Chapter 2. Clarification of Major Issues

A few issues relating to the proposed Lodi Gas Storage project were raised by a number of commenters during the public review of the draft EIR. These issues include the potential for electric motors to be used for gas compression, concerns about the use of eminent domain by LGS, the effects of continuing subsidence in the Delta on the proposed pipeline, the venting of gas from the compressor facility under both normal and emergency circumstances, the consistency of the proposed project with the local Airport Land Use Plan (ALUP), and safety. The paragraphs below address to these issues and are intended to provide clarifications to the draft EIR where major corrections or changes in specific language were not required.

ELECTRIC-DRIVE COMPRESSION

Several commenters on the draft EIR indicated that although the compressor facility would comply with San Joaquin Valley Unified Air Pollution Control District requirements, additional mitigation should be imposed because local residents would still be exposed to substantial emissions. Commenters suggested that the Applicant should be required to install electricity-driven compressors to eliminate local air quality impacts and to reduce potential noise impacts.

The Applicant is designing the compressor facility to meet all the air district requirements. Because the air district is the agency with primary responsibility for and jurisdiction over air quality issues in the project area, the EIR relies on district significance thresholds as significance thresholds under CEQA. Several meetings with air district representatives confirmed the validity of this approach. The Applicant will be required to obtain permits from the air district, and the air district will have final approval and decision-making authority with regard to air pollution control requirements.

In response to these concerns, the CPUC also conducted additional air quality modeling of ozone precursors. Ozone precursors include reactive organic gases (ROG) and oxides of nitrogen. Key ROG constituents were modeled as part of the toxic contaminants impact analysis discussed in Chapter 3.5 of the draft EIR. Impacts were found to be less than significant. Oxides of nitrogen also can be modeled using the same extremely conservative worst-case modeling approach used for toxic contaminants in the draft EIR. Using a worst-case assumption that all oxides of nitrogen are produced as nitrous oxide (which is not the case) and using a very conservative modeling approach, at the nearest sensitive receptor, nitrous oxide concentrations are expected to be between 1% and 2% of the applicable state and federal ambient air quality standards. These levels are not considered to be substantial and are likely highly overestimated given the conservative modeling assumptions.

Regarding potential noise impacts, the analysis conducted for the draft EIR indicates that no significant noise impacts would result. Although electric-drive compressors may produce less noise than gas-driven compressors, the noise effects of proposed project operations with gas-fired engines were not found to be so great in the draft EIR that they warrant the requirement to install electric motors for compression as mitigation under CEQA.

In addition, the CPUC's consultant contracted with an independent consulting firm with specific expertise in the areas of energy and economics (Henwood Energy Services, Inc.) to evaluate information regarding cost and reliability of electricity-driven compression. This independent evaluation largely concurred with the information provided by the Applicant. Although it is not possible (and not required under CEQA) to conduct a complete economic evaluation of the project, the cost of electricity and the reliability of electric power at the site are major issues that could have a substantial effect on the economic viability of the project. The independent review concluded the following:

- Three major factors affect the decision of the type of gas compression to be used at the compressor facility: reliability, emissions, and economic feasibility. Of these factors, project reliability appears to be the central issue because it affects the basic objective of the gas storage project, which is to deliver natural gas at critical time events. Consequently, this factor weighs heavily in the Applicant's analysis and in its recommendation for gas engine-driven compression.

- LGS's conclusion that gas engine-driven compression is more reliable than electric motor-driven compression is generally reasonable primarily because the peak demand for compression coincides with peak demand for electricity on the entire regional electric system when the probability of an outage is relatively high.

- LGS's findings regarding the emissions that would be attributable to electric generation required to provide power for the project may not be complete. The independent analysis found that the generation of electricity at a major regional power plant may have fewer emissions than discussed in LGS's analysis. (Note that the EIR analysis did not attempt to make any such comparisons. No credit was provided in the analysis for emissions that would result from the generation of electricity required for gas compression.)

- The economic balance of a project such as this is complex and dependent on numerous factors, including the capital cost of equipment, the cost of fuel or energy, the cost of electrical service extension, and the type of service contracts ultimately held by LGS.

In summary, the EIR determined, based on available information, that the potential air quality and noise impacts associated with the compressor facility were not significant under CEQA. In addition, requiring the installation of electric motors for gas compression could affect the viability of the project. Therefore, no additional mitigation has been proposed.

EMINENT DOMAIN

Many parties who commented on the draft EIR expressed concerns about the use of eminent domain by the Applicant to acquire property rights for implementation of the proposed project. This section is intended to provide additional information about eminent domain and the processes associated with it, particularly in light of the recent enactment of Senate Bill (SB) 177, which affects the ability of private utilities to exercise eminent domain authority. It is important to note that SB 177 became effective on January 1, 2000, and that the CPUC has only begun to establish regulations regarding its implementation. In addition, the draft EIR did not address private negotiations between the Applicant and landowners or the use of eminent domain.

If the project is approved, on receipt of a Certificate of Public Convenience and Necessity (CPCN), the Applicant would become a public utility with the right to "petition before the CPUC to exercise eminent domain over a specific parcel of property "necessary for the construction and maintenance" of its project. In general, acquisition of the property rights necessary for the construction, operation, and maintenance of the LGS project is subject to private negotiations between the Applicant and affected landowners. The eminent domain process is a procedure in which the courts determine the fair compensation for the necessary land when agreement is not reached through private negotiations.

Eminent Domain Process

The California Constitution provides that the power of eminent domain may be exercised only for a public use. The legislature designates specific public uses. It has generally determined that a gas corporation, such as LGS, may use this power as necessary for the "construction and maintenance of its gas plant". The owner of the property that is to be devoted to public use must be paid just compensation by the condemning entity. Unless otherwise limited by statute, the authority to acquire property by eminent domain extends to any interest in property necessary for public use, including submerged lands, rights in water, and subsurface rights.

The formal public utility eminent domain proceeding takes place in the superior court of the county where the property to be condemned is located. An entity is not allowed to simply "take" land necessary for implementation of a project. At a minimum, the eminent domain process includes the following steps:

- Public utility files action in superior court and provides notice of action to affected property owners.
- Public utility may obtain a court order authorizing possession before judgment if certain conditions are met, including payment of a deposit in the probable amount of the just compensation award.
- Parties enter into pretrial settlement negotiations with the possibility of a settlement.

- If there is no pretrial settlement, the eminent domain trial begins.

- A trial with a jury (unless the right is waived) is held.

- The court makes findings as to whether a recognized public use exists and as to the need for condemnation of specific property.

- The jury supplies the determination as to the amount of compensation to be paid to the affected landowner.

- After the required findings are made, the court enters the judgment that determines the right to take the property and sets the amount of compensation to be paid.

Senate Bill 177

In October 1999, the governor signed SB 177 (enacting new Public Utilities Code Section 625), which adds an additional procedural requirement to the eminent domain process. The CPUC has prepared a guidance manual on the SB 177 process. This manual is included as Appendix A to this final EIR. The following discussion of the newly required process is summarized from SB 177:

- Public utility files a petition or complaint with the CPUC to begin the SB 177 process with respect to any necessary property or properties that are not subject to a privately negotiated access agreement.

- The CPUC holds an adjudicatory hearing, which includes an opportunity for the public to participate, in the local jurisdiction (i.e., the city or county where the property sought to be acquired is located) that would be affected by the proposed condemnation.

- The CPUC makes a finding as to whether the proposed condemnation would serve the public interest. The CPUC may find that the public interest is served if the public utility demonstrates either of the following:

    - the proposed condemnation is necessary to provide service as a provider of last resort to an unserved area; or

    - the public utility demonstrates all of the following:

        1. the public interest and necessity require the project;

        2. the property to be condemned is necessary for the proposed project;

        3. the public benefit of acquiring the property by eminent domain outweighs the hardship to the owners of the property; and

4. the proposed project is located in a manner most compatible with the greatest public good and least private injury.

SUBSIDENCE

Some commenters on the draft EIR were concerned about subsidence of peat lands in the Delta. The comments focused on three primary issues: interference with agricultural activities, reduction in levee stability, and rate of subsidence.

The draft EIR addressed potential impacts on agriculture caused by potential subsidence and recommended Mitigation Measure 3.3-1. In summary, this measure requires that the Applicant:

- prepare and submit a report to the CPUC identifying specifically where soil conditions could result in future interference with agricultural activities;
- annually, for the life of the project, monitor and report to the CPUC the depth of the pipeline;
- implement remedial actions within 1 year of identifying that the pipeline is not deep enough; and
- remove the pipeline from affected lands upon abandonment of the project.

Additionally, Mitigation Measure 3.4-1 requires that the Applicant weight or anchor the pipeline in areas where saturated soils would not prevent the pipeline from floating. The Applicant must submit the engineering designs and supporting soil studies to the CPUC for review.

The draft EIR considers that levee stability issues are effectively addressed by the engineering requirements described in Section 2.3.2 and Chapter 3.4. The State Lands Commission, State Reclamation Board, and local reclamation districts have oversight responsibilities to ensure that projects crossing under, over, or through waterways or levees are safe. Because these agencies are responsible agencies under CEQA and have the special expertise to evaluate the project and provide technical engineering input to the project design, the EIR relies on measures that these agencies may require of the Applicant to make the finding that no significant impacts would result from project implementation.

The draft EIR adequately identified issues associated with subsidence and its implications on project design and operation, and further information regarding site-specific rates of subsidence would not alter the impact conclusions. However, numerous commenters were concerned about the frequency that the LGS may need to implement remedial activities to ensure that the pipeline did not interfere with ongoing agricultural activities. Remedial actions would likely have the same effects as initial construction of the project, including potential loss of crops, temporary interference with irrigation and drainage facilities, and potential interference with access to farmlands.

In areas with high subsidence rates, the pipeline initially can be buried at a depth that would preclude potential interference with agricultural practices. Because of the shallow depth to groundwater and the low strength of the soil materials in these areas, it may not be possible to excavate a trench deep enough to keep the pipeline at a minimum of 4 feet below ground surface during the entire useful life of the project; and the pipeline may need to be reburied periodically.

Because of the comments received on this issue, additional information developed for the CALFED Bay-Delta Program (CALFED 1999) is provided below to more clearly explain the sources of soils subject to subsidence, the causes of subsidence, and the current rates of subsidence.

The present-day Sacramento-San Joaquin River Delta deposits began to form during the end of the last glacial period, 7,000-11,000 years ago, as the sea level began to rise. As the Delta evolved, tributaries formed a series of channels, natural levees, berms, islands, and sloughs. The major rivers periodically incised then were backfilled as the climate changed. Tules, reeds, and other fibrous aquatic plants growing at the water level were preserved as peat beds when sea levels rose. Under natural conditions, the Delta islands received fine- and course-grained sediments during river floods. As a result, the sedimentary profile includes interbedded layers of sand, silt, clay, and peat of varying thickness. The complexity of subsurface conditions is reflected in various soils encountered in the Delta: mineral soils, mineral organic complexes, organic soils, and peat.

Before 1850, the Delta was a tidal wetland. The Delta was reclaimed and drained for agriculture in the late 1800s and early 1900s. The drained islands have undergone continuous subsidence since they were initially drained. Subsidence is the downward movement of the ground surface over time. Delta subsidence is caused primarily by near-surface processes, including consolidation, shrinkage, decomposition, wind erosion, and burning.

Subsidence is a direct result of island reclamation. Reclamation and dewatering of the islands causes shrinkage and decomposition of organic soil materials. Shrinkage occurs with initial dewatering. Fine-textured organic soils and peat can shrink 50% or more in volume. Longer term subsidence is sustained by decomposition. Recent studies found that:

- decomposition rates are proportional to soil temperature: oxidation rates increase with increased temperature;
- decomposition rates are proportional to organic content: soils with a greater percentage of organic content oxidize at a higher rate;
- there is an optimal moisture content for decomposition: rates decrease if the soil moisture is very high or very low;
- drainage and farming increase decomposition;
- decomposition rates are not affected by crop type;

- decomposition rates decrease with time as the mineral proportion of the soil increases with time;

- there appears to be no correlation between depth of peat and subsidence rates; and

- there is a direct correlation between depth to water table and subsidence rates: the higher the water table, the less subsidence (Deveral and Rojstaczer 1996).

Historically, time-averaged subsidence rates have ranged from 0.5 inch to 5 inches per year. Recent research indicates that island subsidence rates are slowing. From 1990 to 1992, subsidence rates were measured continuously on Sherman and Jersey Islands and on Orwood Tract and determined to be 0.2, 0.24, and 0.32 inch per year, respectively (Deverel and Rojstaczer 1996). As part of the CALFED program, numerous samples were taken from Delta islands to determine the current rate of subsidence and the depth of peat soils. Figures 1, 2, and 3 show areas that would be affected by the CPUC's Preferred Project on Staten and Tyler Islands, Brannan and Andrus Islands, and Sherman Island, respectively. The figures show where subsidence is greater than 1.5 inches per year and where the peat is greater than 10 feet deep.

In conclusion, current subsidence rates are generally less than historic rates. The information reviewed and summarized in this section supports the information, impact analyses, and mitigation measures presented in the draft EIR.

COMPRESSOR FACILITY "VENTING"

Numerous commenters on the draft EIR were concerned about regular releases of gas to the atmosphere from the compressor facility. Normal operation of such facilities requires that portions of the system be depressurized at regular intervals for maintenance purposes. In addition, emergency events can result in the release of relatively large quantities of natural gas at high pressures. The comments focused on three primary issues: noise, odor, and false emergency response alarms. The issue of facility depressurization is discussed on page 2-20 of the draft EIR. The depressurization facilities were not discussed in further detail in the draft EIR because detailed engineering designs had not been finalized and the Applicant had committed to meeting various noise and air quality criteria (Section 2.4.13) that ensured that any impacts associated with these operations would be less than significant.

Since publication of the draft EIR, the Applicant has performed additional engineering and design work and has provided this additional information to the CPUC. Based on this additional work, the Applicant has determined that all normal depressurization events will be burned or "flared". The flare tips will be located in an excavated area on the compressor facility site. This excavated area would be approximately 15 feet deep, and the excavated material would be placed around the pit to form a berm 10 feet above the existing ground surface and 25 feet above the bottom of the flare pit to further provide both noise and visual attenuation. The flame from the flare system associated with normal operations would not rise above the berm surrounding the flares and therefore should not

generate false emergency response calls. Engineering estimates indicate that noise produced by this approach would be less than the noise significance threshold established in Section 3.10 of the draft EIR; therefore, impacts would be less than significant.

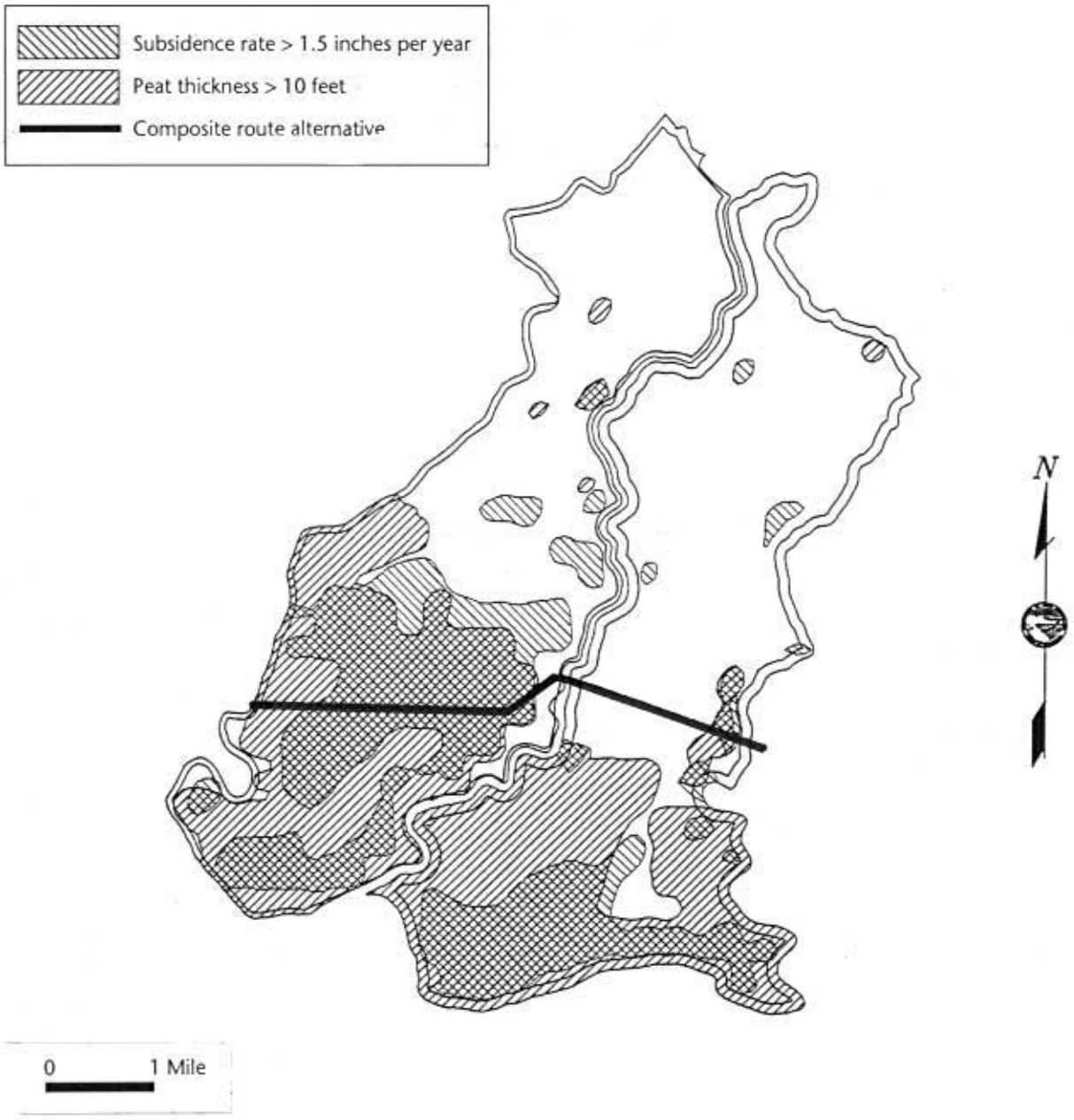
Flaring these repair and maintenance depressurization events will result in a minor increase in emissions from the compressor facility as compared to emissions described in the draft EIR. Annual emissions of nitrous oxide and carbon monoxide are estimated to increase by approximately 0.5% to 1.5%, depending on the constituent. This extremely small increase in annual emissions does not affect the conclusions reached in the air quality analysis in Section 3.5 of the draft EIR.

Occurrences of emergency depressurization cannot be predicted but are expected to occur very infrequently (on the order of once every 5-10 years). The Applicant has determined that emergency releases will also be flared. Each emergency depressurization event will result in emissions that are approximately 0.1% of the annual emission discussed in Section 3.5 of the draft EIR. Again, this extremely small increase in emissions anticipated to occur very infrequently does not affect the conclusions reached in the air quality analysis in Section 3.5 of the draft EIR.

Emergency depressurization will result in the release of larger quantities of gas to the flare system. The flare would not rise higher than the landscaping surrounding the project site and therefore would not be highly visible. Under these circumstances, emergency notification will be made to all appropriate agencies. During an emergency depressurization event, outdoor noise levels at the nearest sensitive receptor would be approximately 55-60 dBA This sound level exceeds the San Joaquin County Noise Ordinance limits and the significance thresholds established in Section 3.10 of the draft EIR. However, the CPUC has determined that potential noise impacts associated with emergency depressurization events are less than significant because such events:

- would not be excessively loud at the nearest sensitive receptor,
- are not predictable,
- are anticipated to occur infrequently (once every 5-10 years),
- are expected to last no more than 1 hour and noise levels would decline during this period as pressure in the system decreased, and
- are related to emergency events.

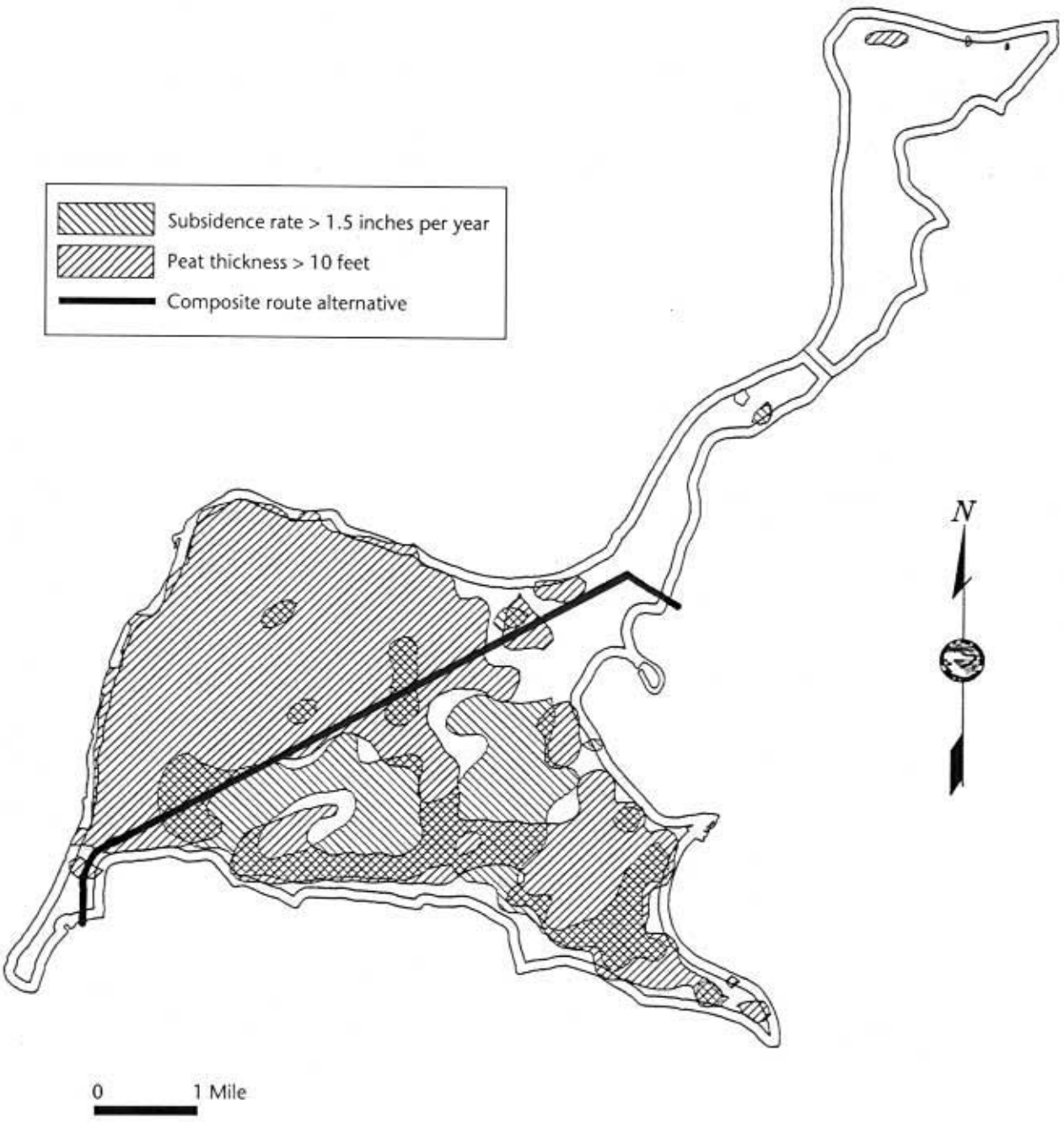
Although this impact has been determined to be less than significant, the CPUC has proposed an additional mitigation measure to ensure that potential noise effects are minimized as committed to by the Applicant. See Chapter 3, “Revisions to the Draft EIR”, of this final EIR for the CPUC’s proposed additional mitigation measure.



Source: DWR 1999.

Jones & Stokes

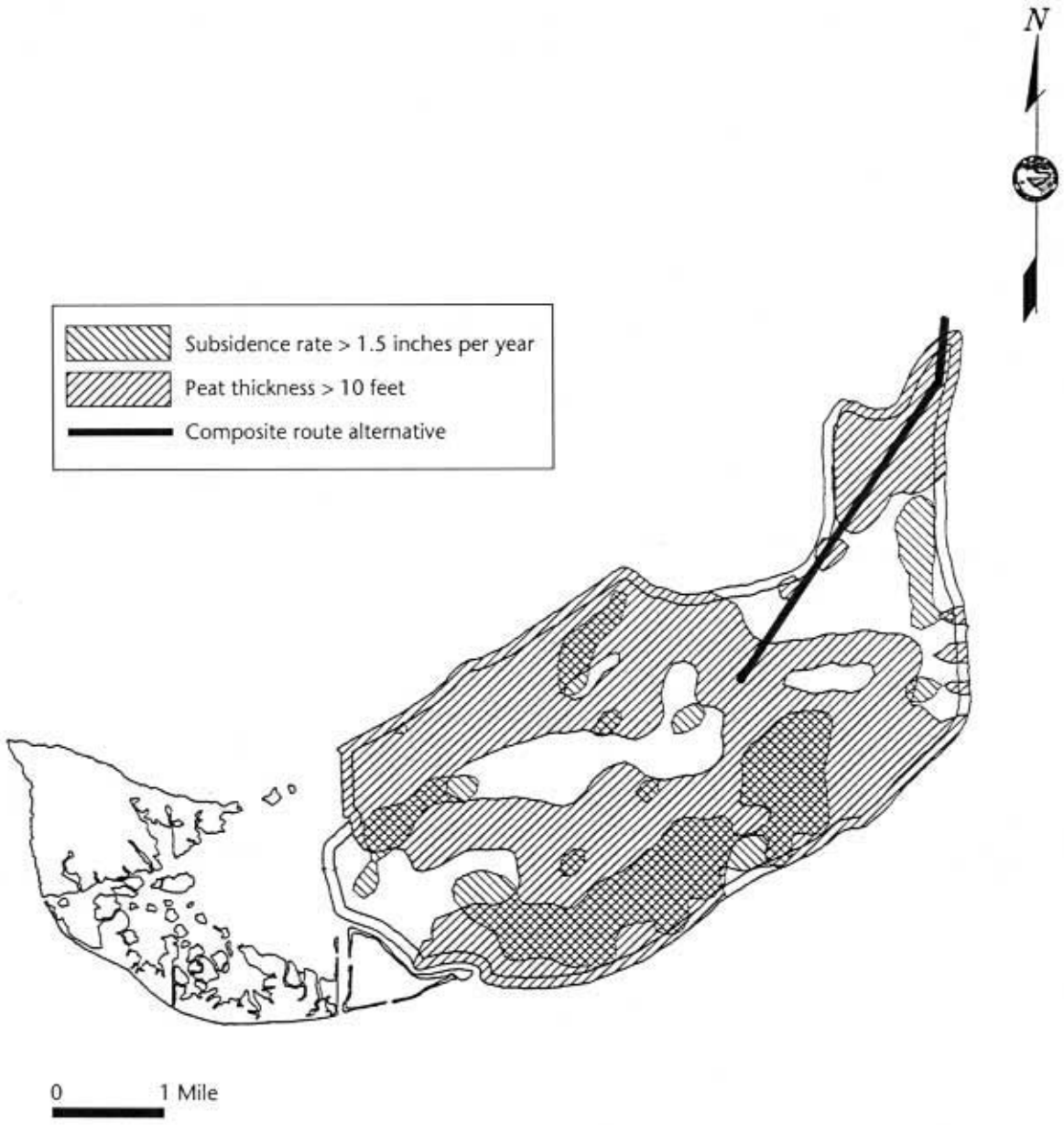
Figure 1
Staten and Tyler Island



Source: DWR 1999.

Jones & Stokes

Figure 2
Brannan and Andrus Island



Source: DWR 1999.

Jones & Stokes

Figure 3
Sherman Island

CONSISTENCY WITH THE LOCAL AIRPORT LAND USE PLAN

Several commenters on the draft EIR expressed concern about the issue of consistency of project facilities with the ALUP for the Lind Airport. The draft EIR concludes (page 3.1-18) that although there is uncertainty regarding the applicability of the ALUP, apparent inconsistency of the project with the ALUP is considered a significant impact (Impact 3.1-5). The draft EIR also recommends a mitigation measure that states that obtaining a determination from the Airport Land Use Commission (ALUC) that the project is consistent with the ALUP, or amending the ALUP, would reduce the impact to a less-than-significant level. The draft EIR notes that a consistency determination may require amendment of the ALUP. Alternatively, the project may have to be revised to avoid lands regulated by the ALUP, which would likely require additional CEQA review.

It is important to note that the impact discussion on page 3.1-18 of the draft EIR is specifically addressing the issue of the consistency of the proposed project with the ALUP, not issues related to safety. Since publication of the draft EIR, the Applicant has received a letter from the Federal Aviation Administration (FAA) that indicates that the proposed project meets all FAA safety requirements.

If it is determined that LGS must comply with the ALUP, there are several potential solutions to this policy conflict:

- The project facilities in question could be relocated to areas outside of the transition and approach surfaces. Although technically feasible, this solution may result in additional environmental effects that may require additional environmental review.

- The Applicant could request that the ALUC amend its rules and regulations to allow the project (a three-quarters majority of commission members present is required). The ALUC could review the proposed project and determine that the project would pose an acceptable risk to the community.

- The Applicant can request that the County Board of Supervisors override the ALUC (a two-thirds majority is required). If the ALUC chooses not to amend its plan to accommodate the project, the County Board of Supervisors could override the ALUC decision if it determined that the project would pose an acceptable risk to the community. Airport land use planning law provides the mechanism for the County to make findings documenting the basis for the override action and compliance with state aeronautics law.

After review of the comments received on the draft EIR, this final EIR concludes that the mitigation measure proposed in the draft EIR is appropriate. As stated in the draft EIR, there is considerable uncertainty regarding the precise applicability of the ALUP to the project facilities and the interpretation of language contained in the ALUP.

The ALUC is a responsible agency under CEQA, and it is proper for the CPUC to rely on the appropriate agency with jurisdiction and expertise over this issue (the ALUC) to make an independent decision regarding the consistency of the project with the ALUP and whether the project should be approved or the ALUP amended.

SAFETY

Several comments expressed concern about the safety of natural gas facilities and the potential for accidents, such as fire and explosion. Local residents expressed concern about living near a natural gas pipeline or the compressor facility. Several community members cited past accidents, including a well blowout on McDonald Island. Some commenters also expressed concern about the proximity of the compressor facility to the Lind Airport and the potential for catastrophic accidents involving airplanes crashing into the facility.

The CPUC reviewed safety issues carefully during the preparation of the draft EIR and reexamined these issues in response to the comments received. As described in the draft EIR, the construction and operation of natural gas facilities are regulated by several state and federal agencies. All such facilities are required to be constructed to standards that have been adopted by these state and federal agencies as being protective of public health and welfare. As discussed in Section 3.9, "Public Health and Safety", of the draft EIR, there are approximately 1,700,000 miles of natural gas transmission and distribution pipeline in the United States. These pipelines, particularly those constructed recently, whish are required to meet more stringent safety standards, are operated safely and are generally considered to have a low level of risk to public safety.

In response to comments regarding the proximity of the airport to the compressor facility, the CPUC again reviewed the available data. An analysis of the distribution of aircraft accidents is included in the California Department of Transportation handbook (1993). These data were used in conjunction with information regarding natural gas pipeline systems to arrive at a conclusion that the locations of the compressor site and supporting pipeline facilities do not pose an unacceptable safety risk. The data do indicate that the alternate compressor site would likely have reduced risk because it is not in line with a runway. The following key points were considered:

- Unless an airplane has sustained mechanical or structural damage, the extent to which it remains under pilot control largely depends on airspeed. Even in situations where an engine failure has occurred, a plane will not go out of control and drop from the sky (California Department of Transportation 1993).

- Most airplanes are able to glide 500-1,000 feet for every 100 feet of altitude (California Department of Transportation 1993).

- A great majority of aircraft-landing accidents take place on or immediately adjacent to the runway. National Transportation Safety Board data indicate that two-thirds of all

landing accidents occur on the runway during touchdown. These types of accidents rarely result in serious injuries (California Department of Transportation 1993).

- Of the remaining landing accidents, most take place on final approach. The pilot either lands short or overshoots the turn to final approach, placing the accident along the extended centerline of the runway (California Department of Transportation 1993).

- Approximately two-thirds of the takeoff/departure accidents occur during initial climbout. The dispersion of takeoff accidents is related to the performance of the aircraft, flight track, climb rate, aircraft payload, or pilot techniques and is therefore difficult to predict although the potential accident site is usually beyond the end of the runway (California Department of Transportation 1993).

- Less than 1% of aviation accidents involve residences or other buildings on the ground (California Department of Transportation 1993).

- Unlike automobiles, aircraft are not designed for collisions. The disintegration of the wings and fuselage of small general aviation aircraft when they strike an object or the ground dissipates much of the energy that would be delivered (California Department of Transportation 1993); therefore, damage to buildings or the ground surface would likely not be great.

- The alternate compressor facility site would be located approximately 1,150 feet from the runway centerline and perpendicular to the end of the runway.

- The nearest residence is approximately 1,500 feet from the compressor facility.

- The pipeline would be buried at a minimum of 4 feet below the ground surface.

- The project would not store large quantities of hazardous materials.

- Natural gas, although flammable, is not explosive unless mixed in the proper proportions with oxygen.

In the highly unlikely event that an aircraft collided with the compressor facility, gas could be released to the atmosphere. If an ignition source were present, the likely outcome would be a fire that would be directed upward and that would continue until all natural gas has escaped from the damaged portion of the facility. Because natural gas is not a liquid, the fire would not spread from the source of the gas leak. Considering the very low density of residences in the area, the low rate of aircraft collisions with buildings, the safety of natural gas, and the lack of substantial quantities of hazardous materials, the location of the alternate compressor site and the buried pipeline facilities is not considered to pose an unacceptable safety risk.

Although the CPUC cannot state that there is no risk associated with natural gas facilities, the draft EIR documents that the risk is relatively small and that appropriate and required measures would be in place to ensure that any risk would be minimized.