintage	Santa Maria	37.2	47.1	1.5	30.7	17.2	37.2	47.1	1.5	30.7	17.2
Total		**272.2**	**344.3**	**11.2**	**224.2**	**71.1**	**269.2**	**340.4**	**11.1**	**221.7**	**69.7**

UNOCAL HS&P SEIR: All Battles
Users Reinjection
With NSCR

Owner	Field	Lease	Gas Used For Gas Compression* (MCFD) 1991	1992	1993	1994	1995	1996	1997	1998	Gas H2S (ppm)
City Oil Corp	Orcutt	Careaga	25	23	32	59	117	117	117	117	10
Conway	Casmalia	Newhall	3	5	3	4	4	4	4	4	10
Conway	Cat Canyon	Brookings	0	0	0	0	0	0	0	0	750
Conway	Santa Maria	Union Sugar	2	2	1	1	1	1	1	1	750
Conway	Santa Maria	Enos	7	7	6	6	6	6	6	6	65
Crimson	Santa Maria		0	0	0	0	0	0	0	0	750
Dominion Oil Co	Cat Canyon	Los Flores	3	7	7	7	7	7	7	7	10
D&S Services/SABA	Cat Canyon		87	88	84	80	76	72	68	65	750
Geo Production	Orcutt Hill	Coreaga	5	4	4	4	4	4	4	4	10
Geo Production	Orcutt Hill	Barbara Inv	0	0	0	0	0	0	0	0	750
Petromineral Corp.	Santa Maria	Hancock	0	1	0	0	0	0	0	0	10
Petromineral Corp.	Santa Maria	Magenheimer	0	1	1	1	1	1	1	1	10
Petrominerals	Cat Canyon	Arata	1	1	0	0	0	0	0	0	500
Texaco	Orcutt		7	7	7	7	7	7	7	7	100
Vintage	Cat Canyon		24	34	43	43	43	43	43	43	750
Vintage	Santa Maria		39	40	41	41	41	41	41	41	750
TOTAL EMISSIONS (TONS/YEAR)			**205**	**219**	**231**	**253**	**308**	**304**	**301**	**297**	

NSCR

Assumed Gas HV, Btu/ft³	Emission Factors (lb/MMBtu) NOx	CO	PM10	ROC
900.0	0.32	0.41	0.01	0.27

* *Compression for reinjection assumed to be to 2,000 psig, with a power demand of 0.26 hp/MCFD compressed and 9,000 btu/bhp-hr*

Gas Compression power 0.26 hp/MSCFD

UNOCAL HS&P SEIR: All Battles
Users Reinjection
With NSCR

Owner	Field	1993 Engine Emissions (Tons/Year) NOx	CO	PM10	ROC	SO2	1994 Engine Emissions (Tons/Year) NOx	CO	PM10	ROC	SO2
City Oil Corp	Orcutt	1.7	2.2	0.1	1.4	0.0	3.1	4.0	0.1	2.6	0.0
Conway	Casmalia	0.2	0.2	0.0	0.2	0.0	0.2	0.2	0.0	0.2	0.0
Conway	Cat Canyon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Conway	Santa Maria	0.1	0.1	0.0	0.1	0.0	0.1	0.1	0.0	0.1	0.0
Conway	Santa Maria	0.3	0.4	0.0	0.3	0.0	0.3	0.4	0.0	0.3	0.0
Crimson	Santa Maria	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dominion Oil Co	Cat Canyon	0.4	0.5	0.0	0.3	0.0	0.4	0.5	0.0	0.3	0.0
D&S Services/SABA	Cat Canyon	4.5	5.6	0.2	3.7	2.1	4.2	5.3	0.2	3.5	2.0
Geo Production	Orcutt Hill	0.2	0.2	0.0	0.2	0.0	0.2	0.2	0.0	0.2	0.0
Geo Production	Orcutt Hill	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Petromineral Corp.	Santa Maria	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Petromineral Corp.	Santa Maria	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0
Petrominerals	Cat Canyon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Texaco	Orcutt	0.4	0.5	0.0	0.3	0.0	0.4	0.5	0.0	0.3	0.0
Vintage	Cat Canyon	2.3	2.9	0.1	1.9	1.1	2.3	2.9	0.1	1.9	1.1
Vintage	Santa Maria	2.2	2.8	0.1	1.8	1.0	2.2	2.8	0.1	1.8	1.0
TOTAL EMISSIONS (TONS/YEAR)		**12.3**	**15.5**	**0.5**	**10.1**	**4.2**	**13.5**	**17.0**	**0.6**	**11.1**	**4.2**

* *Compression for reinjection assume to be to 2,000 psig, with a power demand of 0.26 hp/MCFD compressec and 9,000 btu/bhp-hr*

UNOCAL HS&P SEIR: All Battles
Users Reinjection
With NSCR

Owner	Field	1995 Engine Emissions (Tons/Year) NOx	CO	PM10	ROC	SO2	1996 Engine Emissions (Tons/Year) NOx	CO	PM10	ROC	SO2
City Oil Corp	Orcutt	6.2	7.9	0.3	5.1	0.0	6.2	7.9	0.3	5.1	0.0
Conway	Casmalia	0.2	0.2	0.0	0.2	0.0	0.2	0.2	0.0	0.2	0.0
Conway	Cat Canyon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Conway	Santa Maria	0.1	0.1	0.0	0.1	0.0	0.1	0.1	0.0	0.1	0.0
Conway	Santa Maria	0.3	0.4	0.0	0.3	0.0	0.3	0.4	0.0	0.3	0.0
Crimson	Santa Maria	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dominion Oil Co	Cat Canyon	0.4	0.5	0.0	0.3	0.0	0.4	0.5	0.0	0.3	0.0
D&S Services/SAB/	Cat Canyon	4.0	5.1	0.2	3.3	1.9	3.8	4.8	0.2	3.1	1.8
Geo Production	Orcutt Hill	0.2	0.2	0.0	0.2	0.0	0.2	0.2	0.0	0.2	0.0
Geo Production	Orcutt Hill	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Petromineral Corp.	Santa Maria	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Petromineral Corp.	Santa Maria	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0
Petrominerals	Cat Canyon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Texaco	Orcutt	0.4	0.5	0.0	0.3	0.0	0.4	0.5	0.0	0.3	0.0
Vintage	Cat Canyon	2.3	2.9	0.1	1.9	1.1	2.3	2.9	0.1	1.9	1.1
Vintage	Santa Maria	2.2	2.8	0.1	1.8	1.0	2.2	2.8	0.1	1.8	1.0
TOTAL EMISSIONS (TONS/YEAR)		**16.4**	**20.7**	**0.7**	**13.5**	**4.1**	**16.2**	**20.5**	**0.7**	**13.3**	**4.0**

* *Compression for reinjection assume to be to 2,000 psig, with a power demand of 0.26 hp/MCFD compressec and 9,000 btu/bhp-hr*

UNOCAL HS&P SEIR: All Battles
Users Reinjection
With NSCR

		1997 Engine Emissions (Tons/Year)					1998 Engine Emissions (Tons/Year)				
Owner	Field	NOx	CO	PM10	ROC	SO2	NOx	CO	PM10	ROC	SO2
City Oil Corp	Orcutt	6.2	7.9	0.3	5.1	0.0	6.2	7.9	0.3	5.1	0.0
Conway	Casmalia	0.2	0.2	0.0	0.2	0.0	0.2	0.2	0.0	0.2	0.0
Conway	Cat Canyon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Conway	Santa Maria	0.1	0.1	0.0	0.1	0.0	0.1	0.1	0.0	0.1	0.0
Conway	Santa Maria	0.3	0.4	0.0	0.3	0.0	0.3	0.4	0.0	0.3	0.0
Crimson	Santa Maria	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dominion Oil Co	Cat Canyon	0.4	0.5	0.0	0.3	0.0	0.4	0.5	0.0	0.3	0.0
D&S Services/SAB/	Cat Canyon	3.6	4.6	0.1	3.0	1.7	3.4	4.4	0.1	2.8	1.6
Geo Production	Orcutt Hill	0.2	0.2	0.0	0.2	0.0	0.2	0.2	0.0	0.2	0.0
Geo Production	Orcutt Hill	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Petromineral Corp.	Santa Maria	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Petromineral Corp.	Santa Maria	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0
Petrominerals	Cat Canyon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Texaco	Orcutt	0.4	0.5	0.0	0.3	0.0	0.4	0.5	0.0	0.3	0.0
Vintage	Cat Canyon	2.3	2.9	0.1	1.9	1.1	2.3	2.9	0.1	1.9	1.1
Vintage	Santa Maria	2.2	2.8	0.1	1.8	1.0	2.2	2.8	0.1	1.8	1.0
TOTAL EMISSIONS (TONS/YEAR)		**16.0**	**20.2**	**0.7**	**13.2**	**3.9**	**15.8**	**20.0**	**0.7**	**13.0**	**3.8**

* *Compression for reinjection assume to be to 2,000 psig, with a power demand of 0.26 hp/MCFD compressec and 9,000 btu/bhp-hr*

Appendix D
Offsite Consequence Analysis for the Proposed Project and Expanded HS&P Gas Plant

Table Of Contents

List Of Tables

List Of Figures

1.0 Summary Of Hazard Scenarios

As part of the Risk of Upset analysis for the UNOCAL Point Pedernales Modification Project SEIR, several hazards have been identified associated with processing of onshore and offshore oil and gas streams. These hazards include the risk of exposure to fires, explosions, and toxic gas streams. This consequence analysis was prepared to quantify the magnitude of potential hazards associated with the proposed project.

Attachment 1 presents a summary of the release scenarios identified in the hazards analysis. Numerous release scenarios were identified for components associated with HS&P facility modifications, while only one significant release scenario was identified for Jim Hopkins Fee. No release scenarios were identified for the Santa Maria Pump Station.

Hazard scenarios that were assessed in the consequence analysis include the following potential hazards:

- Sour Gas (Hydrogen Sulfide) Releases,
- Liquefied Petroleum Gas (LPG) And Natural Gas Liquids (NGL) Spills,
- Unconfined Vapor Cloud Explosions (UVCE),
- Partially Confined Vapor Cloud Explosions,
- Boiling Liquid Expanding Vapor Explosions (BLEVE),
- Vessel Overpressurization And Explosions.
- Underground Sour Gas Pipeline Rupture And Cratering,
- Vapor Jet And Liquid Pool Fires, And
- Vapor Cloud Fires.

The purpose of the consequence analysis is to estimate the severity of consequences for each scenario. When combined with information on the frequency of the scenario, the significance of each scenario can also be quantified.

The following sections present a summary of the methods that were used in the offsite consequence analysis for the UNOCAL Point Pedernales Modification Project SEIR. The modeling methodologies are discussed in Section 2, and the selection of meteorological data in Section 3. Damage criteria for exposure to fires, explosions, and toxic vapors are presented in Section 4. Finally, results of the consequence analysis are summarized in Section 5.

The model output files are available from the County of Santa Barbara Resource Management Department.

2.0 Consequence Modeling Methodology

The consequence analysis and hazard modeling of any risk assessment is the part of the analysis which considers the physical effects and the damage caused by these physical effects. It is done in order to form an opinion on the seriousness of potential hazards associated with accidents and their possible consequences. The types of hazards that are generally considered in any risk assessment include fire and flammability, explosion, and toxicity. Fire and flammability hazards are of significance for flammable vapors with relatively low flash points, such as propane and methane. The hazard is usually in the form of thermal radiation from vapor jet or pool fires. In addition, larger vapor jet fires can also lead to loss of structural integrity of other storage or process vessels. The temperature in flame jets is usually high and flame impingement onto nearby equipment is of the greatest concern. The release and ignition of flammable vapors may also result in an explosion. The blast overpressure hazard is dependent on the nature of the chemical, the strength of the ignition source and the degree of confinement. Finally, toxic chemicals can produce adverse effects to humans both on-site and outside the bounds of a facility. The volatility and toxicity of the chemical, combined with the prevailing meteorological conditions could potentially lead to very large hazard zones.

Consequence analysis involves postulating a release scenario, establishing damage criteria and computing a safe separation distance. Performing state-of-the-art hazard assessment requires the combination of sophisticated analytical techniques with a depth of professional experience. The models that were used in this analysis are the result of over two decades of development and have been validated using large-scale field tests. They have also been computerized for ease of use and operate on both mainframe and personal computer. While a large number of consequence models are available, only a few specific models were needed to assess the hazards identified as part of this study.

The hazard assessment models used as part of the UNOCAL Point Pedernales Modification Project SEIR hazard analysis can be grouped into the following categories:

- Release rate models, and
- Vapor dispersion models.

The general characteristics of each of the models that were used in this analysis are discussed in the following sections.

2.1 Release Rate Models

Several models were utilized to simulate potential releases of produced gas, natural gas liquids and vapor/liquids from pipes and vessels. These models are discussed below.

Two-Phase Flashing Flow Model

This is a critical two-phase flashing flow single component liquid discharge model based on methodology validated by experimental data in the recent literature. The data has demonstrated that, for a pipe length exceeding about four inches irrespective of pipe diameter, there is enough residence time for a discharging flashing liquid to establish thermal equilibrium in a pipe. Using an established method known as the Slip Equilibrium Method, the model does a friction calculation based on average vapor/liquid mixture properties and sequentially solves the equilibrium and mechanical energy balance equations, accounting for the pressure reduction and adiabatically recalculating the mixture properties. The output of the model is a mass release rate and the properties of the exiting methane aerosol mixture.

This model was used to estimate release rate characteristics for the scenarios where potential aerosol formation could occur as a result of rapid vessel decompression and cooling, or where pressurized liquids could potentially be released.

Steady/Non-Steady Release From A Pressurized Vessel/Pipeline

These numerical steady and non-steady state flow models can be used to compute liquid/vapor release rate from a ruptured valve or pipeline. The steady choked and unchoked flow models compute a single release rate assuming uniform pressure and temperature in the vessel; in most blowdown processes from pressure vessels, the pressure inside is sufficiently high that choked flow conditions exist during most of the blowdown period. However, in smaller pressure vessels, or for relatively larger release rates, the conditions inside the vessel are not steady. The pressure drop influences the flow velocity and thus the mass flow rate. In addition, the density and temperature inside the vessel are also changing. The unsteady state models compute a time-dependent release rate profile based on chemical component properties.

Pool Size/Evaporation

This model is used to calculate a time dependent solution of evaporation/boiling rate of liquid pools spreading symmetrically on flat surfaces. The spreading is based on conservation equations for incompressible fluid flow. Initially, the flow is dominated by gravity effects and at later stages by gravity-viscous effects. A heat balance is solved simultaneously with the

spreading liquid to calculate pool temperature and liquid regression rate. The heat balance takes into effect evaporate cooling, ground conduction, solar radiation, etc. The model accepts time dependent volumetric flow rates, diking information, etc. This model was used to estimate the vapor release rate for the natural gas liquids spill scenarios.

Release Rate Characterization

Before the release rates could be estimated for each scenario identified in the hazard analysis, the thermodynamic and physical properties of each hydrocarbon stream will need to be characterized. Estimation of the thermodynamic and physical properties of the hydrocarbon streams was accomplished using the Arthur D. Little, Inc. SuperChems™ and PropertEASE™ models which utilize numerous thermodynamic and physical property estimation techniques.

2.2 Vapor Dispersion Models

Among the models required for hazard assessment, vapor dispersion models are perhaps the most complex. This is primarily due to the varied nature of release scenarios, as well as the varied nature of chemicals that may be released into the environment. The exposure limit must be selected by the user carefully to reflect both the impact of interest (fatality, serious injury, injury, etc.) and the scenario release conditions (especially duration of release).

In dispersion analysis, gases and two-phase vapor-liquid mixtures are divided into three general classes:

1. Materials that are positively buoyant;

2. Materials that are neutrally buoyant; and

3. Materials that are negatively buoyant.

These classifications are based on density differences between the released material and its surrounding medium (air). They are influenced by release temperature, molecular weight, ambient temperature, relative humidity, and the presence of aerosols.

Initially, density of the release affects the dispersion process. A buoyant release may increase the effective height of the source. By the same token, a heavier-than-air release will slump towards the ground. For heavier-than-air releases at or near ground level, the initial density determines the initial spreading rate. This is particularly true for large releases of liquefied or pressurized chemicals where flashing of vapor and formation of liquid aerosols contributes very significantly to the initial effective vapor density and therefore to the density difference with air.

Results of recent research programs dramatically indicate the importance of heavy gas dispersion in the area of chemical hazard assessment.

- The initial rate of spreading (often termed slumping) is significant and is dependent on the differences between the effective mean vapor density and the air density.
- The rapid mixing with ambient air due to slumping leads to lower concentrations at shorter distances than those predicted using neutral density dispersion models.
- There is very little mixing in the vertical direction, and thus, a vapor cloud hugging the ground is generated.
- When the mean density difference becomes small, the subsequent dispersion is governed by prevailing atmospheric conditions.

Since heavy gas dispersion occurs near the release, it is particularly important when considering large releases of pressurized flammable chemicals.

In addition, dispersion analysis is also a function of release modes. They are usually divided into the following categories:

- Instantaneous Release (Puff),
- Continuous Release (Plume),
- Momentum-Dominated Continuous Release (Jet), and
- Time-Dependent Continuous Releases (Jet/Plume).

For instance, a momentum-dominated jet will dilute much faster than a plume within a short distance of its source due primarily to increased entrainment of air caused by the jet. This is especially important when simulating the release of compressed natural gas.

In addition to the effects of initial release density, the presence of aerosols, release rate/quantity, release duration, and release mode, dispersion analysis also depends on:

- Prevailing Atmospheric Conditions,
- Limiting Concentration,
- Elevation Of The Source,

- Surrounding Terrain, and

- Source Geometry.

Prevailing Atmospheric Conditions include a representative wind speed and an atmospheric stability class. Less stable atmospheric conditions result in shorter dispersion distances than more stable weather conditions. Wind speed affects the dispersion distance inversely. Since weather conditions at the time of an accident cannot be determined a priori, it is usually prudent to exercise the model for at least typical and worst case weather conditions for hazard analysis purposes.

Limiting Concentration affects the dispersion distance inversely. Lower concentrations leads to a larger dispersion distances. As with source release rate, the effect is non-linear; for example, for steady state releases, a factor of 100 reduction in the limiting concentration results in an increase in the dispersion distance by a factor of about 10.

Elevation of the Source is attributed to its physical height (such as a tall stack). In general, the effect of source height is to increase dispersion in the vertical direction (since it is not ground restricted), and reduce the concentration at ground level.

Surrounding Terrain affects the dispersion process greatly. For example, rough terrain involving trees, shrubs, buildings and structures usually enhance dispersion, and lead to a shorter dispersion distance than predicted using a flat terrain model. Building and terrain effects are site-specific and cannot be considered in a generalized dispersion model.

Source Geometry refers to the actual size and geometry of the source emission. For example, a release from a safety valve may be modeled as a point source. However, an evaporating pool may be very large in area and may require an area source model. The source geometry effects are significant when considering near-field dispersion (less than ten times the characteristic dimensions of the source). At farther distances, the source geometry effects are smaller and eventually become negligible.

Plume Dispersion Models (Atmospheric)

In the estimation of hazard zones for low velocity releases involving flammable or toxic materials, a set of neutrally-buoyant Gaussian plume models are available. The effects of initial density are usually small in the computation of far-field dispersion zones. The most relevant release characteristics affecting the extent of vapor dispersion are the release rate (or quantity), the release duration, the limiting concentration, and the ambient conditions.

Several mathematical variations are included in our models. They have also been computerized as part of Arthur D. Little's SuperChems™ modeling package for ease of use. Additional models, which are available in the public domain and have been rigorously evaluated, are also available. These models have also been validated using large-scale field tests and wind tunnel experiments. The variations in these models consider the details of the source effects (as opposed to the virtual source method). They include a continuous line/plane source model (to approximate finite size source effects from evaporating pools, overflowing dikes, etc.); a continuous point-source plume model (isolated stack) including effects of buoyancy and momentum; a finite duration point-source model for concentration; a finite-source duration and receptor duration to model dose effects from a point-source; and a finite duration "Probit" model which accounts for a non-linear dose response relationship. As a function of downwind distance, each of these models evaluates concentration and cloud width at source and ground level.

Jet Dispersion Model

The turbulent free jet dispersion models (including a modification of the Ooms model) are based on widely accepted entrainment theory and are supported by vast laboratory scale experimental data. For momentum-dominated jets of flammable materials, dispersion to limiting concentrations is generally completed in the jet regime. The models, which also incorporate buoyancy effects, include circular jets in co-flowing air, planar jets in co-flowing air, and circular jets in the presence of a crossflow. The exit conditions and geometry are corrected for choked flow. The models compute concentration and velocity profiles as a function of axial distance. In addition, ground level hazards for elevated jets are evaluated.

This model was used to estimate the initial dispersion for all of the vapor jet releases examined in this analysis. In many instances, plume concentrations will drop below the levels of concern (LOC) within the jet as a result of the high entrainment related to high velocity jets. When the jet reaches ground level, results from the jet dispersion model would transition into the appropriate heavy gas or passive (i.e., Gaussian) dispersion model.

Flame Jet Model

This model is designed to simulate turbulent diffusion flames (flame jets) and can characterize the turbulent flame length, diameter, temperature, and thermal radiation effects. This model is capable of simulating inclined turbulent jets, radiation fields, and the aerodynamic effects on radiant energy and flame stability.

Pool Fire Modeling Methodology

The thermal radiation hazards from hydrocarbon pool fires depend on a number of parameters, including the composition of the hydrocarbon mixture, the size and shape of the fire, the duration of the fire, its proximity to the object(s) at risk and the thermal characteristics of the object exposed to the fire. Estimating the thermal radiation field surrounding a fire involves the following three major steps:

- Geometric characterization of the pool fire which involves the determination of the burning rate and the physical dimensions of the fire. In calculating thermal radiation, the size/shape of the fire implies the time-averaged size of the visible flame envelope (i.e., not obstructed by smoke). Field experiments have shown that the non-visible parts of the fire radiate less than 10 percent of the total radiation from a hydrocarbon pool fire.

- Characterization of the radiative properties of the fire which involves the estimating the average irradiance of the flames. The intensity of thermal radiation emitted by pool fires depends on a host of parameters including fuel type, fire size, flame temperature, and composition. The major sources of radiative emissions in large pool fires are water vapor, carbon dioxide and soot.

- Calculation of radiant intensity at a given location. This is accomplished once the geometry of the fire, its radiation characteristics and the location, geometry and orientation of the receiver are known. For large distances (hundreds of meters), the absorption of thermal radiation in the intervening atmosphere becomes appreciable. This is dependent on the path length, flame temperature and atmospheric relative humidity.

Fires in blended hydrocarbon mixtures, especially those whose components differ widely in their volatility, do not burn at a uniform rate. In the beginning, the burning rate is characteristic of the high volatile component. During the middle portion of the burning, the less volatile component still must be brought to the boiling point of the blend. Finally, as the fractionation proceeds, the burning rate becomes characteristic of the higher boiling fraction.

Radiative properties of NGL pool fires were based on a detailed analysis of the NGL streams. This information was used to simulate the fractionation of the burning hydrocarbon mixture, and the progressive decrease in thermal radiation intensity over time. The initial pool geometry for each model simulation was based on modeling results from the pool size/evaporation model

Tank Overpressurization Model

This model was used to simulate the effect of a vessel explosion resulting from a fire and associated vessel overpressurization. Based on the pressure-time histories calculated using the

vapor steady/non-steady pressurized vessel/pipeline release model, the tank overpressurization model was used to estimate atmospheric overpressure levels.

The Tank Overpressurization model simulates the shock waves resulting from the rupture of an overpressurized container based on the volume and internal pressure of the container. The energy that produces the overpressure field comes from the volume and internal pressure of the vapor space in the container.

Unconfined/Partially Confined Vapor Cloud Explosion Model

A partially confined deflagration model was used to estimate overpressure levels for each release considered. This model is a theoretical one-dimensional model for the prediction of overpressures within several geometric configurations, and accounts for the non-ideal behavior of burnt and unburnt gaseous components during high pressure venting and multi-reaction chemical equilibrium. The pressure-time histories within the explosion chamber (i.e., confined space and/or vapor cloud) are calculated by the model and are in generally good agreement with small and large scale experimental data on methane-air, propane-air, and hydrocarbon mixture vented and unvented explosions. Explosion potential is expressed in terms of a TNT equivalence, and well known shockwave propagation relationships are used to estimate overpressure levels at specified distances from the explosion.

The potential for unconfined vapor cloud fires and explosions will also be assessed using the SuperChems model. The potential for a vapor cloud explosion versus a vapor cloud fire was assessed based on the physical characteristics of the hydrocarbon stream. Parameters that influence the potential for, and consequences of a vapor cloud explosion include:

- Characteristics of ignition sources,
- Flame acceleration mechanisms,
- Deflagration to detonation transitions,
- Direct initiation of detonations,
- Overpressure levels within the combustion zone,
- Effects of pressure rise time dependency on structures vs. TNT curves,
- Minimum amount of mass sufficient to sustain a UVCE,
- Partial vapor cloud confinement and flame reflection characteristics, and
- Explosion efficiencies.

3.0 Meteorological Data

Meteorological data collected at UNOCAL's HS&P and Battles Gas Plant during 1988 and 1989 were summarized to characterize both typical and worst-case meteorological conditions for consequence modeling purposes. Detailed stability/wind frequency distributions are provided in Attachment 2.

Wind frequency distributions for the HS&P and Battles Gas Plant facilities are presented in Figures 3-1 and 3-2, respectively. These figures reflect the dominance of the land/sea breeze cycle typical of the region, as well as differences in terrain between the two areas. Data from the HS&P show the effect of complex terrain on both wind speed and direction, resulting in large variability in wind speed and direction conditions. In contrast, the relatively flat terrain in the vicinity of the Battles Gas Plant results in much lower wind speed/direction variability.

Terrain effects and wind conditions are also reflected in atmospheric stability conditions between the two sites. Stability class frequency distributions for the two sites are as follows:

Stability Class	*Frequency of Occurrence (%)*	
	HS&P	*Battles*
1	10.0	2.6
2	12.3	5.9
3	14.7	11.8
4	13.5	38.7
5	12.3	17.9
6	37.3	23.2

Based on the stability/wind frequency distributions for the two sites, two meteorological conditions were selected for the consequence modeling analysis. Atmospheric stability classes D and F were selected for worst-case day and night stability conditions, respectively. Based on wind speed conditions for these stability classes at the two sites, a wind speed of 4.0 m/s was selected for stability class D, while a wind speed of 2.0 m/s was selected for stability class F.

A surface roughness of 0.3 meters was selected as representative of the two sites to be modeled (i.e., HS&P and Jim Hopkins Fee). Based on the surface roughness and stability/wind speed combinations, appropriate friction velocities were calculated.

Temperature conditions were also summarized for the two sites. Based on these data, a temperature of 286 K (55°F) was selected. Relative humidity data from the National Weather Service Santa Maria station was also summarized. Based on these data, relative humidity values of 60 and 80 percent were selected for D and F stability classes, respectively.

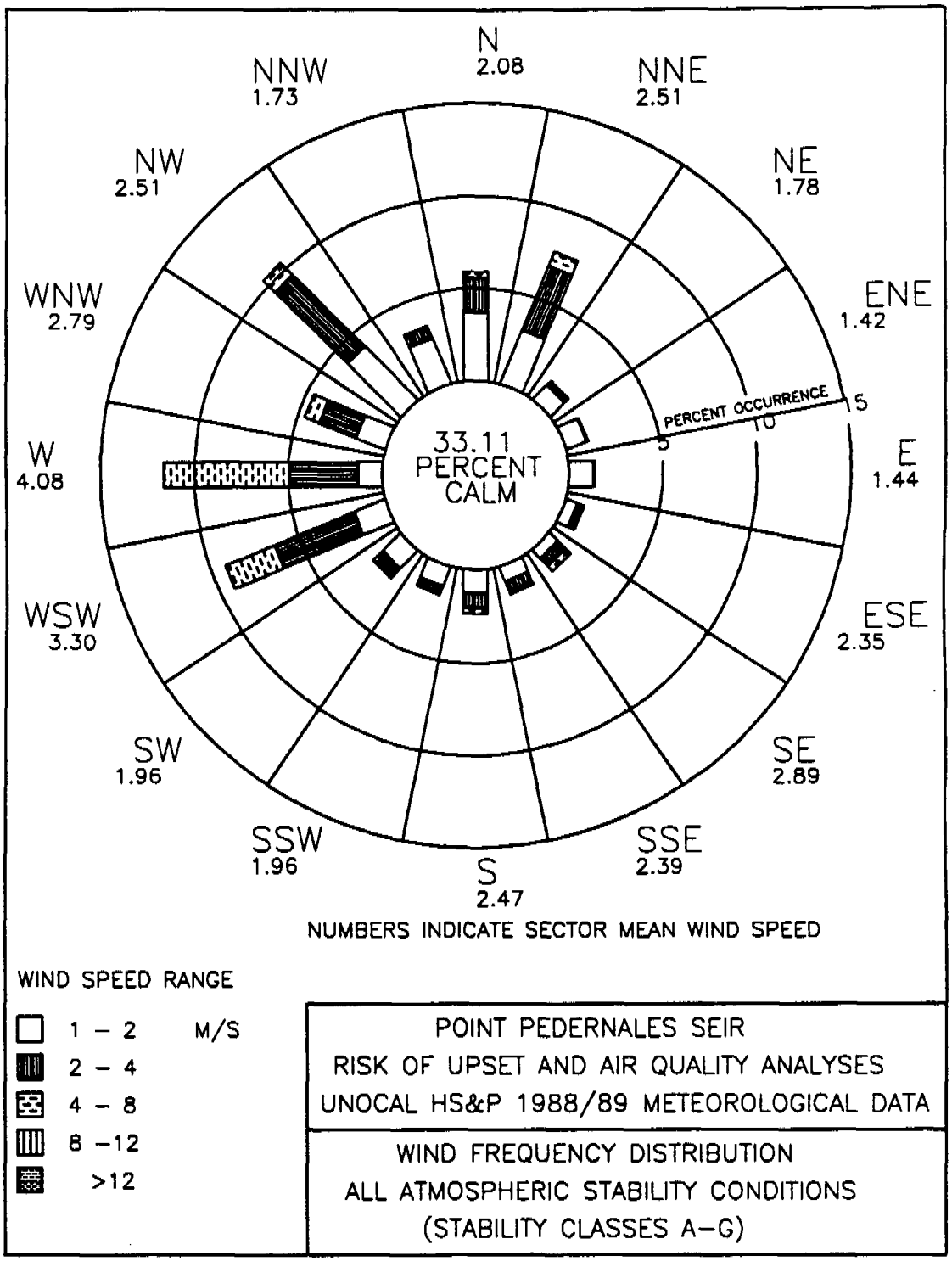

Figure 3-1 Lompoc (UNOCAL HS&P) Wind Frequency Distribution

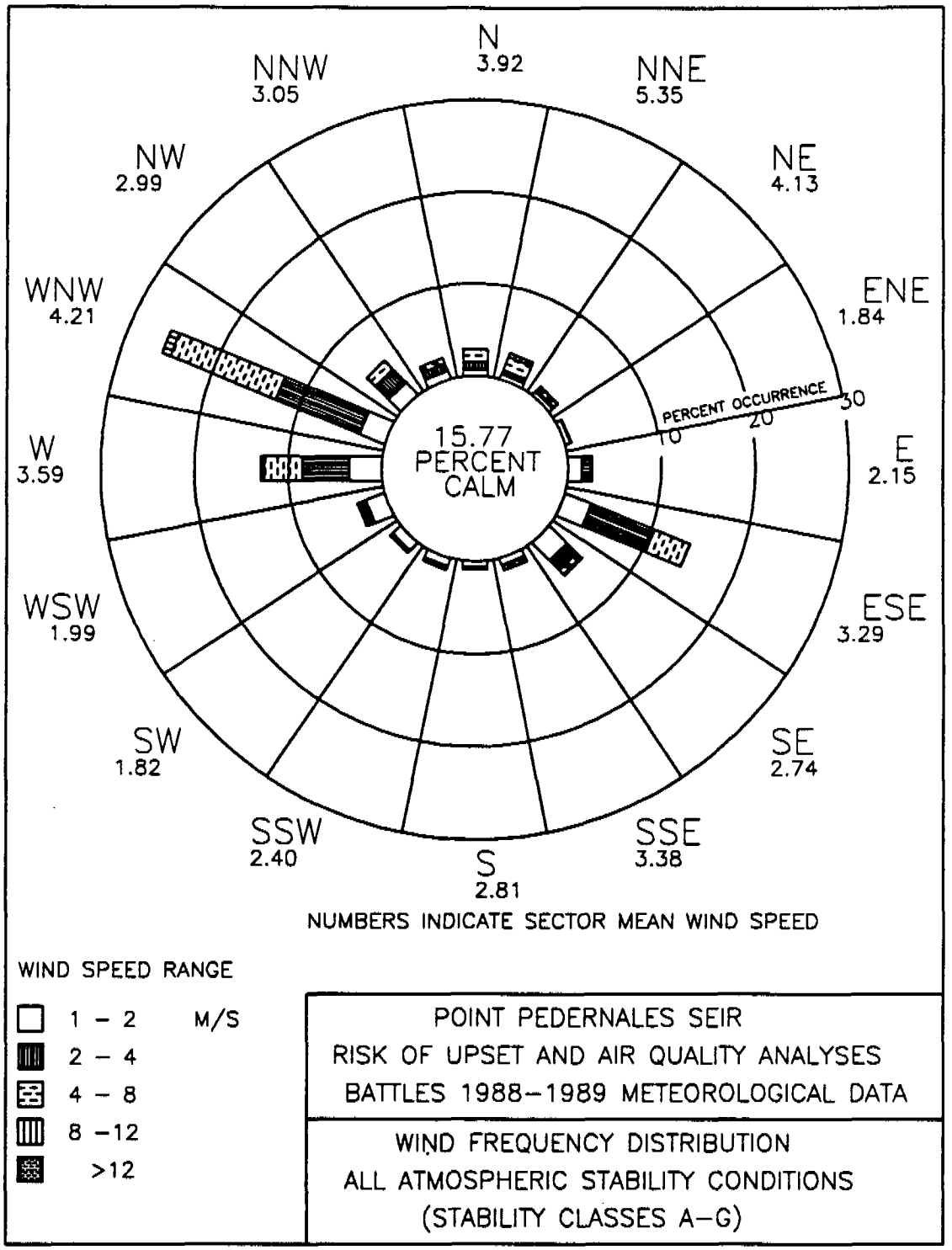

Figure 3-2 Santa Maria (Battles Gas Plant) Wind Frequency Distribution

Several potential hazards exist in the event of an accidental release of the hydrocarbon streams identified in the hazards analysis. Since these streams are extremely flammable, releases could potentially result in thermal radiation exposure from a fire, and also present a significant explosion hazard in confined areas. Hydrogen sulfide concentrations in some of the gas streams also pose a potential hazard. Damage criteria were developed in order to quantify the potential consequences of an accidental release.

Hydrogen Sulfide Damage Criteria

A consistent set of criteria for adverse consequences, referred to as levels of concern (LOC), have been used in modeling the consequences of the various releases. The LOCs are presented as concentrations of the hazardous material (in this case H_2S) in the atmosphere in parts per million (ppm). The justification for selecting these LOCs are described below. Momentary concentration is used in place of dosage because preliminary release rate calculations have shown that for the severe releases, the hazard zones based on dosage are smaller than that for a one breath concentration hazard zone. This is because the maximum release rate and plume length for the severe releases are relatively small and would pass over a receptor (a person exposed to the hazardous plume) in a short time (thus, low dosage). Many of the scenarios are characterized by high initial release rates that gradually decrease until the release ceases. Therefore, the initial concentration is relatively high, but the total dosage is low.

Three basic concentration levels are employed to present the hazard zones for the hydrogen sulfide. These are "extensive", "major", and "minor". The Immediately Dangerous to Life and Health (IDLH) was used to define extensive health effects which is consistent with the original Point Pedernales Project EIR analysis. The Emergency Response Planning Guideline Levels (2 and 3) were used to define major and minor health effects, respectively. Extensive is defined as "one breath can lead to collapse, unconsciousness, or death." Major is defined as "extended exposure can lead to irreversible injury", and minor is defined by recoverable symptoms. These concentrations, presented in Table 4.1, are based on a review of reported concentrations and dosages that have been used in experiments with animals and have been estimated in accident investigation cases involving humans. The justification for selecting these LOCs are further described below.

Hydrogen Sulfide Inhalation Toxicology - General Overview

Acute intoxication from hydrogen sulfide exposure usually occurs from a single exposure to elevated concentrations and refers to systemic effects involving both the central nervous system

Table 4.1 Hydrogen Sulfide Toxic Damage Criteria

Toxic Concentration (ppm)	*Criteria*
300	Extensive
100	Major
30	Minor

and respiratory system. Effects of acute exposures include eye irritation, respiratory tract irritation, headache, dizziness, excitement, staggering gait, and gastroenteric disorders. Exposure to concentrations of 1,000-2,000 ppm causes respiratory paralysis after a breath or two due to inhibition of the respiratory center of the brain. Death due to sulfide toxicity is believed to result form respiratory arrest attributed to a direct depressant effect on the respiratory centers of the brain stem.

Estimates Of Lethal Exposure Levels For Episodic Discharges

For consequence analysis purposes, it is desired to estimate those concentrations in air capable of causing deaths in at least some small fraction of exposed populations within the two time periods of 10 minutes (or less) and 30 minutes. These represent two distinct classes of release: 1) instantaneous loss of contents or a continuous discharge that is rapidly isolated; and 2) a continuous discharge that requires a longer time to isolate or which continues until available inventory is depleted.

Table 4.2 presents the physiologic response to various concentrations of hydrogen sulfide. NIOSH (1985) reports the IDLH (Immediately Dangerous to Life and Health) level for this chemical as 300 ppm for 30 minute exposure. Table 4.2 provides summaries of relevant data reported by key sources of information regarding the potential exposures capable of causing fatalities among exposed members of the public in the event of an accident.

The data reveals that the majority of references agree that concentrations of 600-700 ppm of hydrogen sulfide in air are required to cause fatalities among human populations exposed for 30 minutes. Given that there is some degree of contradiction, however, and (more importantly) that toxicity data of this sort usually contains some degree of uncertainty, it is suggested that 1000 ppm of hydrogen sulfide can be immediately fatal to humans and that 800 ppm and 300 ppm be used respectively as fatality limits for 10 minute and 30 minute exposures.

From the information provided in Table 4.3 we have concluded that injury can occur from one breath exposure. We have selected 300 ppm (30-minute average) and 100 ppm (60-minute average) to represent limiting concentrations for "extensive" and "major" injury levels (Table 4.1). These values were scaled to the appropriate exposure time using the "probit" equation method.

Thermal Radiation Damage Criteria

The potential concern associated with large-scale compressed natural gas vapor jet fires is thermal radiation intensity and its effects surrounding structures, process and fire suppression equipment. Tables 4.4 and 4.5 present an overview of thermal radiation intensity and observed effects. Data presented in these tables show that no significant physical effect would result from exposure to a radiation intensity of 1.6 kW/m^2 over extended periods. Exposure to a radiation intensity of 4 kW/m^2 would result in pain if the exposure period were to exceed 20 seconds.

Table 4.2 Physiologic Effects Of Human Exposure To Various Levels Of Hydrogen Sulfide

Concentration (ppm)	*Physiologic Effects*
<1	Some level of odor
3--5	Offensive, moderately intense
10	Obvious and unpleasant odor
10	Threshold limit value-time weighted average
10	"Sore eyes"
20	Maximum allowable concentration for daily 8-hour exposure
20--30	Strong and intense odor, but not intolerable
50--100	Mild irritation to the respiratory tract and especially to the eyes after 12 hour of exposure
100	Loss of smell in 3 to 15 minutes, may sting eye and throat
200	Kills smell quickly, stings eyes and throat
300-500	Pulmonary edema, imminent threat to life (short-term exposure)
500	In 0.5-1 hour it will cause excitement, headache, dizziness, and staggering, followed by unconsciousness and respiratory failure
500--1000	Acts primarily as a systemic poison causing unconsciousness and death through respiratory paralysis (short term exposure)

Table 4.2 Physiologic Effects Of Human Exposure To Various Levels Of Hydrogen Sulfide (Continued)

Concentration (ppm)	*Physiologic Effects*
700	Unconscious quickly, death will result if not rescued promptly
700--900	Rapidly produces unconsciousness, cessation of respiration and death (short-term exposure)
1000	Rapidly produces unconsciousness, cessation of respiration and death
1000	Nervous system paralysis
5000	Imminent death

* Most of these are for short-term acute exposures.

Source: Modified from Beauchamp (1984)

Table 4.3 Summary Of Acute Inhalation Toxicity Data For Hydrogen Sulfide

Exposure	*Observed Effect*	*References*
>700 ppm (30 min)	Death	Baskin (1972)
500 ppm (30 min)	Headache, Dizziness, Excitement, Staggering, and Gastroenteric disorders possibly followed by bronchitis or bronchial pneumonia	Braker (1977)
>600 ppm (30 min)	Death from respiratory paralysis	Braker (1977)
1000 ppm (single breath)	Convulsions, coma and rapid death	Proctor, Hughes (1978)
500 ppm (30 min)	Headache, dizziness, excitement, staggering gait, diarrhea and dysuria followed by bronchitis or bronchopneumonia	Sax (1989)
800-1,000 ppm (30 min)	Death due to respiratory paralysis	Sax (1989)
1,000-2,000 ppm (single breath)	Convulsions, coma, and rapid death	Matkinson, et al., (1989)
600 ppm (30 min)	Death	NIOSH (1983)
700 ppm (>30 min)	Death	Air Products and Chemicals, Inc. (1985)

Table 4.4 Observed Effects Of Thermal Radiation Intensity

Thermal Radiation Intensity (kW/m^2)	*Observed Effect*
37.5	Sufficient to cause damage to process equipment
25.0	Minimum energy required to ignite wood at indefinitely long exposures (non-piloted)
12.5	Minimum energy required for piloted ignition of wood, melting of plastic tubing
9.5	Pain threshold reached after 8 seconds; second degree burns after 20 seconds
4.0	Sufficient to cause pain to personnel if unable to reach cover within 20 seconds; however blistering of the skin (second degree burns) is likely; 0% lethality
1.6	Will cause no discomfort for long exposure

Table 4.5 Thermal Radiation Intensity And Time To Pain Threshold

Thermal Radiation Intensity (kW/m^2)	*Time to Pain Threshold (seconds)*
1.74	60
2.33	40
2.90	30
4.73	16
6.94	9
9.46	6
11.67	4
19.87	2

Exposure to a radiation intensity of 9.5 kW/m^2 would result in pain (8 seconds) and second degree burns (20 seconds) after short exposure periods.

Data on the exposure time necessary to reach pain thresholds is presented in Table 4.5. This information indicates that relatively high thermal radiation levels can be tolerated without significant pain or injury. The time required to reach the pain threshold can be used to indicate a reasonable evacuation time that would result in little or no significant physical injury. Exposure to a thermal radiation level of 5 kW/m^2 would not likely result in any significant injury based on the assumption that a person could leave the immediate area of the fire within the approximately 15 seconds required to reach the pain threshold. Exposure to a thermal radiation level of 10 kW/m^2 would likely result in some pain, but evacuation would be possible before second degree burns would be incurred. Based on the data in these tables and other sources, thermal radiation levels of 5 and 10 kW/m^2 were selected to represent minor and moderate physical injury levels.

Damage to surrounding structures and equipment could potentially also occur in the immediate vicinity of a methane vapor jet fire. Based on the data presented in Table 4.4, a thermal radiation level of 37.5 kW/m^2 was selected to characterize potential damage to surrounding structures and equipment. This thermal radiation level represents the minimum level that could cause damage to structures and equipment; however, prolonged exposure would be required before significant damage could occur.

Explosion/Overpressure Criteria

Several process vessels would contain flammable/explosive vapors and potential ignition sources would likely be abundant in the vicinity. The possibility of ignition and an unconfined vapor cloud explosion (UVCE) is unlikely for many scenarios. However, ignition of flammable vapors resulting from NGL spills would have the potential to result in a partially confined deflagration/detonation given the design of the facility and associated structures. The consequences of flammable vapor ignition were quantified by estimating the distance to several overpressure levels (shockwaves) that represent different damage criteria.

Several biological and structural explosion damage criteria were reviewed (Table 4.6). Four overpressure levels were selected to be representative of light (0.5 psi), moderate (1.0 psi), heavy (3.0 psi), and extensive (5.0 psi). An overpressure level of 0.5 psi would likely result in broken windows and some potential for minor injury. Some structural damage and injury would likely occur as a result of exposure to an overpressure level of 1 psi. An overpressure level of 3.0 psi would likely result in significant damage to nearby buildings. An overpressure level of 5 psi would result in structural damage to nearby structures; however, overpressure levels of 15-50 psi would be required to cause significant damage to surrounding vessels and equipment.

Table 4.6 Biological And Structural Damage Criteria From Explosions

Overpressure (psi)*	*Biological Damage*	*Structural Damage*
70	99% Fatality	Total structural damage
50	50% Fatality	Total structural damage
35	1% Fatality	Total structural damage
15	Lung Damage	Severe structural damage
7-8		Shearing and flexure failure of brick wall panel 8 to 12 inches thick (not reinforced)
5	Eardrum rupture	Shattering of concrete wall panels, 8 to 12 inches thick (not Reinforced)
2-4		Non-reinforced cinder block walls shattered; 50% destruction of brick buildings; steel frame building distorted; light industrial buildings ruptured
1-2		Failure of wood siding panels. Shattering of asbestos siding and corrugated steel and aluminum panel failure
0.5-1		Shattering of glass windows

* Note that the total overpressure may be achieved by reflection of an incident wave of about half of the stated values.

Significant biological damage would also potentially result from exposure to an overpressure level of 5 psi.

5.0 Consequence Modeling Results

5.1 Proposed Project Modeling Results

This section presents the modeling results for the Proposed Project. Modeling results for toxic (hydrogen sulfide), thermal radiation and explosion overpressure exposure are presented in Tables 5.1 through 5.5. The significance of the modeling results is based on the potential for public injury and/or fatalities. On-site occupational hazards and risk are not summarized in this analysis beyond the identification of potential hazard zones. The following discussion summarizes the severity of the consequences for each scenario.

Hydrogen Sulfide Exposure Hazards

Consequence modeling results for several sour gas (hydrogen sulfide) releases are presented in Table 5.1. Based on the location of these releases and the distance to the point of nearest public access/exposure, only Scenarios 1 (a-c) and 2 (a-c) have the potential to adversely affect the public. All other scenarios pose little risk based on relatively low process gas hydrogen sulfide concentrations or low process flow characteristics (i.e., flow, pressure, temperature, etc.).

Scenarios 1 and 2 cover releases from the existing sour gas pipeline from Platform Irene. If these releases were to occur within the HS&P facility, the consequences would be considered minor at the point of nearest public access. However, this pipeline crosses a few points of public access (e.g., Harris Grade Road) where the potential for exposure exists. If the pipeline were to rupture near one of these points, exposure to a hydrogen sulfide concentration in excess of 300 ppm is possible.

It should be noted, however, that the risk of exposure, injury and/or fatalities resulting from a leak or rupture of this pipeline does not change with implementation of the proposed modification project. Modeling results in 84-EIR-7 (the original EIR for this project) were based on several worst-case assumptions related to process stream composition and pipeline operation. Subsequent construction and operation of the pipeline have resulted in normal operating pressures lower than those in 84-EIR-7 (600 psig vs. 900 psig) and worst-case hydrogen sulfide concentrations that are somewhat higher (1,100 ppm H_2S assumed in 84-EIR-7 versus a design/projected concentration of 4,000 ppm). The proposed modification project would increase the operating pressure of the pipeline, but this pressure would remain well below maximum pressures assumed in 84-EIR-7. For comparison purposes, the maximum toxic vapor hazard distance presented in 84-EIR-7 was 140 meters (i.e., the distance to the IDLH of 300 ppm) which compares to hazard distance of 105 meters in this analysis.

Table 5.1 Toxic Vapor Dispersion Hazard Zones - HS&P

Scenario	Stability/ Wind Speed (m/s)	Distance to ERPG-2 (m) Length	Width	Distance to ERPG-3 (m) Length	Width	Distance to IDLH (m) Length	Width
1a	D/4	69	27	26	10	14	5
	F/2	113	32	30	10	15	6
1b	D/4	17	5	8	3	4	1
	F/2	33	6	11	3	5	2
1c	D/4	140	40	66	21	42	15
	F/2	993	44	230	24	102	17
1d	D/4	100	28	47	15	29	11
	F/2	418	32	107	17	54	12
2a	D/4	23	8	8	3	4	2
	F/2	33	9	9	3	4	2
2b	D/4	17	5	6	2	3	1
	F/2	23	7	6	2	3	1
2c	D/4	47	12	23	6	14	4
	F/2	441	15	82	8	34	6
2d	D/4	35	8	17	4	10	3
	F/2	164	11	41	8	20	4

Table 5.1 Toxic Vapor Dispersion Hazard Zones - HS&P (continued)

Scenario	Stability/ Wind Speed (m/s)	Distance to ERPG-2 (m) Length	Width	Distance to ERPG-3 (m) Length	Width	Distance to IDLH (m) Length	Width
5a	D/4	7	2	3	<1	1	<1
	F/2	13	2	3	<1	2	<1
9a	D/4	2	1	--	--	--	--
	F/2	2	1	--	--	--	--

Table 5.2 Flammable Vapor Dispersion Hazard Zones - HS&P

Scenario	Stability/ Wind Speed (m/s)	Distance to 1/2 LFL (m) Length	Width	Distance to LFL (m) Length	Width
1a	D/4	58	22	33	12
	F/2	87	26	40	14
1b	D/4	15	4	9	3
	F/2	27	5	14	3
1c	D/4	124	34	80	24
	F/2	755	39	325	28
1d	D/4	87	25	55	17
	F/2	321	28	146	20
2a	D/4	19	7	11	4
	F/2	25	8	12	4
2b	D/4	14	5	7	3
	F/2	17	5	8	3
2c	D/4	41	11	27	7
	F/2	323	15	122	9
2d	D/4	30	7	20	5
	F/2	125	11	56	7
3a	n/a	24	48	19	38
4a	D/4	41	8	21	4
	F/2	42	11	28	4
4b	D/4	64	16	31	6
	F/2	64	21	31	8
5a	D/4	6	1	3	1
	F/2	9	2	4	1
6a	n/a	63	126	50	100

Table 5.2 Flammable Vapor Dispersion Hazard Zones - HS&P (Continued)

Scenario	Stability/ Wind Speed (m/s)	Distance to 1/2 LFL (m) Length	Width	Distance to LFL (m) Length	Width
7a	D/4	4	2	2	2
	F/2	23	4	11	3
8a	D/4	6	1	4	1
	F/2	11	1	5	1
9a	D/4	7	2	4	1
	F/2	8	3	4	1

Table 5.3 Thermal Radiation Hazard Zones - HS&P

Scenario	Stability/ Wind Speed (m/s)	Thermal Radiation Hazard Zone (m) 5 kW/m^2	10 kW/m^2	37.5 kW/m^2
1a	D/4	55	49	41
	F/2	60	54	47
1b	D/4	14	13	11
	F/2	18	17	14
1c	D/4	77	63	47
	F/2	79	66	53
1d	D/4	56	46	34
	F/2	58	48	38
2a	D/4	22	19	15
	F/2	23	20	16
2b	D/4	17	14	11
	F/2	17	15	11
2c	D/4	27	22	16
	F/2	28	23	17
2d	D/4	20	16	12
	F/2	21	17	12
4a	D/4	23	19	15
	F/2	24	20	16
4b	D/4	30	26	20
	F/2	32	28	23
5a	D/4	6	5	4
	F/2	7	6	4
7a	D/4	9	7	2
	F/2	7	5	1

Table 5.3 Thermal Radiation Hazard Zones - HS&P (continued)

Scenario	Stability/ Wind Speed (m/s)	Thermal Radiation Hazard Zone (m) 5 kW/m^2	10 kW/m^2	37.5 kW/m^2
8a	D/4	5	5	3
	F/2	6	5	4
9a	D/4	11	9	6
	F/2	11	9	7

Table 5.4 BLEVE Integrated Thermal Radiation Hazard Zones - HS&P

Scenario	Thermal Radiation Hazard Zone (m)		
	40 kJ/m^2	80 kJ/m^2	160 kJ/m^2
3a	125	75	36
6a	534	365	235

Table 5.5 Explosion Overpressure Hazard Modeling Results - HS&P

Scenario	Stability/ Wind Speed (m/s)	Maximum Distance (m) to Overpressure Level 0.5 psi	1.0 psi	3.0 psi	5.0 psi
1a	D/4	124	74	35	25
	F/2	138	82	39	28
1b	D/4	33	20	9	7
	F/2	42	25	12	9
1c	D/4	161	80	27	16
	F/2	229	114	38	23
1d	D/4	112	56	19	11
	F/2	144	72	24	14
2a	D/4	37	22	11	8
	F/2	40	24	11	8
2b	D/4	26	16	7	5
	F/2	28	17	8	6
2c	D/4	50	25	8	5
	F/2	88	44	15	9
2d	D/4	36	18	6	4
	F/2	54	27	9	5
3a	a	222	125	38	25
4a	D/4	53	32	15	11
	F/2	54	32	15	11
4b	D/4	83	49	23	17
	F/2	87	51	24	18
5a	D/4	11	6	3	2
	F/2	12	7	3	3

Table 5.5 Explosion Overpressure Hazard Modeling Results - HS&P (Continued)

Scenario	Stability/ Wind Speed (m/s)	Maximum Distance (m) to Overpressure Level 0.5 psi	1.0 psi	3.0 psi	5.0 psi
6a	a	512	287	87	57
7a	D/4	15	9	4	3
	F/2	27	16	8	6
8a	D/4	10	6	3	2
	F/2	14	8	4	3
9a	D/4	--	--	--	--
	F/2	--	--	--	--

a Overpressure levels resulting from a vessel explosion. All other overpressure levels result from unconfined or partially confined vapor cloud explosions.

note: Modeling results for all scenarios (except 1c) indicate that insufficient mass would be available to sustain an unconfined vapor cloud explosion. Partial or total confinement would be required for an explosion to occur.

Flammable Vapor Hazards

Results of the flammable vapor zone modeling are presented in Table 5.2. As with the hydrogen sulfide modeling results, hazards associated with flammable vapors are limited to the HS&P facility with the exception of Scenarios 1 and 2 (releases from the pipeline from Platform Irene) where there is some potential for the release of flammable vapors where the pipeline crosses points of public access (i.e., Harris Grade Road, Highway 1, and Santa Lucia Canyon Road). However, these modeling results indicate that estimated hazards would remain lower than those estimated in 84-EIR-7. These modeling results are based on more realistic design and operating parameters than were available for the 84-EIR-7 analysis.

Thermal Radiation Exposure Hazards

Hazards associated with thermal radiation exposure resulting from pool fires and flame jets are presented in Table 5.3, while results of the BLEVE model are presented in Table 5.4. Thermal radiation hazards associated with pool fires and flame jets would be limited to within the HS&P facility and would not pose a significant hazard to the off-site public. In the event of a flame jet resulting from a leak or rupture of the sour gas pipeline from Platform Irene, a thermal radiation hazard would exist in the immediate vicinity of the pipeline. However, prolonged exposure would be avoidable. These thermal radiation hazards are also less than those presented in the 84-EIR-7 analysis.

Thermal radiation hazards associated with a BLEVE of a LPG or NGL vessel have the potential to adversely affect off-site areas. While thermal radiation effects of a propane vessel BLEVE would not affect the off-site public, a NGL BLEVE would have the potential to affect off-site areas in the vicinity of Harris Grade Road immediately adjacent to the HS&P. No other off-site areas would be adversely affected. It should be noted that this is an extremely unlikely event ("extraordinary" per Santa Barbara County threshold guidelines) and does not pose a significant hazard to the off-site public according to the threshold/frequency-consequence matrix. In addition, hazards associated with a NGL BLEVE are less than those presented in the 84-EIR-7 analysis and those currently estimated for the Battles Gas Plant (235 meters versus 282 meters), especially when the greater population density surrounding the Battles Gas Plant is considered.

Explosion Overpressure Exposure Hazards

Explosion overpressure exposure hazards resulting from unconfined vapor cloud explosions (UVCEs), partially confined vapor cloud explosions, and BLEVEs are presented in Table 5.5. Modeling results indicate that adverse impacts would be limited to within the HS&P facility with the exception of off-site portions of the Platform Irene sour gas pipeline (Scenarios 1&2) and NGL BLEVE (Scenario 6).

The gas stream in the Platform Irene pipeline is predominantly methane which is difficult to detonate or transition from ignition to a UVCE. The explosion overpressure levels presented in Table 5.5 are only possible under worst-case conditions where partial vapor cloud confinement

and several obstacles exist. Obstacles and partial confinement would enhance flame acceleration and overpressure levels and could lead to vapor cloud deflagration (sub-sonic flame velocity), but detonation (super-sonic flame velocity) would not be likely for methane. Therefore, explosion overpressure hazards are very unlikely outside of the HS&P facility for this scenario. For comparison purposes, these hazard zones are considerably smaller than those presented in the 84-EIR-7 analysis (39 meters versus 113 meters), or those currently estimated for the Battles Gas Plant.

Explosion overpressure levels associated with a NGL BLEVE would have the potential to result in minor injury to the public where Harris Grade Road passes the facility (a road segment of approximately 3,000 ft), although no other off-site areas would be adversely affected. As mentioned previously, this is a highly unlikely event and does not pose a significant risk to the public. For comparison purposes, these hazard zones are considerably smaller than those presented in the 84-EIR-7 analysis, or those that currently exist at the Battles Gas Plant (87 meters versus 220 meters).

Hazards Associated With Modifications At Jim Hopkins Fee

Only one potentially significant release scenario was identified associated with proposed modifications at Jim Hopkins Fee. This scenario, a BLEVE of the propane surge tank, would not pose any significant risk to the public. Worst-case modeling results indicate that the potential for minor injury would only exist within 60 meters of the surge tank, while the hazard zone for potentially major injuries would only extend approximately 10 meters from the tank.

5.2 Expanded HS&P Facility Alternative Modeling Results

This section presents the modeling results for the Expanded HS&P Facility Alternative. Modeling results for toxic (hydrogen sulfide), thermal radiation and explosion overpressure exposure are presented in Tables 5.6 through 5.10. The significance of the modeling results is based on the potential for public injury and/or fatalities. On-site occupational hazards and risk are not summarized in this analysis beyond the identification of potential hazard zones. The following discussion summarizes the severity of the consequences for each scenario.

Hydrogen Sulfide Exposure Hazards

Consequence modeling results for several sour gas (hydrogen sulfide) releases are presented in Table 5.6. Based on the location of these releases and the distance to the point of nearest public access/exposure, only Scenarios Exp-1 and Exp-2 have the potential to adversely affect the public. All other scenarios pose little risk based on relatively low process gas hydrogen sulfide concentrations or low process flow characteristics (i.e., flow, pressure, temperature, etc.).

Scenarios Exp-1 and Exp-2 cover releases from the existing sour gas pipeline from Battles Gas Plant to the HS&P. If these releases were to occur within the HS&P facility, the consequences

would be considered minor at the point of nearest public access. However, this pipeline crosses several points of public access where the potential for exposure exists. If the pipeline were to rupture near one of these points, exposure to a hydrogen sulfide concentration in excess of 300 ppm is possible.

Flammable Vapor Hazards

Results of the flammable vapor zone modeling are presented in Table 5.7. As with the hydrogen sulfide modeling results, hazards associated with flammable vapors are limited to the HS&P facility with the exception of Scenarios Exp-1 and Exp-2 (releases from the pipeline from Battles Gas Plant to the HS&P) where there is some potential for the release of flammable vapors where the pipeline crosses points of public access.

Thermal Radiation Exposure Hazards

Hazards associated with thermal radiation exposure resulting from pool fires and flame jets are presented in Table 5.8, while results of the BLEVE model are presented in Table 5.9. Thermal radiation hazards associated with pool fires and flame jets would be limited to within the HS&P facility and would not pose a significant hazard to the off-site public. In the event of a flame jet resulting from a leak or rupture of the sour gas pipeline from the Battles Gas Plant, a thermal radiation hazard would exist in the immediate vicinity of the pipeline. However, prolonged exposure would be avoidable.

Thermal radiation hazards associated with a BLEVE of a LPG or NGL vessel have the potential to adversely affect off-site areas. While thermal radiation effects of a propane vessel BLEVE would not affect the off-site public, a NGL BLEVE would have the potential to affect off-site areas in the vicinity of Harris Grade Road immediately adjacent to the HS&P. No other off-site areas would be adversely affected. It should be noted that this is an extremely unlikely event ("extraordinary" per Santa Barbara County threshold guidelines) and does not pose a significant hazard to the off-site public according to the threshold/frequency-consequence matrix.

Explosion Overpressure Exposure Hazards

Explosion overpressure exposure hazards resulting from unconfined vapor cloud explosions (UVCEs), partially confined vapor cloud explosions, and BLEVEs are presented in Table 5.10. Modeling results indicate that adverse impacts would be limited to within the HS&P facility with the exception of off-site portions of the sour gas pipeline from Battles Gas Plant (Scenarios 1&2) and NGL BLEVE (Scenarios Exp-5 and Exp-7).

The gas stream in the pipeline from Battles Gas Plant is predominantly methane which is difficult to detonate or transition from ignition to a UVCE. The explosion overpressure levels presented in Table 5.10 are only possible under worst-case conditions where partial vapor cloud confinement and several obstacles exist. Obstacles and partial confinement would enhance

Table 5.6 Toxic Vapor Dispersion Hazard Zones - Expanded HS&P

Scenario	Stability/ Wind Speed (m/s)	Distance to ERPG-2 (ft) Length	Width	Distance to ERPG-3 (ft) Length	Width	Distance to IDLH (ft) Length	Width
Exp-1	D/4	49	14	23	8	15	5
	F/2	148	18	43	9	24	6
Exp-2	D/4	16	4	8	2	5	1
	F/2	36	5	12	3	7	2
Exp-6	D/4	6	2	2	<1	1	<1
	F/2	7	2	2	<1	1	<1

Table 5.7 Flammable Vapor Dispersion Hazard Zones - Expanded HS&P

Scenario	Stability/ Wind Speed (m/s)	Distance to 1/2 LFL (ft) Length	Distance to 1/2 LFL (ft) Width	Distance to LFL (ft) Length	Distance to LFL (ft) Width
Exp-1	D/4	72	15	33	10
	F/2	155	17	73	12
Exp-2	D/4	16	4	11	2
	F/2	37	5	19	3
Exp-3	n/a	24	48	19	38
Exp-4	D/4	65	16	31	6
	F/2	65	21	31	8
Exp-5	n/a	63	126	50	100
Exp-6	D/4	7	2	4	1
	F/2	8	2	4	1
Exp-7a	n/a	54	108	32	64
Exp-7b	D/4	161	20	92	15
	F/2	659	27	392	21

Table 5.8 Thermal Radiation Hazard Zones - Expanded HS&P

Scenario	Stability/ Wind Speed (m/s)	Thermal Radiation Hazard Zone (ft) 5 kW/m^2	10 kW/m^2	37.5 kW/m^2
Exp-1	D/4	34	28	19
	F/2	36	29	20
Exp-2	D/4	11	9	6
	F/2	12	9	6
Exp-4	D/4	30	26	20
	F/2	32	28	23
Exp-6	D/4	11	9	6
	F/2	11	9	6
Exp-7b	D/4	43	29	9
	F/2	33	20	6

Table 5.9 BLEVE Integrated Thermal Radiation Hazard Zones - Expanded HS&P

Scenario	Thermal Radiation Hazard Zone (ft)		
	40 kJ/m^2	80 kJ/m^2	160 kJ/m^2
Exp-3	125	75	36
Exp-5	534	365	235
Exp-7a	666	454	290

Table 5.10 Explosion Overpressure Hazard Modeling Results - Expanded HS&P

Scenario	Stability/ Wind Speed (m/s)	Maximum Distance (ft) to Overpressure Level 0.5 psi	1.0 psi	3.0 psi	5.0 psi
Exp-1	D/4	66	33	11	6
	F/2	84	42	14	9
Exp-2	D/4	18	9	3	2
	F/2	25	12	4	3
Exp-3	a	222	125	38	25
Exp-4	D/4	83	49	23	17
	F/2	87	51	24	18
Exp-5	a	512	287	87	57
Exp-6	D/4	13	8	4	3
	F/2	13	8	4	3
Exp-7a	a	1,073	602	182	119
Exp-7b	D/4	74	44	21	15
	F/2	234	139	66	48

a Overpressure levels resulting from a vessel explosion. All other overpressure levels result from unconfined or partially confined vapor cloud explosions.

note: Modeling results for all scenarios indicate that insufficient mass would be available to sustain an unconfined vapor cloud explosion. Partial or total confinement would be required for an explosion to occur.

flame acceleration and overpressure levels and could lead to vapor cloud deflagration (sub-sonic flame velocity), but detonation (super-sonic flame velocity) would not be likely for methane. Therefore, explosion overpressure hazards are very unlikely outside of the HS&P facility for this scenario.

Explosion overpressure levels associated with a NGL BLEVE would have the potential to result in minor injury to the public where Harris Grade Road passes the facility (a road segment of approximately 3,000 ft), although no other off-site areas would be adversely affected. As mentioned previously, this is a highly unlikely event and does not pose a significant risk to the public.

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Attachment 1
Release Scenarios

Release Scenario 1a

Analysis Type and Goals ===> Estimate hazard zones for hydrogen sulfide toxicity, vapor cloud flammability (LFL), and thermal radiation.

Description ===> Rupture of the inlet gas line to the HS&P. Assume peak flow rate at maximum pipeline pressure.

Release Characteristics ===>
Release description = Horizontal vapor jet
Release height = 3 ft.
Release diameter = 8"
Release temperature = 74°F
Operating pressure = 600 psig
Gas flow rate = 6 MMscfd
= model peak flow rate
Release volume ≈ base on modeled peak rate
Release rate = model peak rate

Gas composition = stream G099
MW = 22.05
H2S = 4000 ppm

Meteorological Conditions ===>

Stability	Wind Speed (m/s)	Temp (K)	Relative Humidity (%)
D	4	286	60
F	2	286	80

Release Scenario 1b

Analysis Type and Goals ===> Estimate hazard zones for hydrogen sulfide toxicity, vapor cloud flammability (LFL), and thermal radiation.

Description ===> Rupture of the inlet gas line to the HS&P. Assume pipeline flow rate.

Release Characteristics ===>
Release description = Horizontal vapor jet
Release height = 3 ft.
Release diameter = 8"
Release temperature = 74°F
Operating pressure = 300 psig (avg)
Gas flow rate = 6 MMscfd
= 69.44 scf/s
Release volume ≈ (69.44 scf/s) (900 s)
≈ 624964scf
Release rate = (69.44 scf/s) (0.05722 lb/ft3)
= 3.97 lb/s
= 1.8 kg/s

Gas composition = stream G099
MW = 22.05
H2S = 4000 ppm

Meteorological Conditions ===>

Stability	Wind Speed (m/s)	Temp (K)	Relative Humidity (%)
D	4	286	60
F	2	286	80

Release Scenario 1c

Analysis Type and Goals ===> Estimate hazard zones for hydrogen sulfide toxicity, vapor cloud flammability (LFL), and thermal radiation.

Description ===> Rupture of an underground portion of the inlet gas line to the HS&P. Assume peak flow rate at maximum pipeline pressure.

Release Characteristics ===>
Release description = Vertical vapor jet
Release height = ground level
Release diameter = 8"
Release temperature = 74°F
Operating pressure = 600 psig
Gas flow rate = 6 MMscfd
= model peak flow rate
Release volume ≈ base on modeled peak rate
Release rate = model peak rate

Gas composition = stream G099
MW = 22.05
H2S = 4000 ppm

Meteorological Conditions ===>

Stability	Wind Speed (m/s)	Temp (K)	Relative Humidity (%)
D	4	286	60
F	2	286	80

Release Scenario 1d

Analysis Type and Goals ===> Estimate hazard zones for hydrogen sulfide toxicity, vapor cloud flammability (LFL), and thermal radiation.

Description ===> Rupture of an underground portion of the inlet gas line to the HS&P. Assume normal operating conditions and maximum H2S inlet concentration.

Release Characteristics ===>
Release description = Vertical vapor jet
Release height = ground level
Release diameter = 6"
Release temperature = 74°F
Operating pressure = 300 psig
Gas flow rate = model peak flow rate
Release volume ≈ base on modeled peak rate
Release rate = model peak rate

Gas composition = stream G099
MW = 22.05
H2S = 4000 ppm

Meteorological Conditions ===>

Stability	Wind Speed (m/s)	Temp (K)	Relative Humidity (%)
D	4	286	60
F	2	286	80

Release Scenario 2a

Analysis Type and Goals ===> Estimate hazard zones for hydrogen sulfide toxicity, vapor cloud flammability (LFL), and thermal radiation.

Description ===> Large leak in inlet gas line to the HS&P. Assume peak flow rate at maximum pipeline pressure.

Release Characteristics ===>
Release description = Horizontal vapor jet
Release height = 3 ft.
Release diameter = 2"
Release temperature = 74°F
Operating pressure = 600 psig
Gas flow rate = 6 MMscfd
= model peak flow rate
Release volume ≈ base on peak rate for 900s
Release rate = model peak rate

Gas composition = stream G099
MW = 22.05
H_2S = 4000 ppm

Meteorological Conditions ===>

Stability	Wind Speed (m/s)	Temp (K)	Relative Humidity (%)
D	4	286	60
F	2	286	80

Release Scenario 2b

Analysis Type and Goals ===> Estimate hazard zones for hydrogen sulfide toxicity, vapor cloud flammability (LFL), and thermal radiation.

Description ===> Large Leak in inlet gas line to the HS&P. Assume average pipeline pressure profile.

Release Characteristics ===>
Release description = Horizontal vapor jet
Release height = 3 ft.
Release diameter = 2"
Release temperature = ambient (68°F)
Operating pressure = 300 psig
Gas flow rate = model based on average press
Release volume ≈ based on peak rate for 900s
Release rate = model peak rate

Gas composition = stream G099
MW = 22.05
H2S = 4000 ppm

Meteorological Conditions ===>

Stability	Wind Speed (m/s)	Temp (K)	Relative Humidity (%)
D	4	286	60
F	2	286	80

Release Scenario 2c

Analysis Type and Goals ===> Estimate hazard zones for hydrogen sulfide toxicity, vapor cloud flammability (LFL), and thermal radiation.

Description ===> Large leak in underground portion of the inlet gas line to the HS&P. Assume peak flow rate at maximum pipeline pressure.

Release Characteristics ===>
Release description = Vertical vapor jet
Release height = ground level
Release diameter = 2"
Release temperature = 74°F
Operating pressure = 600 psig
Gas flow rate = 6 MMscfd
= model peak flow rate
Release volume ≈ base on peak rate for 900s
Release rate = model peak rate

Gas composition = stream G099
MW = 22.05
H_2S = 4000 ppm

Meteorological Conditions ===>

Stability	Wind Speed (m/s)	Temp (K)	Relative Humidity (%)
D	4	286	60
F	2	286	80

Release Scenario 2d

Analysis Type and Goals ===> Estimate hazard zones for hydrogen sulfide toxicity, vapor cloud flammability (LFL), and thermal radiation.

Description ===> Large leak in underground portion of the inlet gas line to the HS&P. Assume normal operating coinditions and maximum inlet H2S concentration.

Release Characteristics ===>
Release description = Vertical vapor jet
Release height = ground level
Release diameter = 2"
Release temperature = 74°F
Operating pressure = 200 psig
Gas flow rate = model peak flow rate
Release volume ≈ base on peak rate for 900s
Release rate = model peak rate

Gas composition = stream G099
MW = 22.05
H2S = 4000 ppm

Meteorological Conditions ===>

Stability	Wind Speed (m/s)	Temp (K)	Relative Humidity (%)
D	4	286	60
F	2	286	80

Release Scenario 3a

Analysis Type and Goals ===> Estimate hazard zones for thermal radiation and explosion criteria.

Description ===> BLEVE of propane receiver (V-1233) at integrated design pressure and temperature value.

Release Characteristics ===>
Release description = BLEVE
Release height = ground level
Release diameter = model
Release temperature = model profile
Release pressure = model profile
Gas volume = 78.75 ft3
Liquid volume = 78.75 ft3
Vessel diameter = 30 "
Vessel length = 144"

Assumed heat input = 575,000 Btu/hr
168,516 J/s

Gas composition = propane

Meteorological Conditions ===>

Stability	Wind Speed (m/s)	Temp (K)	Relative Humidity (%)
D	4	286	60
F	2	286	80

Release Scenario 4a

Analysis Type and Goals ===> Estimate hazard zones for vapor cloud flammability (LFL), and thermal radiation and explosion criteria. (assume flame jet and UVCE releases)

Description ===> Large line leak (2") in propane refrigeration system. (model using 15-minute average conditions)

Release Characteristics ===>
Release description = horizontal 2-phase jet
Release height = 3 ft
Release diameter = 2"
Release temperature = 115°F
Operating pressure = 230 psig
Gas volume = 150 ft3
Liquid volume = 150 ft3
Release volume ≈ model until system is empty
Release rate = model average blowdown rate

Gas composition = propane

Meteorological Conditions ===>

Stability	Wind Speed (m/s)	Temp (K)	Relative Humidity (%)
D	4	286	60
F	2	286	80

Release Scenario 4b

Analysis Type and Goals ===> Estimate hazard zones for vapor cloud flammability (LFL), and thermal radiation and explosion criteria. (assume flame jet and UVCE releases)

Description ===> Large line leak (2") in propane refrigeration system. (use peak flow rate from scenario 4a)

Release Characteristics ===>
Release description = horizontal 2-phase jet
Release height = 3 ft
Release diameter = 2"
Release temperature = 115°F
Operating pressure = 230 psig
Gas volume = 150 ft3
Liquid volume = 150 ft3
Release volume ≈ model until system is empty
Release rate = model average blowdown rate

Gas composition = propane

Meteorological Conditions ===>

Stability	Wind Speed (m/s)	Temp (K)	Relative Humidity (%)
D	4	286	60
F	2	286	80

Release Scenario 5a

Analysis Type and Goals ===> Estimate hazard zones for hydrogen sulfide toxicity, vapor cloud flammability (LFL), and thermal radiation.

Description ===> Rupture of Lompoc compressor discharge line. Assume peak flow rate at maximum pressure and H2S concentration.

Release Characteristics ===>
Release description = Horizontal vapor jet
Release height = 3 ft
Release diameter = 2"
Release temperature = 110°F
Operating pressure = 1600 psig
Gas flow rate = 1 MMscfd (0.9405)
Mass flow rate = 2327.8 lb/hr

Gas composition = G13
MW = 22.54
Methane = 77.6%
Ethane = 3.9%
Propane = 2.5%
Butane = 2.0%
CO2 = 11.0%
H2S = 0.49%

Meteorological Conditions ===>

Stability	Wind Speed (m/s)	Temp (K)	Relative Humidity (%)
D	4	286	60
F	2	286	80

Release Scenario 6a

Analysis Type and Goals ===> Estimate hazard zones for thermal radiation and explosion criteria.

Description ===> BLEVE of NGL surge vessel (V-1214) at integrated design pressure and temperature failure value.

Release Characteristics ===>
Release description = BLEVE
Release height = ground level
Release diameter = model
Release temperature = model profile
Release pressure = model profile
Vessel diameter = 10'
Vessel length = 18' s/s
Total volume = 1675 ft3
Gas volume = 419 ft3
Liquid volume = 1256 ft3

Assumed heat input = 3,500,000 Btu/hr
1,025,750 J/s

Gas composition = C108
MW = 52.67
Methane = 4.8%
Ethane = 7.5%
Propane = 35.4%
Butane = 31.6%
Pentane = 12.9%
C6+ = 6.9%
CO2 = 0.9%

Meteorological Conditions ===>

Stability	Wind Speed (m/s)	Temp (K)	Relative Humidity (%)
D	4	286	60
F	2	286	80

Release Scenario 7a

Analysis Type and Goals ===> Estimate hazard zones for vapor cloud flammability (LFL), and thermal radiation and explosion criteria. (assume pool fire and UVCE releases)

Description ===> Large line leak (2") in low pressure/temperature NGL line resulting from line failure of full seal/fitting/ valve failure/error.

Release Characteristics ===>

Release description = horizontal 2-phase jet/ evaporating pool
Release height = 3 ft
Release diameter = 2"
Release temperature = 12°F
Operating pressure = 125 psig
Release duration = 15 minutes
System flow rate = 1542.2 lb/hr

Gas composition = C108
MW = 52.67
Methane = 4.8%
Ethane = 7.5%
Propane = 35.4%
Butane = 31.6%
Pentane = 12.9%
C6+ = 6.9%
CO2 = 0.9%

Meteorological Conditions ===>

Stability	Wind Speed (m/s)	Temp (K)	Relative Humidity (%)
D	4	286	60
F	2	286	80

Release Scenario 8a

Analysis Type and Goals ===> Estimate hazard zones for vapor cloud flammability (LFL), and thermal radiation and explosion criteria. (assume flame jet and UVCE releases)

Description ===> Large line leak (2") in high pressure/temperature NGL line resulting from line failure of full seal/fitting/ valve failure/error.

Release Characteristics ===>
Release description = horizontal 2-phase jet
Release height = 3 ft
Release diameter = 2"
Release temperature = 117°F
Operating pressure = 1600 psig
Release duration = 15 minutes
System flow rate = 489.8 lb/hr

Gas composition = COIL
MW = 53.67
Methane = 4.8%
Ethane = 7.2%
Propane = 31.4%
Butane = 34.0%
Pentane = 14.3%
C6+ = 7.4%
CO2 = 0.9%

Meteorological Conditions ===>

Stability	Wind Speed (m/s)	Temp (K)	Relative Humidity (%)
D	4	286	60
F	2	286	80

Release Scenario 9a

Analysis Type and Goals ===> Estimate hazard zones for hydrogen sulfide toxicity, vapor cloud flammability (LFL), and thermal radiation.

Description ===> Release of sour gas from a SulfaTreat vessel due to a hole, loss of fitting or valveing error (vessels V1608, V1609, and V1610).

Release Characteristics ===>
Release description = Horizontal vapor jet
Release height = 3 ft.
Release diameter = 2"
Release temperature = 100°F
Operating pressure = 175 psig
Vessel diameter = 8'
Vessel Length = 20' s/s
Gas flow rate = 6 MMscfd
= model peak flow rate
Release volume ≈ base on modeled peak rate
Release rate = model peak rate

Gas composition = stream G576
MW = 22.7
H2S = 780 ppm

Meteorological Conditions ===>

Stability	Wind Speed (m/s)	Temp (K)	Relative Humidity (%)
D	4	286	60
F	2	286	80

Release Scenario Exp-1

Analysis Type and Goals ===> Estimate hazard zones for hydrogen sulfide toxicity, vapor cloud flammability (LFL), and thermal radiation.

Description ===> Rupture of an underground portion of the inlet gas line to the HS&P from Battles Gas Plant. Assume peak pipeline pressure.

Release Characteristics ===>
Release description = Vertical vapor jet
Release height = ground level
Release diameter = 6"
Release temperature = 74°F
Operating pressure = 200 psig
Gas flow rate = model peak flow rate
Release volume ≈ base on modeled peak rate
Release rate = model peak rate

Gas composition = stream G099
MW = 22.05
H2S = 4000 ppm

Meteorological Conditions ===>

Stability	Wind Speed (m/s)	Temp (K)	Relative Humidity (%)
D	4	286	60
F	2	286	80

Release Scenario Exp-2

Analysis Type and Goals ===> Estimate hazard zones for hydrogen sulfide toxicity, vapor cloud flammability (LFL), and thermal radiation.

Description ===> Large leak in underground portion of the inlet gas line to the HS&P from Battles Gas Plant. Assume peak pipeline pressure.

Release Characteristics ===>
Release description = Vertical vapor jet
Release height = ground level
Release diameter = 2"
Release temperature = 74°F
Operating pressure = 200 psig
Gas flow rate = model peak flow rate
Release volume ≈ base on peak rate for 900s
Release rate = model peak rate

Gas composition = stream G099
MW = 22.05
H2S = 4000 ppm

Meteorological Conditions ===>

Stability	Wind Speed (m/s)	Temp (K)	Relative Humidity (%)
D	4	286	60
F	2	286	80

Release Scenario Exp-3

Analysis Type and Goals ===> Estimate hazard zones for thermal radiation and explosion criteria.

Description ===> BLEVE of propane receiver at integrated design pressure and temperature value.

Release Characteristics ===>
Release description = BLEVE
Release height = ground level
Release diameter = model
Release temperature = model profile
Release pressure = model profile
Gas volume = 78.75 ft3
Liquid volume = 78.75 ft3
Vessel diameter = 30 "
Vessel length = 144"

Assumed heat input = 575,000 Btu/hr
168,516 J/s

Gas composition = propane

Meteorological Conditions ===>

Stability	Wind Speed (m/s)	Temp (K)	Relative Humidity (%)
D	4	286	60
F	2	286	80

Release Scenario Exp-4

Analysis Type and Goals ===> Estimate hazard zones for vapor cloud flammability (LFL), and thermal radiation and explosion criteria. (assume flame jet and UVCE releases)

Description ===> Large line leak (2") in propane refrigeration system.

Release Characteristics ===>
Release description = horizontal 2-phase jet
Release height = 3 ft
Release diameter = 2"
Release temperature = 115°F
Operating pressure = 230 psig
Gas volume = 150 ft3
Liquid volume = 150 ft3
Release volume ≈ model until system is empty
Release rate = model average blowdown rate

Gas composition = propane

Meteorological Conditions ===>

Stability	Wind Speed (m/s)	Temp (K)	Relative Humidity (%)
D	4	286	60
F	2	286	80

Release Scenario Exp-5

Analysis Type and Goals ===> Estimate hazard zones for thermal radiation and explosion criteria.

Description ===> BLEVE of NGL surge vessel (V-1214) at integrated design pressure and temperature failure value.

Release Characteristics ===>
Release description = BLEVE
Release height = ground level
Release diameter = model
Release temperature = model profile
Release pressure = model profile
Vessel diameter = 10'
Vessel length = 18' s/s
Total volume = 1675 ft3
Gas volume = 419 ft3
Liquid volume = 1256 ft3

Assumed heat input = 3,500,000 Btu/hr
1,025,750 J/s

Gas composition = C108
MW = 52.67
Methane = 4.8%
Ethane = 7.5%
Propane = 35.4%
Butane = 31.6%
Pentane = 12.9%
C6+ = 6.9%
CO2 = 0.9%

Meteorological Conditions ===>

Stability	Wind Speed (m/s)	Temp (K)	Relative Humidity (%)
D	4	286	60
F	2	286	80

Release Scenario Exp-6

Analysis Type and Goals ===> Estimate hazard zones for hydrogen sulfide toxicity, vapor cloud flammability (LFL), and thermal radiation.

Description ===> Release of sour gas from a SulfaTreat vessel due to a hole, loss of fitting or valveing error (vessels V1608, V1609, and V1610).

Release Characteristics ===>
Release description = Horizontal vapor jet
Release height = 3 ft.
Release diameter = 2"
Release temperature = 100°F
Operating pressure = 175 psig
Vessel diameter = 8'
Vessel Length = 20' s/s
Gas flow rate = model peak flow rate
Release volume ≈ base on modeled peak rate
Release rate = model peak rate

Gas composition = stream G576
MW = 22.7
H2S = 3000 ppm

Meteorological Conditions ===>

Stability	Wind Speed (m/s)	Temp (K)	Relative Humidity (%)
D	4	286	60
F	2	286	80

Release Scenario Exp-7a

Analysis Type and Goals ===> Estimate hazard zones for thermal radiation and explosion criteria.

Description ===> BLEVE of raw natural gas liquid (NGL) tank at integrated design pressure and temperature value.

Release Characteristics ===>
Release description = BLEVE
Release height = ground level
Release diameter = model
Release temperature = model profile
Release pressure = model profile
Tank volume = 2,000 bbl
Vessel diameter = 15'
Vessel length = 65'

Assumed heat input = 3.51E+06 J/s

Gas composition = raw NGLs

Meteorological Conditions ===>

Stability	Wind Speed (m/s)	Temp (K)	Relative Humidity (%)
D	4	286	60
F	2	286	80

Release Scenario Exp-7b

Analysis Type and Goals ===> Estimate hazard zones for thermal radiation and explosion criteria.

Description ===> Failure of liquid loading/unloading line on raw NGL storage tank.

Release Characteristics ===>
Release description = Liquid Pool
Release height = ground level
Release diameter = 2"
model pool diameter
Release temperature = ambient (286 K)
Release pressure = hydrostatic
Tank volume = 2,000 bbl
Vessel diameter = 15'
Vessel length = 65'

Gas composition = raw NGLs

Meteorological Conditions ===>

Stability	Wind Speed (m/s)	Temp (K)	Relative Humidity (%)
D	4	286	60
F	2	286	80

Attachment 1.2
Jim Hopkins Fee Release Scenarios

Release Scenario 1a

Analysis Type and Goals ===> Estimate hazard zones for thermal radiation and explosion criteria.

Description ===> BLEVE of Jim Hopkins Fee propane receiver at integrated design pressure and temperature value.

Release Characteristics ===>
Release description = BLEVE
Release height = ground level
Release diameter = model
Release temperature = model profile
Release pressure = model profile
Total volume = 2.66 ft3

Gas composition = propane

Meteorological Conditions ===>

Stability	Wind Speed (m/s)	Temp (K)	Relative Humidity (%)
D	4	286	60
F	2	286	80

Attachment 2
Meteorological Data Analysis

Attachment 2.1
UNOCAL HS&P Meteorological Station

Unocal HS&P Stability Class Frequency Distribution

Stability Class	1988	1989	avg.
1	.1060	.0933	.0996
2	.1274	.1180	.1227
3	.1449	.1483	.1466
4	.1314	.1392	.1353
5	.1217	.1236	.1227
6	.3686	.3776	.3731

MEAN MONTHLY TEMPERATURES

Month--->	1	2	3	4	5	6	7	8	9	10	11	12
Temp--->	284.	285.	284.	284.	283.	283.	286.	288.	289.	289.	289.	287.

MEAN HOURLY TEMPERATURES AND STABILITY

Hour--->	1	2	3	4	5	6	7	8	9	10	11	12
Temp--->	285.	285.	285.	285.	284.	284.	285.	286.	287.	289.	291.	292.
Stab--->	6.	6.	6.	6.	6.	6.	6.	5.	4.	3.	3.	2.

Hour--->	13	14	15	16	17	18	19	20	21	22	23	24
Temp--->	292.	292.	292.	291.	290.	288.	287.	286.	285.	285.	285.	285.
Stab--->	2.	2.	2.	2.	2.	2.	3.	4.	5.	5.	6.	6.

MEAN MONTHLY TEMPERATURES

Month--->	1	2	3	4	5	6	7	8	9	10	11	12
Temp--->	282.	281.	283.	286.	283.	285.	285.	286.	287.	291.	292.	292.

MEAN HOURLY TEMPERATURES AND STABILITY

Hour--->	1	2	3	4	5	6	7	8	9	10	11	12
Temp--->	285.	285.	285.	285.	285.	284.	285.	286.	287.	289.	291.	292.
Stab--->	6.	6.	6.	6.	6.	6.	6.	5.	4.	3.	3.	2.

Hour--->	13	14	15	16	17	18	19	20	21	22	23	24
Temp--->	292.	292.	292.	291.	290.	288.	287.	286.	285.	285.	285.	285.
Stab--->	2.	2.	2.	2.	2.	3.	3.	4.	5.	5.	6.	6.

Unocal HS&P
1988-1989
Wind Frequency Distribution

DATA PERIOD - JAN 1, 1988 THROUGH DEC 31, 1989
MONTHS CONSIDERED - JAN THROUGH DEC
HOURS CONSIDERED - 0 TO 2400
STABILITY CLASS - A

WIND FREQUENCY DISTRIBUTION
FREQUENCY IN PERCENT
OF TOTAL OBSERVATIONS

	WIND SPEED CLASS (MPS)						
WIND SECTOR	1.01 TO 2.00	2.01 TO 4.00	4.01 TO 8.00	8.01 TO 12.00	GREATER THAN 12.00	TOTAL	MEAN SPEED
NNE	.02	.27	.07	.00	.00	.36	3.13
NE	.01	.00	.00	.00	.00	.01	1.30
ENE	.01	.00	.00	.00	.00	.01	2.00
E	.01	.01	.00	.00	.00	.01	2.45
ESE	.00	.00	.00	.00	.00	.00	.00
SE	.02	.05	.01	.00	.00	.07	2.86
SSE	.06	.05	.04	.00	.00	.15	2.90
S	.06	.22	.02	.00	.00	.30	2.73
SSW	.08	.19	.00	.00	.00	.27	2.55
SW	.13	.30	.00	.00	.00	.43	2.48
WSW	.18	.85	.01	.00	.00	1.04	2.76
W	.10	.78	.27	.00	.00	1.15	3.30
WNW	.15	1.30	.38	.00	.00	1.84	3.22
NW	.38	2.50	.46	.00	.00	3.34	3.02
NNW	.24	.19	.01	.00	.00	.43	2.08
N	.19	.10	.00	.00	.00	.30	1.95
CALM						.26	
TOTAL	1.64	6.80	1.27	.00	.00	9.96	2.86

NUMBERS BELOW BASED ON ALL OBSERVATIONS
NUMBER OF INVALID OBSERVATIONS = 0
NUMBER OF VALID OBSERVATIONS =17544

Unocal HS&P
1988-1989
Wind Frequency Distribution

DATA PERIOD - JAN 1, 1988 THROUGH DEC 31, 1989
MONTHS CONSIDERED - JAN THROUGH DEC
HOURS CONSIDERED - 0 TO 2400
STABILITY CLASS - B

WIND FREQUENCY DISTRIBUTION
FREQUENCY IN PERCENT
OF TOTAL OBSERVATIONS

	WIND SPEED CLASS (MPS)						
WIND SECTOR	1.01 TO 2.00	2.01 TO 4.00	4.01 TO 8.00	8.01 TO 12.00	GREATER THAN 12.00	TOTAL	MEAN SPEED
NNE	.09	.17	.03	.00	.00	.28	2.80
NE	.03	.01	.00	.00	.00	.04	1.79
ENE	.00	.01	.00	.00	.00	.01	2.10
E	.01	.01	.00	.00	.00	.02	1.95
ESE	.01	.02	.01	.00	.00	.03	3.42
SE	.03	.09	.08	.00	.00	.19	3.60
SSE	.03	.15	.06	.00	.00	.25	3.54
S	.10	.29	.18	.00	.00	.57	3.41
SSW	.11	.14	.03	.00	.00	.28	2.47
SW	.24	.23	.01	.00	.00	.48	2.20
WSW	.30	1.95	.43	.00	.00	2.68	3.14
W	.13	1.23	2.14	.00	.00	3.49	4.20
WNW	.19	.47	.25	.00	.00	.91	3.21
NW	.48	1.05	.23	.00	.00	1.77	2.83
NNW	.20	.11	.03	.00	.00	.34	2.10
N	.15	.10	.01	.00	.00	.25	2.08
CALM						.67	
TOTAL	2.08	6.03	3.49	.00	.00	12.27	3.14

NUMBERS BELOW BASED ON ALL OBSERVATIONS
NUMBER OF INVALID OBSERVATIONS = 0
NUMBER OF VALID OBSERVATIONS =17544

Unocal HS&P
1988-1989
Wind Frequency Distribution

DATA PERIOD - JAN 1, 1988 THROUGH DEC 31, 1989
MONTHS CONSIDERED - JAN THROUGH DEC
HOURS CONSIDERED - 0 TO 2400
STABILITY CLASS - C

WIND FREQUENCY DISTRIBUTION
FREQUENCY IN PERCENT
OF TOTAL OBSERVATIONS

	WIND SPEED CLASS (MPS)						
WIND SECTOR	1.01 TO 2.00	2.01 TO 4.00	4.01 TO 8.00	8.01 TO 12.00	GREATER THAN 12.00	TOTAL	MEAN SPEED
NNE	.13	.17	.06	.00	.00	.35	2.82
NE	.02	.01	.01	.00	.00	.04	2.90
ENE	.02	.01	.01	.00	.00	.03	2.23
E	.07	.01	.00	.00	.00	.08	1.50
ESE	.02	.02	.02	.00	.00	.05	3.32
SE	.01	.05	.03	.00	.00	.09	3.89
SSE	.09	.07	.03	.00	.00	.19	2.54
S	.23	.19	.07	.00	.00	.49	2.54
SSW	.28	.05	.02	.00	.00	.35	1.86
SW	.46	.15	.00	.00	.00	.62	1.76
WSW	.48	1.56	1.68	.00	.00	3.72	3.65
W	.20	1.15	3.38	.00	.00	4.73	4.50
WNW	.27	.15	.11	.00	.00	.53	2.75
NW	.52	.68	.06	.00	.00	1.27	2.41
NNW	.29	.14	.02	.00	.00	.45	1.97
N	.26	.11	.02	.00	.00	.38	1.98
CALM						1.27	
TOTAL	3.37	4.51	5.51	.00	.00	14.66	3.16

NUMBERS BELOW BASED ON ALL OBSERVATIONS
NUMBER OF INVALID OBSERVATIONS = 0
NUMBER OF VALID OBSERVATIONS =17544

Unocal HS&P
1988-1989
Wind Frequency Distribution

DATA PERIOD - JAN 1, 1988 THROUGH DEC 31, 1989
MONTHS CONSIDERED - JAN THROUGH DEC
HOURS CONSIDERED - 0 TO 2400
STABILITY CLASS - D

WIND FREQUENCY DISTRIBUTION
FREQUENCY IN PERCENT
OF TOTAL OBSERVATIONS

	WIND SPEED CLASS (MPS)						
WIND SECTOR	1.01 TO 2.00	2.01 TO 4.00	4.01 TO 8.00	8.01 TO 12.00	GREATER THAN 12.00	TOTAL	MEAN SPEED
NNE	.17	1.11	.61	.00	.00	1.89	3.52
NE	.06	.05	.03	.00	.00	.13	2.69
ENE	.13	.02	.01	.00	.00	.15	1.77
E	.14	.02	.00	.00	.00	.16	1.54
ESE	.06	.07	.11	.00	.00	.25	3.85
SE	.06	.15	.25	.00	.00	.47	4.13
SSE	.21	.16	.03	.00	.00	.40	2.39
S	.47	.09	.04	.00	.00	.59	1.96
SSW	.34	.02	.02	.00	.00	.38	1.62
SW	.24	.03	.01	.00	.00	.28	1.68
WSW	.46	.23	.73	.00	.00	1.41	3.53
W	.25	.42	.92	.00	.00	1.58	4.19
WNW	.22	.11	.06	.01	.00	.39	2.66
NW	.62	.48	.09	.01	.01	1.20	2.42
NNW	.36	.11	.01	.00	.00	.48	1.77
N	.44	.72	.27	.00	.00	1.44	2.90
CALM						2.33	
TOTAL	4.21	3.79	3.17	.02	.01	13.53	2.53

NUMBERS BELOW BASED ON ALL OBSERVATIONS
NUMBER OF INVALID OBSERVATIONS = 0
NUMBER OF VALID OBSERVATIONS =17544

Unocal HS&P
1988-1989
Wind Frequency Distribution

DATA PERIOD - JAN 1, 1988 THROUGH DEC 31, 1989
MONTHS CONSIDERED - JAN THROUGH DEC
HOURS CONSIDERED - 0 TO 2400
STABILITY CLASS - E

WIND FREQUENCY DISTRIBUTION
FREQUENCY IN PERCENT
OF TOTAL OBSERVATIONS

	WIND SPEED CLASS (MPS)						
WIND SECTOR	1.01 TO 2.00	2.01 TO 4.00	4.01 TO 8.00	8.01 TO 12.00	GREATER THAN 12.00	TOTAL	MEAN SPEED
NNE	.51	1.25	.02	.00	.00	1.78	2.47
NE	.18	.14	.00	.00	.00	.32	1.99
ENE	.42	.03	.00	.00	.00	.44	1.38
E	.46	.04	.00	.00	.00	.50	1.46
ESE	.09	.11	.01	.00	.00	.21	2.13
SE	.13	.17	.00	.00	.00	.30	2.07
SSE	.23	.09	.00	.00	.00	.32	1.81
S	.15	.05	.01	.00	.00	.21	1.63
SSW	.10	.03	.00	.00	.00	.13	1.65
SW	.13	.01	.00	.00	.00	.14	1.46
WSW	.15	.01	.00	.00	.00	.16	1.50
W	.25	.07	.01	.00	.00	.32	1.75
WNW	.18	.06	.00	.00	.00	.25	1.83
NW	.55	.41	.00	.00	.00	.96	2.04
NNW	.43	.07	.00	.00	.00	.51	1.61
N	.85	.59	.03	.00	.00	1.47	2.10
CALM						4.26	
TOTAL	4.80	3.13	.07	.00	.00	12.27	1.29

NUMBERS BELOW BASED ON ALL OBSERVATIONS
NUMBER OF INVALID OBSERVATIONS = 0
NUMBER OF VALID OBSERVATIONS =17544

Unocal HS&P
1988-1989
Wind Frequency Distribution

DATA PERIOD - JAN 1, 1988 THROUGH DEC 31, 1989
MONTHS CONSIDERED - JAN THROUGH DEC
HOURS CONSIDERED - 0 TO 2400
STABILITY CLASS - F

WIND FREQUENCY DISTRIBUTION
FREQUENCY IN PERCENT
OF TOTAL OBSERVATIONS

	WIND SPEED CLASS (MPS)						
WIND SECTOR	1.01 TO 2.00	2.01 TO 4.00	4.01 TO 8.00	8.01 TO 12.00	GREATER THAN 12.00	TOTAL	MEAN SPEED
NNE	2.14	.87	.00	.00	.00	3.01	1.76
NE	.75	.10	.00	.00	.00	.84	1.51
ENE	.55	.02	.00	.00	.00	.57	1.30
E	.59	.01	.00	.00	.00	.60	1.34
ESE	.43	.05	.00	.00	.00	.48	1.50
SE	.34	.10	.00	.00	.00	.44	1.61
SSE	.19	.05	.00	.00	.00	.24	1.55
S	.17	.02	.00	.00	.00	.19	1.51
SSW	.17	.02	.00	.00	.00	.19	1.42
SW	.11	.00	.00	.00	.00	.11	1.38
WSW	.17	.01	.00	.00	.00	.18	1.45
W	.32	.03	.00	.00	.00	.35	1.46
WNW	.62	.07	.00	.00	.00	.68	1.54
NW	1.46	.39	.00	.00	.00	1.86	1.66
NNW	1.08	.07	.00	.00	.00	1.16	1.43
N	1.80	.28	.00	.00	.00	2.09	1.55
CALM						24.32	
TOTAL	10.90	2.09	.00	.00	.00	37.31	.55

NUMBERS BELOW BASED ON ALL OBSERVATIONS
NUMBER OF INVALID OBSERVATIONS = 0
NUMBER OF VALID OBSERVATIONS =17544

Unocal HS&P
1988-1989
Wind Frequency Distribution

DATA PERIOD - JAN 1, 1988 THROUGH DEC 31, 1989
MONTHS CONSIDERED - JAN THROUGH DEC
HOURS CONSIDERED - 0 TO 2400
STABILITY CLASSES - A,B,C

WIND FREQUENCY DISTRIBUTION
FREQUENCY IN PERCENT
OF TOTAL OBSERVATIONS

	WIND SPEED CLASS (MPS)						
WIND SECTOR	1.01 TO 2.00	2.01 TO 4.00	4.01 TO 8.00	8.01 TO 12.00	GREATER THAN 12.00	TOTAL	MEAN SPEED
NNE	.23	.60	.17	.00	.00	1.00	2.93
NE	.06	.02	.01	.00	.00	.09	2.21
ENE	.03	.01	.01	.00	.00	.05	2.19
E	.09	.02	.00	.00	.00	.11	1.69
ESE	.02	.03	.02	.00	.00	.08	3.36
SE	.06	.18	.12	.00	.00	.35	3.53
SSE	.18	.28	.13	.00	.00	.59	3.05
S	.39	.70	.27	.00	.00	1.36	2.95
SSW	.47	.39	.05	.00	.00	.91	2.26
SW	.83	.69	.01	.00	.00	1.53	2.10
WSW	.96	4.36	2.11	.00	.00	7.44	3.34
W	.42	3.16	5.80	.00	.00	9.38	4.24
WNW	.62	1.92	.74	.00	.00	3.28	3.14
NW	1.39	4.24	.76	.00	.00	6.38	2.85
NNW	.73	.44	.06	.00	.00	1.23	2.04
N	.60	.31	.02	.00	.00	.93	2.00
CALM						2.19	
TOTAL	7.09	17.34	10.27	.00	.00	36.90	3.07

NUMBERS BELOW BASED ON ALL OBSERVATIONS
NUMBER OF INVALID OBSERVATIONS = 0
NUMBER OF VALID OBSERVATIONS =17544

Unocal HS&P
1988-1989
Wind Frequency Distribution

DATA PERIOD - JAN 1, 1988 THROUGH DEC 31, 1989
MONTHS CONSIDERED - JAN THROUGH DEC
HOURS CONSIDERED - 0 TO 2400
STABILITY CLASSES - E,F,G

WIND FREQUENCY DISTRIBUTION
FREQUENCY IN PERCENT
OF TOTAL OBSERVATIONS

	WIND SPEED CLASS (MPS)						
WIND SECTOR	1.01 TO 2.00	2.01 TO 4.00	4.01 TO 8.00	8.01 TO 12.00	GREATER THAN 12.00	TOTAL	MEAN SPEED
NNE	2.65	2.12	.02	.00	.00	4.79	2.02
NE	.93	.23	.00	.00	.00	1.16	1.64
ENE	.97	.05	.00	.00	.00	1.01	1.34
E	1.05	.05	.00	.00	.00	1.09	1.40
ESE	.52	.17	.01	.00	.00	.69	1.69
SE	.47	.27	.00	.00	.00	.74	1.79
SSE	.42	.14	.00	.00	.00	.56	1.69
S	.32	.06	.01	.00	.00	.39	1.57
SSW	.26	.06	.00	.00	.00	.32	1.52
SW	.24	.01	.00	.00	.00	.25	1.42
WSW	.32	.02	.00	.00	.00	.34	1.48
W	.57	.10	.01	.00	.00	.67	1.60
WNW	.80	.13	.00	.00	.00	.93	1.61
NW	2.01	.80	.00	.00	.00	2.82	1.79
NNW	1.52	.15	.00	.00	.00	1.66	1.49
N	2.65	.88	.03	.00	.00	3.56	1.78
CALM						28.59	
TOTAL	15.70	5.22	.07	.00	.00	49.58	.73

NUMBERS BELOW BASED ON ALL OBSERVATIONS
NUMBER OF INVALID OBSERVATIONS = 0
NUMBER OF VALID OBSERVATIONS =17544

Unocal HS&P
1988-1989
Wind Frequency Distribution

DATA PERIOD - JAN 1, 1988 THROUGH DEC 31, 1989
MONTHS CONSIDERED - JAN THROUGH DEC
HOURS CONSIDERED - 0 TO 2400

WIND FREQUENCY DISTRIBUTION
FREQUENCY IN PERCENT
OF TOTAL OBSERVATIONS

	WIND SPEED CLASS (MPS)						
WIND SECTOR	1.01 TO 2.00	2.01 TO 4.00	4.01 TO 8.00	8.01 TO 12.00	GREATER THAN 12.00	TOTAL	MEAN SPEED
NNE	3.06	3.83	.80	.00	.00	7.68	2.51
NE	1.05	.30	.03	.00	.00	1.39	1.78
ENE	1.13	.07	.01	.00	.00	1.21	1.42
E	1.28	.09	.00	.00	.00	1.37	1.44
ESE	.60	.27	.14	.00	.00	1.01	2.35
SE	.59	.60	.37	.00	.00	1.56	2.89
SSE	.81	.58	.17	.00	.00	1.55	2.39
S	1.18	.84	.32	.00	.00	2.34	2.47
SSW	1.07	.47	.06	.00	.00	1.60	1.96
SW	1.31	.73	.02	.00	.00	2.06	1.96
WSW	1.74	4.61	2.84	.00	.00	9.19	3.30
W	1.24	3.68	6.72	.00	.00	11.63	4.08
WNW	1.64	2.16	.80	.01	.00	4.60	2.79
NW	4.02	5.52	.84	.01	.01	10.40	2.51
NNW	2.60	.70	.07	.00	.00	3.37	1.73
N	3.69	1.91	.32	.00	.00	5.92	2.08
CALM						33.11	
TOTAL	27.00	26.36	13.51	.02	.01	100.00	1.84

NUMBERS BELOW BASED ON ALL OBSERVATIONS
NUMBER OF INVALID OBSERVATIONS = 0
NUMBER OF VALID OBSERVATIONS =17544

Attachment 2.2
UNOCAL Battles Gas Plant Meteorological Station

Unocal Battles Stability Class Frequency Distribution

Stability Class	1988	1989	avg.
1	.0237	.0276	.0256
2	.0479	.0696	.0588
3	.0896	.1455	.1175
4	.4334	.3403	.3869
5	.1826	.1763	.1794
6	.2228	.2406	.2317

MEAN MONTHLY TEMPERATURES

Month--->	1	2	3	4	5	6	7	8	9	10	11	12
Temp--->	283.	282.	282.	283.	283.	284.	287.	288.	288.	289.	289.	287.

MEAN HOURLY TEMPERATURES AND STABILITY

Hour--->	1	2	3	4	5	6	7	8	9	10	11	12
Temp--->	284.	284.	284.	284.	284.	283.	284.	285.	287.	289.	291.	292.
Stab--->	5.	5.	5.	5.	5.	5.	5.	5.	4.	3.	3.	3.

Hour--->	13	14	15	16	17	18	19	20	21	22	23	24
Temp--->	292.	292.	292.	291.	290.	289.	287.	286.	286.	285.	285.	285.
Stab--->	3.	3.	4.	4.	4.	4.	4.	5.	5.	5.	5.	5.

MEAN MONTHLY TEMPERATURES

Month--->	1	2	3	4	5	6	7	8	9	10	11	12
Temp--->	280.	280.	283.	284.	283.	285.	286.	287.	287.	291.	292.	291.

MEAN HOURLY TEMPERATURES AND STABILITY

Hour--->	1	2	3	4	5	6	7	8	9	10	11	12
Temp--->	284.	284.	284.	284.	283.	283.	284.	285.	286.	288.	290.	291.
Stab--->	5.	5.	5.	5.	5.	5.	5.	5.	4.	3.	3.	3.

Hour--->	13	14	15	16	17	18	19	20	21	22	23	24
Temp--->	292.	292.	291.	291.	290.	288.	287.	286.	286.	285.	285.	285.
Stab--->	3.	3.	3.	3.	3.	4.	4.	5.	5.	5.	5.	5.

Battles Gas Plant
1988-1989
Wind Frequency Distribution

DATA PERIOD - JAN 1, 1988 THROUGH DEC 31, 1989
MONTHS CONSIDERED - JAN THROUGH DEC
HOURS CONSIDERED - 0 TO 2400
STABILITY CLASS - A

WIND FREQUENCY DISTRIBUTION
FREQUENCY IN PERCENT
OF TOTAL OBSERVATIONS

WIND SECTOR	WIND SPEED CLASS (MPS) 1.01 TO 2.00	2.01 TO 4.00	4.01 TO 8.00	8.01 TO 12.00	GREATER THAN 12.00	TOTAL	MEAN SPEED
NNE	.01	.03	.02	.00	.00	.06	3.31
NE	.03	.01	.00	.00	.00	.04	1.57
ENE	.01	.00	.00	.00	.00	.01	1.20
E	.02	.00	.00	.00	.00	.02	1.50
ESE	.01	.00	.00	.00	.00	.01	1.25
SE	.02	.01	.00	.00	.00	.02	1.83
SSE	.01	.01	.01	.00	.00	.03	3.07
S	.01	.00	.01	.00	.00	.01	3.20
SSW	.01	.05	.01	.00	.00	.07	2.92
SW	.04	.05	.00	.00	.00	.09	2.27
WSW	.02	.05	.02	.00	.00	.08	2.97
W	.11	.24	.01	.00	.00	.36	2.43
WNW	.22	.52	.05	.00	.00	.80	2.55
NW	.15	.14	.01	.00	.00	.30	2.26
NNW	.06	.06	.01	.00	.00	.13	2.30
N	.05	.02	.02	.00	.00	.09	2.56
CALM						.46	
TOTAL	.77	1.19	.15	.00	.00	2.56	2.03

NUMBERS BELOW BASED ON ALL OBSERVATIONS
NUMBER OF INVALID OBSERVATIONS = 0
NUMBER OF VALID OBSERVATIONS =17544

Battles Gas Plant
1988-1989
Wind Frequency Distribution

DATA PERIOD - JAN 1, 1988 THROUGH DEC 31, 1989
MONTHS CONSIDERED - JAN THROUGH DEC
HOURS CONSIDERED - 0 TO 2400
STABILITY CLASS - B

WIND FREQUENCY DISTRIBUTION
FREQUENCY IN PERCENT
OF TOTAL OBSERVATIONS

	WIND SPEED CLASS (MPS)						
WIND SECTOR	1.01 TO 2.00	2.01 TO 4.00	4.01 TO 8.00	8.01 TO 12.00	GREATER THAN 12.00	TOTAL	MEAN SPEED
NNE	.02	.04	.03	.00	.00	.10	3.73
NE	.02	.01	.01	.00	.00	.04	3.53
ENE	.04	.00	.00	.00	.00	.04	1.17
E	.07	.03	.00	.00	.00	.11	1.92
ESE	.06	.05	.01	.00	.00	.12	2.20
SE	.03	.01	.01	.00	.00	.05	2.49
SSE	.01	.02	.01	.00	.00	.03	3.37
S	.02	.01	.02	.00	.00	.05	3.32
SSW	.03	.02	.04	.00	.00	.09	3.52
SW	.05	.07	.01	.00	.00	.13	2.61
WSW	.09	.10	.05	.00	.00	.23	2.87
W	.14	.42	.14	.00	.00	.70	3.07
WNW	.31	1.53	.69	.01	.00	2.53	3.43
NW	.18	.38	.11	.00	.00	.67	2.82
NNW	.09	.06	.07	.00	.00	.22	3.07
N	.06	.05	.04	.00	.00	.14	3.12
CALM						.65	
TOTAL	1.21	2.79	1.23	.01	.00	5.88	2.81

NUMBERS BELOW BASED ON ALL OBSERVATIONS
NUMBER OF INVALID OBSERVATIONS = 0
NUMBER OF VALID OBSERVATIONS =17544

Battles Gas Plant
1988-1989
Wind Frequency Distribution

DATA PERIOD - JAN 1, 1988 THROUGH DEC 31, 1989
MONTHS CONSIDERED - JAN THROUGH DEC
HOURS CONSIDERED - 0 TO 2400
STABILITY CLASS - C

WIND FREQUENCY DISTRIBUTION
FREQUENCY IN PERCENT
OF TOTAL OBSERVATIONS

	WIND SPEED CLASS (MPS)						
WIND SECTOR	1.01 TO 2.00	2.01 TO 4.00	4.01 TO 8.00	8.01 TO 12.00	GREATER THAN 12.00	TOTAL	MEAN SPEED
NNE	.01	.02	.11	.01	.00	.15	5.14
NE	.02	.01	.03	.00	.00	.06	3.54
ENE	.03	.02	.00	.00	.00	.06	1.92
E	.15	.14	.01	.00	.00	.30	2.14
ESE	.22	.26	.05	.01	.00	.54	2.62
SE	.05	.06	.02	.00	.00	.12	2.85
SSE	.01	.03	.05	.00	.00	.09	4.46
S	.01	.01	.11	.00	.00	.13	4.89
SSW	.02	.03	.09	.00	.00	.14	4.13
SW	.03	.03	.02	.00	.00	.08	2.85
WSW	.12	.16	.06	.00	.00	.34	2.86
W	.18	.61	.59	.01	.00	1.38	3.76
WNW	.29	2.51	3.33	.01	.00	6.14	4.08
NW	.19	.36	.36	.00	.00	.91	3.51
NNW	.07	.06	.11	.00	.00	.25	3.43
N	.03	.07	.21	.00	.00	.31	4.40
CALM						.77	
TOTAL	1.43	4.37	5.15	.03	.00	11.75	3.57

NUMBERS BELOW BASED ON ALL OBSERVATIONS
NUMBER OF INVALID OBSERVATIONS = 0
NUMBER OF VALID OBSERVATIONS =17544

Battles Gas Plant
1988-1989
Wind Frequency Distribution

DATA PERIOD - JAN 1, 1988 THROUGH DEC 31, 1989
MONTHS CONSIDERED - JAN THROUGH DEC
HOURS CONSIDERED - 0 TO 2400
STABILITY CLASS - D

WIND FREQUENCY DISTRIBUTION
FREQUENCY IN PERCENT
OF TOTAL OBSERVATIONS

	WIND SPEED CLASS (MPS)						
WIND SECTOR	1.01 TO 2.00	2.01 TO 4.00	4.01 TO 8.00	8.01 TO 12.00	GREATER THAN 12.00	TOTAL	MEAN SPEED
NNE	.03	.16	1.27	.43	.01	1.90	6.78
NE	.02	.07	.42	.10	.00	.62	6.33
ENE	.06	.07	.02	.00	.00	.14	2.65
E	.11	.39	.10	.00	.00	.59	3.09
ESE	.31	3.69	2.71	.02	.00	6.73	3.90
SE	.24	.62	.51	.21	.01	1.58	4.51
SSE	.02	.07	.31	.09	.00	.48	5.92
S	.05	.05	.13	.01	.00	.22	4.48
SSW	.07	.07	.09	.00	.00	.23	3.65
SW	.09	.11	.03	.00	.00	.23	2.53
WSW	.42	.34	.03	.00	.00	.78	2.16
W	.51	2.60	3.25	.37	.00	6.74	4.60
WNW	.38	3.99	7.99	.95	.00	13.31	4.98
NW	.21	.68	.75	.02	.00	1.65	3.98
NNW	.07	.45	.42	.00	.00	.93	4.12
N	.07	.38	.97	.06	.00	1.48	5.10
CALM						1.07	
TOTAL	2.64	13.73	18.98	2.25	.02	38.69	4.51

NUMBERS BELOW BASED ON ALL OBSERVATIONS
NUMBER OF INVALID OBSERVATIONS = 0
NUMBER OF VALID OBSERVATIONS =17544

Battles Gas Plant
1988-1989
Wind Frequency Distribution

DATA PERIOD - JAN 1, 1988 THROUGH DEC 31, 1989
MONTHS CONSIDERED - JAN THROUGH DEC
HOURS CONSIDERED - 0 TO 2400
STABILITY CLASS - E

WIND FREQUENCY DISTRIBUTION
FREQUENCY IN PERCENT
OF TOTAL OBSERVATIONS

	WIND SPEED CLASS (MPS)						
WIND SECTOR	1.01 TO 2.00	2.01 TO 4.00	4.01 TO 8.00	8.01 TO 12.00	GREATER THAN 12.00	TOTAL	MEAN SPEED
NNE	.11	.20	.04	.00	.00	.35	2.73
NE	.13	.10	.02	.00	.00	.25	2.31
ENE	.09	.03	.01	.00	.00	.13	2.01
E	.28	.30	.01	.00	.00	.59	2.16
ESE	.91	2.82	1.28	.00	.00	5.02	3.15
SE	.81	.64	.06	.00	.00	1.52	2.19
SSE	.14	.09	.00	.00	.00	.23	1.96
S	.10	.03	.00	.00	.00	.13	1.76
SSW	.23	.06	.00	.00	.00	.30	1.73
SW	.36	.03	.00	.00	.00	.40	1.52
WSW	.67	.18	.00	.00	.00	.85	1.74
W	1.26	1.01	.09	.00	.00	2.36	2.14
WNW	.70	1.03	.09	.00	.00	1.81	2.44
NW	.38	.43	.01	.00	.00	.82	2.17
NNW	.17	.24	.02	.00	.00	.42	2.26
N	.17	.24	.05	.00	.00	.45	2.50
CALM						2.34	
TOTAL	6.50	7.44	1.66	.00	.00	17.94	2.16

NUMBERS BELOW BASED ON ALL OBSERVATIONS
NUMBER OF INVALID OBSERVATIONS = 0
NUMBER OF VALID OBSERVATIONS =17544

Battles Gas Plant
1988-1989
Wind Frequency Distribution

DATA PERIOD - JAN 1, 1988 THROUGH DEC 31, 1989
MONTHS CONSIDERED - JAN THROUGH DEC
HOURS CONSIDERED - 0 TO 2400
STABILITY CLASS - F

WIND FREQUENCY DISTRIBUTION
FREQUENCY IN PERCENT
OF TOTAL OBSERVATIONS

	WIND SPEED CLASS (MPS)						
WIND SECTOR	1.01 TO 2.00	2.01 TO 4.00	4.01 TO 8.00	8.01 TO 12.00	GREATER THAN 12.00	TOTAL	MEAN SPEED
NNE	.31	.10	.00	.00	.00	.41	1.64
NE	.25	.04	.00	.00	.00	.28	1.50
ENE	.28	.01	.00	.00	.00	.28	1.44
E	.80	.16	.00	.00	.00	.96	1.61
ESE	1.40	.61	.00	.00	.00	2.01	1.80
SE	1.46	.22	.00	.00	.00	1.69	1.59
SSE	.47	.03	.00	.00	.00	.50	1.40
S	.36	.02	.00	.00	.00	.38	1.42
SSW	.46	.01	.00	.00	.00	.47	1.40
SW	.60	.01	.00	.00	.00	.61	1.39
WSW	.83	.03	.00	.00	.00	.86	1.41
W	1.22	.17	.00	.00	.00	1.39	1.57
WNW	.92	.22	.00	.00	.00	1.13	1.62
NW	.68	.11	.00	.00	.00	.79	1.62
NNW	.40	.07	.00	.00	.00	.47	1.62
N	.33	.11	.00	.00	.00	.44	1.65
CALM						10.49	
TOTAL	10.76	1.92	.00	.00	.00	23.17	.87

NUMBERS BELOW BASED ON ALL OBSERVATIONS
NUMBER OF INVALID OBSERVATIONS = 0
NUMBER OF VALID OBSERVATIONS =17544

Battles Gas Plant
1988-1989
Wind Frequency Distribution

DATA PERIOD - JAN 1, 1988 THROUGH DEC 31, 1989
MONTHS CONSIDERED - JAN THROUGH DEC
HOURS CONSIDERED - 0 TO 2400
STABILITY CLASSES - A,B,C

WIND FREQUENCY DISTRIBUTION
FREQUENCY IN PERCENT
OF TOTAL OBSERVATIONS

	WIND SPEED CLASS (MPS)						
WIND SECTOR	1.01 TO 2.00	2.01 TO 4.00	4.01 TO 8.00	8.01 TO 12.00	GREATER THAN 12.00	TOTAL	MEAN SPEED
NNE	.04	.09	.17	.01	.00	.30	4.34
NE	.07	.03	.04	.00	.00	.14	2.96
ENE	.08	.02	.00	.00	.00	.10	1.59
E	.24	.17	.01	.00	.00	.42	2.06
ESE	.30	.31	.05	.01	.00	.67	2.52
SE	.09	.07	.02	.00	.00	.19	2.64
SSE	.02	.06	.07	.00	.00	.16	3.93
S	.03	.02	.13	.00	.00	.19	4.41
SSW	.06	.10	.14	.00	.00	.30	3.67
SW	.11	.14	.03	.00	.00	.29	2.57
WSW	.22	.30	.13	.00	.00	.65	2.88
W	.43	1.27	.74	.01	.00	2.43	3.37
WNW	.82	4.56	4.08	.01	.00	9.47	3.78
NW	.52	.88	.48	.00	.00	1.89	3.06
NNW	.23	.18	.19	.00	.00	.59	3.05
N	.14	.14	.26	.00	.00	.54	3.76
CALM						1.88	
TOTAL	3.41	8.34	6.53	.03	.00	20.19	3.15

NUMBERS BELOW BASED ON ALL OBSERVATIONS
NUMBER OF INVALID OBSERVATIONS = 0
NUMBER OF VALID OBSERVATIONS =17544

Battles Gas Plant
1988-1989
Wind Frequency Distribution

DATA PERIOD - JAN 1, 1988 THROUGH DEC 31, 1989
MONTHS CONSIDERED - JAN THROUGH DEC
HOURS CONSIDERED - 0 TO 2400
STABILITY CLASSES - E,F,G

WIND FREQUENCY DISTRIBUTION
FREQUENCY IN PERCENT
OF TOTAL OBSERVATIONS

	WIND SPEED CLASS (MPS)						
WIND SECTOR	1.01 TO 2.00	2.01 TO 4.00	4.01 TO 8.00	8.01 TO 12.00	GREATER THAN 12.00	TOTAL	MEAN SPEED
NNE	.42	.30	.04	.00	.00	.76	2.14
NE	.38	.14	.02	.00	.00	.53	1.88
ENE	.37	.04	.01	.00	.00	.42	1.62
E	1.08	.46	.01	.00	.00	1.56	1.82
ESE	2.31	3.43	1.28	.00	.00	7.02	2.77
SE	2.27	.87	.06	.00	.00	3.20	1.88
SSE	.61	.12	.00	.00	.00	.73	1.57
S	.47	.05	.00	.00	.00	.51	1.51
SSW	.69	.07	.00	.00	.00	.76	1.53
SW	.96	.05	.00	.00	.00	1.01	1.44
WSW	1.49	.22	.00	.00	.00	1.71	1.57
W	2.48	1.19	.09	.00	.00	3.75	1.93
WNW	1.61	1.24	.09	.00	.00	2.94	2.12
NW	1.05	.54	.01	.00	.00	1.60	1.90
NNW	.56	.31	.02	.00	.00	.89	1.93
N	.50	.35	.05	.00	.00	.89	2.08
CALM						12.82	
TOTAL	17.27	9.36	1.66	.00	.00	41.11	1.43

NUMBERS BELOW BASED ON ALL OBSERVATIONS
NUMBER OF INVALID OBSERVATIONS = 0
NUMBER OF VALID OBSERVATIONS =17544

Battles Gas Plant
1988-1989
Wind Frequency Distribution

DATA PERIOD - JAN 1, 1988 THROUGH DEC 31, 1989
MONTHS CONSIDERED - JAN THROUGH DEC
HOURS CONSIDERED - 0 TO 2400

WIND FREQUENCY DISTRIBUTION
FREQUENCY IN PERCENT
OF TOTAL OBSERVATIONS

	WIND SPEED CLASS (MPS)						
WIND SECTOR	1.01 TO 2.00	2.01 TO 4.00	4.01 TO 8.00	8.01 TO 12.00	GREATER THAN 12.00	TOTAL	MEAN SPEED
NNE	.49	.54	1.48	.44	.01	2.96	5.35
NE	.47	.23	.48	.10	.00	1.28	4.13
ENE	.51	.13	.02	.00	.00	.66	1.84
E	1.43	1.02	.12	.00	.00	2.57	2.15
ESE	2.91	7.43	4.04	.03	.00	14.42	3.29
SE	2.60	1.56	.59	.21	.01	4.98	2.74
SSE	.66	.25	.38	.09	.00	1.37	3.38
S	.55	.11	.26	.01	.00	.92	2.81
SSW	.82	.25	.23	.00	.00	1.29	2.40
SW	1.17	.30	.06	.00	.00	1.53	1.82
WSW	2.13	.85	.15	.00	.00	3.14	1.99
W	3.42	5.06	4.08	.38	.00	12.93	3.59
WNW	2.82	9.79	12.15	.96	.00	25.72	4.21
NW	1.78	2.10	1.24	.02	.00	5.14	2.99
NNW	.86	.93	.62	.00	.00	2.42	3.05
N	.70	.87	1.28	.06	.00	2.91	3.92
CALM						15.77	
TOTAL	23.32	31.43	27.18	2.29	.02	100.00	2.97

NUMBERS BELOW BASED ON ALL OBSERVATIONS
NUMBER OF INVALID OBSERVATIONS = 0
NUMBER OF VALID OBSERVATIONS =17544

Appendix E
Biological Survey

UNOCAL HS&P EXPANSION (91DP-017):

BIOLOGICAL SURVEY

Methods and Background

Areas identified for the installation of a 6-inch gas line were surveyed on the morning of March 16, 1992 by Dr. Michael Dungan (SAIC) and Mr. Larry Hunt (Doctoral Candidate, UCSB). Mr. John Houghton of Unocal described the locations where construction would take place and the methods that would be employed. All areas of impact were systematically examined to determine the presence of sensitive plants or animals that would be impacted. The surveys were focused on sensitive biological resources known or expected to be present in the vicinity, including black-flowered figwort (*Scrophularia atrata*, a local endemic plant which is a category 2 candidate for federal listing) and California legless lizard (*Anniella pulchra pulchra*, a California Department of Fish and Game Species of Special Concern). The survey considered the potential for impact on other sensitive resources such as oak trees, wetland habitat, Burton Mesa chaparral, and the American badger (*Taxidea taxus*, also a CDFG Species of Special Concern).

Results: Southeastern Area

Vegetation

A corridor 25 to 50 feet wide and approximately 350 feet long would be utilized for installation of the gas pipeline. The corridor is in disturbed coastal scrub vegetation. Characteristic Burton Mesa chaparral species do not occur at this site. Black-flowered figwort is not present in this area, but there are other botanical resources of concern that merit mitigation.

Several oak trees are present in close proximity to the construction corridor (refer to photographs). Mr. Houghton indicated that all oak trees will be avoided. To ensure that there is no ground disturbance within the dripline of these trees, construction flagging should be used to delineate a buffer area of at least 8 feet between the construction corridor and the closest oak trees. This will incidentally protect the native grassland (*Stipa pulchra*) understory associated with a group of oaks near the middle portion of the site (see photographs).

A small seep and runoff channel extend downslope to the south of the medium-sized oak tree at the eastern end of the corridor. Within this area, herbaceous wetland plants were found, including brown-headed rush, *Juncus phaeocephalus*, and common rush, *Juncus patens* (see photographs). The common rush, also known as basketgrass, may be of cultural significance. To preserve the colony of basketgrass and the wetland habitat that supports it, the following measures are recommended. First, existing basketgrass clumps within and near the corridor should be flagged prior to construction. The construction corridor should then be routed through the area toward the southeast so as to avoid impact on one or more of the established clumps of basketgrass and the surrounding seep area on the upslope side of construction. Remaining clumps of the basketgrass that cannot be avoided should be salvaged immediately prior to construction. Plants can be dug up and kept temporarily in damp soil in a plastic pool. These plants should be replanted into the corridor when construction is complete.

As a measure to promote the reestablishment of resident vegetation after construction, the top 6 inches of topsoil should be salvaged from the corridor, stockpiled and protected during construction, and respread onto the corridor after construction is complete. If this is done, no need for supplemental seeding is anticipated.

Wildlife

The project site is on the northern edge of Burton Mesa near the Purisima Hills. Burton Mesa Proper provides excellent edaphic and vegetative conditions for the California Legless Lizard. No legless lizards were encountered at the project site, however, which provides only marginal habitat for this species. Reasons for the absence of legless lizards at the project site include the following:

1. Owing to the location of the site near the transition between Burton Mesa sand hills and the Purisima Hills, the soils are highly indurated. Legless lizards require friable, sandy soils for burrowing.

2. Vegetation throughout the project site is dominated by California sagebrush (*Artemisia californica*). This species produces volatile compounds which seem to deter legless lizards. More importantly, sagebrush does not produce sufficient leaf litter, a characteristic microhabitat feature for legless lizards.

3. The project site has undergone a significant degree of disturbance, historically and ongoing. Substantial portions of the site contain buried asphalt, which is inhospitable to the lizards.

The project at this location will not encounter legless lizards. Probable badger diggings were seen in disturbed soil alongside the road, but no active dens were encountered. This species probably forages throughout the project site and surrounding area, but would not be affected by construction. Disturbance of wildlife habitat as a whole will be minimized by avoiding oak trees as mentioned previously and installing the pipeline as close to the road as possible.

Results: Northern Area

Vegetation

In addition to crossing two previously graded areas, the pipeline would cross a transitional slope approximately 10 feet high and 20 feet long. The actual impacted area will vary depending on the angle at which the slope is crossed. The slope supports disturbed coastal scrub vegetation, including a colony of black-flowered figwort (see photographs). Individuals of this species occur in the shade of large shrubs, and in more open areas such as an old road scar. To mitigate the impact on this species, The requirements of Unocal's Point Pedernales FDP Condition H-18 should be followed. During the flowering season (March to June) immediately preceeding construction, a qualified botanist should make one or more visits (as appropriate) to collect seed from plants that are within the construction corridor. Arrangements should be made with the Santa Barbara Botanic Garden for temporary storage of this seed, and for use of a small portion, at the Garden's discretion, for propogation at the Garden. This seed should be redoposited onto the restored slope after construction. Topsoil should be salvaged from this slope and redeposited after construction, as described for the southeastern area. In addition, jute netting or similar mechanical stabilization is recommended to hold the slope in place after construction. No topsoil salvage is suggested for previously graded areas.

Wildlife

Owing to the degree of prior disturbance at this site and the heavily indurated soils that are present, there is no possibility of the presence of legless lizards. Badger diggings were found amid the burrows of a colony of ground squirrels along one portion of the slope (see photographs), but no impact on the badgers is foreseen.

Appendix F
List of Preparers For The Point Pedernales Field SEIR

List of Preparers For The Point Pedernales Field SEIR

Name/Affiliation	Education/Experience	SEIR Responsibility
A. County of Santa Barbara		
Alice McCurdy	B.A., Biological Sciences, Wellesley College. 16 years experience as a planner/project manager for Santa Barbara County.	County Project Manager/ Energy Specialist
John Zorovich	B.A. Environmental Studies, University of California at Santa Barbara, 1988 5 years experience as a planner for Santa Barbara County.	Energy Planner
B. Arthur D. Little, Inc.		
John Peirson, Jr.	B.A. Mathematics, Hartwick College 14 years professional experience in the areas of hazard and risk assessments for oil and gas production and transportation facilities, with extensive experience evaluating the risks associated with oil pipeline and processing projects as well as studies of offshore oil and gas development projects.	Project Manager Cumulative Analysis Alternative Analysis Other Issue Areas

Name/Affiliation	Education/Experience	SEIR Responsibility
Steve Radis	B.A. (1981) and M.A. (1989) in Climatology from California State University at Northridge. 8 years of air quality and numerical modeling experience related to permitting of major oil and gas facilities; over 10 years of air quality and modeling experience related to industrial facilities; and over 14 years of experience in conducting meteorological and climatological studies.	System Safety Consequence Modeling
Skip Lillevick	B.S. in Chemical Engineering from the University of California at Santa Barbara, 1980. 14 years experience in process safety and risk management and in both teaching courses and leading analyses in hazard and operability studies (HAZOP) and process safety management (PSM).	System Safety/ Hazard Scenarios Project Description
Ivor John	B.Sc. in Physics with Meteorology from the University of Reading, 1972; and a Ph.D. from the University of Wales, Aberystwyth in 1977, awarded for his work on Physics of the Atmosphere. 16 years of concentrated experience in offsite consequence analysis and air toxic modeling studies, as well as extensive experience in emergency response program management and analysis of Risk Management and Prevention Programs (RMPPs).	Air Quality

Name/Affiliation	Education/Experience	SEIR Responsibility
Greg Chittick	B.S. in Mechanical Engineering from the University of California at Santa Barbara, 1985; and an M.S. in Mechanical and Environmental Engineering from the University of California at Berkeley, 1986. 5 years experience as an engineering specialist in the environmental health and safety field analyzing air quality, safety and noise hazards and impacts, as well as analyzing toxic and flammable cloud effects using PC based dispersion modeling programs.	Air Quality Noise
Petie Rolandson	Secretarial Certificate from Area Vocational Institute, Thief River Falls, MN, 1978. 10 years experience in computer-generated graphics and desktop publishing. 15 years experience as a professional secretary with an emphasis in office management and accounting systems..	Administrative Support Graphics
Penny Sidoli	Interdisciplinary B.A. in The Art and Science of Language from Evergreen State College, Olympia Washington. 20 years experience as a professional secretary.	Administrative Support

Appendix G
List of Contacts

Name	Affiliation
Dan Baker	PAMCO Engines
Larry Bates	Vintage Oil
Lee Bundy	Southern California Gas
Bruce Conway	Conway Oil
Bruce Fallenhagen	Energy Enterprises
Ryan Hill	Santa Barbara County Fire Department
Steve Isgro	City Oil
Al Koller	California Division of Oil & Gas
Mike Nelson	Dryscol Pipeliners
Greg Nisik	P G & E
Colin Orton	Dryscol Pipeliners
Will Payle	Texaco
Theo Powell	NAO Flares
Robert Shipley, Jr.	Unocal
Steve Sterner	Santa Barbara County APCD
Jan Widczak	Southern California Gas

SANTA BARBARA COUNTY PLANNING COMMISSION
Staff Report for the Torch Gas Plant Project

Hearing Date: July 10, 1996 | **Supervisorial District: 3rd, 4th**
Staff Report Date: July 2, 1996 | **Staff: Samantha Kim, Alice McCurdy**
Case No.: 94-DP-027 RV01 | **Phone #: (805) 568-2040**
Environmental Documents: Addendum, dated July 1, 1996, and supporting documents: 84-EIR-17, NGL Transportation Addendum to 84-EIR-17 (June 1993), 92-EIR-13, Gas Reinjection Addendum to 92-EIR-13 (April 1995)

OWNER/APPLICANT/AGENT/ENGINEER:

Torch Operating Company
201 South Broadway
Orcutt, CA 93454
(805) 739-9111

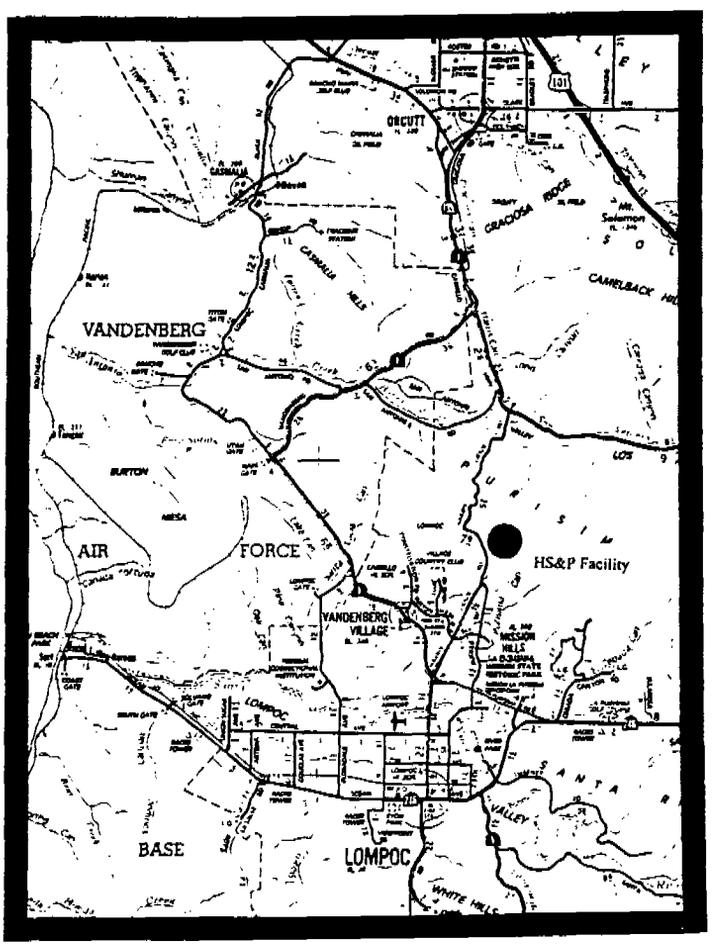
HS&P Assessor Parcel Numbers:

097-360-010, located 2.7 miles northeast of the City of Lompoc; Site address is 3602 Harris Grade Road in the Third Supervisorial District.

Pipelines Assessor Parcel Numbers:

099-010-049, 101-080-050, -069, -070, -089 and 101-020-070, between Lompoc and Orcutt; in the Third and Fourth Supervisorial Districts.

VICINITY MAP



1.0 REQUEST

Torch Operating Company requests modification of its Development Plan to allow the construction of a gas plant at its Lompoc Heating, Separating, & Pumping (HS&P) Facility. The proposed plant would be capable of processing 15 MMSCFD of gas from the offshore Point Pedernales and onshore Lompoc Fields. The proposed modification would supersede the approval granted to Unocal by the County in 1994 for a 12 MMSCFD gas plant at the same site.

Application Filed:	January 30, 1996
Application Complete:	April 2, 1996
Processing Deadline:	April 2, 1997

John Deacon
Torch Operating Company
201 S. Broadway
Orcutt CA 93455

2.0 RECOMMENDATION AND PROCEDURES:

Follow the procedures outlined below and conditionally approve a revision to the Torch Point Pedernales Final Development Plan, Case No. 94-DP-027 RV01, based upon the project's consistency with the Comprehensive Plan and based on the ability to make the required findings.

Your Commission's motion should include the following:

1. Adopt the required findings for the project specified in Attachment A of this staff report, including CEQA findings.

2. Adopt the EIR Addendum included as Attachment C of this staff report.

3. Approve the project, subject to the conditions included as Attachment B of this staff report.

4. Grant the necessary modification of the building height specified in the M-CR zone district.

Refer back to staff if the Planning Commission takes other than the recommended action for appropriate findings and conditions.

3.0 JURISDICTION

This project (94-DP-027 RV01) is being considered by the Planning Commission based upon Section 35-317.4 (7) of Article III, which states that a Revised Development Plan shall be processed in the same manner as the original development plan. Pursuant to Section 35-317.10.2.b(1), the proposed modification is being processed as a Revision rather than a Director's Amendment because additional findings regarding system safety impacts and the proposed exceedance of the height limitation need to be made. The Point Pedernales Project was originally considered and approved by the Planning Commission in April of 1986.

4.0 ISSUE SUMMARY

A) Unocal, the previous owner and operator of the HS&P Facility, had requested and obtained Planning Commission approval for a gas processing facility at the HS&P site in 1993. The approved gas plant is based on a SulfaTreat gas processing system. The approved gas plant was permitted to replace the now abandoned Battles Gas Plant.

B) Torch, the current owner and operator of the HS&P Facility, is requesting a modification to the approved gas plant. Torch proposes to use a regenerable amine system to process gas instead of a SulfaTreat System.

C) Unocal was permitted for a 6 million standard cubic feet per day (MMSCFD) capacity gas plant, expandable to a consolidated 12 MMSCFD gas plant. Torch is requesting a consolidated 15 MMSCFD capacity gas plant.

D) Currently, Torch is injecting sour gas into the Lompoc Oil Field. According to DOG, increasing reservoir pressures will require an alternative outlet for the gas Torch produces. The current system of gas injection wastes a potential source of energy. The gas plant will allow the sour, natural gas to be treated for use as fuel. Also, there is no gas processing facility in the northern Santa Barbara County region that has the capacity to handle the gas produced by Torch.

5.0 PROJECT INFORMATION

5.1 Site Information

HS&P Site Information	
Comprehensive Plan Designation	HS&P: *Rural, Agriculture II with a Petroleum Resources Industry Overlay* Pipelines: *Rural, AG-II-100*
Ordinance, Zoning District	HS&P: *Article III; M-CR, Coastal Related Industry* Pipelines: *Article III; U, Unlimited Agriculture, 100-AG, 100 Acres Agriculture*
Site Size	*22.5 acres within a 2,283-acre parcel*
Present Use & Development	*Crude oil heating, separating, and pumping facility with sour gas reinjection*
Surrounding Uses/Zoning	North: *Purisima Hills & open space/U-Unlimited Agriculture* South: *Lompoc oil field & open space/U-Unlimited Agriculture* East: *Lompoc oil field & open space/U-Unlimited Agriculture* West: *Lompoc oil field & open space/U-Unlimited Agriculture*
Access	*20-foot paved, private road accessible from Harris Grade Road*
Public Services	Water Supply: *Mission Hills Community Water District* Sewage: *Private septic system* Fire: *Lompoc Fire Station 51*

5.2 Setting

The proposed project site is located in a small valley immediately south of the Purisima Hills on a broad alluvial surface that slopes gently to the south. Average slopes onsite are three to four percent. Landforms

to the east, south, and west consist of relatively low, rolling hills, and the Purisima Hills lie to the north of the site. Slopes surrounding the project site are relatively flat and reach heights of 40 to 80 feet above the site. The majority of the proposed project lies within the boundary of the M-CR zone. The site has been previously disturbed by existing oil and gas operations.

Vegetation in the project vicinity consists mostly of oak woodland and Burton Mesa Chaparral habitat, including native grasses with disturbed annual grasses adjacent to the existing facility. There are no creeks or open watercourses in the project vicinity, and the project site is not located within any flood boundaries. There are no designated recreational areas within close proximity of the project site. Also, the site has not been used for any farming activities. However, the project site and the vicinity were once used for grazing.

No known historical, paleontological, or archeological sites or artifacts for the site were identified in either the EIR/EIS or the SEIR prepared for the Point Pedernales Project. No cultural or archeological resources were discovered during construction of the existing facility.

The project site lies within the Lompoc Oil Field. Thus, the surrounding land uses are mainly related to oil and gas development. Several oil wells and small diameter oil and gas gathering lines are near the site indicating past and present oil related land uses.

The proposed project also includes the use of a sales gas pipeline outside the immediate project area. A new section of pipeline will traverse 600 feet from the HS&P site in a northerly direction to connect to an existing pipeline. The existing pipeline runs north over the Purisima Hills just east of HWY 1 and down into the Los Alamos Valley where the pipeline crosses under HWY 1. The pipeline continues north following HWY 1 and Frontage Road and ends at Righetti Valve Box, close to Graciosa Road. A second new section of line will be installed from Righetti Valve Box, running east through open farm land, to connect to the Southern California Gas Company (SCGC) transmission line.

5.3 Statistics

Statistics		
Item	**Proposed**	**Ordinance Standard**
Maximum Height	62 feet	45 feet
Building Coverage (footprint)	14,600 sq. ft. (new) + 715,600 sq.ft. (existing) = 730,200 sq. ft. total	N/A
Grading	HS&P: 5,000 yards^3 (cut) + 2,000 yards^3 (fill) = 7,000 yards^3 total Pipeline: 950 yards^3 (cut & fill)	N/A

5.4 Background Information

The original Union Oil Company Point Pedernales Oil and Gas Development Project (Case No. 85-DP-71) was approved by the Santa Barbara County Board of Supervisors in April of 1986 and has been in operation since 1987. As approved, the original Point Pedernales FDP included the following facilities:

- A new offshore oil and gas drilling and production platform, Platform Irene;
- A new onshore crude oil heating, separating & pumping facility located northeast of the City of Lompoc (referred to as the HS&P Facility);
- Three new pipelines, in one corridor, connecting Platform Irene with the HS&P Facility: a 20-inch wet oil line, an 8-inch gas line, and an 8-inch produced water return line for discharge at the platform. The pipelines reach landfall just north of the Santa Ynez River and cross Vandenberg Air Force Base;
- A new 12-inch dry oil pipeline from the HS&P Facility to the Orcutt Pump Station and use of an existing 8-inch dry oil pipeline from Orcutt to Summit Pump Station;
- A power supply system consisting of a new electrical substation located on Southern Pacific Railroad property at Surf;
- Equipment modifications to the existing Orcutt Pump Station and the Santa Maria Refinery to accommodate the crude oil;
- Use of the existing Unocal Battles Gas Plant, located east of the City of Santa Maria;
- Use of an existing 6-inch gas line connecting the HS&P with the Battles Gas Plant; and
- A new 12-inch wastewater line from Righetti Valve Box to approximately 600 feet outside the HS&P boundary.

On January 12, 1994, the original FDP was modified (Case No. 91-DP-17) to include a gas treatment facility at the HS&P Facility site. The approved gas plant would have replaced the Battles Gas Plant, which was decommissioned on July 10, 1995. The Point Pedernales Project Final Supplemental Environmental Impact Report (SEIR) was prepared to assess the potential environmental impacts from gas processing. The permitted modifications to the HS&P Facility would accommodate two phases of gas treatment. Phase I allowed gas processing of 6 million standard cubic feet per day (MMSCFD) of gas produced from Platform Irene and the Lompoc, Casmalia, and Orcutt Hill onshore fields and reinjection of 1-2 MMSCFD. Processed gas would be sold to Southern California Gas Company (SCGC) or used as fuel as needed at the HS&P Facility. Phase II allowed gas processing of an additional 6 MMSCFD increment (for a total of 12 MMSCFD) for other producers needing to process gas at the HS&P site. The increased volume could come from other offshore leases and onshore fields, including Cat Canyon, Santa Maria Valley, Guadalupe, and Gato Ridge provided that specific environmental and safety findings could be made. The permitted gas processing facility has not been constructed.

On July 14, 1994, Torch Energy Advisors Incorporated purchased the following components of the Point Pedernales Project from Union Oil Company: Platform Irene, the Lompoc HS&P Facility, pipeline system and power cables connecting Platform Irene with the HS&P Facility, and the Surf electrical substation. Torch Operating Company (Torch), a wholly owned subsidiary of Torch Energy Advisors, assumed

operatorship of these facilities on November 1, 1994. Union Oil Company (Unocal) retains ownership of the remaining portions of the Point Pedernales Project.

At present, Platform Irene produces approximately 12 thousand barrels per day (bpd) of dry crude oil and approximately 6 MMSCFD of natural sour gas. The untreated oil is transported via the 20-inch wet oil pipeline from the platform to the HS&P for treatment. After treatment the dry oil is transported to the Orcutt Pump Station via the 12-inch dry oil pipeline, where it is reheated and commingled with additional onshore oil production. At the pump station, the oil enters another pipeline for transportation to Unocal's Santa Maria Refinery, in San Luis Obispo County, for partial processing.

Gas produced on Platform Irene is transported via the 8-inch pipeline to the HS&P. At the HS&P, the gas is currently reinjected into sour gas injection wells.

Unocal stopped gas processing operations at the Battles Gas Plant on July 10, 1995. Plant abandonment is scheduled to be completed in two phases: Phase I includes removal of all above-ground facility components. Phase II includes removal of subsurface facility components, subsurface remediation, and site restoration. Phase I of Battles Gas Plant abandonment was approved by the Planning Commission on August 9, 1995. Presently, the Battles Gas Plant has been demolished and subsurface testing is ongoing.

When Torch assumed operatorship of the Point Pedernales facilities, it believed the permitted gas plant project was not economically feasible. Torch then proposed to amend the gas plant project to permit reinjection of all produced gas at the HS&P. The Torch Gas Reinjection Project was approved May 11, 1995 and Torch began gas reinjection in late June of 1995. Torch Operating Company, after reevaluating reservoir development, now considers construction of a gas processing plant economically feasible. If the Torch proposed gas plant project were to be approved, the gas reinjection permit would be superseded by the gas plant project. Gas reinjection would no longer be the primary gas handling system; gas reinjection would only be allowed to occur during facility upset conditions.

5.5 Project Description

5.5.1 Existing Facilities

The proposed project site is located at the existing HS&P Facility, approximately 3 miles northeast of the City of Lompoc. The site address is 3602 Harris Grade Road, Lompoc, California. The HS&P site comprises a 22.5 acre portion of a 2,283 acre parcel within the Lompoc Oil Field. The site is identified by Assessor Parcel Number (APN) 097-360-010. Torch owns the adjacent land parcels.

The HS&P Facility is currently designed to process emulsion received through a 20-inch pipeline from the Torch operated Platform Irene located on OCS Lease P-0441 offshore Santa Barbara County. Pipeline-quality dry oil leaves the HS&P Facility via the 12-inch pipeline and flows to Orcutt Pump Station prior to being refined at the Santa Maria Refinery in San Luis Obispo County.

The primary function of the HS&P Facility is to lower the basic sediment, gas, and water content of the oil stream to less than three percent (known as dehydration) so the oil can be shipped and processed at a refinery. The emulsion produced from the wells is a combination of crude oil, gas, and water. The gas is in solution in the oil, and the water exists both as free water and emulsion in the oil.

Process operations at the HS&P Facility include oil dehydration, gas dehydration, gas reinjection, produced water treatment, and oil reclamation, storage and shipment. The oil dehydration system is used to dehydrate a current average of 50,000 to 60,000 barrels per day of oil emulsion. The produced oil is characterized as heavy oil (16 degree API gravity).

At the HS&P, water removed from the oil emulsion is treated with emulsion breaking chemicals to separate the trace oil which is contained in the water. This oil is collected and sent to the reclaim oil tank for treating. After the water is treated to recover the hydrocarbon liquids, it is combined with the Lompoc Oil Field produced water and injected into the Lompoc Oil Field.

Gas generated within the HS&P Facility comes from two sources. One source is the gas separated out from the emulsion, and the other source is the vapor recovery system. The vapor recovery system collects vapors from all the tanks, pressure vessel vents, and the flotation cell. Gases collected are sent to a dehydration system (triethylene glycol unit) where water in the gas is removed.

Produced gas from Platform Irene is transported to the HS&P Facility through an 8-inch pipeline. Prior to being transported to the HS&P, the produced gas is dehydrated offshore. At the HS&P, the dehydrated solution gas is combined with the HS&P produced gas and Lompoc Oil Field gas and reinjected into sour gas injection wells, Purisima wells 33 and 73.

The HS&P Facility has the permitted capacity to reinject up to 9.205 MMSCFD of gas. Currently, approximately 6 MMSCFD of gas is reinjected at the HS&P. The combined gas injection stream has an average H_2S concentration of 2000 to 4000 ppm.

Natural Gas Liquids (NGL's) are collected and blended with the crude oil stream to the maximum extent feasible. Excess NGL's are reinjected along with the gas.

5.5.2 Unocal Permitted Gas Plant

A gas processing facility was previously approved at the HS&P Facility site but was never built. This gas processing facility can be constructed without further environmental review under the Torch Point Pedernales Project FDP (94-DP-27). The permitted gas plant includes the following main components: a sulfur removal system using a chemical process called SulfaTreat; a dew point depression system to remove hydrocarbon liquids and water; process gas compressors; carbon dioxide removal system; short connecting pipelines; and additional electrical facilities. Gas from the offshore Point Pedernales Field and onshore fields (Lompoc Field and Orcutt Hill) would be processed and sold to SCGC, used for onshore fuel, or reinjected into wells onshore. The processing capacity of the gas plant would be 6 MMSCFD (with 1-2 MMSCFD of reinjection) for Phase I and 12 MMSCFD for Phase II.

5.5.3 Torch Proposed Gas Plant

Torch proposes to build and operate a gas processing facility designed to treat a maximum of 15 MMSCFD of gas. Gas currently reinjected at the HS&P would be processed at the gas plant and sold to Southern California Gas Company (SCGC). The new gas plant would be constructed adjacent to the existing HS&P Facility and within the M-CR zoned boundary. The gas processing unit would require a plot space of approximately 225 feet wide by 450 feet long (2.5 acres). As stated in the Addendum, no new significant environmental impacts are associated with the use of this space.

The new gas processing unit will remove H_2S and CO_2, a process known as "sweetening". It will also dehydrate (remove water and hydrocarbon condensate) the natural gas to obtain sales quality gas. Gas sweetening will be done by an amine skid and a LoCat or Sulferox skid. Gas dehydration will be performed using a refrigeration skid and a low temperature separator (LTS) skid.

Construction of the gas processing facility is expected to take approximately 5 months. Torch is requesting an extension of the work day, which is currently limited to 7:00 a.m. to 4:00 p.m., Monday through Saturday. Torch would like to extend the construction work hours to 7:00 a.m. to 7:00 p.m., Monday through Sunday. Low noise generating construction work, such as electrical wiring, painting, concrete forming, and equipment decommissioning, would be done in the early morning and early evening hours.

A complete discussion of the Torch proposed project is included in the project description section of the Addendum (Attachment C). Figure 1 is a process flow diagram of the proposed gas plant.

6.0 PROJECT ANALYSIS

An environmental document, analyzing potential environmental effects due to Torch's proposed project, has been prepared pursuant to the California Environmental Quality Act Guidelines Section 15164, *Addendum to an EIR*. No new significant adverse impacts and no substantial increase in the severity of previously identified significant effects require the preparation of an SEIR. The Addendum analysis relies on previous environmental documents - Union Oil Project/Exxon Project Shamrock and Central Santa Maria Basin Area Study EIS/EIR (1985) and Unocal Point Pedernales Project SEIR (1993).

In evaluating significant effects, the Unocal permitted gas plant (12 MMSCFD) was used to assess any new or increased environmental impacts from the Torch proposed project. In addition, the original EIR/EIS analysis for an 80 MMSCFD amine gas plant in the Lompoc area was also used in evaluating Torch 's proposed project. See Table 1 for a comparison of the gas plant scenarios.

Table 1: Comparison of Proposed, Permitted, and Area Study Gas Plant Proposals

	TORCH GAS PLANT	UNOCAL GAS PLANT	AREA STUDY GAS PLANT
Status	Proposed	Approved	Not approved
Environmental Document	Addendum (July 1996)	92-SEIR-13 (Sept. 1993)	84-EIR-17 (June 1985)
Gas Volume	15 MMSCFD	6 - 12 MMSCFD	80 MMSCFD
Gas Sources	Point Pedernales; Lompoc	Point Pedernales; Lompoc; Orcutt Hill; Casmalia	Point Pedernales; other offshore fields
H_2S Removal	Amine system	SulfaTreat system	Amine system
Class I Impacts	system safety; short-term visual	short-term air quality	system safety; visual
Class II Impacts	geologic processes; air quality; biological resources; transportation; visual resources	system safety; air quality; biological resources; transportation	geologic processes; air quality; water resources; biological resources

6.1 Environmental Review

The Addendum to the previous environmental impact reports prepared for the original Point Pedernales Project and the Unocal gas plant project discusses nine previously identified issue areas. Two issue areas (system safety related to NGL/LPG and sales gas transportation, and short-term visual impacts) involve significant, unavoidable (Class I) impacts. Five issue areas have potentially significant but mitigable impacts. These Class II impacts are in geologic processes, transportation/circulation, air quality, biological resources, and aesthetic/visual resources. All other issue areas considered in the environmental document, including noise, fire protection, and water resources, are identified as not significant. Section 3.0 of the Addendum provides a complete analysis of the impacts, mitigation measures, and residual impacts for the issue areas which required further review of changes or additions.

6.1.1 Summary of Impacts and Mitigations

6.1.1.1 Risk of Upset/Hazardous Materials

The project would pose potentially significant hazards to public safety from the proposed offsite transportation of NGL's and sales gas (Class I). Mitigations have been incorporated into the proposed project to reduce these hazards to the maximum extent feasible. The remaining risks associated with the proposed gas plant are fully mitigated by existing conditions and are less than significant (Class III).

6.1.1.2 Air Quality

Short-term air quality impacts during construction are less than significant (Class III). Operational impacts of the proposed project would include NO_X and ROC emissions which exceed the County's significance threshold of 25 pounds per day. Offsets would reduce these impacts to less than significant levels (Class II). Air quality health risk and odor impacts would be less than significant (Class III).

6.1.1.3 Visual Resources

The project would increase the visibility of the HS&P Facility from the north bound lane of Harris Grade Road (Class I in the short-term). This impact would be effectively mitigated when screening vegetation required pursuant to existing condition H-5 becomes established. Incremental impacts to night lighting at the HS&P would be adverse but less than significant. Mitigation would be required pursuant to condition L-2 to reduce incremental impacts to the maximum extent feasible. Visual impacts of the construction of new sections of the sales gas pipeline are less than significant (Class III).

6.1.1.4 Biological Resources

Impacts to sensitive species including oak trees, black flowered figwort and badgers are potentially significant. These impacts can be effectively mitigated (Class II) by compliance with existing conditions addressing biological resources (the "H" conditions).

6.1.1.5 Fire Protection

Fire water supplies, equipment, spacing, and emergency response for the proposed project are all considered adequate, and the impacts of the project related to fire protection are therefore considered less than significant (Class III). Existing conditions imposed to reduce fire hazards will be incorporated into the project.

6.1.1.6 Geologic Resources

The potential for seismic activity to impact underground pipelines is significant, but can be mitigated by proper inspection of new pipeline trenches by a professional geologist (Class II). Erosion hazards are potentially significant and can be mitigated by existing conditions D-2, D-5, and E-11. Impacts of grading and vibration are less than significant (Class III).

6.1.1.7 Noise

Noise impacts from both construction and operation would be less than significant since County noise thresholds would not be exceeded (Class III). Existing permit conditions regulating noise (K-1 through K-5) will be enforced to ensure that any nuisance noise levels are reduced to the maximum extent feasible.

6.1.1.8 Transportation/Circulation

Torch's project would have two potentially significant transportation-related impacts; one involving the offsite transportation of excess soils, and the other involving the offsite transportation of NGL's. Mitigations to reduce theses impacts to less than significant levels (Class II) will require the use of specified local haul routes during non peak hours for both impacts. Additionally, construction of two deceleration lanes to accommodate heavy trucks servicing the site will be required.

6.1.1.9 Water Resources

Impacts to the overdrafted Lompoc Uplands Groundwater Basin are less than significant (Class III). Additional surface runoff will be adequately handled by the applicant's proposal to increase the capacity of the HS&P's retention basin (Class III).

No significant impacts were identified for any other resource areas.

6.1.2 *Analysis of Proposed Project Volume (15 MMSCFD)*

Torch's proposed gas plant would have a slightly higher permitted volume than would the approved Unocal gas plant (15 MMSCFD instead of 12 MMSCFD; see Table I). The difference between these two volumes is insubstantial and does not cause greater environmental impacts for any issue area. For instance, the differences between the Torch proposal and the approved Unocal project relative to system safety impacts relate to their different processing techniques, not to the differences between their proposed throughputs. Torch's proposed gas plant would serve a subset of the sources which were permitted to be served by the Unocal Gas Plant. The additional 3 MMSCFD that this gas plant offers above that permitted for Unocal is inconsequential as an adequate volume to induce a lease operator to develop a new offshore gas field. Therefore, Torch's proposed modification to the permitted gas plant will not induce growth of oil and gas development above that which could have resulted from and was previously analyzed for Unocal's proposed gas plant. All of these points indicate that the difference between the approved and proposed volumes does not correspond to changes in environmental effects.

6.1.3 Consistency with County's Criteria for Siting Gas Processing Facilities

The 1993 SEIR (Section 3.2.2) assessed both the proposed project site and six alternative sites using the screening and siting criteria listed in the County's *Gas Processing Facilities Siting Study*. That assessment concluded that, for the 6 MMSCFD project, the HS&P site is consistent with 37 of the 38 siting criteria. One criterion with which the project site was determined to be inconsistent is air quality (AQ-4). It is important to note that all of the other alternative sites are also considered inconsistent with this criterion due to the non-attainment of air quality standards in northern Santa Barbara County.

Both the approved 12 MMSCFD Unocal project and the 15 MMSCFD Torch project at the HS&P would be potentially inconsistent with siting criteria #6. This criterion recommends the avoidance of sites that would introduce truck transportation of hazardous materials on County or City roadways of high risk. The proposed project would involve the shipment of an average of 2.3 tanker truck loads of natural gas liquids per day from the facility. Unocal's 12 MMSCFD project would have generated approximately 0.7 NGL truck trips per day. Nonetheless, in overall comparison to the other alternative sites, the HS&P site still would provide the most consistency with the screening and siting criteria.

The 1993 SEIR also evaluated several alternative gas plant locations (Battles Gas Plant, Orcutt Hill, Cat Canyon, and Lompoc Field) using the criteria established in the County's *Siting Gas Processing Facilities Study* to determine the potential for reducing or eliminating potentially significant environmental impacts.

The issues weighted most heavily in the analysis of alternatives were system safety, emergency response, and air quality. The proposed project location is environmentally superior to all of the other alternative locations for processing Point Pedernales gas due to its ample setback from urban development, limited distance required for sour gas transport, and the resultant low level of environmental impacts for plant construction and operation. Relative to the proposed project, the three alternative Lompoc sites have distinct environmental disadvantages with regards to public safety, land use, biological resources, and infrastructure issues. Both the Orcutt Hill and Cat Canyon sites are more removed from the location of the gas production than the proposed site, and thus, do not offer any environmental advantage over the proposed project. Relative to the other alternative locations, the proposed project also maximizes compliance with the policies of the North County Siting Study. Because Torch is only modifying how the produced natural gas will be cleaned, the previous (1993) analysis of consistency with the Siting Study criteria is still applicable and need not be revised.

6.1.4 Consideration of Project Alternatives

This section presents a summary of the project alternatives. This discussion carries forward the alternatives analysis from the 1993 SEIR, updating it as appropriate.

6.1.4.1 "No project" Alternative

The "no project" alternative would involve the continued onshore reinjection of up to 9.205 MMSCFD of Point Pedernales and Lompoc Field gas. Reinjection into two wells located at the HS&P would continue, as currently permitted. This alternative is not considered to be technically feasible or environmentally preferred. The State Division of Oil and Gas and Torch are concerned that after approximately one year of reinjection, reservoir pressures in the reinjection zone have risen above planned levels. This issue has raised concerns about the long-term feasibility and safety of continued reinjection of Point Pedernales volumes. Also, reinjection of natural gas potentially wastes a relatively clean fuel.

6.1.4.2 Alternative Locations

The Final EIR for Unocal's Gas Plant, 92-EIR-13, evaluated several alternative project locations to determine whether any could reduce or eliminate potentially significant environmental impacts. The proposed location at Torch's HS&P facility was found to be environmentally superior to all alternative gas plant locations for processing Point Pedernales gas. To meet the gas processing needs of all of northern Santa Barbara County (volume estimated at 12 MMSCFD in 92-EIR-13), the environmentally superior alternative was found to be a gas plant at the HS&P (6 MMSCFD to process gas from offshore and from the onshore Lompoc, Casmalia, and Orcutt Hill Fields) and upgrading the Battles Gas Plant to serve as the processing facility for the remaining onshore fields (an additional 6 MMSCFD to process Cat Canyon and Santa Maria Valley gas). The HS&P is not considered the environmentally superior location for processing gas from these fields due to the long distance required for sour gas transport. However, it is not feasible for the County to require the two gas plant (Battles/HS&P) alternative. Unocal demolished its Battles Gas Plant in 1995. Furthermore, Torch's proposed gas plant attains the basic objective of locating a new processing facility for offshore gas produced from Platform Irene after the decommissioning and abandonment of the

Battles Gas Plant. In the event independent producers determine that there is a need and an economic justification for a second consolidated gas processing facility in northern Santa Barbara County, an application for such a facility can be submitted by the appropriate party or parties and environmentally reviewed at that time.

6.1.4.3 Unocal Gas Plant Alternative

Another alternative to the proposed project would involve construction at the HS&P of the gas plant originally proposed by Unocal and approved by the County in 1994. The gas plant was initially approved with a throughput of 6 MMSCFD, expandable to 12 MMSCFD if certain criteria could be met. Torch's current gas production of 6-10 MMSCFD would require the 12 MMSCFD project. The approved plant design is not as efficient or cost-effective as Torch's revised project. Relying on a SulfaTreat system for H_2S removal would not be economically feasible for this volume of gas. The Unocal project, while it would result in a reduction of NGL trucking and its associated offsite safety hazards, could increase the hazards associated with permitted gas processing at the HS&P. Torch's gas plant would contain fewer components than would the approved design for processing 12 MMSCFD. This reduction translates to a lower probability of an accident occurring within the facility, which in turn means a lower level of risk of upset at the HS&P location.

6.2 Modifications to Existing FDP Conditions

Torch's existing FDP permit conditions will remain in force for this project; as part of its proposed project, Torch made commitments to use existing FDP conditions to mitigate potential impacts. Some modifications to existing conditions are proposed to clarify the intent of the condition, to improve the implementation of conditions, or to include this project and subsequent environmental document as part of the FDP project scope. In addition, mitigations proposed as part of the project description have been incorporated into existing conditions for County purview. The modified conditions shall be incorporated into the current Environmental Quality Assurance Program (EQAP) for the Torch Point Pedernales Project.

Compliance with some applicable existing FDP permit conditions will require action from Torch in the form of new submittals or revising and updating existing plans. Other applicable conditions which do not require specific action from Torch will still remain in effect. Some conditions are not relevant to the proposed project and will therefore be considered not applicable. The following table summarizes the existing and proposed modified conditions, compliance requirements, and their applicability to the proposed project.

Table 2: Condition Compliance Requirements

CONDITION	REMARKS
Existing Conditions: Language Modification Required	
A-6: Project Description and Modifications	Modified to include Torch proposed project and Addendum.
A-11: Owner Liability	Modified to include proposed project components.
A-12: Capacity	Modified to reflect maximum gas processing volume.
A-21: Consolidated Gas Plant Siting Study	Modified to reflect maximum gas processing volume.
B-1: Construction Review by SSRRC	Modified to include proposed project components.
F-1: Runoff Water Quality Monitoring Program	Modified to include proposed project component.
H-6: Landscape Performance Security	Administrative modification.
H-17: Relocation of Badgers	Modified to include gas plant site.
H-26: Oak Tree Replacement Plan	Administrative modification.
H-27: Brown-Headed Rush	Administrative modification.
K-3: Construction Hours and Noise Limitations	Modified to allow extension of construction hours.
L-1: Board of Architectural Review Approval	Administrative modification.
O-7: Mitigation Plan for Impacts to County Roads	Modified to include proposed road improvements.
O-8: Construction Equipment Parking	Modified to allow additional construction staging area.
O-10: Limitations on Truck Trips	Modified to include proposed truck transportation.
P-2: Safety Inspection Maintenance and Quality Assurance Program	Modified to include proposed project components.
P-22: Underground Pipeline Warning Marker	Modified to include proposed project components.
P-23: HS&P Phased NGL Transport	Modified to include proposed project components.
R-2: Site Restoration	Administrative modification.
S-9: Consolidation of HS&P to Orcutt Pipeline Segment	Condition transferred to Torch from Unocap permit.
Existing Conditions: New or Modified Compliance Plans Required	
C-1: Environmental Quality Assurance Program	Revise existing construction and operation EQAP.
C-2: 24-Hour Emergency Contacts	Update emergency contact list.
D-1: Geologic Investigation, Design and Mitigation Program	Submit geotechnical study for HS&P and gas plant site.
D-5: Grading, Drainage and Erosion Control Plans	Submit new plans.
E-3: Curtailment Plan	Submit APCD-approved plan.
E-8: Future Consolidation	File APCD-approved written statement.
E-11: Construction Air Quality Impacts Mitigation Plan	Submit APCD-approved plan.
F-2: Construction Water Source	Submit hydrostatic test water disposal plan.
G-3: Produced Water Quality	Update chemical list for produced water treatment.
H-1: Restoration, Erosion Control, and Revegetation Plan	Update plan to incorporate to include new revegetation activities.

CONDITION	REMARKS
H-5: Landscaping Plans	Submit revised plan.
H-6: Landscape Performance Security	Post landscape bond.
H-23: Bond for Revegetation Costs	Post revegetation bond.
H-26: Oak Tree Replacement Plan	Submit new or revised plan to incorporate oak tree transplanting.
J-3: Temporary Housing of Construction Workers	Submit plan to house temporary construction workers.
J-12: Written Agreement from Mission Hills Community Services District for Water Service	Submit written agreement from MHCSD to provide additional water.
L-2: Lighting Plan	Submit new lighting plan incorporating measures to reduce lighting effects.
O-1: Programs to Minimize Traffic-Related Impacts	Submit plan to minimize traffic.
P-2: Safety, Inspection, Maintenance, and Quality Assurance Program	Revise SIMQAP to incorporate proposed project.
P-3: Facility Emergency Response Plans	Revise ERP to incorporate proposed project.
P-5: Hazardous Material and Waste Management Plan	Revise plan to incorporate proposed project.
P-7: Approved Site Security Plan	Revise plan to incorporate proposed project.
P-10: Fire Protection Plan	Revise plan to incorporate proposed project.
Existing Conditions: Demonstration of Compliance Required	
B-1: Construction Review by SSRRC	SSRRC approval required for all design and construction drawings.
D-3: Pipeline Trench or Trench Spoil Inspections	Geologist to inspect pipeline trenches.
E-2: Authority to Construct	Obtain ACT from APCD .
E-6: Mitigation of Project Emissions	Obtain approval of offsets from APCD.
E-9: Reasonable Further Progress Emissions Compliance and Effectiveness	Demonstrate emission mitigated in compliance with AQAP.
E-10: Emissions Offsets and Mitigation Strategies	Identify offsets and mitigations for emissions.
E-13: Fugitive Inspection and Maintenance Program	Commit to implementing Fugitive I&M program.
E-14: Emissions Offsets for Modified HS&P	Comply with PTO 6708, Condition 39.
H-2: Post-Construction Survey	Conduct post-construction survey after one year.
H-8: Department of Fish and Game Construction Impacts Determination	Provide CDFG written determination .
H-11: Tree Removal and Replacement	Avoid tree removal to maximum extent feasible.
H-17: Relocation of Badgers	Relocate any badgers found on proposed site.
H-18: Black Flowered Figwort Seeds	Collect seeds for revegetation.
H-19: Transmission Poles	Note on construction drawings.
H-21: Construction Fueling and Lubrication	Not to occur within .25 miles of any streams.
H-25: Designated Wash-Off Areas	Designate on construction drawings.
H-27: Brown-Headed Rush	Flag, salvage, and replant.
H-28: Topsoil Protection	Salvage top 6 inches.
I-1: Phase II Cultural Resources Survey	Survey previously undisturbed areas.
I-3: Pipeline Installation Workshop	Construction workshop for contractors, consultants, & P&D monitors.

CONDITION	REMARKS
I-4: Cultural Resource Monitors	Archaeologist and Native American consultant monitoring of previously undisturbed areas.
J-4: Construction Scheduling	Avoid peak tourist season.
J-5: Local Labor	Encourage use of local labor.
J-13: Provision of Water and Sanitary Facilities During Construction	Provide during construction.
K-2: Maximum Noise Levels	Sound levels not to exceed 70 dBA at property line.
K-4: Minimization of Equipment Noise and Vibration	Minimize noise generated from equipment.
L-1: Board of Architectural Review Approval	Obtain BAR approval.
L-4: Painting of Facilities and Pipeline	Paint new facilities to harmonize with existing facilities.
L-11: Height of Electrical Power Poles	Note on construction drawings.
O-3: Screening of Parking Areas	Screen permanent and construction parking areas.
O-4: Compliance With Parking Requirements	Comply with Article III, Division 6.
O-5: Installation of Warning Signs	Install warning signs during construction.
P-1: System Safety and Reliability Review Committee	SSRRC to review and approve project drawings.
P-9: Installation of Fire Protection Features	Install all required fire equipment.
P-16: Supervisory Control and Data Acquisition System	Proposed project to incorporate monitoring system.
P-19: Review of Process Alarm and Emergency Shutdown Systems	SSRRC to review system for proposed project.
P-22: Underground Pipeline Warning Marker	Install warning markers for pipeline extending outside HS&P.
S-1: Staking and Notification of Pipeline Route	Stake pipeline ROW and notify affected property owners.
S-2: Pipeline Construction Hours	Construction hours limited to 7:00 a.m. and 4:00 p.m., Monday through Saturday.
S-3: Maintenance and Security Agreement for Affected Properties During Construction	Consult with affected property owners.
S-4: Interruption of Utility Services	Stake utility line locations and minimize service interruptions.
S-6: Procurement of Rights-of-Way	Demonstrate that all rights-of-ways have been obtained.

6.3 Comprehensive Plan Consistency

REQUIREMENT	DISCUSSION
Land Use Element: Land Use Policies	
Policy #4: *Prior to issuance of a use permit, the County shall make the finding, based on information provided by environmental documents, staff analysis, and the applicant, that adequate public or private services and resources (i.e., water, sewer, roads, etc.) are available to serve the proposed development...*	Water for the HS&P is currently supplied by the Mission Hills CSD. Demand for the project does not exceed the threshold for the Lompoc Groundwater Basin. Mission Hills CSD will be able to meet the increased water demand from the proposed project. Other services (electricity, sewer, etc.) supplied for the HS&P will continue to be supplied for this project. Consistency with this policy may be found.
Policy #10: *Impacts of oil, gas, and produced-water pipelines outside industry facilities shall be minimized by requiring the use of available or planned common carrier and multiple-user pipelines to the maximum extent feasible...*	The proposed project will use an existing 12-inch pipeline to transport sales gas to the SoCal delivery point. In order to use this line, the applicant will need to install a connecting pipeline from the gas processing unit to the existing 12-inch line and a pipeline from the 12-inch termination point to SoCal Line #1010. The pipelines will be used as common carrier pipelines. Thus, consistency with this policy may be found.
Policy #11: R*equires that the Siting Gas Processing Facilities: Screening & Siting Criteria study be "incorporated herein by reference to guide a comprehensive analysis of alternative sites...*	The SEIR for the previously approved Unocal gas plant at the HS&P evaluated the proposed site and several other sites using the siting study criteria. The proposed site was identified as the environmentally superior location for processing gas from Point Pedernales, assuring consistency with this policy.
Land Use Element: Hillside and Watershed Policies	
Policy #2: *All developments shall be designed to fit the site topography, soils, geology, hydrology, and any other existing conditions and be oriented to that grading and other site preparation is kept to an absolute minimum. Natural features, landforms, and native vegetation, such as trees, shall be preserved to the maximum extent feasible...*	The proposed gas plant will be built within the M-CR zoned boundary. Grading will be kept to a minimum and vegetation will be preserved to the maximum extent feasible. However, the project will require the relocation of 9 oak trees. The trees will be removed and transplanted outside the M-CR zone, thereby preserving the survival of the trees. Consistency with this policy may be found.
Policy #6: *Provisions shall be made to conduct surface water to storm drains or suitable watercourses to prevent erosion. Drainage devices shall be designed to accommodate increased runoff resulting from modified soil and surface conditions as a*	Surface water is directed towards a retention basin located at the southern portion of the site. Surface water for the proposed project will also drain into the retention basin, which may need to be enlarged to accommodate increased runoff. Water in the retention basin is tested for contamination prior to being released into a natural

REQUIREMENT	DISCUSSION
result of development. Water runoff shall be retained onsite whenever possible to facilitate groundwater recharge.	southern swale. Consistency with this policy may be found.
Policy #7: *Degradation of the water quality of groundwater basins, nearby streams, or wetlands shall not result from development of the site. Pollutants, such as chemicals, fuels, lubricants, raw sewage, and other harmful waste, shall not be discharged into or alongside coastal streams or wetlands either during or after construction.*	The proposed project will require the addition of a new underground sump and several drainage devices. These devices will connect into the existing drainage system. Consistency with this policy may be found. No info. Interwoven system
Land Use Element: Visual Resources Policies	
Policy #1: *"All commercial, industrial, and planned developments shall be required to submit a landscaping plan to the County for approval.*	The HS&P Facility was required to submit and implement a landscaping plan as part of the original permit approval.. With the addition of a gas plant, the existing landscaping will be reviewed and augmented if adequate screening has not been achieved. Therefore, consistency with this policy may be found.
Policy #2: *In areas designated as rural on the land use maps, the height, scale, and design of structures shall be compatible with the character of the surrounding natural environment, except where technical requirements dictate otherwise.*	The proposed gas plant will be located adjacent to an existing industrial facility and is compatible in scale and design with existing operations. However, several pieces of the new equipment will be approximately 50 to 60 feet in height, exceeding the 45 feet height limit of the M-CR zone. It would not be technically feasible to meet the 45 feet height limit for these equipment. During project approval, the decision-making body may modify this development standard, thereby allowing consistency with this policy to be found.
Noise Element: Noise Policies	
Policy #1: *In the planning of land use, 65 dB Day-Night Average Sound Level should be regarded as the maximum exterior noise exposure compatible with noise sensitive uses unless noise mitigation features are included in project design.*	No sensitive receptors are located within the vicinity of the proposed project. Neither short-term construction nor long-term operational noise levels are expected to create significant environmental impacts. Therefore, consistency with this policy may be found.
Seismic Safety/Safety Element: Fire Hazards Recommendations	
Recommendation #2: *"All land development (including grading*	The HS&P Facility is located within a high fire hazard area. The applicant will be

REQUIREMENT	DISCUSSION
and clearing) in high fire hazard or extreme fire hazard areas should be subject to conditional use permit regulations, and review by the County Fire Prevention Officer, and where appropriate, by responsible federal or State agencies.	required to revise the existing Fire Protection Plan to address the additional processing equipment and hazard. The Fire Department shall review and approve the revised Fire Protection Plan prior to land use clearance. Consistency with this policy may be found.
Hazardous Waste Element: Hazardous Waste Policies	
Policy #2-3: *All hazardous waste treatment, storage, and disposal facilities in the County shall provide the County with information regarding their operations and treatment, storage, and disposal capacity. Such information shall be updated annually.*	As the proposed project will be located within the HS&P Facility site, the existing Hazardous Material and Waste Management Plan and Business Plan will be revised to address hazardous treatment, storage, and disposal. Review and approval of these Plans prior to start-up will assure consistency with this policy.
Policy #8-1: *Any land use permit for a hazardous waste generator or a hazardous waste facility shall require submittal of an emergency response plan prior to operations, if such a plan is required under Chapter 6.95 (section 25500 et seq.) of the California Health and Safety Code.*	As the proposed project will be located within the HS&P Facility site, the existing Emergency Response Plan must be revised to address the additional gas processing equipment and associated hazards. Approval of the revised Plan prior to start-up of the gas processing unit will assure consistency with this policy.
Lompoc Community Goals - Air Quality	
Good air quality should be maintained as one of our greatest assets.	Implementation of the FDP air quality conditions (E conditions) would help to minimize potential air quality impacts of the project and also provide consistency with this policy.
Lompoc Community Goals - Noise	
Excessive noise should be eliminated through the development of noise pollution standards.	The project's noise impacts would be less than significant. Nuisance level noise from the project would be mitigated to the maximum extent feasible by existing noise conditions (K-1 through K-5). These conditions would also ensure consistency with this policy.
Lompoc Community Goals - Water Resources	
Policy #4: The County should plan for and encourage the maximum conservation of water.	No significant impact in project-related water demand is expected. Compliance with Condition F-6 of the FDP would satisfy the intent of this policy.

REQUIREMENT	DISCUSSION
Lompoc Community Goals - Circulation	
Improvements to or alterations of existing roadways must minimize environmental and visual impact. The scenic enhancement of through-transit corridors in the Lompoc Valley should be encouraged.	The project would require the construction of two deceleration lanes along County roads. These lanes will be designed to County specifications. Construction of these lanes will be required to comply with existing project conditions which protect environmental resources and provide consistency with this policy.
Lompoc Community Goals - Environment	
Growth and employment must be consistent with the preservation and enhancement of resources and environmental quality.	The proposed project would provide economic growth in the Lompoc area. The existing and proposed permit conditions require the preservation and restoration of environmental resources. Therefore, the project can be found consistent with this policy.
Lompoc Community Goals - Land Use Development	
The unique character of the area should be protected and enhanced with particular emphasis on protection of agricultural lands, grazing lands, and natural amenities.	The proposed project can be considered appropriately sited due to its location within the M-CR (Coastal Related Industry) zoning designation. The site has been designated by the County as a consolidation site for oil and gas development. Furthermore, it would be inappropriate to site this facility close to an urban area due to safety concerns. Therefore, the project can be found consistent with these policies.
Residential, commercial and industrial growth should be confined to urban areas.	
Industrial development should be light intensity.	
Changes in natural or re-established topography, vegetation, (and) biological communities should be minimized in an attempt to avoid the destruction of natural habitats.	The project includes conditions which require restoration of any impacted biological resources. Grading for the proposed project would impact oak trees, which would be transplanted. The project, as mitigated by existing and proposed conditions, would be consistent with this policy.

6.4 Ordinance Compliance

The proposed project is consistent with County Zoning Ordinance Article III requirements as identified below.

6.4.1 Compliance with Ordinance Requirements

Gas processing facilities are a permitted use in the M-CR, Coastal Related industry zone district (Section 35-236.3). The project conforms with the required performance standards for this zone district. However, several necessary components of the facility exceed the height limit of 45-feet. These structures are further discussed in Section 6.3.2, below.

6.4.2 Other Requested Modification(s)

Section 35-317.8 of Article III allows the Planning Commission to consider modifications to the maximum height requirement of the Zoning Ordinance. Such modifications may be approved as part of the Planning Commission's decision, if the requested modifications can be justified.

The following proposed components would exceed the 45 foot height limit:

STRUCTURE	*HEIGHT ABOVE GROUND*
Amine Contactor	62 feet
Amine Still	55 feet
De-ethanizer	52 feet
NGL Stabilizer	50 feet

The above structure heights are dictated by their function and technical requirements. The shape of the vessels, tall cylinders, are required as part of the gas processing system design. The heights of these vessels are standard for their use and are normally 50 - 60 feet tall. The possibility of reducing the overall height of these vessels by lowering them below grade was evaluated. This alternative design was not considered feasible as it could allow for the accumulation of hazardous vapors within these low areas. The functional requirements of the four vessels, combined with the industrial nature of the project site which is designated for consolidated oil and gas development, justify exceedance of the height limit. Therefore, the height limit for this project should be modified to allow these four gas processing vessels to exceed the 45 foot height limit. The vegetation along Harris Grade Road can be supplemented via existing condition H-5 to ensure an adequate visual screen from public viewing points over the long-term.

6.5 Subdivision/Development Review Committee

This project was reviewed by agencies in the Permit Compliance Committee, a functional equivalent for oil and gas projects of the Subdivision Review Committee. Representatives from the departments below

have reviewed and commented on the proposed project. Memos from the following agencies are incorporated:

Office of Emergency Services/Fire Department
Air Pollution Control District
Planning and Development, Building & Safety Division
Public Works, Traffic and Roads Division & Flood Control Division
Environmental Health Services

6.6 Board of Architectural Review

The proposed project is scheduled to be considered by the Board of Architectural Review on July 12, 1996.

6.7 Community Land Use/Design Review Committee

Not required for this project.

6.8 Agricultural Preserve Advisory Committee

Not required for this project.

7.0 APPEALS PROCEDURE

The action of the Planning Commission may be appealed to the Board of Supervisors within ten (10) calendar days of said action.

ATTACHMENTS

A. Findings
B. Conditions of Approval (94-DP-027)
C. EIR Addendum

ATTACHMENT A: FINDINGS OF APPROVAL

Torch Gas Plant Project
94-DP-027 RV01

ATTACHMENT A: FINDINGS OF APPROVAL

[illegible] Gas Plant Project

[illegible] KVII

ATTACHMENT A: FINDINGS OF APPROVAL

In order to approve any development project, the decision-making body must make certain findings pursuant to the County Zoning Ordinance. In addition, whenever an agency approves a project which will have significant effects on the environment, that agency must make certain findings as required by the California Environmental Quality Act.

1.0 ADMINISTRATIVE FINDINGS

1.1 Findings Required for Approval of Development Plan Revisions Pursuant to Article III, Section 35-317.10.3

Pursuant to Sections 35-317.10.3a,b of the Santa Barbara County Zoning Ordinance, Article III, a Revised Development Plan shall be required for changes to a Preliminary or Final Development Plan if findings for an Amendment cannot be made and substantial conformity cannot be determined. A Revised Development Plan is processed in the same manner as a new Preliminary or Final Development Plan. While a gas plant has already been approved for the HS&P site, Torch's proposal to modify that gas plant will require a revised Development Plan.

1.2 Findings Required for Approval of Development Plans Pursuant to Article III, Section 35-317.7

Pursuant to Section 35-317.7 of the Santa Barbara County Zoning Ordinance, Article III, a Preliminary or Final Development Plan shall be approved only if all of the following findings can be made:

a. *That the site for the project is adequate in size, shape, location, and physical characteristics to accommodate the density and intensity of development proposed.*

The modifications to Torch's Point Pedernales Project will be constructed to comply with current American Petroleum Institute (API) spacing standards for oil and gas facilities. The project will be constructed largely within existing site boundaries at an already existing industrial facility for processing crude oil and reinjecting natural gas. The HS&P facility, zoned Coastal-Related Industry (M-CR) is well buffered by more than 2,000 acres of undeveloped Torch property. The proposed new sections of sales gas pipeline are located in areas which are not significantly constrained. Therefore, this finding can be made.

b. *That adverse impacts are mitigated to the maximum extent feasible.*

When the County approved Unocal's Gas Plant in 1994, it imposed new conditions and modified pre-existing conditions as necessary to insure that adverse impacts were mitigated to the maximum extent feasible. Although Unocal's gas plant was never constructed, all the mitigations associated with the project remain in force as part of Torch's Point Pedernales Development Plan. In addition,

the project proponent has incorporated several design modifications and other measures into the project to mitigate the project's impacts. In combination, these existing conditions and new design features will insure that all adverse impacts are reduced to the maximum extent feasible. Therefore, the Planning Commission can make this finding.

c. *That streets and highways are adequate and properly designed.*

Additional traffic volumes resulting from the project will be insignificant. The proposed project will provide two deceleration lanes to accommodate heavy trucks traveling to and from the facility. Trucks carrying natural gas liquids (NGL's) will be limited to non-peak hours. Existing conditions regarding transportation will remain in effect. No new roads, streets, or highways are proposed. Due to both the existing permit conditions and the proposed construction of two deceleration lanes, the project will not have a significant impact on streets or highways. Therefore, the Planning Commission can make this finding.

d. *That there are adequate public services, including but not limited to, fire protection, water supply, sewage disposal, and police protection to serve the project.*

The proposed modifications to Torch's Point Pedernales Project will not require any additional demands on sewage disposal or police protection. The project's water needs can be provided by existing sources and will not contribute significantly to groundwater overdraft. Additional fire protection demands are minimized due to the existing fire protection system and proposed additional fire protection equipment, and will be mitigated through existing project conditions requiring Torch to modify its Emergency Response and Fire Protection Plans for the HS&P. Thus, the Planning Commission can make this finding.

e. *That the project will not be detrimental to the health, safety, comfort, convenience, and general welfare of the neighborhood and will not be incompatible with the surrounding area.*

The system safety impacts associated with the offsite transportation of NGL's and sales gas identified in 84-EIR-17, 92-EIR-13, and the addendum dated July 1, 1996 will be mitigated to the maximum extent feasible by existing permit conditions and applicant-proposed mitigations. All other system safety and fire protection impacts associated with the proposed gas plant at the HS&P site identified in the SEIR and the addendum, dated July 1, 1996, were found to be insignificant after mitigation. All other impacts will be reduced to a level of insignificance in the long-term through implementation of existing project conditions and the mitigation measures listed in the SEIR and addendum.

In determining overall land use compatibility of the proposed gas plant at the HS&P site the following facts must be considered: (1) There is a recognized need for gas processing facilities for Central Santa Maria Basin production in northern Santa Barbara County; (2) County policy encourages consolidation of oil and gas processing facilities to minimize land disturbances

throughout the County; (3) due to system safety issues, gas processing facilities are more appropriately located away from populated areas; and (4) the County (Planning Commission) previously approved (January 12, 1994) construction and operation of a gas processing plant at the HS&P site, but which was never built by the previous owner, Unocal. The proposed gas plant at the HS&P can be considered appropriately sited because of its relatively remote location, its compliance with the siting criteria of the North County Siting Study, and its designation as a consolidated site for processing gas in northern Santa Barbara County. For all of these reasons, this finding can be made.

f. That the project is in conformance with the applicable provisions of this Article and the Comprehensive Plan.

The applicant has proposed four structures (the amine contactor, the amine still, the de-ethanizer, and the NGL stabilizer vessel) which would exceed the height limitation of 45 feet for the M-CR zoning district. Due to processing requirements, the heights of these vessels cannot meet the height limit of 45 feet. Vessels used in the proposed type of gas processing are normally 50-60 feet in height. Placing these structures below grade to reduce their overall height is not feasible due to the potential for unsafe levels of hazardous vapors to accumulate in such low areas. The Planning Commission has the authority to modify the height limit for these structures pursuant to Sec. 35-317.8.1 of Article III. The Planning Commission hereby finds that modifying the normal 45 foot height limitation to allow four structures of 50, 52, 55, and 62 feet at this industrial site designated for consolidated oil and gas development is justified by technical requirements. Other than the issue of height limitations, the policy consistency analysis provided in Section 6.0 of 92-EIR-13 and Section 6.2 of this staff report indicates that the proposed modifications to the HS&P are in conformance with both the Comprehensive Plan and County Zoning Ordinance. Thus, this finding can be made.

g. That in designated rural areas the use is compatible with and subordinate to the scenic and rural character of the area.

The proposed gas plant represents an incremental increase in developed area at the HS&P. Visual impacts to northbound motorists on Harris Grade Road will be mitigated over the longterm by implementation of Condition H-5. This condition requires Torch's landscaping plan to screen the facility from public viewing areas. The project would add incrementally to nighttime noise and night lighting caused by the existing facility. Although the project's effects would be less than significant, mitigation measures requiring development and implementation of plans to minimize noise and night lighting to the maximum extent feasible will be enforced through existing conditions K-1 and L-2. Thus, this finding can be made.

h. That the project will not conflict with any easements required for public access through, or public use of a portion of the property.

The modifications to Torch's Development Plan will not conflict with any easements required for public access and will not affect public use of any properties. Thus, this finding can be made.

i. A Final or Revised Final Development Plan shall only be approved if all of the following findings are made:

(1) Such plan is in substantial conformity with any approved Preliminary Development Plan except when the Planning Commission considers a Final Development Plan for which there is no previously approved Preliminary Development Plan. In this case, the Planning Commission may consider the Final Development Plan as both a Preliminary and Final Development Plan.

The Final Development Plan (94-DP-027RV1) serves as both the Preliminary and Final Plan, as no Preliminary Development Plan was filed.

(2) Such plan is in conformance with all applicable provisions and policies of the Santa Barbara County Comprehensive Plan and this Article.

As discussed above for finding 1.f, the plan is consistent with both the Comprehensive Plan and Article III Zoning Ordinance.

1.3 Findings Required for Approval of Processing Facilities Pursuant to Article III, Section 35-296.4A

In addition to the above findings for approval of Final Development Plans, the following findings are required for approval of oil and gas treatment and processing facilities outside the South Coast Consolidation Planning Area, pursuant to Section 35-294.4.A of the Article III Zoning Ordinance.

a. Consolidation or collocation on or adjacent to an existing processing facility to accommodate the proposed production is not feasible or is more environmentally damaging.

As part of its approval of Unocal's Gas Plant in 1994, the County designated the HS&P site as a consolidation site for gas processing in northern Santa Barbara County. Torch's proposed gas plant will be collocated within the boundary of the existing HS&P consolidated oil processing facility. Condition Q-9 requires Torch to operate its facilities as consolidated facilities, with access for use available on a nondiscriminatory and equitable basis to other producers. Therefore, the Planning Commission can make this finding.

b. *There are no feasible alternative locations for the proposed processing facility that are less environmentally damaging.*

The Planning Commission finds that the HS&P is the environmentally preferred location for processing gas from the Point Pedernales and Lompoc fields, as described in the SEIR (92-EIR-13). That SEIR evaluated several alternative gas plant locations (Battles Gas Plant, Orcutt Hill, Cat Canyon, and Lompoc Field) to determine the potential for reducing or eliminating potentially significant environmental impacts. The issues weighted most heavily in the analysis of alternatives were system safety, emergency response, and air quality. The proposed project location is environmentally superior to all of the other alternative locations for processing Point Pedernales gas due to its ample setback from urban development, limited distance required for sour gas transport, and the resultant low level of environmental impacts for plant construction and operation. Relative to the proposed project, the three alternative Lompoc sites have distinct environmental disadvantages with regards to public safety, land use, biological resources, and infrastructure issues. Both the Orcutt Hill and Cat Canyon sites are more removed from the location of the gas production than the proposed site, and thus, do not offer any environmental advantage over the proposed project. Relative to the other alternative locations, the proposed project also maximizes compliance with the policies of the North County Siting Study. Because Torch is only modifying how the produced natural gas will be cleaned, the previous (1993) analysis of alternative sites is still applicable and need not be revised. Therefore, this finding can be made.

c. *Where consolidation or collocation on or adjacent to an existing processing facility is not proposed, for coastal areas east of the City of Santa Barbara, there are no existing processing facilities within three (3) miles of the proposed site.*

The proposed gas plant at the HS&P site is not located in a coastal area east of the City of Santa Barbara. Therefore, this finding does not apply. Furthermore, Torch will be collocating its gas plant with its existing HS&P processing facility.

d. *The proposed facility is compatible with the present and permitted recreational and residential development and the scenic resources of the surrounding area.*

The proposed gas plant will be located adjacent to the existing HS&P oil processing facility on 22-acres zoned Coastal Related Industry. This site is surrounded by Torch-owned land and a 5,000 2,500 acre parcel that Unocal deeded to the State as a preserve. The land Unocal deeded to the State is approximately 2,000 feet from the site boundary and could be used for recreational activities. The residential development closest to the proposed site is approximately one mile away. Potential impacts to public safety from the proposed offsite transportation of the NGL's and sales gas are found to be mitigated to the maximum extent feasible. Relevant mitigations include many of Torch's existing system safety conditions. These conditions include the requirement to comply with the measures adopted by the County in Resolution 93-480, incorporated into the project as Condition P-11. The incorporation into the project of two deceleration lanes to accommodate project trucks, and a requirement to limit NGL trucks to non-peak hours, will provide additional

measures of safety. Requirements to hydrotest and smart-pig the proposed new sales gas line would partially mitigate the potential hazards of operating that line. The SEIR and addendum, dated July 1, 1996, found that the project would add incrementally to nighttime noise and night lighting caused by the existing facility. Although the project's effects would be less than significant, mitigation measures requiring development and implementation of plans to minimize noise and night lighting to the maximum extent feasible have been incorporated as conditions. The project's potentially significant impact to motorists northbound on Harris Grade Road during daylight hours would be mitigated over the longterm by the requirement to install landscaping capable of screening the facility from view. All existing conditions of Torch's Point Pedernales project imposed to mitigate visual impacts will remain in force. The County accepts the project's short-term visual impacts at this site since it is an industrial site which has been designated as a consolidated site for oil and gas processing. In summary, as mitigated by existing conditions and measures incorporated into the proposed project, Torch's proposed gas plant can be found compatible with the surrounding scenic resources of the area.

e. *Gas processing facilities proposed in the North County Consolidation Planning Area (NCCPA), including expansion of existing facilities, have been sited in accordance with criteria set forth in Santa Barbara County Comprehensive Plan study entitled Siting Gas Processing Facilities. Additionally, sites are selected with adequate consideration of all future gas processing needs in the NCCPA to optimize siting and consolidation strategies. The "expansion" of an existing facility shall mean any structural modification, alteration, expansion or enlargement which results in increased facility capacity, or change in facility use, operation, or other limitations imposed by permit or other law. The "expansion of an existing facility shall also mean introduction of production from a field not served by the processing facility since January 1, 1986, or from any new production well that increases the current area extent of a field presently served by the facility. Expansion shall not include modification to existing facilities that is required to comply with current health and safety standards, regulations, and codes.*

The 1993 SEIR (Section 3.2.2) assessed both the proposed project site and the six alternative sites using the screening and siting criteria listed in the Siting Study. That assessment concluded that, for the 6 MMSCFD project, the HS&P site is consistent with 37 of the 38 siting criteria. One criterion with which the project site was determined to be inconsistent is air quality (AQ-4). It is important to note that all of the other alternative sites are also considered inconsistent with this criterion due to the non-attainment of air quality standards in northern Santa Barbara County.

Torch's proposed gas plant and Unocal's 12 MMSCFD project would also appear to be potentially inconsistent with siting criterion #6. This criterion recommends the avoidance of sites that would introduce truck transportation of hazardous materials on County or City roadways of high risk. The proposed project would involve the shipment of an average of 2.3 tanker truck loads of natural gas liquids per day from the facility. Unocal's 12 MMSCFD project would have generated approximately 0.7 NGL truck trips per day. Nonetheless, in overall comparison to the other

alternative sites, the HS&P site still would provide the most consistency with the screening and siting criteria. Therefore, this finding can be made.

Based on the best available forecasts of future oil and gas production, the HS&P site is adequately sized to handle all future natural gas production from the Point Pedernales, Lompoc, Casmalia and Orcutt Hill fields. These are the fields for which the HS&P has been identified as the environmentally superior processing location (ref. 92-EIR-13). The proposed capacity of 15 MMSCFD is also considered adequate to handle future production from these fields. Therefore, the Planning Commission can make this finding.

1.4 Findings Required for Approval of Pipelines Pursuant to Article III, Section 35-290.4

The following findings are also required for approval of pipelines pursuant to Section 35-290.4 of Article III Zoning Ordinance:

a. Use of available or planned common carrier and multiple-user pipelines is not feasible;

The existing 12 inch wastewater pipeline located between the HS&P and the Righetti Valve Box will be used to transport treated gas most of the 10 miles to the proposed tie-in with Southern California Gas Company's (SoCal) regional transmission line. Two new sections of sales gas pipeline will need to be constructed as part of the project. One will extend 600 feet north from the HS&P, and the other will extend 4000 feet east of the Righetti Valve Box. Gas from the proposed processing facility cannot be accepted into the existing SoCal Gas pipeline located approximately 200 feet east of the HS&P due to the proposed volumes. The project as proposed makes maximum use of existing pipelines. All of Torch's Point Pedernales pipelines are maintained as common carrier pipelines pursuant to permit condition Q-9 and the sales gas pipeline will also be common-carrier. Therefore, this finding can be made.

b. Pipelines will be constructed, operated, and maintained as common carrier or multiple-user pipelines unless the Planning Commission determines it is not feasible. Applicants have taken into account the reasonable, foreseeable needs of other potential shippers in the design of their common carrier and multiple-user pipelines. Multiple-user pipelines provide equitable access to all shippers with physically compatible stock on a nondiscriminatory basis;

The Planning Commission finds that implementation of existing condition Q-9 will ensure that all of Torch's pipelines associated with its Point Pedernales Project, including the sales gas pipeline, will be used as common carrier pipelines.

c. *New pipelines are routed in approved corridors that have undergone comprehensive environmental review unless the Planning Commission determines that such corridors are not available, safe, technically feasible, or the environmentally preferred route for the proposed new pipeline;*

The impacts of the two newly proposed sections of sales gas pipeline which will tie the HS&P into the regional SoCal Gas transmission pipeline have been evaluated in the Addendum dated July 1, 1996. The majority of the new pipeline section proposed northeast of the HS&P follows an existing pipeline corridor and traverses previously disturbed areas. For the new pipeline section needed east of the Righetti Valve Box, an environmentally preferable route that avoids the locally significant riparian corridor has been selected. Impacts associated with construction of these lines have been found to be effectively mitigated by existing conditions of Torch's Point Pedernales Permit. Therefore, this finding can be made.

d. *When a new pipeline route is proposed, it is environmentally preferable to all feasible alternative routes;*

As noted above, an environmentally superior route for the new pipeline section east of the Righetti Valve Box has been selected. The new pipeline section northeast of the HS&P will require the removal of some rare black-flowered figwort. However, the proposed route is the environmentally preferred route since the pipeline will run through previously disturbed areas.

Mitigation measures imposed as conditions of approval on the proposed new sections of sales gas pipeline will reduce impacts associated with the construction of these pipelines to adverse but not significant levels.

e. *When a new pipeline is proposed, the project's environmental review has analyzed the cumulative impacts that might result from locating additional pipelines in that corridor in [the] future;*

Biological surveys were conducted for the new sales gas pipeline corridors. The pipeline corridor investigated was approximately 25 to 50 feet wide. Similarly, the addendum's analysis for issues such as cultural resources assumed the potential for impacts over a 25 to 50 foot corridor. This corridor width would allow for additional pipelines to be constructed within the same corridor in the future. Although no future oil and gas lines are anticipated in this area, additional space for specific, small pipelines may be available. Therefore, this finding can be made.

f. *Concurrent or "shadow" construction has been coordinated with other pipeline projects that are expected to be located in the same corridor where practical.*

No other pipeline construction is proposed or foreseeable in either of the projects' pipeline corridors. The existing 12" pipeline proposed to be used for sales gas was built in the mid 1980s by

Unocal in an effort to meet this policy concern of conducting "shadow" construction. Thus, the Planning Commission can make this finding.

1.5 Findings Pursuant to Condition A-12 of Torch's Point Pedernales Final Development Plan (94-DP-027)

Condition A-12 of Torch's existing permit requires the following findings to be met to allow expansion above the initially permitted volume of 6 million standard cubic feet per day (MMSCFD) of natural gas:

1. *The method of transporting the produced natural gas is consistent with the intent of the County's Siting Gas Processing Facilities study; and*
2. *Processing of the produced natural gas at the HS&P is environmentally preferred, including health and safety issues, over processing the gas at another new or existing gas plant.*

The gas plant proposed by Torch would exceed the permitted volume of 12 MMSCFD. However, it would process gas only from sources for which the HS&P has been determined to be the environmentally superior processing location (92-EIR-13). These proposed sources are the offshore Point Pedernales Field and the onshore Lompoc Field. For these fields, the method of transporting the natural gas is consistent with the intent of the County's Siting Gas Processing Facilities Study. The conclusions of the 1993 SEIR regarding consistency with the siting criteria and environmental preferability of processing sites are still valid. Because this is a revised Development Plan, the Planning Commission could delete the requirement to meet Condition A-12. However, in making this finding, the Planning Commission can demonstrate that the proposed project is consistent with the originally-approved HS&P gas plant, specifically the criteria specified in Condition A-12.

2.0 CEQA FINDINGS

2.1 Consideration of the Addendum and Full Disclosure

The Planning Commission has considered the Addendum dated July 1, 1996 together with the previously certified environmental documents (84-EIR-17 and 92-EIR-13, as amended) for the Torch Gas Plant. The Addendum reflects the independent judgment of the Planning Commission and has been completed in compliance with CEQA. The Addendum, together with the previously certified environmental documents, is adequate for this proposal.

2.2 Location Of Documents

The documents and other materials which constitute the record of proceedings upon which this decision is based are in the custody of Mr. William Douros, the Deputy Director of the Santa

Barbara County Energy Division of the Planning and Development Department, located at 1226 Anacapa St., Santa Barbara, CA 93101.

2.3 Findings Addressing Addendum Issue Areas

This finding addresses why an addendum was prepared, consistent with CEQA section 15164. The Addendum prepared for the project addresses the following issues: system safety, air quality, visual resources, biological resources, geological processes, transportation, noise, fire protection, and water resources.

The Addendum provides evidence that the impacts of the currently proposed project are within the scope of previously analyzed projects. Class I system safety impacts related to offsite transportation of hazardous materials (NGL's) are less than the impacts identified in the original Point Pedernales EIR (84-EIR-17) for NGL transportation from the HS&P location. Further, policy changes and mitigation measures to reduce the risk of truck transportation of NGL's were developed with an addendum to the Point Pedernales EIR in 1993, and remain valid for the project also. The 1996 Addendum identifies Class I system safety impacts related to the potential for an accidental release from the proposed new sales gas line. This impact is within the scope of the hazards identified for the old Battles gas line, in 92-EIR-13, which was to carry sour natural gas to the HS&P. As a part of the proposed project, the old Battles Gas Pipeline would be abandoned and replaced with a newer gas pipeline. The other system safety impacts remain Class II, less than significant after mitigation. Longterm air quality impacts are identified as Class II, or insignificant after the application of mitigation measures. Construction-phase pollutant emissions are classified as less than significant due to recent changes in the County's significance threshold for air quality. All other impacts remain as categorized in the previous environmental documents, as summarized in the Addendum dated July 1, 1996.

2.4 Findings That Certain Unavoidable Impacts of Development Project Components Are Mitigated To The Maximum Extent Feasible

Certain impacts originally described in the Point Pedernales EIR's (84-EIR-17 and 92-EIR-13), and as amended in the Addendum dated July 1, 1996, cannot be fully mitigated and are considered unavoidable. To the extent the impacts remain significant and unavoidable, such impacts are acceptable when weighed against the overriding social, economic, legal, technical, and other considerations, set forth in the Statement of Overriding Considerations included herein. These Class I impacts identified by the Final EIR's, as amended, are discussed below, along with the appropriate findings as per CEQA Section 15091.

The potentially significant and unavoidable safety impact associated with the offsite transportation of NGL's is mitigated to the maximum extent feasible. The existing permit condition P-11 requires the operator to comply with all of the safety measures identified in the Addendum (dated June 30, 1993) and Board Resolution (93-480) regarding NGL transportation. These measures include the following requirements:

- maximum shipment by pipeline
- use of highways that offer the lowest societal risk
- use of LPG-rated (safer) containers
- use of carriers with suitable driver hiring and training practices
- truck inspections prior to loading
- use of vehicles with speed controls, and
- use of carriers with cellular phones.

In addition, the applicant proposes as part of the project to adhere to the following local route for NGL-laden trucks: Harris Grade Road, Purisima Road, Mission Gate Road, and Highway 246. The applicant proposes to limit NGL truck traffic to nonpeak hours. The applicant also proposes to construct two deceleration lanes, one on Harris Grade Road and the other on Purisima Road, to accommodate right turns by heavy trucks, including those transporting NGL's. The applicant has agreed to limit offsite NGL transportation to a monthly average of 2.3 trips per day. Any additional NGL's will be reinjected. No other feasible measures are known which would further reduce the safety impact associated with NGL transportation. Reinjection of the full volume of produced NGL's would not obtain a project goal of recovering NGL resources.

The Addendum identifies Class I system safety impacts related to the potential for an accidental release from the proposed new sales gas line. This impact is found to be mitigated to the maximum extent feasible by Torch's existing system safety conditions (the "P" conditions) and by the required hydrotesting and smart-pigging of the line.

Visual impacts to northbound motorists along Harris Grade Road will be mitigated to the maximum extent feasible by Condition H-5. This condition requires the planting of landscaping to screen the facility from public view. Over the long-term, this impact is found to be mitigated to a less than significant level.

2.5 Findings That Certain Impacts Are Mitigated To Insignificance By Conditions Of Approval

Conditions of FDP approval which mitigated significant environmental impacts from the original Point Pedernales Project and the subsequent Unocal Gas Plant project to the maximum extent feasible are included (and where necessary, revised) as part of the project description for the proposed project. The inclusion of these conditions and modifications of existing conditions lessens the significant environmental effects from the proposed project to the maximum extent feasible, as identified in the addendum dated July 1, 1996.

2.6 Statement Of Overriding Considerations

The environmental documents for a gas plant at the HS&P (84-EIR-17 and 92-EIR-13, as amended by the Addendum dated July 1, 1996) identify long-term project impacts to public safety and short-

term impacts to visual resources as significant environmental impacts which are considered unavoidable. The Planning Commission therefore makes the following Statement of Overriding Considerations which warrant approval of the project notwithstanding that all identified impacts are not fully mitigated. Pursuant to CEQA Sections 15043, 15092 and 15093, any remaining significant effects on the environment are acceptable due to these overriding considerations:

The proposed project would provide for processing and sale of valuable reserves of natural gas from the Point Pedernales and Lompoc Fields, an important aspect of Santa Barbara County's economy. It is estimated that the Torch Gas Plant Project would process up to 16 billion standard cubic feet of gas (Point Pedernales and Lompoc Field) and 800,000 barrels of condensate, or NGL's. Furthermore, because the gas is associated with crude oil in offshore fields, the new gas plant would allow for continued and expanded production of crude oil. The HS&P is permitted to process up to 36,000 barrels per day (BPD) of dry oil, but recently has been producing an average of 12,000 BPD. Gas is currently produced at a rate of approximately 6 MMSCFD. Torch's plans to produce up to 15 MMSCFD will allow oil production to also increase up to an estimated 13,000 BPD. In turn, both crude oil and natural gas production lead to increased royalties to the federal government and will maintain domestic production. The project would also result in increased property tax revenues to the County by increasing the assessed value of the HS&P site. Gas that would be processed at the facility rather than reinjected would provide a relatively clean fuel capable of assisting in meeting the energy needs of the area and in meeting the goals of the National Energy Strategy. This strategy promotes energy independence through the development of recoverable reserves and the use of natural gas, which has environmental benefits over other fossil fuels.

The County, in approving previous oil and gas projects such as Chevron's Point Arguello Project, Exxon's Santa Ynez Unit Project, Unocal's original Point Pedernales Project, and POPCO's Gas Plant Project, has accepted some societal risk related to the offsite transportation of NGL's. The County has also conducted a thorough study to assess this risk, and adopted Resolution 93-480 which includes a rigorous program of mitigations to reduce the hazards of NGL transportation to the maximum extent feasible. These mitigations were incorporated into the Point Pedernales project in 1994, and are a part of Torch's existing Development Plan.

The project would be beneficial in that it would abate the potential hazards associated with the continued reinjection of full production volumes of gas into the Lompoc Field. The project would replace the old Battles Gas Pipeline with a newer line between the HS&P and the Southern California Gas Company transmission line east of the Righetti Valve Box. Torch's gas plant would require less NGL storage onsite than would the approved Unocal gas plant. This reduction would, in turn, reduce the hazards associated with NGL storage. Also, the Torch gas plant proposes fewer components than the approved Unocal gas plant at 12 MMSCFD. This difference reduces the associated risk of upset associated with component failure for the proposed project in comparison to the approved project. The project would

provide a regional benefit by making consolidated gas processing facilities available to producers in the Orcutt Hill and Casmalia Oil Fields.

For all of these overriding considerations, the safety hazards and short-term visual impacts associated with this project are deemed acceptable.

2.8 Environmental Reporting And Monitoring Program

Public Resources Code 21081.6 requires the County to adopt a reporting or monitoring program for the changes to the project which it has adopted or made a condition of approval in order to mitigate or avoid significant effects on the environment. The Planning Commission finds that:

The approved project description and conditions of approval, with their corresponding permit monitoring requirements, are hereby adopted as the monitoring program for this project. The monitoring program consists of continuation of the Environmental Quality and Assurance Program (EQAP) already in place for the Torch Point Pedernales Project, and is designed to ensure compliance with all conditions during project implementation.

ATTACHMENT B: CONDITIONS OF APPROVAL

Torch Gas Plant Project
94-DP-027 RV01

The following conditions are proposed to be modified for this project:

A-6	Project Description and Modifications
A-11	Owner Liability
A-12	Capacity
A-21	Consolidated Gas Plant Siting Study
B-1	Construction Review by SSRRC
F-1	Runoff Water Quality Monitoring Program
H-6	Landscape Performance Security
H-17	Relocation of Badgers
H-26	Oak Tree Replacement Plan
H-27	Brown-Headed Rush
K-3	Construction Hours and Noise Limitations
L-1	Board of Architectural Review Approval
O-7	Mitigation Plan for Impacts to County Roads
O-8	Construction Equipment Parking
O-10	Limitations on Truck Trips
P-2	Safety Inspection, Maintenance and Quality Assurance Program
P-22	Underground Pipeline Warning Marker
P-23	HS&P Phased NGL Transport
R-2	Site Restoration
S-9	Consolidation of HS&P to Orcutt Pipeline Segment

KEY TO PROPOSED CONDITION LANGUAGE CHANGES:

Underline = Staff proposed additions not previously considered by the P/C
Strikeout = Staff proposed deletions not previously considered by the P/C