3.9 PUBLIC HEALTH AND SAFETY

This section describes the existing setting and regulatory environment for public health and safety issues related to hazardous materials handling and storage and potential rupture or explosion of the natural gas pipeline and facilities. The section also provides a brief overview of the safety features of the proposed project and project alternatives and relevant state and federal safety requirements. CPUC examined potential public health impacts from using hazardous materials at the project site or the potential accidental release of hazardous materials. CPUC also examined the potential hazards posed to life and property in case of a rupture or explosion of the proposed natural gas facilities. Section 3.6, "Transportation and Circulation," discusses potential disruption of emergency vehicle access during construction of the project. Section 3.11, "Public Services and Socioeconomics," discusses public safety concerns related to potential increased demand for emergency response services, including law enforcement and fire protection.

3.9.1 ENVIRONMENTAL SETTING

SENSITIVE RECEPTORS IN THE PROJECT VICINITY

Development of the proposed project and project alternatives involves construction of several natural gas facilities and approximately 33 miles of interconnecting pipeline through mostly rural areas in San Joaquin and Sacramento Counties. Residences located near possible construction areas and facility operations are considered sensitive receptors.

PROJECT CHARACTERISTICS

Hazardous Materials

Heavy equipment and several hazardous materials would be expected along the construction corridor and stored at the project sites. The following materials would be required daily or on a job-specific basis at the facilities:

- methanol;
- methyl mercaptan;
- lubricants and solvents; and
- corrosion inhibitors.

Project operations would be expected to generate approximately 1,000 gallons of liquid hazardous waste per year, primarily in the form of used oil and miscellaneous waste (e.g., small quantities of oily rags, tri-ethylene glycol filters, oil filters).

Safety Programs

Measures incorporated into the project are designed to prevent surface water and groundwater pollution. These measures include secondary containment structures and leak detectors. Additionally, LGS must comply with the requisite safety management programs by instituting the following plans and programs which are described in Chapter 2, "Project and Alternatives Description":

- operations and maintenance plan (includes inspection program);
- damage prevention program;
- emergency response plan;
- hazardous materials release response plan;
- fire prevention plan;
- fire fighting training program;
- employee drug testing program;
- safety program;
- stormwater pollution prevention plan; and
- groundwater monitoring program.

The project includes operational controls that are designed to protect employees, the public, and the environment by including modern gas control systems that enhance operational efficiencies and provide for greater safety. Primary control room equipment would include personal computers and programmable logic controllers, which would provide automation of control and monitoring functions. Other features of the project include:

- Storage wells would be metered to allow proper monitoring of the characteristics and performance of the gas storage reservoir. Wellhead emergency shutdown valves would be provided, as well as a master emergency shutdown valve where the 30-inch-diameter pipeline enters the separation facility.

- Gas, fire, and vibration sensors would monitor all equipment at the compressor facility and would be able to shut down the facility automatically if unusual conditions are detected. An automatic call-out system would be used to contact personnel in emergency situations.

- Fire prevention and response in the compressor facility would include smoking area restrictions, work area restrictions, firefighting equipment, fire detection equipment or sensors near pumping equipment, and ultraviolet ray detectors on heaters and compressors.

- The compressor and separator facilities would be connected to a cathodic protection system. Pipelines would be cathodically protected against corrosion and electrically isolated from all structural supports. Insulating flanges would be installed at all intersections with other pipelines.

- Flow, temperature, and gas pressure would be monitored between the PG&E Line 401 and Line 196 interconnects, the compressor and separation facilities, and wellheads. The presence of excessive heat or gas in the compressor facility would be monitored.

- At the PG&E meter stations, a gas chromatograph would monitor gas composition and a calorimeter would measure heating valves. The transmission pipeline would be installed with a leak detection system. Pipeline markers that identify the number to call in case of accidental damage would be placed at intervals along the transmission line route.

NATURAL GAS TRANSPORTATION AND SAFETY

Chapter 49 Part 192 of the Code of Federal Regulations prescribes federal safety standards for transportation of natural gas by pipeline. One of the key pipeline design factors is the class location. The class location unit is defined by the number of dwelling units or high occupancy buildings or open areas within 220 yards of the centerline per mile of pipeline. Based on this definition, natural gas pipelines are classified as follows:

- A Class 1 location has 10 or fewer dwelling units per mile.

- A Class 2 location has more than 10 but less than 46 dwelling units per mile.

- A Class 3 location has 46 or more dwelling units per mile, or is located within 100 yards of either a building, such as a school, restaurant, or other business, or a small, well-defined outside area, such as a playground, recreation area, or other place of public assembly, that is occupied by 20 or more persons on at least 5 days a week for 10 weeks in any 12-month period.

- A Class 4 location is in any class location unit where buildings with 4 or more stories above ground are prevalent.

A design factor (the ratio of the maximum allowable operating pressure relative to the design pressure) as determined by the class location is used during pipeline engineering to provide a factor of safety. The safety factor (the reciprocal of the design factor) for Classes 1 through 4 are 1.39, 1.67, 2, and 2.5, respectively. For example in a Class 1 location, the pipeline would be designed to withstand a pressure of 139 percent of the maximum allowable operating pressure. Generally the higher the design factor, the thicker the walls of the pipeline (although the grade or alloy of the steel may be altered to provide greater strength). Overall, the design factor is greatest when a pipeline is located in high density residential areas, or proximate to schools, businesses, or other high use public open areas. As land use changes or densities increase, the Applicant will be required to upgrade the pipeline to meet the appropriate class location or reduce the maximum operating pressure to remain in compliance with federal safety requirements (49 CFR 192).

Historically, natural gas transmission and distribution lines and associated facilities have a very low probability of a full-scale rupture that could lead to an explosion resulting in property damage or fatalities. The most recent data available from U.S. Department of Transportation - Office of Pipeline Safety for 1985 through the present indicate the following:

- There are approximately 1.7 million miles of natural gas transmission pipeline (which include pipelines of a diameter and an operating pressure similar to those of the proposed LGS pipeline) and distribution pipeline (which are smaller in diameter and operate at a lower pressure than the proposed LGS pipeline) in the United States subject to U.S. Department of Transportation jurisdiction.

- There were 1,302 reportable incidents (significant leaks) in the nation on natural gas transmission projects (similar to the proposed project) during the data collection period. The causes of the leaks were identified as follows (totals less than 100 percent because of rounding):
  - 527 (40 percent) were related to various construction, operating errors, or other unspecified causes (i.e., improper welding or maintenance);
  - 368 (28 percent) were caused by a third party, 62 of which occurred on pipelines that were unmarked;
  - 300 (23 percent) were caused by corrosion, 261 of which were related to uncoated pipelines; and
  - 107 (8 percent) were caused by natural or geologic forces (eight by subsidence, four by flooding, three by channel scour).

- Of the 1,302 incidents, 880 (68 percent) were on projects that were constructed before the current Minimum Federal Safety Standards (49 CFR 192) were promulgated in 1970 (35 Federal Register 13257) and therefore on pipelines greater than 30 years old.

- Of the 1,302 incidents, most leaks were repaired or made safe in less than 1 day:
  - 540 (41 percent) were repaired or made safe in less than 1 hour,
  - 1,062 (81 percent inclusive) were repaired or made safe in 3 hours or less, and
  - 36 incidents (less than 3 percent) took 24 hours or greater to repair or make safe.

- Of the 1,302 incidents, 35 were reported in California, and one of these occurred in San Joaquin County (none occurred in Sacramento County).
- The only reported incident in San Joaquin County was a leak from an odorant pump seal that was repaired or made safe in less than 2 hours.

From the data presented, it can be concluded that transmission pipelines that have been recently constructed in accordance with minimum federal safety standards are coated to prevent corrosion, are well marked, and are least prone to leaks or other accidents. In the Delta region of California, where there is risk of subsidence,

flooding, channel scour, and seismic activity, there has not been a reported incident of pipeline rupture or leak related to natural forces.

3.9.2 REGULATORY SETTING

A hazardous material is defined by the California Environmental Protection Agency, Department of Toxic Substances Control as a material that poses a significant present or potential hazard to human health and safety or the environment if released because of its quantity, concentration, or physical or chemical characteristics (26 California Code of Regulations 25501). For the purposes of this analysis, hazardous materials include the raw materials and products listed above, and hazardous waste includes waste generated by facilities and businesses or waste material remaining onsite as a result of past activities. Applicable regulations and policies considered relevant to the proposed project and project alternatives are summarized below.

FEDERAL REGULATIONS

The principal federal regulatory agency responsible for the safe use and handling of hazardous materials is the U.S. Environmental Protection Agency. Two key federal regulations pertaining to hazardous wastes are described below. Other applicable federal regulations are contained primarily in Titles 29, 40, and 49 of the Code of Federal Regulations.

Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act enables the U.S. Environmental Protection Agency to administer a regulatory program that extends from the manufacture of hazardous materials to their disposal, thus regulating the generation, transportation, treatment, storage, and disposal of hazardous waste at all facilities and sites in the nation.

Comprehensive Environmental Response, Compensation, and Liability Act

The Comprehensive Environmental Response, Compensation, and Liability Act, also known as Superfund, was passed to facilitate the cleanup of the nation's toxic waste sites. In 1986, Superfund was amended by the Superfund Amendment and Reauthorization Act Title III (community right-to-know laws). Title III states that past and present owners of land contaminated with hazardous substances can be held liable for the entire cost of the cleanup, even if the material was dumped illegally when the property was under different ownership.

STATE REGULATIONS

California regulations are equal to or more stringent than federal regulations. The U.S. Environmental Protection Agency has granted the State of California primary oversight responsibility to administer and enforce hazardous waste management programs. State regulations require planning and management to ensure that hazardous wastes are handled, stored, and disposed of properly to reduce risks to human health and the environment. Several key laws pertaining to hazardous wastes are discussed below.

Hazardous Materials Release Response Plans and Inventory Act of 1985

The Hazardous Materials Release Response Plans and Inventory Act, also known as the Business Plan Act, requires businesses using hazardous materials to prepare a plan that describes their facilities, inventories, emergency response plans, and training programs. Hazardous materials are defined as raw or unused materials that are part of a process or manufacturing step. They are not considered to be hazardous waste. Health concerns pertaining to the release of hazardous materials, however, are similar to those relating to hazardous waste.

Hazardous Waste Control Act

The Hazardous Waste Control Act created the state hazardous waste management program, which is similar to, but more stringent than, the federal Resource Conservation and Recovery Act program. The act is implemented by regulations contained in Title 26 of the California Code of Regulations, which describes the following required aspects for the proper management of hazardous waste:

- identification and classification;
- generation and transportation;
- design and permitting of recycling, treatment, storage, and disposal facilities;
- treatment standards;
- operation of facilities and staff training; and
- closure of facilities and liability requirements.

These regulations list more than 800 materials that may be hazardous and establish criteria for identifying, packaging, and disposing of such waste. Under the Hazardous Waste Control Act and Title 26, the generator of hazardous waste must complete a manifest that accompanies the waste from the generator to the transporter to the ultimate disposal location. Copies of the manifest must be filed with the California Department of Toxic Substances and Control.

Emergency Services Act

Under the Emergency Services Act, the state developed an emergency response plan to coordinate emergency services provided by federal, state, and local agencies. Rapid response to incidents involving hazardous materials or hazardous waste is an important part of the plan, which is administered by the California Office of Emergency Services. The office coordinates the responses of other agencies, including the U.S. Environmental Protection Agency, the California Highway Patrol, regional water quality control boards, air quality management districts, and county disaster response offices.

Other Laws, Regulations, and Programs

Various other state regulations have been enacted that affect hazardous waste management, including:

- Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65), which requires labeling of substances known or suspected by the state to cause cancer; and

- California Government Code Section 65962.5, which requires the Office of Permit Assistance to compile a list of possibly contaminated sites in the state.

3.9.3 SIGNIFICANCE CRITERIA

Criteria for determining the significance of health and public safety impacts were developed based on questions contained in the environmental checklist form in Appendix G of the California Environmental Quality Act Guidelines and professional judgment. Based on the checklist questions, a project may have a significant effect on the environment if it would result in:

- the creation of a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;

- the creation of a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment;

- the impairment of or interference with a locally adopted emergency response plan or emergency evacuation plan; or

- incompatibility with laws and regulations managing hazardous materials.

3.9.4 IMPACTS OF THE PROPOSED PROJECT AND MITIGATION MEASURES

METHODOLOGY

Information regarding the use, storage, and disposal of hazardous materials and hazardous waste was obtained from the Applicant and from historical safety records. Because hazardous materials are strictly regulated, this analysis assumes that the proposed project and project alternatives would comply with all pertinent regulations regarding the presence, use, and storage of hazardous materials onsite and their transportation offsite. Noncompliance with these regulations would constitute a violation of law and would be subject to penalty. Unless otherwise noted, the methodology is the same for the analysis of alternatives.

IMPACTS

Impact 3.9-1: Potential for Public Health Hazard Involving the Use, Production, or Disposal of Hazardous Materials

Both construction and operation of the project facilities would involve the use of heavy equipment and hazardous materials that may result in hazardous conditions onsite. Consequently, several programs are incorporated into the proposed project to prevent pollution of surface water and groundwater and promote the health and safety of the workforce (see Chapter 2, "Project and Alternatives Description"). These programs include an operations and maintenance plan, a damage prevention program, an emergency response plan, a fire prevention plan, a hazardous materials release response plan, and a stormwater pollution prevention plan. The programs are required by law and require approval of several responsible agencies. Therefore, this impact is less than significant.

Mitigation Measures

None required.

Impact 3.9-2: Potential Risk to Public Safety and the Environment through Release of Emissions or Risk of Upset

Several hazardous materials are expected to be used and stored on the project site. Implementation of the hazardous materials release response plan (described in Chapter 2, "Project and Alternatives Description") would address public health and safety issues by providing safety measures, including release prevention measures; employee training, notification, and evacuation procedures; and adequate emergency response protocols and cleanup procedures. Potential air quality emission issues are described in greater detail in Section 3.5, "Air Quality." Compliance with regulations and requirements concerning the use and storage of hazardous materials will minimize the project's potential to threaten public safety and the environment. Therefore, this impact is less than significant.

Mitigation Measures

None required.

Impact 3.9-3: Potential Public Health Hazard Associated with Pipeline Rupture That Could Lead to an Explosion Resulting in Property Damage or Fatalities

Implementation of the proposed project would involve placing approximately 33 miles of underground pipeline on mostly agricultural land. The pipeline would pass within 220 yards of 74 homes. Based on the estimate of 1.7 million miles of gas pipelines in service, the rate of public injuries from pipeline safety incidents is 0.05 per 1,000 miles of pipeline per year. Applying this industrywide standard to the estimated 33 miles of pipeline proposed for this project would result in less than 0.02 injuries to the facility operators and the nearby public per year or approximately 0.5 injuries during the 30 year life of the project. It is important to note that much of the 1.7 million miles of gas pipeline is old and was constructed before the development of modern engineering designs and standards. Implementation of the project would create a risk of accidental rupture (e.g., agricultural operations or construction excavations) of the pipeline that could lead to an explosion resulting in property damage or fatalities, although natural gas pipelines and associated facilities are associated with very low accident rates. Because a limited possibility of an accident does exist, however, several measures have been incorporated into the project design (see Chapter 2, "Project and Alternatives Description") to avoid the accidental rupture of the pipeline. These measures include burial of the pipeline in exceedance of U.S. Department of Transportation standards, with additional cover as determined by future agricultural use such as deep ripping or as negotiated by the landowners to ensure safety during normal agricultural activities. Additionally, in accordance with regulations of the U.S. Department of Transportation's Office of Pipeline Safety, aboveground markers will be placed along the pipeline corridor (Brown, 1999). These markers will be placed within the line of sight along the pipeline corridor and identify the type of utility and a point of contact in case of emergency. In addition, the Applicant has committed to provide training and specialty equipment to local fire districts to effectively fight fires at the LGS facilities.

Because the compressor facility is located near an airport, there is also potential risk of aviation related accidents, such as a plane crash or skydiving accident, that could upset these facilities. The project would be in compliance with all applicable safety regulations of the Federal Aviation Administration and other agencies. Although a plane crash could cause substantial damage to the facilities, causing the release of a small amount of natural gas and possibly a fire, the automated shutdown equipment and isolation valves would minimize the release of gas and limit the duration of a fire. The automated shut down equipment and isolation valves (see Chapter 2, "Project and Alternatives Description") are triggered by pressure loss, fire, vibration, or other variables that fall outside normal operating conditions. A skydiving accident, such as a parachutist hitting the facility with or without a deployed parachute, would be unlikely to have a substantial effect on the facilities. The safety factors designed into the aboveground pipeline and valves make it unlikely that there would be a gas release. However, the electric service may be interrupted, the external compressor cooling facilities, compressor exhaust stacks, and other light duty facilities may be damaged, which would trigger the automated shutdown system. Although the possibility of accidents can never be ruled out entirely,

the pipeline will be designed to modern engineering standards and to exceed all safety requirements Therefore, this impact is less than significant.

Mitigation Measures

None required.

Impact 3.9-4: Potential Peat Fire Hazard During Pipeline Construction

In the Delta portion of the pipeline alignment, the pipe would be buried in peat soils that are combustible. There is a slight possibility that pipeline joint preparation and welding of the pipeline may initiate a peat fire causing harmful air emissions and damage to property. A peat fire may burn slowly or smolder unnoticed for days and spread laterally below the ground surface. If not extinguished immediately, a fire may grow to a size that can only effectively be controlled by flooding the land, which could have secondary effects on agricultural activities, such as direct crop loss or interference with seed bed preparation that limits the potential crop yield. Because of the potential direct and secondary effects of a peat fire this impact is significant. Implementation of Mitigation Measure 3.9-1 will reduce this impact to a less-than-significant level.

Mitigation Measure 3.9-1: Develop and implement a peat fire prevention plan

The project Applicant shall develop and implement a peat fire prevention plan in addition to the fire protection plan required by the U.S. Department of Transportation Office of Pipeline Safety. The plan shall be developed in consultation with the State Fire Marshall or other responsible fire fighting agencies. The plan shall include specific measures to prevent ignition and spread of a peat fire. These measures may include, but are not limited to:

- coordinating construction with local fire districts;
- wetting the soil or covering the ground with fire proof tarps prior to grinding or welding;
- wetting the soil after welding;
- wetting the soil at each welding site at the end of the work day;
- dedicating a water truck to fire fighting purposes for each construction spread working in peat soils; and
- patrolling the work area 24 hours a day for evidence of a fire.

Monitoring Action — LGS will submit a peat fire prevention plan to CPUC. CPUC will monitor construction activities to ensure compliance with the plan.

Responsibility — CPUC and LGS

Timing — Active construction areas will be patrolled daily.

3.9.5 IMPACTS OF THE PUBLIC RIGHT-OF-WAY ROUTE ALTERNATIVE AND MITIGATION MEASURES

IMPACTS

The effects of the Public Right-of-Way Route Alternative on health and public safety would be essentially the same as those described for the proposed project. The only change from the proposed project is the route of the pipeline and the location of the compressor. Because the pipeline would follow a different route, different land owners would have the potential to be exposed to hazardous materials or wastes. This alternative would pass within 220 yards of 140 residences or approximately twice that of the proposed project.

This alternative would use and store the same types and quantities of hazardous materials and generate the same quantity of hazardous wastes as the proposed project. Although a greater number of residences could potentially be exposed to hazardous materials or accidents, this alternative would be subject to all the same hazardous materials laws, rules, and regulations described for the proposed project. This pipeline alternative would also be subject to the same pipeline safety and operation rules and regulations described for the proposed project in Section 3.9.1, "Environmental Setting."

As described for the proposed project, there exists the slight potential for a peat fire to occur as a result of joint preparation and welding in areas of peat soils. Peat fires and their control could have both direct and secondary effects on adjacent agricultural operations. This impact is significant. Implementation of Mitigation Measure 3.9-1 will reduce this impact to a less-than-significant-level.

Mitigation Measure 3.9-1: Develop and implement a peat fire prevention plan

Implementation of Mitigation Measure 3.9-1, described above, would reduce this impact to a less-than-significant level.

3.9.6 IMPACTS OF THE EXISTING PIPELINE CORRIDOR ALTERNATIVE AND MITIGATION MEASURES

IMPACTS

The effects of the Existing Pipeline Corridor Alternative on health and public safety would be essentially the same as those described for the proposed project. The only change from the proposed project is the route of the pipeline and the location of the compressor. Because the pipeline would follow a different route, different landowners would have the potential to be exposed to hazardous materials or wastes. This alternative would pass within 220 yards of 145 residences, or approximately twice that of the proposed project.

This alternative would use and store the same types and quantities of hazardous materials and generate the same quantity of hazardous wastes as the proposed project. Although a greater number of residences could potentially be exposed to hazardous materials or accidents, this alternative would be subject to all the same hazardous materials laws, rules, and regulations described for the proposed project. This pipeline alternative would also be subject to the same pipeline safety and operation rules and regulations described for the proposed project in Section 3.9.1, "Environmental Setting."

As described for the proposed project, there exists the potential for a peat fire to occur as a result of joint preparation and welding in areas of peat soils. Peat fires and their control could have both direct and secondary effects on adjacent agricultural operations. This impact is significant. Implementation of Mitigation Measure 3.9-1 will reduce this impact to a less-than-significant-level.

Mitigation Measure 3.9-1: Develop and implement a peat fire prevention plan
Implementation of Mitigation Measure 3.9-1, described above, would reduce this impact to a less-than-significant level.

3.9.7 IMPACTS OF THE COMPOSITE ROUTE ALTERNATIVE AND MITIGATION MEASURES

IMPACTS

The effects of the Composite Route Alternative on public health and safety would be essentially the same as those described for the proposed project. The only change from the proposed project is the route of the pipeline and the location of the compressor. Because the pipeline would follow a different route, different landowners would have the potential to be exposed to hazardous materials or wastes. This alternative would pass within 220 yards of 170 residences, or approximately 2.5 times that of the proposed project.

This alternative would use and store the same types and quantities of hazardous materials and generate the same quantity of hazardous wastes as the proposed project. Although a greater number of residences could

potentially be exposed to hazardous materials or accidents, this alternative would be subject to all the same hazardous materials laws, rules, and regulations described for the proposed project. This pipeline alternative would also be subject to the same pipeline safety and operation rules and regulations described for the proposed project in Section 3.9.1, "Environmental Setting."

As described for the proposed project, there exists the potential for a peat fire to occur as a result of joint preparation and welding in areas of peat soils. Peat fires and their control could have both direct and secondary effects on adjacent agricultural operations. This impact is significant. Implementation of Mitigation Measure 3.9-1 will reduce this impact to a less-than-significant-level.

Mitigation Measure 3.9-1: Develop and implement a peat fire prevention plan

Implementation of Mitigation Measure 3.9-1, described above, would reduce this impact to a less-than-significant level.

REFERENCES— PUBLIC HEALTH AND SAFETY

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