Flow Line

A 12-inch, bidirectional steel flow line will connect the injection and withdrawal wells to the existing compressor site (see Figure 2-2a). The flow line will be approximately 3,700 feet long. The purpose of the flow line is to convey natural gas from the compressor station to the injection/withdrawal wells for injection into the geologic formation and storage. The line also will convey the withdrawn gas from the wells to the compressor station so that it can be compressed to sufficient pressure for injection into the PG&E 400 pipeline.

Compression/Dehydration

A new compressor enclosure will be built on the existing compressor station site to house two additional compressors with a combined total of 5,900 horsepower. The site will also accommodate additional 250 MMcf/d of dehydration capacity within the existing compressor/dehydration station footprint.

The existing compressor/dehydration station is located on an 8-acre site at the eastern base of Kirby Hill, as shown in Figure 2-2a. The site is fenced and graveled for access control, fire control, and maintenance purposes. The compressor station is fully encircled by an earthen berm to prevent uncontrolled runoff from the site. The site is manned during the daylight shift during weekdays and remotely monitored and controlled at all times from the existing Lodi Gas Storage Facility control room. The station is in a valley between Kirby Hill to the west and a low hill to the east and is generally screened from view. The closest residential site is 0.45 mile from the proposed compressor enclosure site.

As part of the Phase II project, two additional natural gas engines coupled to reciprocating compressors would be housed in a new compressor enclosure. The two additional engines will add a combined output of 5,900 horsepower of compression (one compressor engine would be 2,350 horsepower, and the other would be 3,550 horsepower). Pursuant to D.06-03-012, 4,520 horsepower of certificated and unused capacity remains. As part of the amended application, LGS is requesting that an additional 1,380 horsepower be certificated as part of the Kirby Hills amended CPCN. The new compressor/ dehydration equipment will be designed to meet the air emissions standards set by the Bay Area Air Quality Management District (BAQMD). These standards include use of best available control technology.

A noise impact analysis performed by Hoover & Keith Inc. for this Phase II project component indicates that under full load operation (gas injection) the proposed Kirby Hills Facility will operate at less than 50 dBA CNEL as measured at the nearest noise sensitive area. The noise analysis is provided in the amended CPCN Application as Exhibit 6.

PG&E Interconnection

The existing 16-inch, 5.9-mile pipeline that connects the compressor site to PG&E's Lines 400/401 Pipeline System will be used without modification. The pipeline is bidirectional, allowing natural gas to flow to and from the Kirby Hills gas field.

The PG&E interconnection will be expanded to 350 MMcf/d from the existing 100 MMcf/d interconnection. The expanded PG&E interconnect will be accomplished on the existing 0.75-acre metering station site, west of Birds Landing Road and adjacent to PG&E's Lines 400/401 Pipeline System (see Figure 2-2b).

The existing 0.75-acre graded and fenced site for remote metering and PG&E interconnection will be used to accommodate expansion of the PG&E interconnect from 100 to 350 MMcf/d. One additional meter and flow control valve will be installed in the existing meter station. The existing lateral from the meter station to PG&E's Lines 400/401 Pipeline System is approximately 350 feet long. Either the existing lateral will be replaced with a larger diameter pipe, or a new parallel pipe will be installed.

LGS has discussed with PG&E the interconnection issues associated with adding Kirby Hills II capacity to PG&E's Line 400 and/or Line 401 interconnect near mile marker 286.65. While PG&E has verbally indicated that there is adequate capacity on its system to accommodate the expansion, PG&E has not determined whether to replace the existing tap into Line 400 with a larger one or add a tap to Line 401, which lies adjacent to Line 400 at this location. At the time of the application, LGS has no indication of interconnection issues with PG&E.

Conversion of Abandoned Wells

Four existing abandoned wells are proposed for conversion to observation wells (see Figure 2-2a for the location of the wells). Two former production wells (Wagenet 2 [W2] and Wagenet 5 [W5]) are located on the Wohn Parcel. The other two wells (Lambie 6 [L6] and Lambie 7 [L7]) are located on the Kirby Property. All four wells will need to be reworked to convert them to observation wells. Permanent fenced and graveled well pads (20 feet x 20 feet) will be constructed for the L6 and L7 wells. Construction of a permanent well pad (150 feet x 300 feet) encompassing both the W2 and W5 wells on the Wohn Parcel with an access road from the Kirby Property will result in the temporary disturbance and a permanent loss of approximately 1.17 acres of potential waters of the United States (brackish marsh and mudflats) located in the Suisun Marsh Primary Management Area.

Construction Methods

Pipeline Construction Methods

The following section describes the methods that LGS will use to install the flow line. These methods are similar to those described in the original PEA (Jones & Stokes 2005).

Surveying Right-of-Way

The pipeline alignment will be surveyed and identified prior to beginning construction activity. Alignment identification will include staking the centerline of the pipeline, foreign line crossings, and the limits of the construction work area. As part of this preconstruction phase, environmentally sensitive areas (e.g., wetlands) also will be marked in the field to ensure avoidance.

Underground Facilities Coordination

To avoid or minimize construction conflicts with existing utilities and public services, LGS will coordinate closely with the Solano County Public Works Department during final project design to identify any potential utility conflicts and initiate relocation efforts. LGS will also contact Underground Service Alert (USA) at least 2 full working days before construction activity begins. USA will contact all owners of underground pipeline and utilities that are registered with USA and inform them that construction is about to begin in their service area. This notice allows those owners to mark the areas near the construction site where their underground facilities are located so that these areas can be avoided during project construction.

Grading Right-of-Way

The pipeline right-of-way will be graded with a bulldozer or similar equipment as necessary to create a safe and level work surface. The width of the right-of-way will vary depending on terrain and adjacent sensitive resources. This right-of-way will be demarcated prior to construction. As described below under *Applicants Proposed Measures,* sediment control devices such as silt fences and straw bales will be installed as necessary around waterbodies, roads, and other areas during clearing and grading**.** These measures are described in detail in the storm water pollution prevention plan (SWPPP) that was prepared for the Kirby Hills I project.

Pipeline Trenching Methods

Trenching involves excavating a ditch for the pipeline and will be accomplished with backhoes or trenching machines. The trench will be excavated to a depth sufficient to provide the appropriate amount of cover, which generally will be a minimum of 3 feet over the pipeline. Trench spoil will be deposited on the spoil storage portion of the right-of-way. The trench width for the pipeline will be approximately 4 feet, but the trench may be wider in wet or sandy areas to allow for unstable soils and a sloped trench wall. Based on the known geologic conditions in the project area, blasting will not be required.

Stringing, Welding, and Installation

After the construction right-of-way has been prepared and the trench excavated, pipes and associated support timbers (skids) will arrive on the job site by highway trucks, along with pipe handling equipment in the form of crawler-mounted sideboom tractors and hydraulic cranes. The trucks will travel down the right-of-way, being off-loaded as they travel; they will place joints of pipe end-to-end, supported by skids with pad material to protect the coating. When emptied of their cargo, trucks turn around in areas provided. Mud on the vehicle tires, wheels, and undercarriage that could be dropped in transit on public roads will be removed before the vehicles leave the right-of-way.

Pipeline segments, bent to conform to the trench contour, will be placed along the right-of-way parallel to the trench. Pipe ends (bevels) will be cleaned prior to welding by means of filing or wire brushing to remove rust, scale, and dirt. A sideboom crawler tractor or other suitable hoisting machine will lift each joint of pipe to abut and align with the bevel of the previous joint, and a suitable space for welding will be attained. Welders qualified by testing to the appropriate welding code then will apply an initial pass of weld and will progress to the next aligned joint as the first weld pass is applied. Subsequent welding passes will be applied by other welders following the initial pass, until satisfactory weld metal has been applied. Each pass, including the final pass, will be mechanically cleaned of slag by wire brush and/or grinding disc, and the welds will be radiographically or ultrasonically inspected for defects. Welds that are defective beyond code limits will be repaired by grinding out the defect and rewelding the objectionable area, or they will be removed and rewelded.

Welding will be performed in accordance with the American Petroleum Institute Standard Number 1104, U.S. Department of Transportation (DOT) pipeline safety regulations (*49 Code of Federal Regulations* [*CFR*] *192* [latest editions]). Completed welds will be visually and radiographically or ultrasonically inspected in accordance with the same standards to determine the integrity of the welds.

After passing quality control checks, the weld areas (field joints) will be coated with a powdered epoxy applied to induction-heated weld areas; with a liquid epoxy; or with a mastic sleeve that, when heated, will shrink to form a snug fit on the pipe, and the mastic will become viscous to eliminate air pockets and provide

adhesion. The pipe will be visually checked for damaged coating (holidays), and damaged areas will be repaired by means of melting a stick form of epoxy onto the damaged area.

Pipeline sections that are ready to be installed into the trench will be lowered in by means of nylon straps or wheeled "cradles" suspended from sideboom tractors or other hoisting equipment. Where rock is encountered, the bottom of the ditch will be padded with sand or fine-grained soils. After the last handling, an electrical coating tester attached to a girth spring will be passed along the entire length of pipe, alerting by audible signal the presence of defects (holidays) in the pipe coating. The lowering operation will cease until the defect is repaired. Inspectors will ensure that the minimum required cover is attained. This will be accomplished by measuring the pipe depth.

Trench Backfilling

After the pipe is placed into the trench, the trench will be backfilled with the previously excavated material. Although not anticipated, where topsoil is stored separately from subsoil, the subsoil will be backfilled first and then the topsoil will be replaced. Although not anticipated, if rock conditions exist in the Kirby Hills, a layer of rock-free soil will be placed over the pipe to protect the coating, and then the backfill operation will be completed. A soil mound will be left over the trench to allow for soil settlement, unless otherwise required by the landowner.

Pipeline Testing

After construction and prior to placing the pipeline in service, the completed pipeline will be hydrostatically tested. Hydrostatic testing will be conducted in accordance with the requirements of DOT pipeline safety regulations (*49 CFR 192*), LGS testing specifications, and applicable permits. Approximately 21,000 gallons of water will be used for hydrostatic testing. This water will be obtained from existing public or private water supplies, which have not yet been identified. The test water will be filtered through hay bales and discharged into upland areas.

Compression/Dehydration Equipment

Construction activities for the proposed compression/dehydration equipment will be confined to the 8-acre compressor station site and the adjoining temporary workspace. This area was completely cleared and graded as part of the Phase I construction process. Additional minimal grading will be necessary to prepare the area for constructing foundations within the existing 8-acre site. The site currently does not support any vegetation.

Excavating required for the foundations will be performed as needed, and all backfill will be compacted in place. Excess soil will be used on site or will be disposed of in an approved area off site. Compressor enclosure construction will begin after the compressor/engine skids are installed on concrete foundations. Typically, the steel frame of the enclosure is erected, followed by installation of the roof, exterior casing, and insulation as may be needed for noise attenuation. The compressor enclosure will be designed to meet County noise requirements, and a noise abatement silencer will be installed on the engine exhausts.

Gas pressure piping at the compressor station will involve welded construction, except where connected to flanged components. The piping work may begin in a fabrication shop off site. If offsite fabrication is used, the prefabricated pieces will be shipped to the site and installed in place. Piping installed below grade will be coated for corrosion protection prior to backfilling, and a cathodic protection system will be installed to protect underground piping. Aboveground valves and piping will be installed on concrete pipe supports, and protected from external corrosion by paint coatings.

Equipment such as the glycol dehydration units, reboilers, and coolers will be installed on pads or skids. Pig launchers ("pigs" are devices used to clean the line) and receivers will be installed on pads with concrete containment. The aboveground storage tanks will be installed within diked areas or otherwise installed within secondary containment. Prior to placing the compressor station in service, the gas piping system (both above and below ground) will be hydrostatically tested. Controls and safety devices, such as the emergency shutdown system, relief valves, gas and fire detection facilities, and other protection and safety devices, will be checked and tested.

After completion of start-up and testing, the compressor station site will be graded, and disturbed areas will be graveled or revegetated with a sterile grass. Cleanup and restoration of various parts of the site will be completed as work on the area is finished.

PG&E Interconnection

The same construction methods described above in the *Pipeline Construction Methods* section will be used to install the approximately 350 feet of pipeline at the PG&E interconnection.

Injection/Withdrawal Well Construction

Well pads will be cleared of surface materials and vegetation and then leveled and graded to accommodate drilling equipment. The pad sites will be graded flat, with drainage and runoff contoured to a collection point in order to control stormwater discharge.

Once the site is prepared and contoured, the mobile drilling rig and associated equipment and tanks will be driven to the pad. The type of drilling rig to be used is self-contained and will be relocated for each well. Typical equipment associated with the rig includes pipe racks, substructure, mud system, changing quarters, a "doghouse" and tool pusher trailer, and power pack.

The drilling rig will operate 24 hours per day, 7 days per week while each well is drilled and completed. There will be two, 12-hour personnel shifts each day. After the drilling/completion of a well is complete, the drilling rig will be relocated to the next well position. Equipment and materials typically will be delivered during daylight hours.

Drilling activities typically involve the use of the rig's rotary table to turn the drilling bit and attached drill pipe. As the bit advances deeper into the subsurface, additional pipe is added to the "drill string." Lengths of pipe are taken up from the pipe rack and held in place until the "driller" is ready to attach the new lengths. After conducting safety checks, the rotary table is stopped, the drill string is unscrewed, and new lengths are added. The system is re-pressurized and drilling continues. Drilling mud is used to lubricate the bit, bring drill cuttings back to the surface, and control down-hole formation pressure. All fluids used in or for the drilling operation will be contained in temporary mobile tanks or 55-gallon drums stored within a containment area. Fluid and mud circulation systems are based on closed-loop designs, which result in no discharge. Once the well is in place, ancillary valving, piping, and monitoring equipment is installed and tested.

Setting depth of the well may vary depending on the exact depth of the reservoir at each specific well location. The wellhead will be about 10 feet in height and will be connected to a section of aboveground flowline containing the valve, flow control valve, flow meter, and pressure gauge. A manifold/flowline system will connect the wellheads to the compressor station.

Workforce

LGS will retain a construction contractor to install all the components of the project. The workforce estimates are as follows:

- Compression/dehydration equipment: 50 maximum
- Pipeline construction: 25 maximum
- Well drilling and completion work: 15 maximum

Equipment and Material Staging Area

Three potential material and equipment staging areas have been identified for the Phase II project. The sites are less than 1 acre is size and will be located along the Kirby Hills access road, Shiloh Road/Kirby Hills access road intersection,

and the meter station. These sites were chosen because they have been previously disturbed and occur adjacent to major access points. The staging areas will contain laydown areas for equipment, pipes and other construction-related supplies and for equipment access.

Access Roads

LGS is proposing to construct an access road to provide access to the new well pads from the compressor station. The access road will be constructed along the route of the proposed flowline and will also connect to the existing road along the north boundary of the Kirby property. The access roads will be approximately 20 feet wide.

Construction Equipment

Table 2-1 identifies the equipment that may be used to construct the proposed project.

Table 2-1. Equipment That May Be Used during Construction of the Proposed Project

Equipment	Potential Uses
Water trucks	Compaction, erosion, and dust control
Roller/compactor	Compaction of foundation areas
Backhoe	Excavation
Cranes	Lifting and setting equipment
Dump trucks	Hauling road and pad materials
Flatbed trucks	Hauling equipment
Pickup trucks	General use and hauling minor equipment
Small hydraulic cranes/forklifts	Loading and unloading equipment
Four-wheeled all-terrain vehicles	Personnel access to construction spreads
Rough-terrain forklift	Lifting equipment
Boring equipment	Horizontal boring
Sideboom	Laying pipeline
Dozer	Clearing and grading
Drilling/Workover Rig	Well drilling and well completion

Applicant-Proposed Measures

As part of the proposed project, LGS will implement a number of measures to avoid and minimize long-term effects on environmental resources within and adjacent to the proposed project facilities.

The PEA and subsequent data responses include measures intended to ensure that development of the project would occur with minimal environmental impacts and

would be consistent with applicable rules and regulations. LGS committed to implement these measures during the design, construction, and operation of the proposed project in order to avoid or minimize potential environmental impacts. Therefore, these APMs are considered part of the proposed project description in the evaluation of environmental impacts.

The following section lists the applicable APMs by environmental issue area that were identified in the Final IS/MND. Some APMs have been removed because they no longer apply to the resources found in the Phase II project area (e.g., biological resources APMs B-3 and B-4 for California tiger salamander which was determined not to occur in the Phase II project area). Where appropriate, the APMs have also been modified to reflect the resource issues associated with the Phase II project. The APMs are numbered based on the section and sequence in which they appear in the Final IS/MND. The applicable APMs are referenced, where appropriate, in Chapter 3 of this supplemental PEA.

Aesthetics

APM A-1: Aesthetics

The following measures would be implemented as part of the proposed project to minimize Visual Resources impacts of the project and be consistent with the County's general plan polices.

- Construction disturbances would be minimized to help reduce contrast between exposed soils and naturally vegetated and clearing of vegetation and trees at facilities sites would be minimized.
- Disturbed agricultural land would be replanted following pipeline construction (if requested by the landowner).
- Facilities would be painted with nonglare, earthtone colors to blend with the surrounding vegetation/landscape.
- Shielded, nonglare lighting would be used at facilities.

Air Quality

APM AIR-1: Air quality

The following applicable measures would be implemented as part of the proposed project to minimize projection dust emissions and to be consistent with BAAQMD guidelines for reducing construction impacts to a less-than-significant level.

- Water all active construction areas at least twice daily.
- Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least 2 feet of freeboard.

- Pave, apply water three times daily, or apply (nontoxic) soil stabilizers on all unpaved access roads, parking areas, and staging areas at construction sites.
- Sweep daily (with water sweepers) all paved access roads, parking areas, and staging areas at construction sites.
- Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets.
- Hydroseed or apply (nontoxic) soil stabilizers to inactive construction areas (previously graded areas inactive for 10 days or more).
- Enclose, cover, water twice daily, or apply (nontoxic) soil binders to exposed stockpiles (e.g., dirt and sand).
- Limit traffic speeds on unpaved roads to 15 mph.
- Install sandbags or other erosion control measures to prevent silt runoff to public roadways.
- Replant vegetation in disturbed areas as quickly as possible.
- Install wheel washers for all exiting trucks or wash off the tires or tracks of all trucks and equipment leaving the site.
- Limit the area subject to excavation, grading, and other construction activity at any one time.
- LGS also commits to installing BACT to reduce emissions from the natural gas compressor units. LGS would provide the CPUC with evidence that it has complied with the requirements of the BAAQMD. This evidence will be in the form of a final permit from the BAAQMD. The final permit will be provided to the CPUC prior to the beginning of construction of the compression facility.

Biological Resources

Please note that AMP B-3 and B-4 have been removed from the following environmental commitments because they do not apply to the Phase II project.

APM B-1: Designate work zones

LGS would identify work areas and ensure the following occurs.

- Construction activities, equipment, and associated activities (e.g., staging areas) are confined to the designated work zone.
- Areas supporting sensitive resources (e.g., nearby seasonal wetlands and special-status plant population) are avoided.
- Construction equipment would be confined to a designated work zone (including access roads) in the project area. Before ground-disturbing activities are initiated, the work zone would be clearly staked and flagged.

APM B-2: Install temporary construction barrier fencing to protect sensitive biological resources adjacent to the construction zone

The construction specifications will require that a qualified biologist identify sensitive biological habitat onsite and identify areas to avoid during construction. Sensitive communities in the area that generally would be required for construction, including staging and access, will be fenced off to avoid disturbance in these areas. LGS's contractor will install orange construction barrier fencing (or staking and flagging, if appropriate) to identify environmentally sensitive areas. Sensitive resources that occur in and adjacent to the construction area include the following areas.

- Wetland communities and special-status plant species located along the access road in the Kirby Hills (see Figure 3.3-1).
- Occupied burrowing owl habitat (identified during preconstruction surveys).
- Occupied raptor nests.

The fencing will be installed at least 20 feet from the edge of the populations. Prior to construction, LGS will retain a botanist to conduct a late season survey in May (or June, depending on rainfall levels in 2008). The botanist will flag the outer extent of the populations and identify the fencing location.

Before construction, the contractor will coordinate with a resource specialist to identify the locations for the barrier fencing or staking and will place stakes around the sensitive resource sites to indicate these locations. The protected area will be designated an environmentally sensitive area and clearly identified on the construction specifications. The fencing or staking and flagging will be installed before construction activities are initiated and will be maintained throughout the construction period. The following paragraph will be included in the construction specifications:

The Contractor's attention is directed to the areas designated as "environmentally sensitive areas." These areas are protected, and no entry by the Contractor for any purpose will be allowed unless specifically authorized in writing by the CPUC. The Contractor will take measures to ensure that Contractor's forces do not enter or disturb these areas, including giving written notice to employees and subcontractors.

Temporary fences around the environmentally sensitive areas will be installed as the first order of work. Temporary fences will be furnished, constructed, maintained, and removed as shown on the plans, as specified in the special provisions, and as directed by LGS.

APM B-5: Conduct preconstruction surveys for burrowing owls

The *Staff Report on Burrowing Owl Mitigation*, published by CDFG (1995), recommends that preconstruction surveys for be conducted to locate active burrowing owl burrows in the construction area and in a 250-foot-wide buffer zone around the construction area. LGS or its contractor will retain a qualified wildlife biologist to conduct preconstruction surveys for active burrows according to DFG guidelines. The preconstruction surveys will include a nesting season survey. If no burrowing owls are detected, then no further mitigation is required. If active burrowing owls are detected in the survey area, the following measures will be implemented.

1 Occupied burrows will not be disturbed during the nesting season (February 1–August 31). Whenever avoidance is feasible, no disturbance should occur within 160 feet of occupied burrows during the nonbreeding season (September 1–January 31) or within 250 feet during the breeding season (February 1–August 31).

2 When destruction of occupied burrows is unavoidable during the nonnesting season (September 1–January 31), unsuitable burrows will be enhanced (enlarged or cleared of debris) or new burrows created (installing artificial burrows) at a ratio of 2:1 on nearby protected lands approved by DFG. Newly created burrows will follow the guidelines established by DFG.

3 If owls must be moved away from the construction area, passive relocation techniques (e.g., installing one-way doors at burrow entrances) will be used instead of trapping. At least 1 week will be necessary to accomplish passive relocation and allow owls to acclimate to alternate burrows.

4 If owls must be moved away from the construction area, the project proponent or its contractor will acquire and permanently protect a minimum of 6.5 acres of foraging habitat per occupied burrow identified in the construction area. The protected lands should be located adjacent to the occupied burrowing owl habitat in the study area or at another occupied site near the study area. The location of the protected lands will be determined in coordination with DFG. LGS also will prepare a monitoring plan and provide long-term management and monitoring of the protected lands. The monitoring plan will specify success criteria, identify remedial measures, and require an annual report to be submitted DFG.

APM B-6: Avoid disturbance causing the abandonment or removing active raptor or migratory bird nests

Avoid disturbance causing the abandonment or removing active nests (with eggs or young) of Swainson's hawk; northern harrier, loggerhead shrike, grasshopper sparrow, horned lark, and many other non-special hawks, northern harrier, log-status migratory birds and raptors. To avoid this impact, LGS or its contractor will implement one of the following two options as part of the proposed project.

1. Conduct all construction activity (including vegetation pruning or removal) during the nonbreeding season (generally between August 16 and February 28) for most special-status and non-special-status migratory birds; or

2. If construction activities are scheduled to occur during the breeding season for these species (generally between March 1 and August 15), retain a qualified wildlife biologist to conduct the following focused nesting surveys within the appropriate habitat:

   - Tree- and shrub-nesting surveys within and adjacent to the construction work area to look for Swainson's hawk, northern harrier, loggerhead shrike, and other nonlisted migratory birds and raptors.
   - Ground-nesting surveys in annual grasslands within and adjacent to the construction work area to look for northern harrier, grasshopper sparrow, horned lark, and other nonlisted migratory birds.

The surveys will be conducted within 1 week prior to initiation of construction activities and at any time between March 1 and August 15. If no active nests are detected during surveys, then no additional mitigation is required.

If surveys indicate that special-status or non-special-status migratory bird nests are found in the survey area and could be affected by construction activities, a no-disturbance buffer will be established around the site to avoid disturbance or destruction of the nest site until after the breeding season or after a qualified wildlife biologist determines that the young have fledged (generally late June to mid-July). The extent of these buffers will be determined by the biologist (coordinating with DFG) and will depend on the level of noise or construction disturbance, line of sight between the nest and the disturbance, ambient levels of noise and other disturbances, and other topographical or artificial barriers. These factors will be analyzed in order to make an appropriate decision on buffer distances.

If construction activities are scheduled to occur within an area that supports an active nest site or within an established no-disturbance buffer, then construction would be delayed until after the breeding season or until the young have fledged (as determined by the biologist).

New APM B-7: Compensate for permanent impacts on jurisdictional wetlands

LGS will be obtaining permits to place fill material into the waters of the United States associated with the Suisun Marsh Primary Management Area. These permits will include a Section 404 permit from the USACE and a Section 401 water quality certification from the Regional Water Quality Control Board (RWQCB). As part of these permit authorizations, LGS will implement measures to minimize the placement of fill material into the wetlands and will compensate for the permanent loss of wetlands at a minimum 1:1 ratio (one acre for every one acre filled). The final compensatory mitigation ratio and

implementation plan (e.g., the purchase of mitigation bank credits) will be determined through coordination with the USACE, RWQCB, and the BCDC (if necessary).

Cultural Resources

APM C-1: Paleontological resources

A paleontological resources discovery and management plan would be developed and implemented as part of the proposed project to avoid potential impacts on these resources. This plan would include review of final construction plans to determine which portions of the project would affect paleontologically sensitive sediments that lie deeper than 10 feet below the surface.

If potentially significant fossils (defined as deposits that are unique, or that may reasonably be expected to assist in the evaluation of specific areas of research or expand our understanding of prehistory) are encountered, the LGS would initiate the following measures:

- Stop construction in the immediate vicinity of the fossil find until they are removed.
- Arrange for recovery of fossils by a qualified paleontologist and curation of scientifically prepared specimens in an accredited institution.

APM C-2: Stop work if buried resources are discovered

Stop work if buried resources are discovered inadvertently LGS and its construction contractor will take the steps specified below during project construction. If buried cultural resources, such as chipped or ground stone, historic debris, building foundations, or human bone are discovered inadvertently during ground-disturbing activities, work will stop in that area and within 100 feet of the find until a qualified archaeologist can assess the significance of the find and, if necessary, develop appropriate treatment measures in consultation with the County, the State Historic Preservation Officer, and other appropriate agencies. In the event that human remains are encountered, APM C-3 will be implemented.

APM C-3: Follow proper procedures if human remains are discovered

If human remains of Native American Origin are discovered during project construction, it will be necessary to comply with state laws relating to the disposition of Native American burials, which fall under the jurisdiction of the Native American Heritage Commission (NAHC) (Public Resources Code, Section 5097). If any human remains are discovered or recognized in any location other than a dedicated cemetery, there will be no further excavation or

disturbance of the site, or any nearby area reasonably suspected to overlie adjacent human remains, until:

- The Solano County Coroner has been informed and has determined that no investigation of the cause of death is required and if the remains are of Native American origin;
- The descendants of the deceased Native Americans have made a recommendation to the landowner or the person responsible for the excavation work, for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods a provided in Public Resources Code, Section 5097.98; or
- NAHC is unable to identify a descendant or the descendant fails to make a recommendation within 24 hours after being notified by the NAHC

Geology

APM G-1: Prepare an injection plan

DOGGR is responsible for wells drilled into an underground gas storage facility. LGS would complete engineering and geology studies and an injection plan and submit them to the division for approval. These studies would describe the well drilling and abandonment plans; reservoir characteristics; all geologic units, aquifers, and oil and gas zones; and the monitoring system to ensure that injected gas is confined to the intended zone. LGS currently has a bond in place with DOGGR to ensure proper completion or abandonment of any well drilled.

APM G-2: Seismic-resistant design measures

The project would be designed to meet the seismic safety standards of the Uniform Building Code. Specific design measures may include, but are not limited to, special foundation design, additional bracing and support of upright facilities (e.g., tanks, exhaust stacks), and weighting the pipeline in areas of potential liquefaction. In addition, automated leak detection, isolation, and shutdown controls would limit the secondary effects of equipment damage. Project facilities and foundations would be designed to withstand changes in soil density.

APM G-3: Erosion and sediment control—minimize site disturbance

The most basic way to avoid erosion is to minimize site disturbance. To minimize site disturbance and ensure that impacts are avoided or reduced to less-than-significant levels, the construction contractor would be directed to:

- Remove vegetation only when absolutely necessary,
- Avoid off-road vehicle use outside the work zone,

- Avoid excessive trips along the right-of-way or access or public roads, and
- Instruct all personnel on stormwater pollution prevention concepts to ensure that all are conscious of how their actions affect the potential for erosion and sedimentation. Construction inspectors would be on site during all construction activities and would reinforce the importance of confining all vehicular traffic to the existing right-of-way and public access roads.

APM G-4: Erosion and sediment control—perform initial cleanup

The contractor would be directed to perform initial site cleanup immediately following construction activities. Initial cleanup includes removing debris and spoils and restoring original contours. Initial cleanup conducted as part of the construction contributes significantly to overall site stability and facilitates final cleanup. The site would begin to stabilize naturally with little additional disturbance during final cleanup. A site that is not initially cleaned up is more susceptible to erosion.

APM G-5: Erosion and proper compaction of subsurface soil

Proper compaction of subsurface soil serves as an erosion control measure. Uncompacted plow or sediment control–trench furrows are susceptible to subsurface erosion through the migration of surface and subsurface compact subsurface water. The contractor would be directed to implement proper compaction of the subsurface material and plow furrows to help prevent backfill material, surface and subsurface migration of water along the plow or trench furrow, and trench settlement.

APM G-6: Erosion and sediment control—install trench plugs

Where appropriate, the contractor will be directed to install trench plugs. A trench plug is a permanent mechanical erosion control measure consisting of soil-filled burlap bags placed in the excavated trench before backfilling. This also can be accomplished by substituting standard pipe backfill materials with a short length of impervious materials such as clay or slurry cement. Trench plugs serve to control erosion by arresting subsurface water flow. Trench plugs are placed in the trench at regular intervals along areas with steep slopes. The spacing is determined by slope grade, topography, and soil characteristics.

APM G-7: Erosion and sediment control—apply an appropriate seed mix

Seeding consists of sowing soil-stabilizing grasses on areas disturbed by construction activities—except cropland and areas surfaced with pavement or gravel. Vegetation serves to control both erosion and sedimentation. The root structure of the vegetation holds soil in place to resist erosion. Grasses slow the

flow of surface water, allowing suspended particles to settle. The contractor will be directed to reseed areas immediately after construction activities are completed, if requested by the landowner. Reseeding would use species that are appropriate to the site and acceptable to the landowner.

Hazards and Hazardous Materials

APM HZ-1: Equipment maintenance and refueling restrictions

The equipment used for the proposed project would require periodic maintenance and refueling. To reduce the potential of contamination by spills, no refueling, storage, servicing, or maintenance of equipment would be performed within 100 feet of sensitive environmental resources. No refueling or servicing would be done without absorbent material or drip pans underneath to contain spilled fuel. Any fluids drained from the machinery during servicing would be collected in leakproof containers and taken to an appropriate disposal or recycling facility. If such activities result in spillage or accumulation of a product on the soil, the contaminated soil would be assessed and disposed of properly. Under no circumstances would contaminated soils be added to a spoils pile.

Mobile refueling trucks likely would be used for onsite refueling of construction equipment. The refueling trucks would be independently licensed and regulated to haul and dispense fuels, to ensure that the appropriate spill prevention techniques are implemented.

All maintenance materials (i.e., oils, grease, lubricants, antifreeze, and similar materials) would be stored at offsite staging areas. If these materials are required during field operations, they would be placed in a designated area away from site activities and sensitive resources.

APM HZ-2: Hazardous materials generated from construction

The following measures would be incorporated into the construction contract specifications to address hazardous materials generated from construction-related activities.

- Diesel fuel and petroleum-based lubricants would be stored only at designated staging areas.
- All hazardous material spills or threatened releases, including petroleum products such as gasoline, diesel, and hydraulic fluid—regardless of the quantity spilled—must be immediately reported if the spill has entered or threatens to enter a water of the State, or has caused injury to a person or threatens injury to public health.

LGS prepared a Hazardous Materials Contingency Plan as part of the Kirby Hills I project. This plan would be implemented if an accidental spill occurs or if any subsurface hazardous materials are encountered during construction. Provisions outlined in this plan include phone numbers of county and state agencies and primary, secondary, and final cleanup procedures.

In addition, LGS would require that the contractor prepare a Health and Safety Plan (HSP) to ensure that no impacts would occur if hazardous soils or other materials are encountered during construction of the proposed project. The HSP would include elements that establish worker training, engineering controls, and monitoring. The HSP also would establish security measures to prevent unauthorized entry to cleanup sites and to reduce hazards outside the investigation/cleanup area.

APM HZ-3: Fire management measures

The Montezuma Hills and project area are classified as a high grassfire risk area due to the dry, grassland environment and strong winds (Solano County 1977). LGS recognizes the potential for increased fire risk during summer construction activities. For this reason, LGS developed fire management measures as part of their construction safety and emergency response plan for use during construction and operation. The plan includes notification procedures and emergency fire precautions, such as the following mitigation measures.

- All internal combustion engines, stationary and mobile, shall be equipped with spark arresters, meeting Agency standards.
- Spark arresters shall be in good working order.
- Light trucks and cars with factory-installed (type) mufflers that are in good condition may be used on roads where the roadway is cleared of all vegetation.
- Smoking signs and fire rules shall be posted on the project bulletin board at the Contractor's field office and areas visible to employees during the fire season.
- Equipment parking areas and small stationary engine sites shall be cleared of all extraneous flammable materials.
- Installation of fire extinguishers at the compressor station and metering station.
- Employee training in use of extinguishers and communication with the Montezuma Hills Fire District.
- Periodic inspections by the Montezuma Hills Fire District. It is expected that the implementation of this plan would sufficiently mitigate increased fire risk.

Noise

APM N-1: Construction noise control

The following measures would be incorporated into the construction contract specifications to reduce and control noise generated from construction-related activities.

- Restrict construction within 1,000 feet of occupied dwelling units to daytime hours between 7 a.m. and 7 p.m. on weekdays, Saturdays, and nonholidays, unless written approval is obtained from the resident.
- Ensure that all construction equipment has sound-control devices no less effective than those provided on the original equipment. No equipment would have an unmuffled exhaust.
- Implement appropriate additional noise-reducing measures, including but not limited to:
  - Changing the location of stationary construction equipment,
  - Shutting off idling equipment,
  - Rescheduling construction activity, and
  - Notifying nearby residents in advance of construction work.

APM N-2: Noise-Reducing Treatments at the Compressor Facility

Lodi Gas Storage shall implement recommended treatments 6.1 through 6.5 in the Hoover & Keith noise report (Hoover & Keith 2007) to ensure that noise from the compressor facility does not exceed County noise compatibility standards at the nearest NSA (R1) (50 dBA-Ldn).

Transportation and Circulation

APM T-1: Construction traffic plan

LGS prepared a construction traffic plan as part of the Kirby Hills I project to minimize short-term construction-related traffic safety measures to minimize impacts on local traffic. These measures included installation of temporary warning signs at appropriate locations along Birds Landing Road and Shiloh Road (and other roads if determined necessary). The signs would be placed at strategic locations near the site access location and would indicate “Construction Traffic Ahead,” “Trucks Entering and Exiting 50 Feet Ahead,” or an equivalent message. The signs would be removed after all construction-related activities are completed. The construction traffic plan that was prepared for the Kirby Hills I project includes the following measures.

- Coordinate with the County on any lane or road closures, if needed to construct improvements.
- Install traffic control devices as specified in the California Department of Transportation's *Manual of Traffic Control for Construction and Maintenance Works Zones.*
- Provide alternative routes (detours), as necessary, to route local traffic around roadway construction.
- Provide notification of any road closures to residents in the vicinity of construction.
- Provide access to driveways, private roads, and farm roads outside the immediate construction zone.
- Consult with emergency service providers and develop an emergency access plan for emergency vehicle access in and adjacent to the construction zone.

Site Reclamation

APM SR-1: Site reclamation measures

Site reclamation is the final element of the proposed project. The short-term objectives of reclamation are to control accelerated erosion and sedimentation and to minimize impacts on adjacent waters, land uses, and other sensitive resources. Properly executed construction practices and timely progress would minimize impacts to environmental resources. Long-term reclamation objectives include erosion and sedimentation control, as well as reclamation of topography to preconstruction conditions. The reclamation effort would involve restoration of temporary access roads (where necessary), and installation of erosion control measures that comply with Solano County Public Works Department requirements.

LGS prepared a SWPPP as part of the Kirby Hills I project. This SWPPP described when, where, and how the site reclamation BMPs would be implemented (see discussion of *Erosion and Sediment Control* below). The State Water Resources Control Board approved this plan prior to construction of the Kirby Hills I project. This SWPPP will be amended and used for the Phase II project.

Restoration of Pipeline Right-of-Way

APM RP-1: Pipeline right-of-way restoration measures

Following installation of the pipeline (flow line and PGE& interconnect pipelines), the right-of-way would be graded to preconstruction grades and restoration measure contours and would be seeded with an appropriate seed mix,

if requested by the landowner. The seed mix would be composed of the appropriate mix of species and acceptable to the landowner.

Construction Schedule

Construction activities associated with project components generally will occur Monday through Saturday between 7:00 a.m. and 7:00 p.m. The APMs described above will be implemented throughout all construction phases.

Pending the receipt of necessary project approvals, LGS proposes to begin construction in Spring 2008 and complete construction by September 2008. LGS' goal is to be operational for the 2008 winter heating season.

Landowner Coordination and Easement Acquisition

LGS has secured easements from the private landowners for construction of the Phase II project components. As required by the CPUC, "a list of the names and mailing addresses of all owners of land over, under or on which the project, or any part of the project, may be located, and owners of land adjacent thereto" is provided below. The Phase II project will be constructed within three landowners' and adjacent to two additional landowners' properties (see Table 2-2).

Operation and Maintenance Program

Operation and maintenance of the proposed Phase II project components will be performed by the existing LGS operations and maintenance personnel. The storage facility will be manned during the daylight shift during weekdays and remotely monitored and controlled at all times from the existing control room of the Lodi Gas Storage Facility control room.

As described in the Final IS/MND, the aboveground piping components will be maintained to minimize leakage of odorized gas. The facility valves, flanges, and other piping components will be monitored for leaks by operations personnel as part of the day to day operation of the facility. In the event that a leak occurs, releasing odorized gas into the atmosphere, the leak will be repaired as soon as practical. In the event that LGS receives notification from a third party concerning the smell of odorant in the vicinity of the proposed facility, LGS operations personnel will investigate the source of the odor, and repair any leaks contributing to the odor as soon as practical. A log of all third party notifications regarding gas odors will be kept. The date of the notification, the cause of the odor, and the date of the repair of any corresponding odorant leaks will be recorded in the log. A copy of the described log will be submitted to the CPUC quarterly.

Required Permits and Approvals

The CPUC will use this PEA as the basis for a CEQA document to disclose the Phase II environmental impacts as part of the Subsequent IS/MND. This document may be used by regulatory agencies responsible for issuing permits and approvals that may be needed to proceed with the proposed project. These agencies are identified in Table 2-3.

Table 2-3. Applicable Project Permits and Other Approvals (Federal, State, and Local)

Agency	Activity	Entitlement
Federal		
U.S. Army Corps of Engineers	Required for the placement of fill into waters of the United States (Primary Marsh Management Area wetlands)	Section 404 – Nationwide Permit Authorization
State		
California Department of Conservation, Division of Oil, Gas and Geothermal Resources	Permit to conduct well operations	Permit
California Department of Conservation, Division of Oil, Gas and Geothermal Resources	Approval to convert Kirby Hills Gas Field, Wagenet Formation, to Gas Storage	Permit
State Water Resources Control Board	Construction activities and discharge of hydrotest water	Permit
Regional Water Quality Control Board	Water quality certification required under Section 401 of the Clean Water Act to support the Section 404 nationwide permit authorization	Water quality certification
Local		
Solano County Department of Building Inspection	Building and Electrical	Permits
Solano County Department of Resource Management	Modification to current permits for additional well sites and pipelines	Permit modification
Solano County Department of Resource Management	Grading permit	Permit
San Francisco Bay Conservation and Development Commission	The Bay Conservation and Development Commission has marsh development permit jurisdiction within the Primary Marsh Management Area	Permit
Bay Area Air Quality Management District	Amendment to air permit for added horsepower above current permit allowance	Permit amendment

Table 2.2. Kirby Hills Phase II Affected Property Owner List

Landowner	APN	Impact	Mailing Address	Phone
Hamilton, Neil	0048-060-070	Within 1000 ft of Meter Station	P.O. Box 445 Rio Vista, CA 94571	(707) 374-2917
Hamilton, Neil	0048-100-620	Within 1000 ft of Meter Station	P.O. Box 445 Rio Vista, CA 94571	(707) 374-2917
Hamilton, Neil	0048-160-010	Within 1000 ft of Meter Station	P.O. Box 445 Rio Vista, CA 94571	(707) 374-2917
Kirby Hills Associates (Kirk Beebe)	0046-180-070	Within 1000 ft of Kirby Hill Facilities	2555 Joseph Dr. Alamo, CA 94507	(925) 251-4611 cell
Kirby Hills Associates (Kirk Beebe)	0048-070-020	Directly Affected (Kirby Hill Facilities)	2555 Joseph Dr. Alamo, CA 94507	(925) 251-4611 cell
Peters, Ross	0048-050-300	Directly Affected (Meter Station)	7055 Birds Landing Rd. Birds Landing, CA 94512	(707) 374-5575
Wohn, Christopher & Lisa	0046-180-060	Within 1000 ft of Kirby Hill Facilities	2673 Shiloh Rd. Suisun City, CA 94585	(925) 798-1772
Wohn, Christopher & Lisa	0048-040-120	Within 1000 ft of Kirby Hill Facilities	2673 Shiloh Rd. Suisun City, CA 94585	(925) 798-1772
Wohn, Christopher & Lisa	0048-070-010	Directly Affected (Kirby Hill Facilities)	2673 Shiloh Rd. Suisun City, CA 94585	(925) 798-1772
Graham, Kevin and Jill	0048-070-070	Directly Affected (Temporary access route)	2600 Shiloh Road Suisun City, CA 94585	(707) 374-5123 office