

**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA**



**APPLICATION OF
WILD GOOSE STORAGE, LLC.
TO AMEND ITS CERTIFICATE
OF PUBLIC CONVENIENCE AND NECESSITY
(U911-G)**

**PROPONENT'S ENVIRONMENTAL ASSESSMENT
FOR THE WILD GOOSE PHASE 3 EXPANSION**

A.09-04-021

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EXECUTIVE SUMMARY

BACKGROUND

The Wild Goose Gas Storage Project (the Approved Project), which involves the development of a depleted and abandoned underground natural gas field for use in natural gas storage, consists of the initial development between April 1997 and April 1999 (the Base Project), and a later expansion (the Expansion). The Approved Project per the Certificate of Public Convenience & Necessity (CPCN) Decision 97-06-091, as amended by Decision 02-07-036, includes the following components:

- An 8.5-acre Well Pad Site (WPS) with 24 injection/withdrawal, and observation wells at the location of the abandoned original Wild Goose Gas Field production compression facility on the property of the Wild Goose Club
- A 4.5-mile, 18-inch-diameter bi-directional natural gas pipeline (storage pipeline) and 3-inch-diameter produced water pipeline between the WPS and Remote Facility Site (RFS)
- A second bi-directional pipeline, 24-inches in diameter, generally following the existing pipeline between the WPS and RFS in the same right-of-way with the existing 18-inch pipeline
- An 12.2-acre RFS with six gas-fueled engines and compressors with natural gas coolers yielding 21,000 horsepower (HP), two buildings, 3 dehydration units/ gas process trains, 6 water storage tanks, water disposal pump skid, and water injection well
- An interconnect to the existing 12-inch diameter Line 167 (L167) of Pacific Gas and Electric Company's (PG&E's) Sacramento Valley Local Transmission System (SVLTS)
- A 25.5-mile, 30-inch diameter bi-directional pipeline (interconnect pipeline) interconnected with PG&E's Line 400 (L400) backbone natural gas pipeline system at the Delevan Compressor Station
- A mid valve station located approximately 11.5 miles west of the RFS, which provides a means of stopping gas flow through the 30-inch pipeline, and segregating the east and west portion of the line.
- A 140 feet by 200 feet interconnect facility with valves, metering and pressure monitoring equipment (Delevan Interconnect Site) along the access road to PG&E's Delevan Compressor Station

- Two fiber optic communication cables, one primary and one spare, located in the trench with the pipe, between both the WPS/RFS and RFS/Delevan Interconnect Site, to allow remote operation of valves and data acquisition by Wild Goose Storage, LLC (WGS or Wild Goose)

Of the above mentioned Approved Project components, there are some items that are yet to be completed. These include, with estimated on-stream date in parentheses, construction of the 24-inch loop pipeline (September 2009), drilling additional withdrawal/injection wells (September 2009), installation of 7,100 HP compression and a third dehydration/gas process train within the RFS (September to December 2009). These items are not a part of the subject Proponent's Environmental Assessment (PEA or assessment), as they were addressed as part of WGS' Expansion Application.

When the Approved Project is completed it will have up to 450 million cubic feet per day (MMcfd) of injection capability, 700 MMcfd of withdrawal capacity, and approximately 29 billion cubic feet (Bcf) of storage capacity.

PROPOSED PROJECT

WGS is proposing to expand its existing natural gas storage facility, beyond the capabilities currently certificated, to more fully utilize the injection, withdrawal and storage capacity of the most suitable natural gas storage reservoirs in the field, resulting in a cumulative total of approximately 650 MMcfd of injection, approximately 1,200 MMcfd of withdrawal, and approximately 50 Bcf of storage capacity. The proposed components associated with the WGS second expansion (or third phase) of its storage facilities (Project or Phase 3 Expansion) are illustrated in Figure ES-1: Project Components, and are described below:

Delevan Interconnect Site

In order to accommodate the increased withdrawal and injection flow, PG&E will need to modify the Delevan Interconnect Site and install a new PG&E lateral pipeline between the Interconnect Site and PG&E Line 400/401. The changes to the Interconnect Site will involve installation of a new custody transfer meter, and associated piping, valving, and instrumentation. The new PG&E lateral pipeline will be approximately 670 feet in length, will be constructed adjacent the existing 30 inch lateral line within a new easement (to be obtained by PG&E), and hot tapped into PG&E's Line 401. At this time PG&E's preference would be to install the new meter run parallel to the current meter run within the existing 0.6 acre (140 feet by 200 feet) Interconnect Site. PG&E is performing an engineering study to confirm design work and modifications necessary to accommodate these changes.

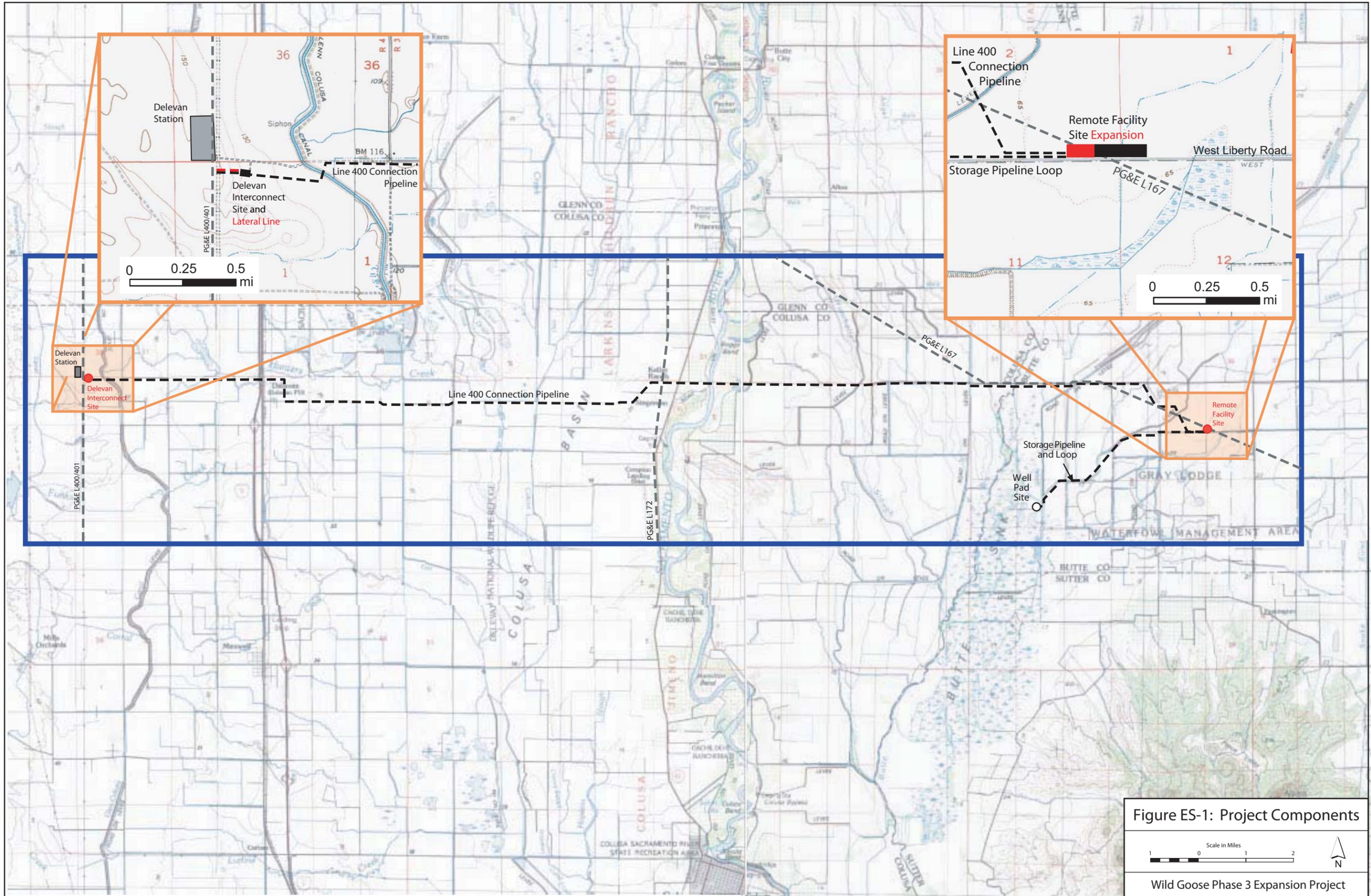
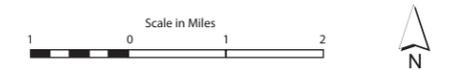


Figure ES-1: Project Components



Wild Goose Phase 3 Expansion Project

Remote Facility Site

The existing RFS will be expanded westward by approximately 540 feet. The compression will be increased from approximately 20,700 HP (six compressor units) to a total of approximately 35,000 HP (approximately 10 compressor units). Two new process trains (for a total of five trains) and two new dehydration units will be installed to provide the proposed injection and withdrawal capabilities.

PROJECT IMPACTS

Through the use of conscientious project planning and design, no potentially significant impacts are anticipated in the following resource categories: Agriculture, Geology and Soils, Hazards and Hazardous Materials, Hydrology and Water Quality, Land Use and Planning, Mineral Resources, Noise, Population and Housing, Public Services, Transportation and Traffic, and Utilities and Service Systems.

Potentially significant impacts are anticipated in the following resource categories: Aesthetics, Air Quality, Biological Resources, Cultural Resources, and Recreation (see Table ES-1). All potentially significant impacts referenced in Table ES-1 will be mitigated to a less-than-significant level.

In addition to those mitigation measures listed in Table ES-1, mitigation measures for less than significant impacts have also been incorporated into the Project. The comprehensive listing of relevant mitigation measures from the Expansion Project Final Environmental Impact Report may be found in the Mitigation Monitoring and Reporting Plan included in Appendix A.

ORGANIZATION OF THE PEA

Chapter 1 of the PEA provides a description of the purpose and need of the Project. Chapter 2 provides a detailed description of the Project area, Project background, facility selection and evaluation process, Project components, construction methods, operations and maintenance program, and required permits and approvals expected for the Project. Environmental issues with regards to the various resources are described and analyzed in Chapter 3 of this PEA. An environmental setting section and impact analysis are presented for each of the environmental issues identified in the CEQA checklist. Each environmental issue is analyzed using the Project information contained in Chapter 2 and based on resource-specific impact methodologies. Chapter 4 describes the objectives of the WGS Phase 3 Expansion and evaluates a reasonable range of Project options, including alternative ways of meeting the objective and alternative locations for the Project facilities. Chapter 5 provides conclusions on whether an impact would

be considered “significant” under CEQA. Significance criteria are based on the State CEQA Guidelines and are defined at the beginning of each impact analysis section.

Table ES-1: Summary of Impacts and Mitigation Measures

Potential Impact	Mitigation Measures	Significance After Mitigation
<i>Aesthetics</i>		
Expansion of the RFS would increase the size of an industrial-appearing facility on an agrarian landscape, and would add additional night lighting.	<ul style="list-style-type: none"> • All buildings and aboveground features will be painted the same neutral color as the existing buildings. Site lighting will be hooded and directed toward the interior of the site. Building design will emulate the existing facility. • Light glare from welding activities at night will be reduced by using smaller grinding wheels and using welding tents or other shielding. • The landscaped buffer strip and berm will be extended around the sides of the expanded RFS. Annual surveys of the landscaping will be performed for five years in the fall of each year. During these surveys, an evaluation of the survivorship of each species and the effectiveness of the visual screening will be completed. Success of the screening will be based on how much of the physical site can be seen from West Liberty Road. The visual screening goal after five years is to view only a broken line of the site rather than an image of unbroken lines. 	Less than significant
<i>Air Quality</i>		
Emissions from combustion equipment during project	<ul style="list-style-type: none"> • Obtain amendment to the existing Permit to Operate from the Butte County AQMD. Submit a copy of the amendment to the CPUC prior to construction. Provide offsets if required by Butte 	Less than significant

operations	County AQMD.	
Emissions of nitrous oxides (NO _x) and reactive organic gases (ROG) during project construction	<ul style="list-style-type: none"> • Maintain all construction equipment in proper tune according to manufacturer's specifications. • Maximize to the extent feasible, the use of diesel construction equipment meeting the CARB's 1996 or newer certification standard for off road heavy-duty diesel engines. • Electrify equipment where feasible. • Substitute gasoline-powered for diesel-powered equipment, where feasible. • Use alternatively fueled construction equipment on site where feasible, such as compressed natural gas (CNG), liquefied natural gas (LNG), propane or biodiesel. • Use equipment that has Caterpillar pre-chamber diesel engines. • Carpooling or bussing of workers will be encouraged. • The pipeline contractor will prepare an Off-road Construction Equipment Reduction Plan prior to groundbreaking. The Plan will include a comprehensive inventory (i.e. make, model, engine year, emission year, emission rating, fuel consumption rate) of all the heavy-duty off-road equipment, 50 horsepower or greater, that will be used an aggregate of 40 or more hours for the construction project, and will include the following: <ul style="list-style-type: none"> ○ 20% of the heavy duty off-road equipment included in the inventory should be powered by EPA/CARB certified off-road engines or by engine retrofit technology, exhaust filtration and low-sulfur diesel fuel, emulsified diesel fuels, or other CARB verified or 	Potentially Significant Impact

	<p>certified technology.</p> <ul style="list-style-type: none"> ○ Construction equipment exhaust emissions will not exceed BCAQMD Rule 202 Visible Emission limitations. ○ Utilize existing power sources (e.g. power poles) or clean fuel generator rather than temporary power generators. Minimize idling time to 10 minutes. ○ Employ construction activity management techniques, such as: extending the construction period outside the ozone season of May through October; reducing the number of pieces used simultaneously; increasing the distance between emission sources; reducing or changing the hours of construction; and scheduling activity during off-peak hours. <ul style="list-style-type: none"> • Develop a customized Construction Mitigation Program with assistance from the Air District. 	
The project could result in fugitive natural gas emissions and odors from valves and flanges	<ul style="list-style-type: none"> • Valves and flanges will be subject to a leak test following installation and following any maintenance on the valve. • Welded connections will be used to the extent feasible to minimize the number of flanges and threaded connections. • Unless necessitated by specific design requirements or valve location limitations, pipeline pressure valve actuators will not be used by WGS. At the Project site, pneumatic valve actuators are presently powered by compressed air. 	Less than significant
<i>Biological Resources</i>		
General impacts to biological	<ul style="list-style-type: none"> • An environmental training program will be provided to all 	Less than significant

<p>resources in the Project area.</p>	<p>construction personnel. Training will include information about protection measures for sensitive species in the Project area, requirements for working in sensitive habitats, and consequences for noncompliance.</p> <ul style="list-style-type: none"> • Vehicles will be confined to existing roads and only approved access roads. • Refueling and hazardous materials storage will be restricted to areas farther than 100 feet from the boundaries of all wetlands, streams, and drainages, or refueling will be limited to designated areas that are protected with berms lined with a non-porous material to ensure that accidental spills will not contaminate the water body. All hazardous materials spills will be cleaned up immediately and disposed of properly. • The edge of the work area will be clearly marked to contain construction activities. • A qualified biologist will be on-site during construction activities in suitable habitat for sensitive species to perform supplemental surveys just prior to construction and to monitor compliance with mitigation measures. • The introduction of noxious weeds carried in with construction equipment will be minimized by washing the equipment before it is delivered to the Project. In addition, only weed-free erosion control materials will be used on the Project. • Trench backfilling will occur within 72 hours of pipeline installation to preclude potential impacts to wildlife that may fall into the trench. • At the conclusion of each day's trenching activity, the end of 	
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	<p>the trench will be left ramped at an approximate 2 to 1 slope to allow any wildlife falling into the trench to escape.</p> <ul style="list-style-type: none"> • Water withdrawal for hydrostatic testing will be timed and conducted in a manner to avoid adverse effects to fish and aquatic life 	
<p>Temporary disturbance of annual grasslands during construction of the PG&E lateral and Delevan Interconnection Site.</p>	<ul style="list-style-type: none"> • Surface disturbance along the pipeline ROW in grasslands will be scarified and allowed to re-establish using the existing seed base in the topsoil, or if necessary, will be hydroseeded with a suitable native seed mix. • The Comprehensive Landscape Restoration Plan prepared during the Expansion will be implemented to ensure that vegetation is restored and noxious weeds are controlled. 	<p>Less than significant</p>
<p>An area of freshwater marsh/open water ditch approximately 100 feet long could be impacted by access into the expanded facility and relocated parking area.</p>	<ul style="list-style-type: none"> • WGS will conduct restoration of the drainage ditch, and/or acquisition of mitigation credits consistent with the Corps Section 404 permit dated December 17, 2002 (File # 200100383). 	<p>Less than significant</p>
<p>Adverse effects to sensitive plants from construction activities</p>	<ul style="list-style-type: none"> • Sensitive plant surveys will be conducted prior to construction within suitable habitat in and adjacent to Project work areas and during the appropriate survey window. • Where sensitive plants occur within the construction work area, the work area will be adjusted to the extent feasible in order to minimize impacts. • Exclusion fencing will be provided to protect sensitive plants that occur within 50 feet of construction work areas. 	<p>Less than significant</p>

	<ul style="list-style-type: none"> • Extra workspace will avoid locations with sensitive plants to the extent feasible. • The sensitive plant species potentially present in the three vernal pools just west of the Glenn-Colusa Canal will be avoided by construction. • Sensitive plant species that are unavoidable by construction will be transplanted or replaced. 	
<p>Direct impacts to giant garter snake from construction activity, and the temporary and permanent loss of foraging habitat and hibernacula</p>	<ul style="list-style-type: none"> • WGS will implement the requirements in U.S. Fish & Wildlife Service (USFWS) Biological Opinion dated September 13, 2002 (File # 1-1-02-F-0060) and the California Department of Fish and Game (CDFG) Take Permit dated September 26, 2002 (File # 2081-2002-017-02) as amended for the Phase 3 Expansion. • A qualified biologist will monitor construction to ensure that no sensitive reptile species inadvertently enter the work area. • WGS biologists will obtain authorization from the USFWS and the CDFG to handle the giant garter snake for the purposes of removing it from harms way during construction and operation of the Project. • Preconstruction surveys for giant garter snake and northwestern pond turtle will be performed within 24 hours prior to construction at the RFS. If a giant garter snake or any other sensitive species is found, it will be allowed to escape on its own, or will be removed from harm's way by an authorized biologist and relocated to suitable habitat. USFWS and CDFG will be notified whenever a snake is handled by an authorized biologist. 	<p>Less than significant</p>

	<ul style="list-style-type: none"> • Other than ROW isolation dike construction and irrigation flow culvert installation, construction adjacent to flooded rice fields and other potential habitat will be confined to May through September unless otherwise authorized by the USFWS and CDFG. • Temporary ROW isolation dike construction and irrigation flow culvert installation activities in rice fields will preferably be conducted in the fall following harvest. If this is not feasible, it will not begin before May 1 (unless otherwise authorized by the USFWS and CDFG) and will, if possible, coincide with the spring field preparation activities. 	
Adverse effects to suitable breeding and basking habitat for northwestern pond turtle by construction activity	<ul style="list-style-type: none"> • Preconstruction surveys for northwestern pond turtle will be performed within 24 hours prior to construction at the RFS. If a northwestern pond turtle is found, it will be allowed to escape on its own, or will be removed from harm's way by an authorized biologist and relocated to suitable habitat. 	Less than significant
Disturbance of sensitive birds during nesting periods by construction activity	<ul style="list-style-type: none"> • Construction within one-half mile of active Swainson's hawk nests will be avoided between April 15 and August 1 if feasible. If not feasible, nesting hawks within one-half mile will be monitored, construction activities will be halted if signs of disturbance are noted, and CDFG will be consulted to determine possible options • A minimum 500-foot buffer will be maintained for other tree-nesting species (white-tailed kites, Cooper's hawks, and yellow-billed cuckoo) until after the young have fledged. • A minimum 250-foot buffer will be maintained for ground nesting or shrub-nesting species (northern harriers, tricolored 	Less than significant

	blackbird, black tern, white-faced ibis breeding colonies, loggerhead shrikes, and American bitterns) until after nesting is complete.	
Burrowing owl nest could be destroyed by construction vehicles if they move into Project work areas during construction	<ul style="list-style-type: none"> • Detailed preconstruction surveys will be conducted for burrowing owls to determine locations within the annual grasslands. To the extent feasible, proposed Project facilities will avoid active burrows. • If burrowing owls occur within the proposed construction area, a 250-foot exclusion zone will be maintained around the burrows until relocation is complete. Passive relocation may be used during the non-breeding season (September 1 through January 31) if it is determined that construction activities would disturb owls. Passive relocation would include installing one-way doors on the entrances of burrows located within the Project area. • Under the supervision of a qualified biologist, burrows within the proposed construction area will be excavated using hand tools and then refilled to prevent reoccupation. If any owls are found during the excavation, the excavation will cease and the owls will be allowed to escape. • For each burrow excavated, one natural or artificial burrow will be provided outside the 250-foot buffer zone. 	Less than significant
Temporary disturbance of San Joaquin pocket mouse breeding and nesting activities and direct mortality from construction vehicles	<ul style="list-style-type: none"> • Detailed preconstruction surveys of suitable habitat will be conducted for the San Joaquin pocket mouse. To the extent feasible, the final location of Project components in the grasslands west of the Glenn-Colusa Canal will avoid confirmed San Joaquin pocket mouse habitat. If avoidance is 	Less than significant

	not entirely possible, then the Project area will be narrowed to the minimum necessary to safely conduct pipeline installation and the CDFG will be consulted for site-specific recommendations.	
<i>Cultural Resources</i>		
Disturbance of unknown archaeological or historical resources during construction	<ul style="list-style-type: none"> • WGS will amend the Memorandum of Agreement for the Project and will implement relevant measures from the Historic Properties Management Plan to reduce general cultural resource potential impacts. • If any unanticipated significant cultural materials are exposed, construction operations should stop within 100 feet of the find and a qualified archeologist should be contacted for further recommendations regarding the integrity of the cultural deposits, potential of the deposits to provide information, and the cultural site setting of the discovery. • WGS will include language in the construction specifications and worker training regarding trespass on and restricting public access to known or potential resources, and the procedures to be followed by the contractor during an unexpected discovery situation. 	Less than significant
Disturbance of significant paleontological resources during pipeline trenching	<ul style="list-style-type: none"> • In the event that paleontological resources are discovered during excavation activities, the excavation at that site will immediately cease, and a qualified paleontological monitor will be called to investigate and evaluate the discovery. 	Less than significant

<i>Recreation</i>		
<p>Should schedule variables necessitate any outdoor or noise-producing construction activities during the hunting season, hunting opportunities may be temporarily lost due to waterfowl or other game species avoiding the area</p>	<ul style="list-style-type: none"> • Compensation for missed hunting opportunities will be negotiated with the affected hunting clubs and the Gray Lodge manager. 	<p>Less than significant</p>
<p>Outside noise-producing routine operations and maintenance activities at the RFS during the hunting season may adversely affect waterfowl hunting success on the adjacent rice fields and across the road on the Gray Lodge</p>	<ul style="list-style-type: none"> • The Plant Manager at the RFS has, to the extent possible, developed a schedule where major outside noise-producing routine operations and maintenance activities avoid the hunting season. However, should non-routine operations and maintenance activities be required during the hunting season, the Plant Manager will coordinate these activities with the adjacent property owner(s) and the Gray Lodge manager to minimize any adverse effects on hunting. This may include scheduling activities for non-hunting days or avoiding the morning hours when noise will have the greatest effect on hunting success. Through close coordination with the adjacent property owner(s) and the Gray Lodge manager, potential operation impacts to recreational hunting will be minimized to a less-than-significant level. 	<p>Less than significant</p>

1.0 PURPOSE AND NEED

1.1 PROJECT OBJECTIVE AND PURPOSE

The continuing objective of the WGS Phase 3 Expansion is to provide highly flexible natural gas storage services to a variety of customers, which includes gas utilities, electric utilities, independent electric generators, gas marketers, gas producers, the core, industrial gas users, and other wholesale and retail gas customers. The purpose of the Phase 3 Expansion is to capture economic incremental storage, injection and withdrawal capacity of the natural gas storage facility to meet customer demands into the foreseeable future.

1.2 PROJECT NEED FOR CALIFORNIA NATURAL GAS/ENERGY INDUSTRY

1.2.1 Background

In its previous applications before the Commission, Wild Goose Storage, Inc. asserted that the Commission's 1993 Storage Decision created a presumptive showing of need through adoption of a "let the market decide policy" with respect to the construction or expansion of new storage facilities¹. In other words, as long as the applicant was willing to take the financial risk associated with its proposed project, seeking recovery of its investment solely through the rates negotiated with its customers, then it was unnecessary to test the need for a new gas storage facility on a traditional resource planning basis. WGS relied on this presumptive showing of need in obtaining its original CPCN.

In its decision on the Lodi Gas Storage Project², the Commission, however, retreated from the presumptive showing of need established in the Storage Decision and required Lodi to make a more "traditional" needs showing. Based on the record in that proceeding, the Commission concluded that "a general need for competitive gas storage services in California" had been established and that "the benefits of competitive gas storage include (a) increased reliability; (b) increased availability of storage in California; (c) the potential for reduced energy price volatility; and (d) the potential for reduced need for gas transmission service." The need for competitive gas storage and the ensuing benefits thereof which were recognized by the Commission with respect to Lodi have been underscored by the present state of the California energy market.

Continuing growth in the level of electric generation capacity in the state will necessitate growth in the level of gas infrastructure to support such capacity. The majority of generation plants in development in California at this time are natural gas-fired. In this regard, it is projected that the

¹ Re Natural Gas Procurement and System Reliability Issues. *D. 93-01-013, 48 CPUC 2d 107 (1993)*.

² Re Lodi Gas Storage, LLC, *Decision 00-05-048*.

PG&E system will be required to serve substantial increases in demand, primarily from new electric generation. The onset of these additional demands on the system will compel development of incremental capacity to service them.

When a natural gas system is constrained during peak periods, increased gas storage capacity allows the system to serve additional load, provided that the adequate off-peak transmission capacity exists to allow the new storage inventory to be full. In this manner, incremental storage can serve the same functions as additions to gas transmission capacity. A seasonal profile of PG&E's flowing gas supplies shows that the PG&E gas transmission system is constrained during peak periods, but that significant excess capacity exists in off-peak months. The proposed Phase 3 Expansion providing a Project total of approximately: 50 billion cubic feet (Bcf) of storage capacity; 650 million cubic feet per day (MMcfd) of injection; and, 1,200 MMcfd of withdrawal capability will allow for PG&E to serve incremental load in all months, and thus serve as an alternative to perhaps more costly expansions of its backbone transmission system.

The service of incremental loads by PG&E, which will be facilitated by the Phase 3 Expansion, may allow the PG&E transmission system to operate at a load factor higher than the current level. The addition of the capacity from the proposed Phase 3 Expansion should allow PG&E to serve additional load during the two three-month periods of highest demand on its system (July through September and December through February). The service of additional load during the two peak periods should serve to increase the load factor on PG&E's system. Such an increase in PG&E's load factor resulting from the WGS Phase 3 Expansion should provide benefits to all ratepayers.

Additional storage capacity in northern California from the WGS Phase 3 Expansion should also reduce peak period natural gas prices. A well understood aspect of the natural gas market is that prices rise during peak periods due to increases in customer demand as well as supply and transportation constraints resulting from those increases in flows during such periods. The capacity added to the PG&E system as a result of the WGS Phase 3 Expansion will have the "peak shaving" effect of moderating peak period prices. Storage users, selling into price peaks, will dampen those peaks, to the benefit of all consumers. In this respect, it is anticipated that the proposed storage expansion will reduce the PG&E city-gate prices paid by a majority of non-core customers in PG&E's service territory. A reduction in non-core gas prices is significant not only for the savings afforded non-core customers, but could result in lower energy prices for a large number of Californians. A large sector of the non-core customer base is natural gas-fired electric generators where a reduction in the price of natural gas could translate into a lowering of the prices charged for electricity in the state. Moreover, all PG&E customers, including core customers, who purchase gas during peak periods will benefit, by way of lower prices, from the peak shaving effect of the expanded Wild Goose facility.

Finally, additional compression is needed to minimize the cost of gas injected. For example, if gas prices were lower on a specific summer day, the ability to inject more lower-priced gas could result in a reduced average cost of gas for the full summer.

1.2.2 Related Storage Facilities

There are no other storage facilities other than the one described above.

1.3 PROJECT APPLICATION

Wild Goose proposes to operate the Phase 3 Expansion seamlessly from a customer's perspective with its current Wild Goose Facility. Thus, Wild Goose customers will continue to contract with PG&E to transport gas to one of the two Wild Goose interconnection points with PG&E, paying the associated PG&E transmission rate. The gas will then be transported on Wild Goose's facilities and injected into the storage reservoir. Customers must then schedule with Wild Goose to withdraw their gas while also nominating with PG&E for transportation from the Wild Goose interconnect with PG&E to the point of end use on PG&E's system utilizing PG&E's zero rate "Mission Path" (in this manner the customer only pays one transportation rate on PG&E).

2.0 PROJECT DESCRIPTION

2.1 PROJECT BACKGROUND

The Approved Project, which involves the development of a depleted and abandoned underground natural gas field for use in natural gas storage, consists of the Base Project development between April 1997 and April 1999, and the construction of an expansion to the existing facility between. The Approved Project components per Certificate of Public Convenience & Necessity (CPCN) Decision 97-06-091 are described in Executive Summary. The Approved Project components, as well as the proposed expansion components, are illustrated on Figure 2-1: Vicinity Map and Figure 2-2: Project Components.

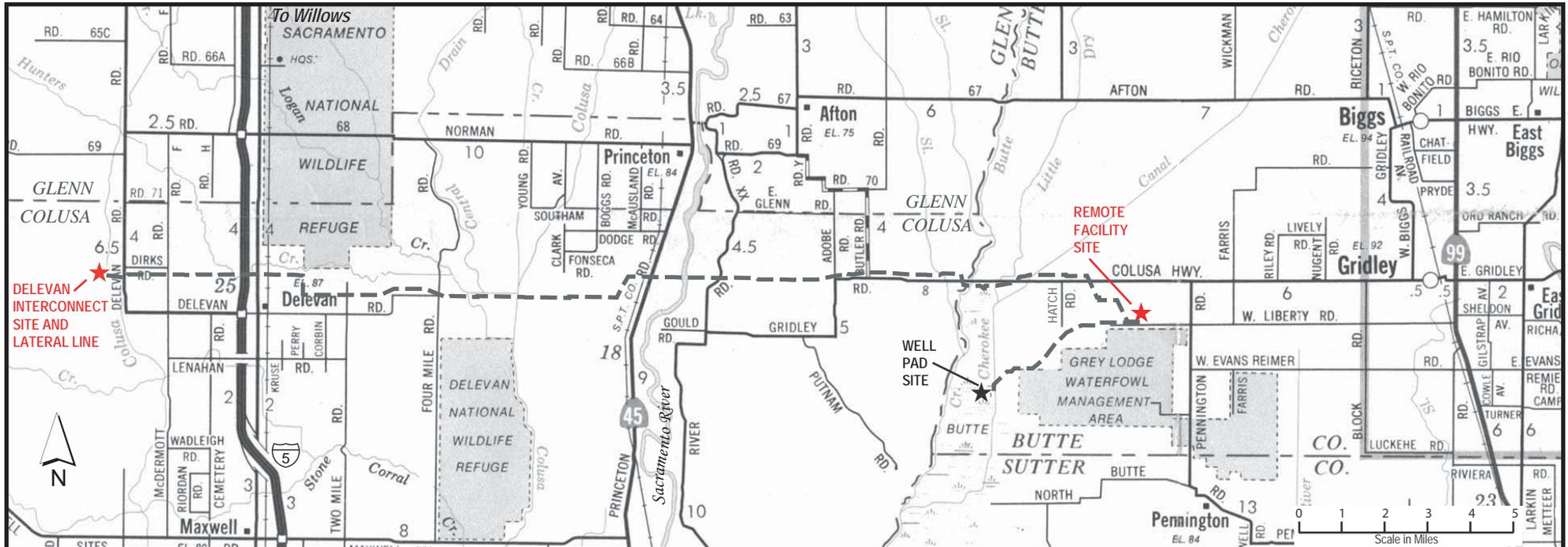
2.2 PROJECT OWNERSHIP

On March 6, 2006, EnCana Corporation agreed to sell substantially all of its North American gas storage business to the Carlyle/Riverstone Global Energy and Power Fund. The first phase of this transaction, which did not include the sale of Wild Goose, closed on May 12, 2006 and the business is now called Niska Gas Storage (NGS). NGS received approval from the California Public Utilities Commission (CPUC) in Decision 06-11-019 issued on November 9, 2006 to acquire ownership of Wild Goose and thus the WGS Project facilities.

2.3 SITE DESCRIPTION

WGS is requesting CPUC review and certificate the maximum foreseeable Project expansion scenario which will utilize the storage, injection, and withdrawal capacity of the most suitable natural gas storage reservoirs. The scope of the Phase 3 Expansion will provide a Project total of approximately: 50 billion cubic feet (Bcf) of storage capacity; 650 million cubic feet per day (MMcfd) of injection; and, 1,200 MMcfd of withdrawal capability. Because project development is driven by market demand for natural gas storage, the maximum scope of the Phase 3 Expansion is anticipated to be constructed as quickly as possible while taking into account the significant constraints posed by environmental mitigation measures that limit WGS' access to the project areas during certain times of the year. Another factor affecting the time required for completion of the Phase 3 Expansion involves the time to mobilize construction crews in a timely manner.

The primary Project components associated with the maximum foreseeable Project expansion are discussed below and shown in Figure 2-2: Project Components.



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February 26, 2009, TRC

--- Line 400 Connection Pipeline and Storage Pipeline Loop

★ Project Sites

Study Area



Figure 2-1: Vicinity Map
Wild Goose Phase 3 Expansion Project

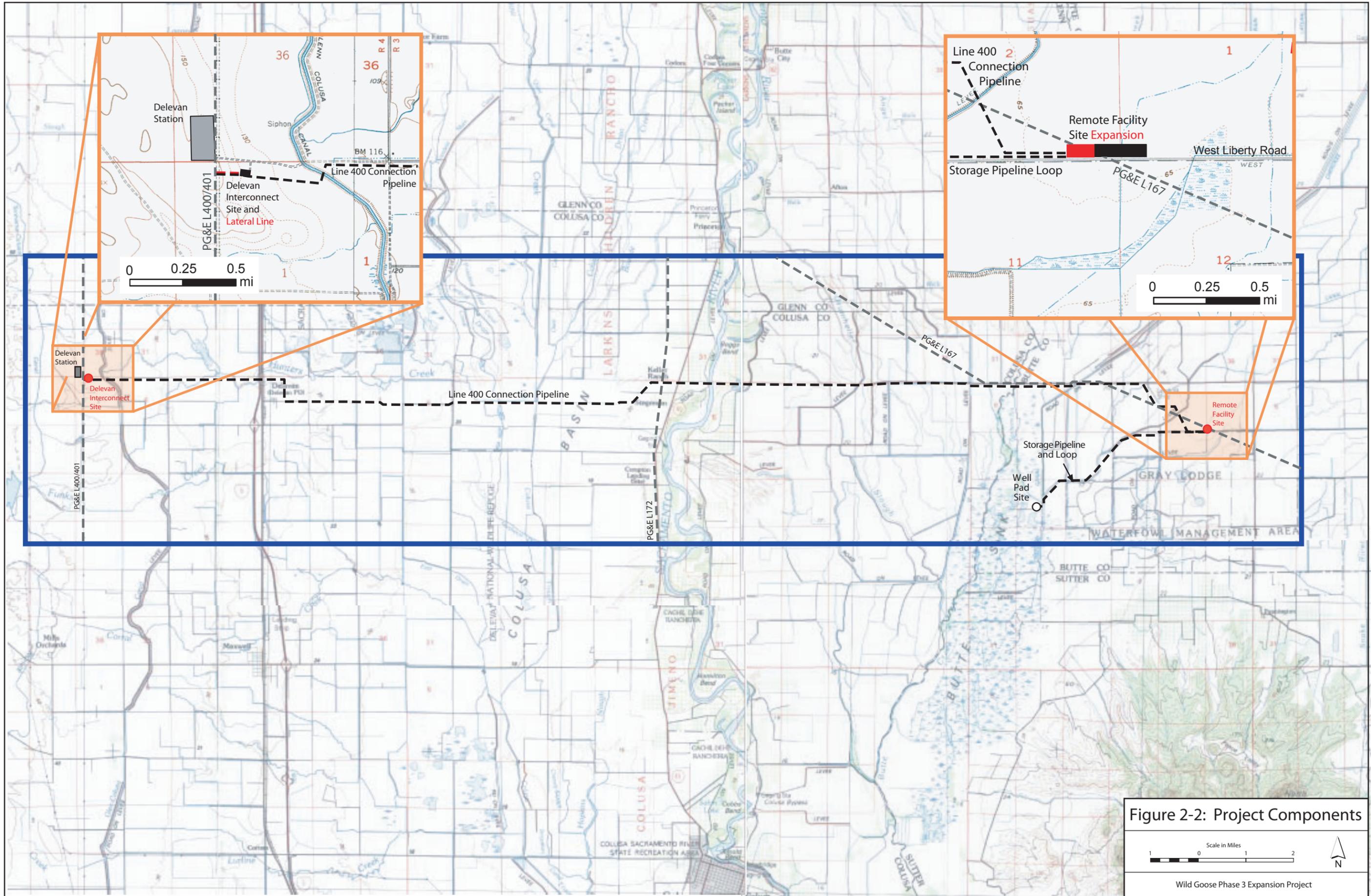


Figure 2-2: Project Components



2.3.1 Location

The Wild Goose Phase 3 Expansion Project is located near the center of the Sacramento Valley approximately 62 miles northwest of Sacramento. The RFS is located approximately 1.12 miles west of the West Liberty Road and Pennington Road intersection in Butte County. The Delevan Interconnect Site is located approximately 0.7 mile west of the Dirks Road and Delevan Road intersection in Colusa County.

2.3.2 Land Uses and Environmental Setting

The RFS is surrounded by agricultural land that is being cultivated for rice to the west, north, and east of West Liberty Road. The Gray Lodge Wildlife Area, managed by the California Department of Fish and Game, is located south of West Liberty Road. The Delevan Interconnect Site is located at the base of the Coast Range foothills adjacent to annual grassland on all four sides, and is situated approximately 0.25 mile west of the Glenn Colusa Canal. Both facilities are located within the relatively flat terrain of the valley floor. The valley area historically consisted of an extensive wetland and marsh system sustained by the Sacramento River and its tributaries. The community of Delevan is about four miles east from the Delevan Interconnect Site. The Sutter Buttes, a noticeable geological and geographical landmark that rise from the Sacramento Valley floor, are located about eight miles south of the RFS. Like most parts of California, the region experiences a Mediterranean type climate, with hot dry summers and mild wet winters.

2.3.3 Formation Information

The Wild Goose Gas Field is a structural dome which contains a series of stacked sandstones of the Upper Cretaceous Kione Formation. Select isopach variations within the Kione Formation suggest there is likely some faulting in the overall structure. Regionally, the Kione Formation is a deltaic succession that was deposited in the Sacramento Basin of present day northern California. The top of the Kione formation sits at 2480 feet depth below ground level in the Wild Goose Field. The total thickness of the Kione interval is 950 feet, with individual sandstones up to 100 feet thick. The Kione Formation is overlain by approximately 50 feet of Sacramento shale, which forms the top seal for the reservoir. An additional 300-350 feet of Capay shale overlies the Sacramento Formation either directly or separated by a thin (less than 10 feet) intervening-zone called the Hangtown.

2.4 EXISTING FACILITIES

2.4.1 History of the Oil/Gas Field

The Wild Goose Gas Field was discovered in 1951 and produced in excess of 100 Bcf of natural gas from 9 primary wells that tapped each of the 12 reservoirs. The Kione Formation is a

compact domal structure with a total thickness of 950 feet, and covers approximately 1 square mile in area. The field discovery well was drilled in 1951 followed by eight wells, drilled in the crestal area of the dome to deplete the high quality reservoir sands. The sides of the dome were defined by 16 additional wells situated radially between 800 feet and 2 miles away from the crest of the dome. These wells provided key input in the geologic description of the reservoir, providing further confidence in the storage conversion.

Natural gas from the field was routed to a small compressor at the location of the existing Well Pad Site (WPS). From there it was transported through an 8-inch diameter collector pipeline to PG&E's Wild Goose Mixer Station on West Liberty Road. Production ceased at the end of primary depletion in 1988 and all wells were abandoned in accordance with the California Division of Oil, Gas and Geothermal Resources (DOGGR) standards.

2.4.2 Underground Natural Gas Field

The Wild Goose Gas Field consists of 12 distinct underground porous rock reservoirs located at depths ranging from 2,550 to 3,450 feet below the ground surface (see Figure 2-3). The individual reservoirs are separated from each other by impervious rock (shale) formations. These reservoirs have three primary characteristics that make the field technically attractive for conversion to natural gas storage:

- The impervious dome-shaped “cap rock,” which varies in thickness from 10 to 75 feet, serves as the top of the reservoir and traps the natural gas within the top portion of the dome.
- The reservoir body is composed of highly porous and permeable sandstone rock within which the gas is actually contained.
- The flanks of the reservoir are saturated with water and are in contact with large, deep saline aquifers that provide pressure support – termed “water drive” – during natural gas withdrawal.

APPROXIMATE
SUB-SEA
DEPTH
2,500 FT.

3,215 FT.

CAPAY SHALE

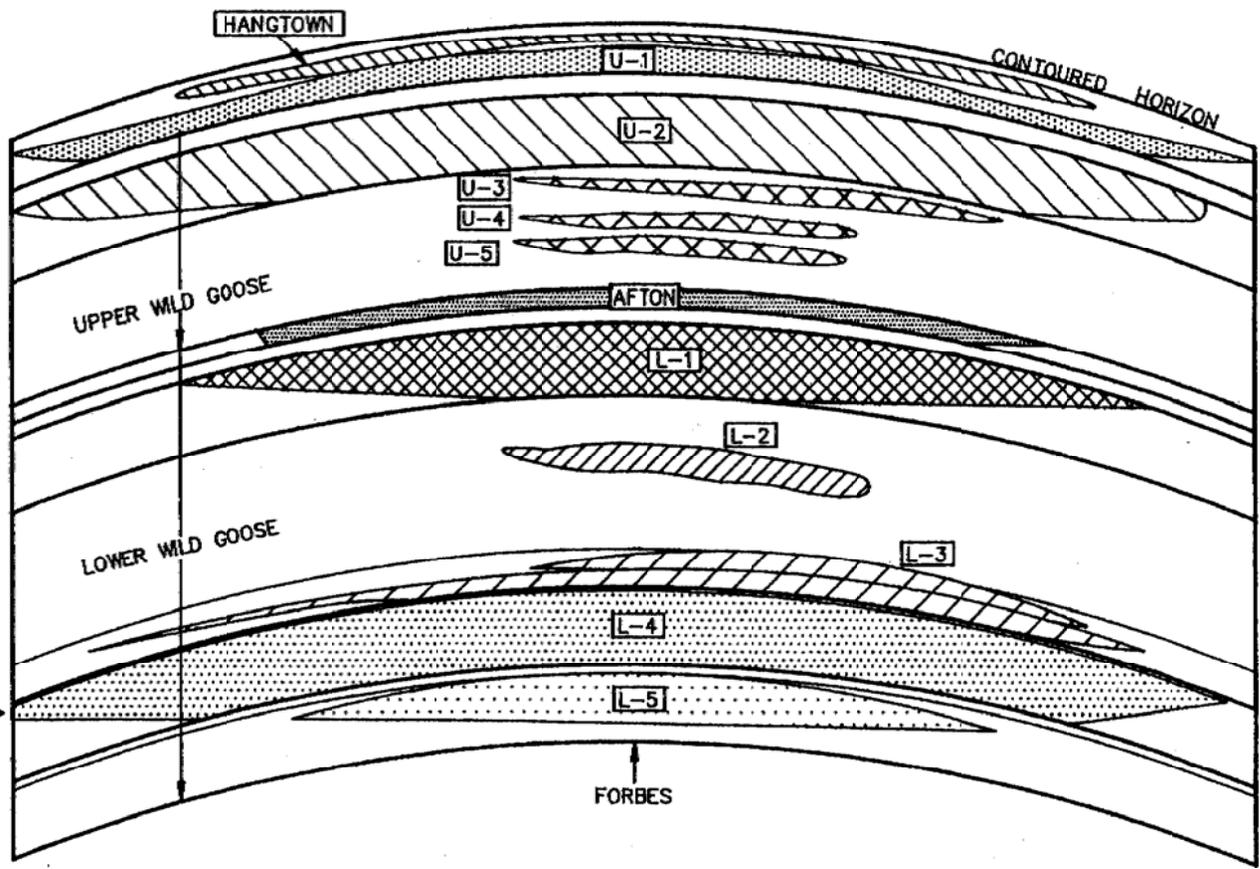


Figure 2-3

Gas Storage Reservoir Cross Section

Wild Goose Phase 3 Expansion Project

not to scale

2.4.3 Reservoir Development

All 12 reservoirs are segregated by impervious shale layers, allowing individual zones to be converted to natural gas storage in response to market demand. Over 100 Bcf of natural gas was produced by the field during the primary depletion. Based on current performance of the storage zones, simulation studies, reservoir geology and the amount of cushion gas needed for each reservoir, the working natural gas storage capacity is estimated to be in excess of 50 Bcf. Of the 12 reservoirs, the L-1, L-4, U-1, and U-2 were determined to have the optimum combination of permeability and strong water drive that are suitable for conversion to storage service.

Very thorough geologic and engineering analyses were conducted to determine the reservoir's ability to store natural gas in the L-1, L-4, U-1 and U-2 zones. This detailed technical data was provided in the Application for Gas Storage submitted to the Division of Oil, Gas and Geothermal Resources (DOGGR) prior to Base Project development and the Expansion. In letters dated August 5, 1997, July 23, 2002, and August 3, 2007, DOGGR approved the use of these zones for storage.

The L-4 reservoir (second deepest zone) was considered to be the best candidate during the Base Project development due to its greater size. Three L-4 horizontal withdrawal/ injection wells were drilled in summer 1998 and due to success of the Base Project development, another two L-4 wells were drilled during summer 2003. Approval was received from the CPUC (Decision 02-07-036) in June 2002 and from DOGGR in July 2002 to utilize the L-1 and U-1/U-2 reservoirs for gas storage. Three L-1 wells were drilled during summer 2002, and injection commenced in this zone during fall 2002. One horizontal U-2 well was drilled during summer 2007, and some cushion gas was injected for testing purposes.

WGS will increase its working gas capacity to 50 Bcf from 29 Bcf using the L-1, L-4, U-1 and U-2 reservoirs. The caprock of each of the four zones was extensively cored, tested and analyzed during the previous Expansion. Even though the capacity will increase to 50 Bcf, the maximum allowable injection-pressure gradient for each zone will not exceed the 0.7 psi per foot limit previously permitted by the DOGGR. This limit is below the core threshold pressures as determined by the mechanical testing of the cores, and is significantly below the theoretical overburden pressure of each proposed storage zone.

As previously described, the L-4, L-1, U-1, and U-2 reservoirs appear to be the most suitable for gas storage. To the extent that any of the remaining eight reservoirs could provide natural gas deliverability consistent with customer demands, they could also be tapped and developed as part of future expansions.

2.5 EXISTING OPERATIONS

2.5.1 Gas Injection Operations

During injection operations, natural gas flows from the PG&E Line 400 Delevan Interconnect Site, through the 30-inch, 25.5-mile pipeline, to the RFS compressor, through the Approved Project's bi-directional 4.5 mile pipeline to the WPS, for injection into the field. A schematic of natural gas flow through the Approved Project's components is shown in Figure 2-4. Typically, natural gas is taken from PG&E's Line 400 at pressures ranging from approximately 650 to 1,000 pounds per square inch gauge (psig) and injected into the reservoir to a maximum design surface pressure of 2,000 psig. The current injection capability is 250 MMcfd although certificated to 450 MMcfd.

2.5.2 Withdrawal Operations

During withdrawal operations, natural gas flows from the WPS back through the RFS and on to PG&E's Line 167 and/or Line 400 transmission system. The wellhead surface pressures under withdrawal conditions typically range from 1,650 psig to approximately 500 psig, and will dictate the use of compression during the withdrawal mode. The gas is routed through inlet separation, filtration, and dehydration to achieve desired gas quality specification prior to free flow, or compressed flow onto PG&E's system. The volume of daily, weekly, and monthly injections and withdrawals will vary with customer demand, subject to the volume, deliverability, and injection capabilities of the field. All injections and withdrawals will continue to be operationally dispatched and controlled by facility personnel working at the RFS. The current withdrawal capability is 450 MMcfd. Achieving the certificated 700 MMcfd withdrawal capability has been slower than expected due to the capital spending restrictions associated with the divestment of the Wild Goose asset by the predecessor, Encana Gas Storage, and the delay in attaining access to all the property to construct the loop pipeline.

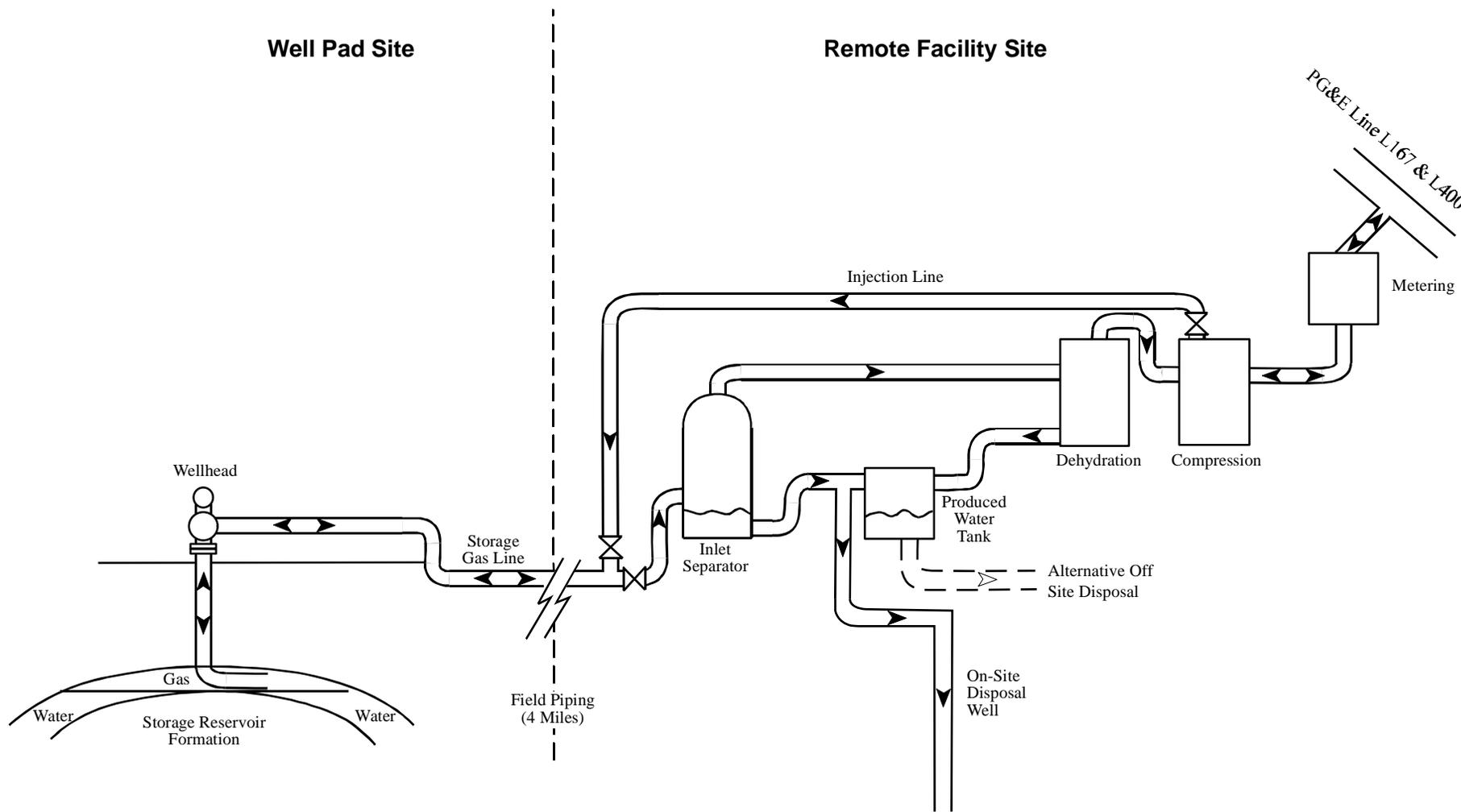


Figure 2-4

Gas Flow Schematic

not to scale

Wild Goose Phase 3 Expansion Project

2.5.3 Produced Water and Other Associated Products

When natural gas is withdrawn from the reservoirs, small amounts of water from deep saline aquifers connected to the storage reservoir may also be withdrawn with the gas. Water production increases to a large volume during the later part of the withdrawal cycle, when the working gas inventory in the reservoir is near depletion. This “produced water,” which is high in mineral salt concentration (approximately equivalent to sea water), must be separated and removed from the gas stream with the use of an inlet separator and a dehydration system. Produced water is temporarily stored in a tank farm at the RFS, and is routed through a pump skid and disposed of in a water injection well that’s also located at the RFS. The water separation, storage and disposal system is setup to automatically handle the produced water that accompanies the gas stream.

2.5.4 Cushion Gas Injection

Typically a two- to three-month start-up phase is required to inject the cushion gas into storage reservoirs. As was done with the L-4 and L-1 zones during Base Project start-up, cushion gas will be injected into the U-1/ U-2 formation to re-establish the gas saturation, slowly depress the natural gas/water contact zone in the porous sandstone formations, and establish the base field pressure. Cushion gas becomes a permanent component of the reservoir and is not normally withdrawn.

2.6 PROJECT COMPONENTS

2.6.1 Delevan Interconnect Site

The custody transfer and metering point of natural gas movements between PG&E’s Line 400 system and WGS Operations occurs at the Delevan Interconnect Site (see Figure 2-5a). An expansion to the Interconnect Site will be required to accommodate the increase in withdrawal and injection volume. A new up to 30-inch PG&E lateral pipeline will need to be constructed between the Interconnect Site and PG&E’s Line 400/Line 401 transmission system. A new PG&E easement running adjacent to the existing 30-foot wide by 670-foot long easement, will be needed for the PG&E lateral pipeline. The new PG&E lateral line will be hot tapped into PG&E’s Line 401 transmission line. Increased meter capacity will be required, as well as a means of regulating flow on and off both Line 400 and Line 401. At this time PG&E believes that the new meter and associated pipe, valves and equipment can be housed within the existing 0.6 acre Interconnect Site. PG&E is conducting an engineering study to confirm piping, equipment design and spacing requirements. However, this PEA is studying the maximum possible impact of the Project by assuming that the facility will need to be expanded by approximately 140 feet by 200 feet and that staging of equipment, temporary pipeline workspace, and access will be conducted in the area between the existing access road and the

new PG&E lateral pipeline. The modified Interconnect Site will be fenced for security, and will be split into two sections by security fencing – one area for PG&E’s custody transfer and metering equipment and the other for WGS’s equipment. Utility service required at the Site is the standard electric service that is already provided by PG&E’s existing 12 kilo Volt (kV) electric distribution line running along the access road. PG&E’s portion of the Delevan Interconnect Site will include the lateral pipeline, valves, meters, pipeline monitoring equipment, and a small pre-engineered metal building to house its instrumentation electronics, calibration system, computer control system, high voltage alternating current (HVAC), recorders, chromatograph, valve solenoids, and communications and metering equipment. WGS’s portion of the equipment at the meter station site include an actuated block valve, control valve and associated electrical instrumentation devices for monitoring and control of equipment. The new station piping will tie-in immediately downstream of the 30-inch pig launcher, before the pipeline enters the ground departing east towards the RFS.

2.6.2 Remote Facility Site

The compression will be increased from approximately 21,000 HP (six compressor units) to a total of approximately 35,000 HP (approximately 10 compressor units). Two new process trains (for a total of five trains) will be installed.

To allow for installation of further process and compression equipment, the RFS will need to be expanded from the current 12.2 acres to approximately 16.7 acres (see Figure 2-5b). The lease area will be extended approximately 540 feet to the west to occupy an area currently used for farm equipment and parking during the hunting season. The proposed expansion area, which includes the berms, will increase the lease area an additional 4.5 acres for a total of 16.7 acres. The operations area will be enclosed by a 6-foot-high chain link security fence. The fenced operations area will increase by 3.7 acres to a total of 12.4 acres. The perimeter landscaped berm will be extended and another access driveway off West Liberty Road may be added to the west edge of the lease area as part of the expansion. Rice field drainage systems will be relocated as required, and the parking area will be shifted from the existing location approximately 540 feet west, and will reside adjacent the west side of the RFS.

Proposed Equipment and Operation

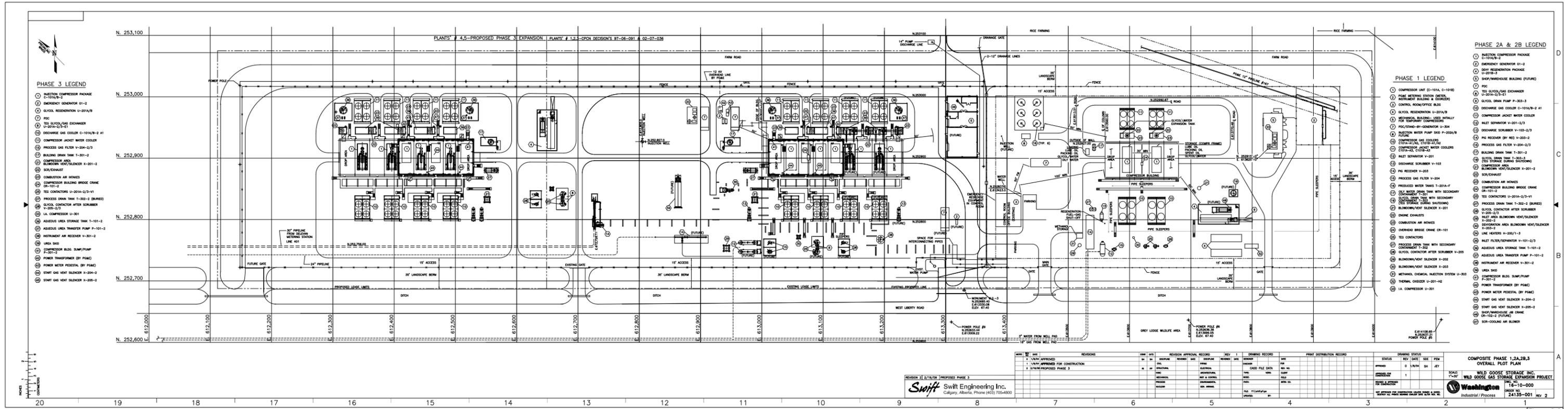
Major components of the RFS maximum foreseeable expansion are described below and are illustrated in Figure 2-6. All proposed aboveground structures will be painted the same neutral color as the existing facilities to minimize visual impact.



Figure 2.5a

Delevan Interconnect Site	
Scale in Feet	
200	100 0 200 400
Wild Goose Phase 3 Expansion Project	





- PHASE 3 LEGEND**
- ① INJECTION COMPRESSOR PACKAGE C-101A/B-2
 - ② EMERGENCY GENERATOR G1-2
 - ③ GLYCOL REGENERATOR U-201A/B
 - ④ POC
 - ⑤ TES GLYCOL/GAS EXCHANGER U-201A/B-2/3
 - ⑥ EXCHANGE GAS COOLER C-101A/B-2 AT
 - ⑦ COMPRESSOR JACKET WATER COOLER
 - ⑧ PROCESS GAS FILTER V-204-2/3
 - ⑨ BUILDING DRAIN TANK T-201-2
 - ⑩ COMPRESSOR AREA BLOWDOWN VENT/SILENCER X-201-2
 - ⑪ SCV/EXHAUST
 - ⑫ COMBUSTION AIR INTAKES
 - ⑬ COMPRESSOR BUILDING BRIDGE CRANE CR-101-2
 - ⑭ TES CONTACTORS U-201A-2/3-1/1
 - ⑮ PROCESS DRAIN TANK T-202-2 (BURIED)
 - ⑯ GLYCOL CONDENSER AFTER SCRUBBER V-202-2/3
 - ⑰ I.A. COMPRESSOR U-201
 - ⑱ AQUEOUS UREA STORAGE TANK T-101-2
 - ⑲ INSTRUMENT AIR RECEIVER V-201-2
 - ⑳ UREA SLO
 - ㉑ COMPRESSOR BLDG. SUMP/PUMP P-201-2
 - ㉒ POWER TRANSFORMER (BY PG&E)
 - ㉓ POWER METER PEDESTAL (BY PG&E)
 - ㉔ SHUNT GAS VENT SILENCER X-204-2
 - ㉕ SHUNT GAS VENT SILENCER X-205-2

- PHASE 1 LEGEND**
- ① COMPRESSOR UNIT (C-101A, C-101B)
 - ② GASE METERS STATION METER
 - ③ INSTRUMENT BUILDING # 000000
 - ④ CONTROL ROOM/OFFICE BLDG
 - ⑤ GLYCOL REGENERATOR U-201A/B
 - ⑥ PROCESSING BUILDING - USED INITIALLY FOR TREATMENT COMPRESSOR
 - ⑦ POC/STAND-BY GENERATOR G-204
 - ⑧ INJECTION WATER PUMP SKID P-202A/B
 - ⑨ COMPRESSOR GAS COOLING CONTACTOR U-201A/B-2/3
 - ⑩ GASE METERS STATION
 - ⑪ GASE METERS STATION
 - ⑫ GASE METERS STATION
 - ⑬ GASE METERS STATION
 - ⑭ GASE METERS STATION
 - ⑮ GASE METERS STATION
 - ⑯ GASE METERS STATION
 - ⑰ GASE METERS STATION
 - ⑱ GASE METERS STATION
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 - ⑳ GASE METERS STATION
 - ㉑ GASE METERS STATION
 - ㉒ GASE METERS STATION
 - ㉓ GASE METERS STATION
 - ㉔ GASE METERS STATION
 - ㉕ GASE METERS STATION

- PHASE 2A & 2B LEGEND**
- ① INJECTION COMPRESSOR PACKAGE C-101A/B-2
 - ② EMERGENCY GENERATOR G1-2
 - ③ GLYCOL REGENERATOR U-201A/B
 - ④ POC
 - ⑤ TES GLYCOL/GAS EXCHANGER U-201A/B-2/3
 - ⑥ EXCHANGE GAS COOLER C-101A/B-2 AT
 - ⑦ COMPRESSOR JACKET WATER COOLER
 - ⑧ PROCESS GAS FILTER V-204-2/3
 - ⑨ BUILDING DRAIN TANK T-201-2
 - ⑩ COMPRESSOR AREA BLOWDOWN VENT/SILENCER X-201-2
 - ⑪ SCV/EXHAUST
 - ⑫ COMBUSTION AIR INTAKES
 - ⑬ COMPRESSOR BUILDING BRIDGE CRANE CR-101-2
 - ⑭ TES CONTACTORS U-201A-2/3-1/1
 - ⑮ PROCESS DRAIN TANK T-202-2 (BURIED)
 - ⑯ GLYCOL CONDENSER AFTER SCRUBBER V-202-2/3
 - ⑰ INSTRUMENT AIR RECEIVER V-201-2
 - ⑱ UREA SLO
 - ㉑ COMPRESSOR BLDG. SUMP/PUMP P-201-2
 - ㉒ POWER TRANSFORMER (BY PG&E)
 - ㉓ POWER METER PEDESTAL (BY PG&E)
 - ㉔ SHUNT GAS VENT SILENCER X-204-2
 - ㉕ SHUNT GAS VENT SILENCER X-205-2
 - ㉖ SCV/PANHOUSE AIR DOME CR-102-2 (FUTURE)
 - ㉗ NON-COOLING AIR BLOWER

REV	DATE	DESCRIPTION	APP'D	CHK'D	REVISED APPROVAL RECORD	REVISED RECORD	CHANGED RECORD	PRINT DISTRIBUTION RECORD	STATUS	DATE	BY	REV
1	1/14/19	ISSUED FOR CONSTRUCTION							APPROVED	01/14/19	SH	1
2	1/14/19	ISSUED FOR CONSTRUCTION							APPROVED	01/14/19	SH	1
3	1/14/19	ISSUED FOR CONSTRUCTION							APPROVED	01/14/19	SH	1

REVISION 3/12/19 (PROPOSED PHASE 3)
Swift Engineering Inc.
 Calgary, Alberta, Phone (403) 705-6500

COMPOSITE PHASE 1,2A,2B,3 OVERALL PLOT PLAN
 WILD GOOSE STORAGE INC.
 WILD GOOSE GAS STORAGE EXPANSION PROJECT
 SCALE: 1"=30'
 DATE: 01/14/19
 DRAWN BY: SH
 CHECKED BY: SH
 APPROVED BY: SH
 PROJECT NO: 24155-001
 REV: 2

Figure 2-6
 Remote Facility Site Expansion
 Wild Goose Phase 3 Expansion Project

All Project staff is stationed at the RFS. The facility is staffed seven days per week with a day shift to meet customer injection or withdrawal nominations. Evening and weekend call-out duties will rotate among the staff. Staff positions include:

- Plant Superintendent/Manager
- Operations staff
- Electrical/Instrumentation Maintenance Technicians
- Mechanical/Equipment Maintenance Technicians

The present complement of six operations and maintenance staff will be supplemented with up to three additional staff at full Project expansion.

Compressor Units

Four additional natural gas-fueled engines and compressors, producing up to an additional 14,200 horsepower, will be installed as part of the Phase 3 Expansion. A single compressor building will be erected within the expanded site that will house all four new compressor units. The new pre-engineered compressor building will include noise attenuation designed into the walls and doors, and will be similar to the existing building in style and exterior materials. An engine jacket water cooler for each unit will be located along the north side of the compressor building. The WGS Marketing group tries to manage daily gas nominations such that the compressor units run at optimal engine load level. Failing that, Operations will adjust day versus evening flow rate to accommodate efficient use of the units while still meeting desired nominations. This in turn helps to reduce emissions from the facility.

Produced Water Storage Tanks

Approximately 6 tanks, representing a total of 2,400 barrels (100,000) gallons, are currently in place within a concrete basin, providing 110 percent external containment. The existing production water tank capacity is sufficient to manage the expected increase in water production volume from the Phase 3 Expansion. The existing system is setup such that produced water that's dumped off separation vessels within the process, is temporarily stored in the tank farm, and is then routed through a pump skid to a water injection well for disposal. If water production volume escalates beyond expected level, WGS may utilize the services of a licensed trucker to haul the water to an approved disposal/ injection well.

Dehydration Units and Reboilers

Two additional dehydration units, the second stage in the two-stage produced water removal process, will operate in a closed-loop cycle, using glycol to remove any remaining moisture from the natural gas. Each dehydration unit will have the ability to operate independently of one another. But, a single glycol regeneration system will be installed and will facilitate glycol processing demands for both dehydration units. Glycol regeneration system usage will be optimized such that only the required glycol volume will be circulated, and the reboiler will be operated at the necessary process temperature to achieve desired lean concentration. Vapors from the glycol regeneration still column will be routed to a single thermal oxidizer to reduce emissions. The natural gas contactors will be approximately 30 feet high. A glycol after-scrubber will be installed downstream of each contactor to ensure there is no glycol carryover into the PG&E pipeline system.

Natural Gas Coolers

Horizontal, forced-air natural gas coolers (one for each new compressor unit) will be installed on the south side of the compressor buildings to cool the natural gas, which heats up during compression. Natural gas must be cooled before it enters the buried pipeline to reduce the thermal stress on the pipeline and valves. The coolers are approximately 15 feet high and are driven by electric fans.

Relief Vent

Pressure relief from compressor station piping, as required by code, is necessary for safe operation of the facility. The WGS natural gas compressor facility, like all natural gas facilities, has incorporated a number of redundant safety systems into the overall operation of the facility. During normal operations, sectional piping is usually blown down whenever a compressor unit shuts down. In addition, abnormal emergency conditions trigger activation of emergency shutdown valves and initiate a blowdown of the entire facility. Both these types of blowdowns depressure the piping and equipment rapidly in a controlled manner. The vents that are used to relieve the pressure are equipped with silencers for noise attenuation. Five silenced blowdown vents are currently in place, and another two vents will be installed in conjunction with completion of the Approve Project (CPUC Decision 02-07-036). Additional silenced blowdown vents will serve the Phase 3 Expansion compressor and process piping to reduce blowdown noise to acceptable levels. Natural gas is lighter than air and dissipates rapidly into the atmosphere.

A third type of depressurization is done via the pressure safety valves, also called “pop valves”. These valves activate only when the pressure exceeds a pre-set level on a vessel or piping. The safest method to relieve this potential overpressure situation is to immediately vent the gas pressure directly to the atmosphere, not by a controlled release through a silencer. Consequently,

these blowdowns are extremely loud, but last only five to ten seconds. In normal operating mode and even under the first level of alarm mode where the emergency shutdown valves are activated, the pressure safety valves do not open. A total of 93 pressure safety valves are currently in place within the RFS, and an additional 21 pressure safety valves will be needed to complete the Approve Project (CPUC Decision 02-07-036). Approximately 45 pressure safety valves will be installed to serve the facilities that are a part of the Phase 3 Expansion.

Glycol Supply/Drain Tank

As part of the Phase 3 Expansion a new 6,000-gallon storage tank with secondary containment may be installed to supply make-up glycol for any minor amounts lost in the natural gas stream. The tank will also provide temporary storage for glycol removed from the dehydration system during maintenance.

Standby Generator

To ensure that the RFS has continuous emergency power, the existing natural-gas-fueled standby generation activates when the local power supply is interrupted. The standby generator will be located in a Power Distribution Center (PDC) building within the expanded RFS. Refer to Figure 2-6 for approximate location of the proposed PDC.

A 2.5 Megawatt (MW) standby diesel fueled generator will be installed within the expanded plant site. The purpose of this generator is to provide sufficient power to run the entire plant process for a temporary period while the PG&E power distribution system is down. This system will be used rarely, but will provide added reliability for the California electrical/gas market, when power grid is down, and gas is needed to be withdrawn or placed onto PG&E's gas distribution system. The generator will be housed in the new expansion site PDC.

Utilities

Natural gas will be used as the fuel for the compressor engines, standby generator, and glycol reboiler. Diesel will be used to fuel the 2.5 MW standby generator. Fuel gas will be obtained directly from natural gas storage supplies or purchased by WGS from natural gas supplies available on the PG&E system. Electricity from the existing 12 kV distribution line along West Liberty Road will continue to be used for jacket water coolers, process gas coolers, pumps, site lighting, office lighting, HVAC system, air compressors, and other miscellaneous equipment. PG&E is in the process of studying if any upgrades are required to handle the additional load associated with the proposed Phase 3 Expansion. Pacific Bell provided upgraded phone service from its existing cable along Pennington Road during Base Project development, and no further upgrades will be required. Well water is used for everything except drinking. Sanitary wastewater from the plumbing in the office building flows to a county-approved on-site septic

holding tank, which is periodically pumped by a local sanitary waste hauler. Solid waste is removed by Waste Management Company.

2.7 PRODUCTION INFORMATION

The L-4 reservoir has been in operation, for gas storage purposes, since September 1998. The reservoir has experienced ten separate injection and withdrawal seasons, which has allowed WGS to gain very useful information about the reservoir's behavior and performance. The same experience has been gained with the L-1 reservoir. It has been in gas storage operation since November, 2002, and has experienced six separate injection and withdrawal seasons.

Pressure and flow is monitored through a SCADA system for each of the wells, allowing for real time assessment of well flowing, or shut-in conditions. In addition, an observation well has been completed in each of the L-1 and L-4 formations, which provides a means of evaluating overall reservoir performance. Pressure response during injection and withdrawal indicates good containment, and that the caprock and lateral seals are holding the L-1 and L-4 injected volume in place. WGS has been very pleased with the success of L-1 and L-4 reservoir performance, and expects similar results with the U-1/U-2 formation when it is developed.

2.8 RESERVOIR INFORMATION

Since storage operations commenced in the L-4 formation in 1998, and the L-1 in 2002, the entire WGS sand section has been assessed for sub-surface structural variation, thickness, lithologic distribution and caprock continuity. Core and log data combined with storage performance measurements and analysis support a reservoir characterization of similar lithology throughout the entire reservoir, with permeability in the range of several darcies³.

The WGS reservoirs have strong water drive mechanisms; meaning the storage gas bubble is pushed towards the wells at the top of the structure by water pressure from the bottom or sides of the reservoir. The advantage of a water drive is that it helps maintain reservoir pressure and therefore well deliverability.

High deliverability capability provided by the prolific WGS reservoirs is facilitated by large diameter horizontal wellbores ranging in lateral length from 400 to 600 feet. Each horizontal completion is completely gravel packed from heel to toe. The L-4 zone is equipped with 5 horizontal wellbores and the L-1 is has 3 horizontal wells. The wells were designed to take high permeability, unconsolidated sands and a strong water drive into account. The design of the

³ A darcy is defined as a unit of permeability, that measures the ability of fluid to flow through rock.

horizontal wells have effectively allowed for high rate gas throughput while maintaining integrity of the down hole completion and surface equipment.

2.9 PROJECT LAND REQUIREMENTS

2.9.1 Delevan Interconnect Site

Depending on the results of the PG&E engineering study, the Delevan Interconnect Site may be required by PG&E to be expanded by up to 0.6 acre. The PG&E lateral pipeline will temporarily disturb approximately 1.5 acres. Up to an additional approximately 1 acre could be temporarily disturbed for access and staging for the pipeline and meter station work. The surrounding grassland is utilized for cattle grazing.

2.9.2 Remote Facility Site

The RFS will be expanded to the west by approximately 4.5 acres. The area located to the west of the RFS is currently used by farm equipment and for hunter parking and camping. A total of 3.5 acres of this parking/ camping area will be temporarily impacted by the Phase 3 Expansion. The equivalent area will be relocated approximately 540 feet west. Approximately 4.5 acres of rice field will be affected by the Phase 3 Expansion.

2.10 CONSTRUCTION

2.10.1 Staging and Access

The following are WGS's estimate of staging and access needs based on its collective experience with similar projects and the Base Project development.

Delevan Interconnect Site

Construction Staging

PG&E will be managing construction activities pertaining to piping modifications at the Delevan Interconnect Site, and installation of the lateral pipeline that will hot tapped into Line 401. A construction staging area may be established adjacent to this site for worker parking, construction office trailer, and/or material laydown. The staging area may be fenced for security. The contractor may have an office trailer at this location as well, and will use bottled water for drinking and portable toilets for sanitary needs.

Construction Access

This site is located on the existing private paved road to the Delevan Compressor Station. Access to this private road is via graveled Delevan Road from Glenn County to the north, or from the

east via the end of Dirks Road in Colusa County.

Remote Facility Site Construction Staging

Construction Staging

Staging for worker parking and equipment and material storage will be located in the existing facility, the expansion area, and possibly within the relocated hunter parking area. A third access driveway to West Liberty Road may be installed to improve ingress and egress from this site. Construction office trailers may be located either near the existing control building or in the expansion area. Temporary construction electrical service connections will be made from the existing PG&E electric distribution line along West Liberty Road as needed. Contractors and their forces will use bottled water for drinking and portable toilets for sanitary needs.

Construction Access

Heavy equipment for the construction at the RFS will be brought in on West Liberty Road via Gridley Road and Pennington Road. The existing bridge on West Liberty Road was upgraded during Base Project development to handle standard maximum weight loads. Material delivery from Sutter County will use West Butte Road, North Butte Road and Pennington Road. As was done during Base Project development, the condition of these roads will be reviewed with Butte and Sutter County Public Works Department staff prior to construction and then following construction. The counties will be reimbursed for road repairs necessitated by damage from construction traffic and hauling.

2.10.2 Construction Schedule, Work Force, and Equipment

Construction Windows

The construction window in Giant Garter Snake habitat is May through September, while rice fields are usually flooded by May 1 and may not be harvested until the end of September. In order to construct the RFS expansion in the rice fields during the active farming period, the site will need to be isolated from the adjacent fields and not flooded. The installation of the temporary rice dikes will be performed by the property owner during normal rice field preparation activities around late-March or early-April. Work at the RFS will not begin before May. After the pad has been constructed, mechanical work that does not entail ground disturbance may continue beyond September 30.

As mitigation to avoid impacts to the waterfowl management and hunting activities in the area, outside noise-producing construction activities should not occur during the hunting season, which typically runs from mid-October through late-January. The construction schedule provides a split construction period for the mechanical work at the RFS to reflect this constraint. Limited

indoor activities or quiet outdoor activities such as electrical and instrumentation work may occur during hunting season. If schedule variables make it necessary to continue full outdoor construction activities into the beginning of hunting season, or to resume full outdoor construction activities before the end of hunting season, WGS will negotiate appropriate mitigation with the adjacent hunting lessees and the Gray Lodge manager to compensate for the lost hunting opportunities.

As mitigation to avoid sensitive bird species during their breeding and nesting season, construction activities may be delayed in the vicinity of active nests until the chicks have fledged.

Construction Work Force

Based on the schedule provided in Figure 2-7, a peak loading of approximately 100 total workers would be involved in the construction of the Project. The work force necessary for construction of the proposed facilities is composed of the following labor crafts:

- Pipefitters
- Equipment operators
- Welders
- Carpenters
- Electricians
- Iron workers
- Surveyors
- Instrumentation personnel
- Laborers
- Swampers
- Mechanics
- Non-destructive examination (NDE) personnel
- Painters/insulators
- Environmental health and safety personnel

Worker origin will depend on the specific Project component to be constructed, and is further discussed in section 3.13: Public Services of this report.

Equipment

Below Table 2-1 lists the equipment expected to be used during Project construction.

Table 2-1: Equipment Expected to Be Used During Project Construction

Type of Equipment	Use
Truck	Lift and transport workers
Bus Service	Transport workers
Crane	Erect pole structure, lift and transport heavy construction items
Backhoe or Bucket Excavator	Excavation, trenching, moving materials
Diesel Tractor	Haul material
Fork Lift	Lifting and moving heavy materials
Grooming/Grading Equipment ---Dozer ---Water Truck ---Motor Grader	----- Move/compact soils ----- compaction and dust control ----- to properly pitch road for run-off
Sideboom	Lifting and supporting pipe
Man Lift	Lifting personnel to elevated work areas
Air Compressor	Air pressure supply for tools
Welding Truck	Welding
Hydrovac	Day lighting underground lines
Vacuum Truck	Deliver water; cleanup
Radiographic Truck	Non-destructive examination (X-ray)
Mobile Office	Supervision and clerical office
Portable Generator	Temporary power supply
Tractor Trailer	Haul materials
Two-ton Truck	Haul materials

2.10.3 Construction Method

Delevan Interconnect Site

Modifications to the Delevan Interconnect Site are expected to be done within the existing 0.6 acre station footprint subject to the results of PG&E's engineering study. A new meter run, parallel the existing run, and associated valving, piping, and instrumentation and electrical will need to be installed. A new PG&E lateral pipeline, approximately 670 feet in length, connecting the Interconnect Site with PG&E's backbone transmission system, is expected to be constructed in a new PG&E right-of-way adjacent to the existing 30-inch lateral pipeline, and hot tapped into Line 401. The exact design details for the Interconnect Site and PG&E lateral pipeline are being confirmed by PG&E.

General Pipeline Specifications

The pipeline associated with the Delevan Interconnect Site will be designed, manufactured, installed, and operated in accordance with the applicable specifications, standards, and regulations established by the industry and state and federal government. The pipeline is expected to be constructed of a high-yield strength steel pipe and will be cathodically protected for corrosion control. The pipe will have a factory-applied external protective coating, and field welds and connections will be coated or wrapped in a similar way. Gas pipeline wall thickness will be determined by the operating pressures in accordance with applicable codes and regulations.

The total work area for the up to 30-inch-diameter PG&E lateral pipeline will include 30 feet of permanent easement and 60 feet of temporary construction easement.

Trenching

Trenching is conducted by tracked backhoes or ditchers, beginning with removal of the topsoil from over the trench and segregating it on the edge of the ROW for replacement following construction. The excavated subsoil is maintained in a separate windrow to be used as trench backfill following installation of the pipe. The trench will be a minimum of 45 inches wide (1.5 times the pipe diameter) and about 6 feet deep to ensure 3 feet of cover over the pipeline. At the conclusion of each day's trenching activity, the end of the trench will be left ramped at an approximate 2 to 1 slope to allow any wildlife falling into the trench to escape.

Stringing

Stringing of pipe is completed by trucking pipe lengths to and along the ROW and unloading with a crane or bulldozer with a side boom onto wooden supports.

Pipe Installation

Pipe installation includes any bending for horizontal or vertical angles in the alignment, welding the pipe segments together, and applying an epoxy-based coating to the joint areas to prevent corrosion. The pipe will not be pushed or dragged into the trench, but will be lowered from the wooden supports into the trench by side booms.

Backfilling

Backfilling the trench involves replacing the excavated subsoil in the appropriate layers. The topsoil is then re-spread to return the surface to its original grade. The bucket of the backhoe is used to compact the backfill in the trench. In addition, when all the subsoil has been replaced, the tracks of the backhoe may be driven along the trench to further ensure adequate subsurface compaction. The topsoil is replaced last to re-establish the preconstruction soil profile. The topsoil may be mounded slightly over the trench to accommodate any future settling of the trench backfill. Backfilling will occur within 72 hours of pipeline installation to preclude potential impacts to wildlife that may fall into the trench.

Hydrostatic Testing

Hydrostatic testing is completed by filling the pipeline with water, increasing the pressure to a minimum of 125 percent of the maximum operating pressure, and holding the pressure for a period of time in accordance with pipeline safety regulations and codes. Following testing, the pipe is typically flushed to remove dirt and other debris. The test and flushing water will be drawn from local sources and returned to these sources as described in section 3.8: Hydrology. An energy dissipation basin consisting of hay or straw bales will be assembled to control the water discharged from the pipeline following hydrostatic testing and flushing. All discharges to waterways will be conducted in compliance with the National Pollution Discharge Elimination System (NPDES) General Permit requirements administered by the Regional Water Quality Control Board.

Cleanup

Cleanup and restoration of the surface along the ROW and temporary workspaces involves removing construction debris, final grading to the finished contour, decompaction of topsoil, and revegetation, if needed.

Commissioning

Commissioning is the drying of the inside of the pipeline, purging air, and filling the pipeline with natural gas.

Remote Facility Site

The existing RFS will be extended approximately 540 feet to the west. The fenced operations expansion area will be stripped of topsoil and organic material, and the area for building foundations will be over-excavated. This excavated material will be stockpiled and used as part of the fill needed to create the perimeter berm. The foundation areas will be filled with structural fill and compacted to support the concrete foundations and anticipated weight of the equipment. The remainder of the fenced area will be filled, leveled, and compacted with clean structural fill to bring the subgrade up to the elevation of the adjacent rice field dikes. Fill material will likely be obtained from one of the two quarries on the Sutter Buttes to the south. Aggregate will be spread and compacted over the subgrade to create a stable surface for construction activities. Drainage structures will be installed, the final grade of the gravel surface will be sloped to drain, and perimeter fencing will be installed.

Site development will continue with the civil, foundation, and structural work, mechanical and piping work, building erection and fabrication, electrical and instrumentation, and finally, berm installation, landscaping, and cleanup. During foundation excavation, forming, and concrete pouring/setting, sump pumps will be utilized to dewater the foundation areas. This groundwater will be pumped, filtered, and discharged into the drainage ditch running along West Liberty Road consistent with the applicable NPDES permit.

Construction water will be obtained through contract arrangements with local water suppliers, irrigation and drainage districts, or hunting clubs that have water rights.

Erosion and Sediment Control and Pollution Prevention

Best Management Practices will ensure that no erosion and pollution will occur. Expansion work will comply with the requirements contained in the Hazardous Materials Release Response Plan prepared for the Expansion project. This plan will be updated as required by the construction contractors. In addition, the Storm Water Pollution Prevention Plan will be updated and complied with for the current expansion plans.

2.11 OPERATION AND MAINTENANCE

2.11.1 Control Systems

The proposed facilities will be integrated into WGS's existing safety measures, operational controls, and the maintenance and monitoring procedures described below. WGS has the expertise, demonstrated track record, and financial resources necessary to ensure that these procedures are implemented.

General System Monitoring and Control

The control room at the RFS serves as the focal point for Approved Project systems monitoring, control, and operation. The WPS, pipeline, Mid-Valve Station, and PG&E Meter Station monitoring, and control functions are connected to the control room computer system by the fiber optic communication system. In addition, PG&E monitors total facility natural gas flow and quality through equipment located in its metering buildings at the Line 167 and Line 400 Interconnect Sites. Control and monitoring functions for equipment and operations within the RFS associated with injection and withdrawal operations are via hardwired electric systems to the control room computer system. The fiber optic cables installed with the Line 400 Connection Pipeline and the 18-inch storage pipeline are used for remote data gathering and control with the WPS, Mid-Valve Station, and the Delevan Interconnect Site facilities and valves.

Remote Facility Site Monitoring and Control Systems

Redundant safety systems were installed in the existing facilities at the RFS. Natural gas, fire, and vibration sensors monitor all equipment and will automatically shut down the facility if abnormal conditions are detected. The facility is staffed with a day shift only, seven days a week. Automatic call-out to the operators occurs when any unusual circumstances arise during non-work hours. When paged by the automatic call-out system, the on-call operator, using a lap-top computer, dials up the telephone modem at the control room. Once the connection is made, the operator has the same graphic displays on the lap-top computer as in the control room and can make all the same operations and equipment adjustments and changes described below.

Control Room Technology

The heart of the control room consists of personal computers and Programmable Logic Controllers (PLC), which provide automation of the control and monitoring functions as well as data collection, recording, and storage (the Supervisory Control and Data Acquisition [SCADA] system). This system provides continuous monitoring of critical systems parameters of all facilities, ensuring the alarm and/or shutdown of process equipment and/or piping areas is engaged when specific operating conditions are detected. The system is connected to two graphic display monitors in the operator's console. One monitor provides a simplified flow diagram and operating status of the entire system. The second monitor provides a menu of graphics available for viewing the operating conditions of individual process areas, or the specific valve line-up or sequencing required for various operations of the system.

System operating parameters that typically will be monitored include flow, temperature, and pressure of the natural gas movements between PG&E's system, the RFS, and the WPS. In addition, major valve status or position for pressure control, flow control, and emergency shutdown valves on the pipelines and well heads is indicated and monitored.

Equipment Operation

From the control room, the operator is able to provide valve line-up and sequencing for natural gas movement between PG&E's system, the RFS, and the WPS, in addition to storage well selection. Valving is open/ closed to accommodate the desired flow path for the specific mode of operation. The various operating modes include freeflow withdrawal, withdrawal with compression, freeflow injection, and injection with compression. The flow path, and the amount of process system being utilized, also depends on the flow nomination for that particular day, the operating pressure on PG&E's Line167/ Line 400 transmission systems, and the L-1, L-4, U-1/U-2 reservoir pressure. The start-up of major pieces of equipment, such as compressors, coolers, and dehydrators, is done manually by an operator from local control panels in the equipment building. This assures that the operators regularly inspect the condition and operation of the equipment and facilities.

2.11.2 Facility Inspection and Survey

The regular inspection of the pipelines, equipment, wells, instrumentation, control, and support systems is critical to the safe, efficient, and economical operation of the Project. Early identification of items in need of maintenance, repair, or replacement ensures continued safe operation of the natural gas storage systems. Written procedures for the operation, inspection, maintenance, and repair of the Project pipelines, equipment, and facilities have been established by WGS in an Operating and Maintenance Plan as required by the U. S. Department of Transportation (DOT) in 49 U. S. Code of Federal Regulations (CFR), Part 192, Subparts 605a (Operations and Maintenance Plan), 615 (Emergency Plan), 801809 (Operator Qualification Plan), 901-951 (Integrity Management Plan). The Project meets or exceeds the minimum requirements of this code.

Remote Facility Site Inspections

Inspection of the RFS and equipment presently occurs on a daily basis. The operator is responsible for walking the site at the start of the shift and noting the condition of fencing, drainage facilities, tanks and containment, piping, valves, instrumentation and control systems, equipment, site lighting, and buildings. Conditions revealed by the inspections are included in the operator's daily log and summarized in a monthly report. The SCADA system, which is hardwired to electrical, pneumatic end devices within the process, provides a means for Operations staff to monitor operating conditions, and assists them with early detection of any abnormal conditions that may warrant maintenance and/or repairs. This in turn helps to minimize the amount of unscheduled downtime.

The Plant Superintendent is notified of any conditions revealed during the inspections/ SCADA monitoring that require further inspection, repair, or replacement. Based on the severity or reduced project safety of the condition, the Plant Superintendent has the authority to re-adjust process flow to a safe level and/or shutdown a portion or all operations until the condition can be corrected. In addition, the operational blowdown valves and the emergency shutdown valves are inspected and tested twice per year which is in compliance with 49 CFR, Part 192, Subpart M.

Pipeline Inspections

Ground inspections and leak surveys of the existing storage pipeline right-of-way are conducted on an annual basis consistent with 49 CFR, Subpart M. These ground inspections include checking for encroachments and reduced cover, as well as assessing the condition of vegetation, warning signs, cathodic protection test stations, and piping. A report summarizing the results of the inspections is prepared and maintained by WGS at the RFS.

2.11.3 Maintenance

Maintenance and Repair Procedures

Maintenance of the sites, equipment, and facilities is a daily part of the operations of this type of project. Minimum requirements for the maintenance, repair, and record keeping of natural gas pipelines and compressor stations are also established by 49 CFR, Part 192, Subpart 605a, and have been included in the Operating and Maintenance Plan.

Routine maintenance, repair, overhaul, and testing of equipment assemblies and subassemblies are conducted by site personnel at the RFS. Major equipment assemblies and subassemblies that require extensive repair, rebuilding, and testing beyond the capabilities of operation's on-site equipment, will be removed from service. This equipment will either be completely replaced or repaired on site by the maintenance contractor, or shipped to a qualified service center depending on service tools and/or parts required for the refurbishment. During equipment repairs, the Project will either operate with the backup or redundant equipment, at reduced capacity, in only one mode (injection or withdrawal), or be completely out of service. The implementation of scheduled maintenance and refurbishment of the equipment reduces the chances of complete system downtime by scheduling major repairs during non-operational periods. During the injection season, equipment associated with the withdrawal cycle is serviced, and vice versa. As such, a complete plant shutdown for maintenance is usually not necessary.

Scheduled Site Maintenance

Routine and scheduled site maintenance within the above ground facilities is conducted on the site access roads, drainage facilities, fencing, site lighting, landscaping, and painting of equipment and aboveground piping. Site access roads and surfaced areas are regraded and

resurfaced as often as necessary to maintain a smooth surface and promote drainage. Regular mowing and periodic clean-out of ditches and culverts assures that the drainage systems operate at their design capacities. Site fencing is inspected regularly and repaired as necessary to prevent unauthorized access to the facilities. The site landscaping is watered and maintained regularly. All equipment and storage tanks, and aboveground piping, valves, and fittings are painted a neutral color upon completion of construction and repainted regularly. The housekeeping and maintenance procedures employed at the facility sites provide a clean work environment and ensure that these sites perform properly while presenting a professional appearance. Much of the maintenance work described above is provided by local service companies.

Parts and Materials

To service and maintain the equipment and facilities, an adequate inventory of service, repair, and replacement parts and materials is warehoused at the RFS. The service and repair parts inventory includes items not generally available locally on short notice, such as repair and overhaul kits, gaskets, electric motors, pumps, instruments, transmitters, rectifiers, wire, specialty hardware, equipment subassemblies, specialty paints, filters, and lubricants. It also includes items that are utilized on a frequent basis, such as small diameter valves and fittings. Maintenance and repair items that can readily be obtained locally, such as fencing, standard hardware, paints, concrete, gravel, and culverts, are not warehoused on the site. WGS makes a conscious effort to minimize the amount of inventory on site, trying to utilize the services of local parts and supply companies as much as possible.

Ongoing general maintenance activities, which are routine activities for natural gas utilities, are conducted either on a regular schedule or on an as-needed basis. These maintenance activities are normally scheduled for periods that do not conflict with agricultural operations or sensitive biological periods. Ground disturbance in these areas will be restored where appropriate.

Vegetation Management

The landscaping and irrigation systems on the pipeline ROW and berms surrounding the RFS require regular maintenance to ensure the vigorous growth needed to meet visual mitigation requirements. WGS's vegetation management program is designed to:

- Eliminate weeds, brush, and trees around equipment and facilities for fire hazard reduction, security, safety, and maintenance access.
- Eliminate noxious weed seed sources.
- Maintain landscape plantings at the RFS to provide a visual screen from adjacent properties and/or the county road.
- Maintain the irrigation systems at the RFS, including replacing or moving sprinkler heads and drip emitters as needed to ensure adequate irrigation coverage.

Access Road Maintenance

The existing access roads are used by facility personnel conducting operations and maintenance activities at the Delevan Interconnect Site. WGS must maintain or assist in the maintenance of this road to keep it usable during the time of year when it is needed, as well as passable for the types of equipment to be used for the anticipated maintenance or operations activity. In addition, maintenance of the entrance roads into the RFS and around its perimeter may be required. Maintenance consists of periodic grading to smooth the surface and remove ruts, and topping with additional gravel as needed. Major maintenance may occasionally be required where winter storm damage or general road deterioration has occurred. In such cases, additional engineered road base fill and/or rock material may be imported to stabilize the sub-base and return the road to its original shape and elevation. Periodic cleaning of drainage culverts may also be required, involving mechanical removal of accumulated vegetation and silt around the inlet and outlet and within the culvert. Where culverts or other drainage structures have been damaged beyond repair, they may be removed and replaced by excavating across the road.

2.12 FUTURE PLANS

The proposed level of development described in Section 2.6 constitutes full Project development of the reservoirs in the natural gas storage field, based on WGS's current understanding of the field's capabilities. It should be noted that the current proposal reflects re-engineering to more efficiently utilize the reservoirs targeted by earlier phases. The scope of the combined Base Project, the Expansion and the Phase 3 Expansion is expected to provide adequate infrastructure that will allow WGS to meet the maximum foreseeable market demands for natural gas storage services. Future development beyond the proposed scope is too speculative to determine and discuss with any degree of confidence at this time.

2.13 REGULATORY REQUIREMENTS

The Wild Goose Phase 3 Expansion Project must conform to the same safety and environmental standards that applied to the Base Project and the first Expansion project, as applicable. The following summary of the most pertinent regulatory agencies that have oversight responsibility for the design, construction, and operation of gas storage, gas pipelines, and related facilities is derived and updated from the EIR for the WGS Expansion Project.

2.13.1 Federal Regulations

U.S. Department of Transportation – Office of Pipeline Safety

The U.S. Department of Transportation (DOT) Office of Pipeline Safety regulates the design, construction, testing, operation, and maintenance of natural gas pipelines and associated facilities (separation, compression, dehydration, valve, and interconnect facilities) in accordance with published regulations (49 CFR 192). These regulations require the following:

- Materials for the pipe and components for use in pipelines must maintain structural integrity under temperature and other environmental conditions that may be anticipated and must be chemically compatible with any gas to be transported.
- The pipe must be designed with sufficient wall thickness or must be installed with adequate protection to withstand anticipated external pressures or loads.
- Each component of a pipeline must be able to withstand operating pressures and other anticipated loadings without impairment of its serviceability.
- Welding must be performed by a qualified welder in accordance with welding procedures set forth in 49 CFR 192, Subpart E.
- The pipeline must be constructed in accordance with comprehensive written specifications or standards that are consistent with 49 CFR 192, Subpart G.
- The pipeline must be inspected to ensure that it has been constructed in accordance with 49 CFR 192, Subpart G.
- The pipeline must be protected from external corrosion by an external protective coating and a cathodic protection system.
- A new, repaired, or relocated pipeline must be tested to substantiate the maximum allowable operating pressure and to ensure that all leaks have been located and eliminated before it can be placed into service.
- The operator shall prepare and follow a manual of written procedures for conducting operations and maintenance activities, responding to emergencies, and handling abnormal conditions.
- The operator shall establish a continuing education program to enable customers, the public, appropriate government agencies, and persons engaged in excavation-related activities to

recognize a gas pipeline emergency and report it to the operator and/or the appropriate public officials.

- The program must be conducted in English and in other languages commonly understood by a significant portion of the non-English speaking population.
- The operator shall have a patrol program to observe surface conditions on and adjacent to the pipeline right-of-way for indications of leaks, construction activity, and other factors affecting safety and operation.
- Pipeline that is abandoned in-place or deactivated must be disconnected from all sources of gas, purged of gas, and sealed at the ends.

U.S. Environmental Protection Agency

The proposed project requires the use and storage of potentially hazardous materials and wastes. The following acts govern the handling of these materials.

Resource Conservation and Recovery Act (RCRA)

RCRA enables the U.S. Environmental Protection Agency (EPA) to administer a “cradle-to-grave” regulatory program that includes all aspects of hazardous materials exposure, from generation and transportation to treatment, storage, and disposal, at all facilities and sites within the nation.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)

CERCLA (known as Superfund) was passed to facilitate cleanup of the nation’s toxic waste sites. In 1986, Superfund was amended by the community right-to-know laws (42 U.S. Government Code 1100 et seq.), which stated that past and present owners of land contaminated by hazardous substances can be liable for the entire cost of the cleanup, even if the material was illegally dumped when the property was under previous ownership.

2.13.2 State Regulations

California Regional Water Quality Control Board – Central Valley Region

National Pollutant Discharge Elimination System General Industrial Storm Water Discharge Permit

In 1999, the California State Water Resources Control Board adopted a General Industrial Storm Water Discharge Permit (Water Quality Order 99-08-DWQ), which requires facility operators to file a Notice of Intent to discharge stormwater runoff to waters of the United States from

specified industrial activities, including mining and oil and gas facilities. The permit requires dischargers to eliminate non-stormwater discharges to stormwater systems, develop and implement a stormwater pollution prevention plan, perform inspections of stormwater pollution prevention measures, and monitor water quality.

California Environmental Protection Agency – Department of Toxic Substances Control

Hazardous Materials Release Response Plan and Inventory Act of 1985

The Hazardous Materials Release Response Plans and Inventory Act of 1985 (known as the Business Plan Act) requires that any business using hazardous materials must prepare a plan describing its facilities, inventories, emergency response plans, and training programs. State regulations in Chapter 6.96 of the California Health and Safety Code and Title 19 of the CCR identify detailed planning and management requirements to ensure that hazardous materials are handled, stored, and disposed of properly to reduce risks to human health and the environment.

Hazardous Waste Control Act

The Hazardous Waste Control Act describes the requirements for proper management of hazardous wastes, including criteria for:

- identification and classification of hazardous wastes;
- generation and transportation of hazardous wastes;
- design and permitting of facilities that recycle, treat, store, and dispose of hazardous wastes;
- treatment standards;
- operation of facilities and staff training; and
- closure of facilities and liability requirements.

2.13.3 Local Requirements

Butte and Colusa Counties

The Tanner Act (Assembly Bill 2984) requires that each county develop a hazardous waste management plan that includes information on current and projected hazardous waste generation, including household hazardous waste, an inventory of contaminated sites and hazardous waste treatment, storage, and disposal facilities, and administrative policies and implementation measures. In addition, the county is responsible for enforcing many state regulations governing hazardous materials management, including waste generation, minimization, and storage. The County Office of Emergency Services (OES) oversees the preparation of emergency plans and inventories by businesses that handle hazardous material. The OES requires businesses that use specific hazardous substances to prepare a comprehensive plan to reduce the risk of an accident.

The counties are responsible for administering applicable provisions of their locally adopted General Plans, zoning ordinance, and building codes.

2.13.4 Permit Requirements

The California Public Utilities Commission is the lead state permitting agency and the U.S. Army Corps of Engineers (Corps) is the lead federal agency responsible for review of the Project. In addition to the permits from these two agencies, the Project will obtain permits from several other federal, state, and local agencies, as shown in Table 2-2. WGS has consulted and will continue to consult with numerous other local agencies, officials, and individuals. Where appropriate, existing permits for the Expansion Project will be amended to cover the Phase 3 Expansion. Local landowners and lessees will also continue to be consulted during easement negotiations and Project implementation.

Table 2-2: Permit Requirements

Permits	Agency	Jurisdiction/Purpose
<i>Federal</i>		
Section 404 Individual Permit	U.S. Army Corps of Engineers	Waters of the U.S. (temporary construction access at RFS) and National Environmental Policy Act (NEPA) lead agency
Section 7 Consultation (through Corps permit process)	U.S. Fish and Wildlife Service & National Marine Fisheries Service	Threatened and Endangered Species Biological Opinion and Take Authorization
<i>State</i>		
Certificate of Public Convenience and Necessity	California Public Utilities Commission	Overall Project approval and CEQA lead agency
NPDES Construction Storm Water General Permit*	State Water Resources Control Board	Surface disturbance greater than 1 acre
NPDES Industrial Storm Water General Permit	State Water Resources Control Board	Industrial storm water discharges
NPDES General Permit for Discharges From Utility Vaults and Other Underground Structures	State Water Resources Control Board	Short-term intermittent discharges from utility vaults to Waters of the U.S.
Section 401 Certification and Low Threat Discharge Permit*	Regional Water Quality Control Board	Water quality certification, hydrotest water discharge, and dewatering
Stream Crossing Agreement	Department of Fish & Game	Waterways and adjacent wildlife habitat areas (temporary construction access at RFS)

Permits	Agency	Jurisdiction/Purpose
Section 2081(b)/2080.1 Permit	Department of Fish & Game	State-listed Endangered Species Take Authorization
Cultural Resource Section 106 Consultation (if required for the Corps permit amendment)	State Historic Preservation Office	Cultural resources protection and management
<i>Local</i>		
Land Use Permit*	Colusa County Planning	Delevan Interconnect Site
Road Encroachment Permits	Butte County Public Works	Temporary construction access from West Liberty Road to RFS expansion area
Building Permits	Butte and Colusa County Development Services	Building permits for structures and buildings
Authority to Construct/Operate	Butte County Air Quality Management District	Combustion emission reduction and monitoring for compressor engines

*Permits for work at the Delevan Interconnect Site will be the responsibility of PG&E.

3.0 ENVIRONMENTAL RESOURCE IMPACT ASSESSMENT

In this section of the Proponent's Environmental Assessment, environmental resources potentially affected by the Project are discussed. Each subsection addresses one environmental resource and provides the existing conditions, potential impacts and proposed mitigation measures as applicable. Under existing conditions, the baseline environmental setting is described. Where appropriate, separate existing setting sections are provided for each of Butte and Colusa Counties. Potential impacts to these resources are identified and discussed in detail and WGS's assessment of the potential significance of those impacts is offered.

Consistent with the Commission's Information and Criteria List, this document has focused only on those impacts WGS believes are significant or potentially significant, and has avoided detailed descriptions of the environmental setting for those resources where few to no effects are anticipated.

Every effort has been made through conscientious planning and design and by approaching certain activities in a least-impact manner to minimize and preclude environmental impacts. In addition, WGS and the Commission now have the benefit of lessons learned during Base Project development and the Expansion, which will be applied to many of the same environmental issues that may be faced with the Phase 3 Expansion. Where mitigation measures were previously successful, they have been incorporated directly into the Phase 3 Expansion. Where measures were less than successful, they have been modified based on past experience to correct those shortcomings and increase successful implementation as part of the Phase 3 Expansion.

WGS believes the Phase 3 Expansion has the potential to cause significant adverse effects on the environment. However, through the implementation of proven mitigation measures and continued adherence to the conditions of all permits issued to the Project, the construction, operation and maintenance of the Phase 3 Expansion facilities can be accomplished without creating any significant adverse environmental effects.

The description of Project alternatives is discussed in section 4.0, Impact Assessment Summary; and section 5.0 provides a comprehensive overview of all the environmental effects of the Project.

3.1 AESTHETICS

3.1.1 INTRODUCTION

This section addresses existing conditions and potential visual and aesthetic impacts associated with the WGS Phase 3 Expansion Project. The analysis of potential impacts describes any changes in existing visual resources that would result from the construction and operation of the Project. Potential impacts are presented as an evaluation of viewer's anticipated responses to those changes.

The assessment concludes that there will be no potentially significant visual impacts from construction or continued operation of the Project. The Project's modifications to the existing Delevan Interconnect Site and RFS will not be readily noticeable to viewers, given the small scale of the changes relative to the existing facilities.

3.1.2 COLUSA COUNTY EXISTING CONDITIONS

3.1.2.1 General Visual Setting

The Project components in Colusa County will consist of an expansion to the Delevan Interconnect Site which is located within open grass and grazing land on its north, south, east, and west side; approximately 0.2 miles to the east of the site is agriculture land. Views of the Project study area are expansive, with agriculture and open grassland dominating. Distant background views include the Coastal Range to the west and the Sierra Nevada Range to the east if air quality permits.

Since natural gas production has occurred for many years in the area, natural gas wells, pipelines, and valve facilities are relatively commonplace. In most instances, these facilities are merely enclosed by a chain link fence for security and no visual screening is provided. As such, viewer sensitivity to these types of installations is considered low.

3.1.2.2 Scenic Highways

Colusa County has identified two state highways – State Route 16 and State Route 20 from the Lake County line – as “eligible” scenic highways within the California Scenic Highway System. However, these routes have not been officially designated. In addition, the following highways have been designated by Colusa County as local scenic highways:

- State Route 20 (between State Route 16 and Williams)
- Maxwell-Stonyford Road
- Bear Valley Road/Leesville-Lodoga Road
- State Route 45 (from Yolo County to Glenn County)
- River Road/Gridley Road

3.1.2.3 Light and Glare

Light and glare is minimal in the Project study area due to its rural character. Except for occasional passing vehicles and local residences, few man-made light sources are present at night in the area where permanent aboveground structures will be expanded.

3.1.2.4 Delevan Interconnect Site

The Delevan Interconnect Site is located west of the agricultural fields in grazing/grassland, the foothills of the Coastal Range form the immediate backdrop to the west. PG&E's Delevan Compressor Station has an industrial appearance with no visual screening. Two PG&E overhead 230 kV electric transmission lattice-style tower lines run along the east side of Delevan Compressor Station. The nearest residence is over one mile away to the southeast, and Interstate 5, the nearest moderately traveled public road, is over three miles to the east.

3.1.3 BUTTE COUNTY EXISTING CONDITIONS

3.1.3.1 General Visual Setting

The proposed Project components within Butte County are located in agricultural areas. Views in the Project study area are expansive, with agricultural uses dominating the foreground and middle ground. Depending on air quality, background views are of the Sierra Nevada or Coastal Mountain Ranges to the east and west, respectively. Aside from the Sutter Buttes rising almost 1,700 feet above the valley floor several miles southeast of the existing Project facilities, there are no distinctive aspects to the existing landscape.

Since natural gas production has been occurring for many years in the area, natural gas wells, pipelines, and valve facilities are relatively commonplace. In most instances, these facilities are merely enclosed by a chain link fence for security and no visual screening is provided. As such, viewer sensitivity to these types of installations is considered low.

3.1.3.2 Scenic Highways

Butte County has identified two scenic areas in the Scenic Highways Element of the General Plan: State Route 70 along the Feather River and State Route 32 to Butte Meadows. Both of these areas are located in the mountains to the northeast of the Project study area.

3.1.3.3 Light and Glare

Light and glare is minimal in the Project study area due to its rural character. Except for occasional passing vehicles and local residences, few man-made light sources are present at night in the area where permanent aboveground structures will be expanded.

3.1.3.4 Remote Facility Site

The visual environment of the area proposed for the expansion of the RFS is characterized by the existing facility to the east, and open rice fields to the north and east. The Gray Lodge Wildlife Management Area to the south has extensive stands of riparian woodland and is more natural in appearance. As is typical in this agricultural region, views are expansive, broken by the occasional farmhouse and outbuildings or riparian corridors. For drivers on Gridley Road, the primary travel corridor in this part of the Project area, the Sutter Buttes form a visual background to the south. The existing facilities are in the middle ground and present a relatively dense and massive industrial appearance in contrast to the surroundings.

The site is visible from two residences – a farmhouse about 5,600 feet to the northwest near Gridley Road and a farmhouse on Pennington Road about 4,500 feet to the east. These residences are clustered with barns and other farm buildings and include some perimeter trees and shrubs. Outside storage of farm equipment, implements, and irrigation pipe is common. Landscaping and an irrigation system were installed on the perimeter berm during Base Project and Expansion development. The plant materials include native and indigenous species and were intended to provide visual screening and wildlife habitat when mature, while not shading the adjacent rice fields.

3.1.4 POTENTIAL IMPACTS

3.1.4.1 Significance Criteria

According to Section 15002(g) of the California Environmental Quality Act (CEQA) Guidelines, “a significant effect on the environment is defined as a substantial adverse change in the physical conditions which exist in the area affected by the proposed project.” As stated in the Section 15064(b) of the CEQA Guidelines, the significance of an activity may vary with the setting. According to Appendix G of the CEQA Guidelines, visual and aesthetic impacts may be considered significant if the Project:

- has a substantial, adverse effect on a scenic vista;
- substantially damages scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway;

- substantially degrades the existing visual character or quality of the site and its surroundings; and
- creates a new source of substantial light or glare, which will adversely affect day or nighttime views in the area.

In applying these criteria to determine significance, a variety of factors were considered, including:

- the extent of Project visibility from residential areas, public park land, and designated scenic routes;
- the degree to which the various Project elements will contrast with or be integrated into the existing landscape;
- the extent of change in the landscape's composition and character; and
- the number and sensitivity of viewers.

Project conformance with public policies regarding visual quality was also taken into account.

3.1.4.2 Delevan Interconnect Site

The Delevan Interconnect Site has low visual sensitivity due to its location. It is not in the foreground or middle ground of any major public roads, and it will be similar in use and appearance to the existing Delevan Interconnect Site and Delevan Compressor Station. Only the top of the metal control building will extend above the perimeter chain link fence. The PG&E lateral pipeline will be underground and the surface will be restored to pre-existing conditions. Consequently, impacts to aesthetics at this site will be less than significant and no visual screening is proposed.

Pipeline markers will be installed in the alignment and at inter-visible locations, to provide notice of the approximate location of the line. Although these markers must be visible to be effective as safety devices, they would be sufficiently spaced along the line so as not to result in a significant visual impact to the scenic vista.

3.1.4.3 Remote Facility Site

The RFS will be expanded from the current 12.2 acres to approximately 16.7 acres. The Phase 3 Expansion will involve moving the lease area to the west approximately 540 feet to accommodate the equipment associated with the Project. The approximate increase in area at the RFS will be 4.5 acres. The tallest individual component on the Project site will be the addition of a second 30-foot-high compressor building. Night lighting will be provided for security and maintenance staff. The structure, mass, height, and density will be similar to those of the existing operation. The Project area will also be surrounded by a 35-foot landscaped buffer strip.

Potential significant impacts include the intrusion of an industrial-appearing facility on an agrarian landscape, and additional night lighting.

3.1.5 PROPOSED MITIGATION MEASURES

3.1.5.1 Delevan Interconnect Site

There will be no significant visual impacts at the Delevan Interconnect Site and thus no mitigation is necessary. To further reduce impacts, all buildings and aboveground features will be painted the same neutral color as the existing buildings. Site lighting will be hooded and directed toward the interior of the site. Building design will emulate the existing facility.

3.1.5.2 Remote Facility Site

All buildings and aboveground features will be painted the same neutral color as the existing buildings. Site lighting will be hooded and directed toward the interior of the site. Building design will emulate the existing facility.

Light glare from welding activities at night will be reduced by using smaller grinding wheels and using welding tents or other shielding.

The landscaped buffer strip and berm will be extended around the sides of the expanded RFS. Annual surveys of the landscaping will be performed for five years in the fall of each year. During these surveys, an evaluation of the survivorship of each species and the effectiveness of the visual screening will be completed. Success of the screening will be based on how much of the physical site can be seen from West Liberty Road. The visual screening goal after five years is to view only a broken line of the site rather than an image of unbroken lines. With the implementation of these mitigation measures, the visual impact of the RFS expansion will be less than significant.

3.2 AGRICULTURAL RESOURCES

3.2.1 INTRODUCTION

This chapter describes existing land agricultural resources in the area of the Approved Project, as well as impacts to agricultural resources that could result from construction and operation of the Project. Project construction activities will comply with all applicable federal, state, and local non-discretionary regulatory requirements. Construction and operation of the Project will have a less than significant impact on agricultural resources.

3.2.2 COLUSA COUNTY EXISTING CONDITIONS

3.2.2.1 General Agricultural Setting

Large farms dominate the Project study area in Colusa County. For the most part, the land is flat and used for rice production, orchards, and row crops. Rice is the dominant crop in the county; however, near the Sacramento River, there are fruit and nut orchards and row crops. The annual grasslands found west of the Glenn-Colusa Canal are used for cattle grazing (see Figure 3.2-1a Existing Land Uses).

3.2.2.2 Delevan Interconnect Site

The Delevan Interconnect Site is located at the base of the Coast Range foothills adjacent to annual grassland and is situated approximately 0.25 mile west of the Glenn Colusa Canal. The site is located within the relatively flat terrain of the valley floor. The grassland area surrounding this site is currently used for cattle grazing and zoned as non-irrigated agriculture. The additional metering, piping, and valve equipment associated with the Phase 3 Expansion will likely be housed within the existing Interconnect Site. PG&E is in the process of conducting an engineering study to confirm spacing requirements for the new equipment and if necessary the facility will be expanded into the surrounding grasslands. A new PG&E lateral pipeline, that's approximately 670 feet in length, will be installed parallel to the existing pipeline within the annual grasslands between the Interconnect Site and the hot tap at PG&E's Line 401. Approximately 0.2 mile to the east sits currently utilized large expanses of prime agriculture land.

3.2.3 BUTTE COUNTY EXISTING CONDITIONS

3.2.3.1 General Agricultural Setting

The western edge of Butte County is characterized by large-acreage farms dedicated almost entirely to rice production. Irrigation water from canals and ditches is introduced at the high end of the fields to allow sequential flooding of down-gradient fields. Fields are separated by dikes,

and water level and movement is controlled by check boxes. The rice fields in the vicinity of the RFS have been leveled, allowing large tracts to be farmed more efficiently with higher production rates (see Figure 3.2-1b Existing Land Uses).

The lands affected by the expansion of the RFS are zoned for agriculture with a 40-acre minimum parcel size (A-40). The Butte County zoning ordinance allows gas wells, including re-injection wells, and the erection, construction, alteration, or maintenance of gas transmission facilities. Butte County has confirmed that Project components are permitted uses in areas zoned for agriculture.

3.2.3.2 Remote Facility Site

The RFS is surrounded by agricultural land that is being cultivated for rice to the west, north, and east of West Liberty Road. The Gray Lodge Wildlife Area, managed by the California Department of Fish and Game, is located south of West Liberty Road. Directly to the west of the site lies a parking lot/disturbed area used by hunters and farmers for parking. Directly west of that lies what is predominantly classified as “prime” farmland, the north is flanked directly both by “unique farmland” and “farmland of statewide importance” and directly east of the RFS holds strictly “farmland of statewide importance.” These categories have been certified and assigned by the State of California Department of Conservation (see Figure 3.2-2 Remote Facility Site).

3.2.4 POTENTIAL IMPACTS

3.2.4.1 Significance Criteria

According to Section 15002(g) of the CEQA Guidelines, “a significant effect on the environment is defined as a substantial adverse change in the physical conditions which exist in the area affected by the proposed project.” As stated in the Section 15064(b) of the CEQA Guidelines, the significance of an activity may vary with the setting. According to Appendix G of the CEQA Guidelines, impacts to agricultural resources may be considered significant if the Project:

- converts Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use;
- conflicts with existing zoning for agricultural use, or a Williamson Act contract; and/or
- involves other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland to non-agricultural use.

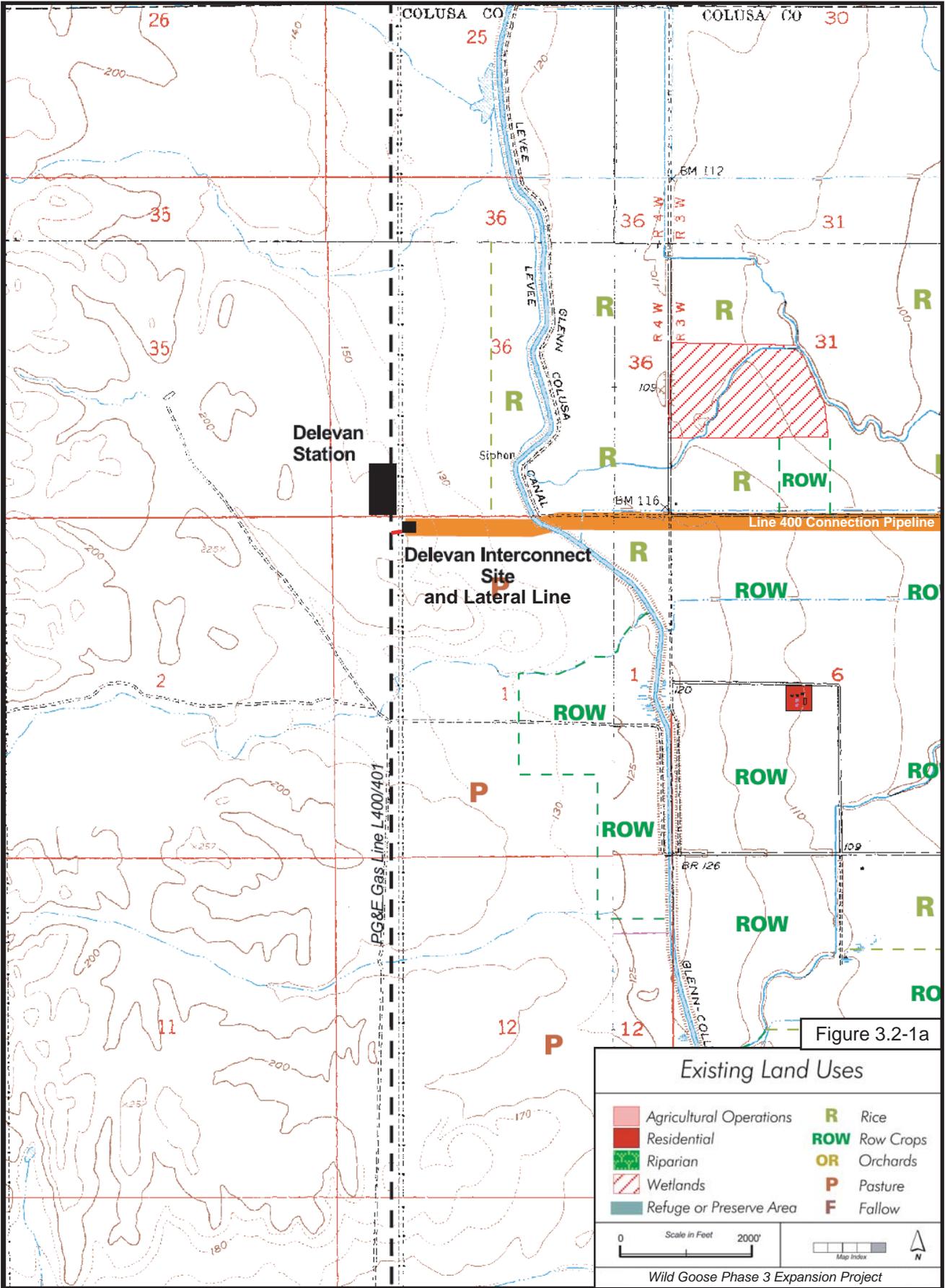


Figure 3.2-1a

Existing Land Uses

- | | |
|--|---|
|  Agricultural Operations |  Rice |
|  Residential |  Row Crops |
|  Riparian |  Orchards |
|  Wetlands |  Pasture |
|  Refuge or Preserve Area |  Fallow |

0 Scale in Feet 2000'

Map Index



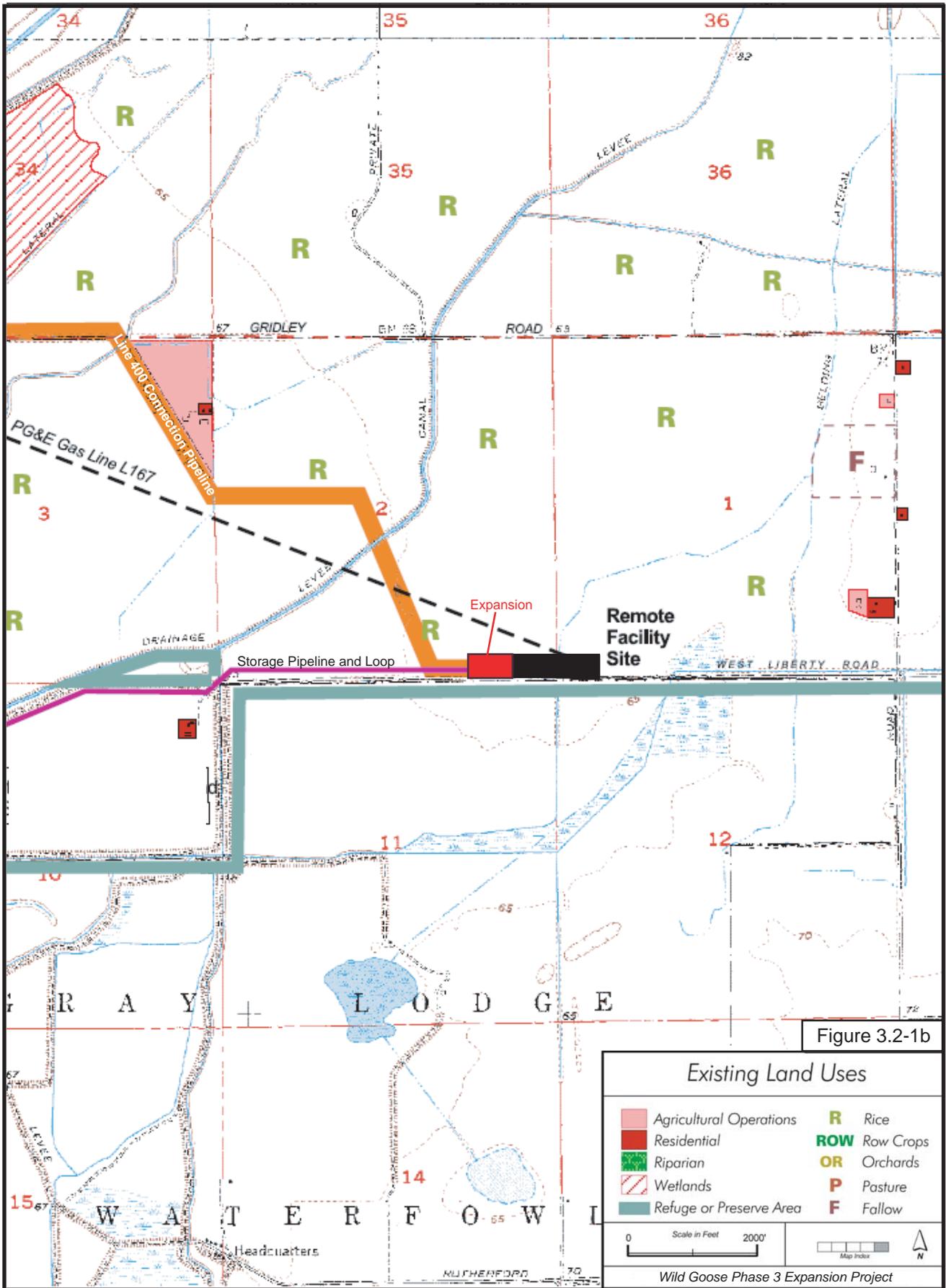


Figure 3.2-1b

Existing Land Uses

Agricultural Operations	Rice
Residential	Row Crops
Riparian	Orchards
Wetlands	Pasture
Refuge or Preserve Area	Fallow

0 2000' Scale in Feet

Map Index

Wild Goose Phase 3 Expansion Project



Unique Farmland

Prime Farmland

Farmland of Statewide Importance

Farmland of Statewide Importance



New
Parking Lot
for Hunters

Remote Facility
Site Expansion

Existing Remote Facility Site

W Liberty Rd

Figure 3.2-2

Remote Facility Site

Scale in Feet



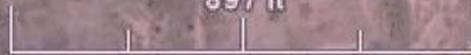
Wild Goose Phase 3 Expansion Project



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897 ft



3.2.4.2 Delevan Interconnect Site

Approximately 1.5 acres will be temporarily impacted by installation of the PG&E lateral pipeline. Up to 0.6 acre of grasslands currently being used for grazing could be permanently converted if expansion of the Delevan Interconnect Site is determined to be necessary. The lands are not considered prime, unique, or of statewide importance. The permanent loss of 0.6 acre of grazing lands represents a small fraction of the 230,000 acres of lands available for grazing in Colusa County, and is considered less than significant. Approximately 1 acre for laydown, staging, and access would be temporarily located adjacent to the site during construction. The construction activities will be managed by PG&E. The area is comprised of grasslands currently used for grazing, and the temporary disturbance of 2.5 acres of grazing land is less than significant. Project activities will not affect the prime farmland located approximately 0.2 mile to the east of the site. The project activities will not conflict a Williamson Act contract.

3.2.4.3 Remote Facility Site

To accommodate the facilities and equipment associated with the Phase 3 Expansion, the RFS will be extended approximately 540 feet to the west. The RFS footprint will extend an additional 4.5 acres, for a total of 16.7 acres. The existing landscaped berm along the perimeter of the project area will be extended and another access driveway off West Liberty Road may be added to the west edge of the RFS as part of the Phase 3 Expansion. Approximately 3.5 acres of the expansion area is disturbed land, which is currently used by hunters as a parking lot; approximately 0.9 acre is designated farmland of statewide importance; and approximately 0.1 acre is designated prime farmland. The project activities will not conflict a Williamson Act contract.

In order to mitigate for the recreation losses, the hunters' parking lot will be moved directly west of the RFS. Parking lot relocation will result in conversion of approximately 1.0 acre of farmland of statewide importance and approximately 2.5 acres of prime farmland to nonagricultural use.

Butte County considers development of gas-related facilities to be an acceptable use in areas zoned for agriculture, and the resulting loss of farmland used for rice production represents a very small fraction of the rice farmlands that are presently cultivated in the area. Approximately 101,634 acres of rice were harvested in Butte County in 2007 and the loss of 4.5 acres represents only 0.00004%; a statistically insignificant number. In addition, Butte County rice lands have not historically been subject to significant loss. Given the economic conditions in the region and the hydrology in the area that is subject to regular inundation, it is not reasonably foreseeable that rice lands in Butte County will be subject to significant development pressure. As a result, the loss of 4.5 acres of rice lands is considered less than significant in the context of the local setting. The construction activities will not impact adjacent rice fields because equipment staging will all

be done within the Phase 3 Expansion area and/or within adjacent hunter parking area to the west of the RFS.

3.2.5 PROPOSED MITIGATION MEASURES

3.2.5.1 Delevan Interconnect Site

Impacts to agriculture from proposed activities at the Delevan Interconnect Site will be less than significant and no mitigation is required. To further reduce any conflicts with the adjacent grazing operations, PG&E will coordinate with the rancher to exclude cattle from construction areas as needed either through temporary fencing or by moving the cattle to another grazing area during construction.

Topsoil removed during construction activities will be separated and stockpiled in appropriate locations along the edge of ROW. All soil will be replaced during backfilling and recontouring at the end of construction with topsoil being replaced last.

3.2.5.2 Remote Facility Site

Impacts to agriculture from proposed activities at the RFS Site will be less than significant and no mitigation is required. To further reduce any conflicts with the adjacent agricultural operations, WGS will coordinate with the landowner to ensure that construction activities do not disrupt agricultural production. Sediment and dust control will be implemented as necessary to prevent indirect impacts to crops. Land owners will make any necessary modifications to rice dikes and other agricultural features during their normal field preparation activities around late March or early April. Farmers will be compensated for the loss of crops from expansion and during construction of the proposed facilities. Work at the RFS will not begin before May. This period will also coincide with the necessary window supplied for mitigation to the giant garter snake.

3.3 AIR QUALITY

3.3.1 INTRODUCTION

This chapter describes the existing quality of air within the vicinity of the Project, as well as impacts to air quality that could result from construction and operation of the Project. Project construction activities will comply with all applicable federal, state, and local non-discretionary regulatory requirements. Construction and operation of the Project will have a less than significant impact on air quality.

3.3.2 EXISTING CONDITIONS

3.3.2.1 Air Basin Setting

The project study area is located in the Northern Sacramento Valley Air Basin (NSVAB), which includes the counties of Colusa, Butte, Sutter, Yuba, Glenn, Tehama, and Shasta. The NSVAB is bound by the Coastal Mountain Range on the west and northwest, on the northeast by the lower end of the Cascade Mountain Range, and on the east by the north end of the Sierra Nevada Mountains. The mountains create a substantial physical barrier to locally created air pollution. The NSVAB is open to the south. The southern portion of the Sacramento Valley, which includes the metropolitan area of Sacramento, is also part of the same physical air basin. However, the NSVAB has been separated from the Sacramento area for air quality planning purposes due to the generally higher pollution levels and greater number of emission sources in the Sacramento area. Transport of pollutants from the greater Sacramento area into the NSVAB by prevailing winds is itself a significant source of the NSVAB's ambient air pollution. The valley is often subjected to inversion layers that combined with the geographic barriers and high summer temperatures create an ideal atmosphere for elevated levels of ambient air pollution.

3.3.2.2 Baseline Air Quality

The NSVAB has been designated as non-attainment or non-attainment-transitional (Glenn, Butte, and Colusa Counties) for the state ozone Ambient Air Quality Standard (AAQS). Butte County and the southern tip of Sutter County are also designated as non-attainment for the federal AAQS for ozone. The entire NSVAB has been designated as non-attainment for the state standard for particulate matter of less than 10 microns (PM_{10}). Butte County is designated as non-attainment for the state standard for particulate matter of less than 2.5 microns ($PM_{2.5}$). All other pollutants for which there are AAQS are in attainment or are unclassified in the NSVAB. Non-attainment of the AAQS for ozone is the most significant air quality problem in the NSVAB.

Ozone and particulate air quality are monitored at many locations throughout the NSVAB. The stations most representative of the project area are located in Colusa, Chico, Willows, Yuba City,

and at the Sutter Buttes (12 miles west of Yuba City, ozone only). The maximum concentrations measured at these sites and the numbers of exceedances of AAQS in 2003 through 2007 are presented in Table 3.3-1. Because these sites surround the project study area and display similar pollutant maximum concentrations, the data presented in Table 3.3-1 are reasonably representative of the existing air quality for the project study area.

The California 24-hour PM₁₀ standard was exceeded fairly frequently during 2003 through 2007. The California annual standard was exceeded in all counties during this period. The exceedances were attributable primarily to agricultural activities, entrained road dust, and wildfires. The less stringent federal standards were not exceeded during any of these years. As is true for many agricultural areas, it is consistently difficult to attain state PM₁₀ standards in the project study area.

Table 3.3-1 shows that the California one-hour ozone standard was exceeded during the 2003 – 2007 period in Sutter County only, probably primarily as a result of pollutant transport from the Sacramento metropolitan area

3.3.2.3 Existing Project Emissions

Existing combustion equipment installed at the Wild Goose Gas Storage Project's RFS in Butte County includes two 3,335 horsepower gas-engine-driven reciprocating natural gas compressors, two 3,550 horsepower gas-engine-driven reciprocating natural gas compressors, two dehydration units (triethylene glycol/natural gas contactor towers with natural-gas-fired glycol reboilers), a thermal oxidizer for the still vapors from the dehydration units, and two natural gas-fueled standby generators. The compressor engines utilize clean burn combustion chamber design as best available control technology (BACT), and the reboiler burners are of low emissions design.

The remaining emission equipment that is part of the previously approved Expansion; which includes two 3,550 horsepower gas-engine-driven reciprocating natural gas compressors, a dehydration unit, and a natural gas-fueled standby generator; are planned for installation in 2009.

Table 3.3-1: Air Quality in the Proposed Project Area

Criteria Pollutants Classified as Non-attainment													
Pollutant (Units)	Averaging Period	Year	Colusa (Colusa County)	Chico (Butte County)	Willows (Glenn County)	Yuba City (Sutter County)*	Colusa (Colusa County)	Chico (Butte County)	Willows (Glenn County)	Yuba City (Sutter County)*	California AAQS	Federal AAQS	
			Maximum Concentrations				No. of Days >0.09						
Ozone (ppm)	1 Hour	2003	0.089	0.092	0.090	0.177	0	0	0	10	0.09	-	
		2004	0.084	0.088	0.084	0.100	0	0	0	1			
		2005	0.085	0.083	0.077	0.096	0	0	0	1			
		2006	0.084	0.090	0.076	0.110	0	0	0	5			
		2007	0.080	0.094	0.091	0.098	0	0	0	1			
			Maximum Concentrations				Estimated No. of Days >50						
PM ₁₀ (µg/m3)	24 Hours	2003	69	54	61	83	NA	5.8	17.6	30.7	50	150	
		2004	81	115	138	53	NA	30.2	23.7	NA			
		2005	92	76	69	60	25.8	29	18.3	31.1			
		2006	69	81	77	66	NA	41	NA	NA			
		2007	43	66	43	54	0	12.1	0	NA			
				Annual Arithmetic Mean				AAM >20					
	Annual	2003	NA	21.7	20.4	26.4	NA	Y	Y	Y	20	-	
		2004	NA	28.8	25.6	NA	NA	Y	Y	NA			
		2005	25.5	23.9	21.5	25.0	Y	Y	Y	Y			
		2006	NA	26.9	NA	NA	NA	Y	NA	NA			
2007		22.0	21.8	20.1	NA	Y	Y	Y	NA				
			Annual Arithmetic Mean				AAM >12						
PM _{2.5} (µg/m3)	Annual	2003	NA	15.9	NA	9.4	NA	Y	NA	N	12	15	
		2004	7.3	16.5	NA	10.1	N	Y	NA	N			
		2005	11.2	13.8	NA	10.2	N	Y	NA	N			
		2006	7.9	14.6	NA	11.2	N	Y	NA	N			
		2007	9.0	14.4	10.2	NA	N	Y	N	NA			

N = No; Y = Yes; N/A = Not Available

Source: CARB Air Quality Data Reports for 2003 - 2007

WGS's Permit to Operate (Number WGS-98-01) issued by the Butte County Air Quality Management District (AQMD) has enforceable conditions limiting total annual emissions of nitrous oxides (NO_x) to below 30.15 tons per year on a rolling monthly basis and reactive organic gases (ROG) from all combustion equipment to below 25 tons per year on a rolling monthly basis. Emission limits are monitored using fuel consumption for each piece of combustion equipment. Based on current operations and measured fuel usage to date, average actual annual emissions are greater than 30.15 tons of NO_x, triggering the requirement for offsets. WGS received an amendment to its existing Permit to Operate issued by the Butte County AQMD and secured the necessary offsets.

Greenhouse gas emissions from the existing combustion equipment, calculated from on-site fuel usage, averaged 13,687 metric tons of CO₂ equivalent (MTCO₂e) for the years 2004 through 2006.

Greenhouse gas emissions resulting from blowdowns average 3,089 MTCO₂e, based on facility records for the years 2007 through 2008.

Various estimates of fugitive greenhouse gas emissions originating from underground storage facilities have been attempted. However, these estimates vary greatly in magnitude, and the assumptions used in their calculation are not consistent. Likewise, thresholds of significance have not yet been adopted by California. The California Air Resources Board (CARB) is currently initiating an Oil and Gas Industry Survey to improve estimates of GHG emissions from oil and gas production, processing and storage. The results of this effort are expected to allow a more accurate estimate of fugitive emissions of GHGs from the existing project.

3.3.3 POTENTIAL IMPACTS

3.3.3.1 Significance Criteria

Standards of significance were derived from Appendix G of the CEQA Guidelines. Impacts to air quality are considered significant if the project:

- conflicts with an applicable air quality plan,
- violates any AAQS,
- contributes substantially to an existing or projected air quality violation,
- exposes sensitive receptors to a substantial pollutant concentration, and/or
- creates objectionable odors affecting a substantial number of people.

The Thresholds of Significance for Criteria Pollutants detailed in the Butte County Air Quality Management District CEQA Air Quality Handbook outlined in Table 3.3-2.

Table 3.3-2: Thresholds of Significance for Criteria Pollutants

Pollutant	Level A	Level B	Level C
NO _x	Less than or equal to 25 lbs/day	Greater than 25 lbs/day	Greater than 137 lbs/day
ROG	Less than or equal to 25 lbs/day	Greater than 25 lbs/day	Greater than 137 lbs/day
PM ₁₀	Less than or equal to 80 lbs/day	Greater than 80 lbs/day	Greater than 137 lbs/day

Source: Butte County Air Quality Management District (2008)

Significance thresholds for air emissions have not been published by Colusa County; thresholds of significance for GHG emissions have not yet been adopted by California. GHG significance thresholds for general projects have been proposed by CARB, however it is uncertain whether these will be adopted or applied to natural gas storage facilities. The CARB will be introducing new GHG emissions control requirements for gas storage facilities. These will either confirm that the facility is operating with optimum control, or will detail the mitigation measures required under that program.

3.3.3.2 Construction

Criteria Pollutants

Criteria pollutants include NO_x, ROG, carbon monoxide (CO), sulfur dioxide (SO₂), PM₁₀, and PM_{2.5}. No open burning of vegetation will be conducted during the Project.

Equipment Emissions

In order to determine a ‘worst-case scenario’ with the greatest potential for air quality impacts during construction, equipment emissions were estimated for the various construction activities, and then the schedule was reviewed to determine the period when the activities with the greatest potential emissions could occur simultaneously. The peak period for construction emissions was determined to be during the summer of 2010, when work on the Delevan Interconnect Site and the mechanical and electrical components at the RFS would occur. This period represents the ‘worst-case scenario’ for air emissions.

Exhaust emissions of NO_x, ROG, CO, SO₂, PM₁₀, PM_{2.5} and CO₂ will occur from internal combustion engines in dump trucks, dozers, scrapers, excavators and other heavy construction

equipment, and from construction workers' cars and supply trucks traveling to and from the work site.

The project-generated emissions for the worst case scenario are shown in Table 3.3-3. For assessment purposes, all of the construction sub-tasks associated with these activities were assumed to be simultaneously operating at peak loads. The total concurrent estimated peak day emissions for this hypothetical maximum-activity, worst-case day are shown at the end of Table 3.3-3 in pounds-per-day and tons-per-day. Under actual conditions, the worst-case scenario is very unlikely to occur.

Table 3.3-4 provides existing air emission information in tons-per-day units for comparison to project-generated emissions. Since the project includes activities in both Butte and Colusa Counties, data for both is provided for comparative and informational purposes. Project construction vehicle and equipment emissions during this worst-case peak day scenario will be approximately 0.02 percent of the average daily ROG emissions in the project study area, 0.08 percent of the CO, 0.34 percent of the NO_x, 0.01 percent of the SO₂, 0.05 percent of the PM₁₀, and 0.08 percent of the PM_{2.5}. When these peak day estimated project emissions are compared to average background emissions, the Project impacts are magnified, since actual average Project emissions during the construction period will be far less than on the hypothetical worst-case peak day.

Construction emissions as shown in Table 3.3-3 are significant for NO_x and ROG. The Project will select all standard mitigation measures and as many Discretionary Mitigation Measures as feasible. The Project will be submitted to the Air District for review and development of a Customized Construction Mitigation Program.

Greenhouse Gas Emissions

Equipment Emissions

Using the worse-case scenario described above, construction equipment used for the Project could be expected to emit 5,986 metric tons of CO₂. This estimate is based on the worst-case metric tons per day emissions (16.4 metric tons per day) occurring for 365 days per year.

Table 3.3-3: Construction Emissions

Activity	Emissions						
	ROG	CO	NOx	SO2	PM10	PM2.5	CO*2
<i>Year 1 – Delevan and Remote Facility – Summer 2010</i>							
Totals (pounds per day)	36.76	212.33	289.99	0.12	45.85	19.11	36,265
Totals (tons per day)	0.02	0.11	0.14	0.00	0.02	0.01	16.4
<i>Year 2 – Remote Facility</i>							
Totals (pounds per day)	18.05	119.17	135.62	0.09	35.39	11.70	20,182
Totals (tons per day)	0.01	0.06	0.07	0.00	0.02	0.01	9.15

* For CO₂, tons per day is metric tons (2,204.62 pounds)

Sources: WGS construction estimates. URBEMIS 9.2.4.

Table 3.3-4: Summary of Emissions By Major Source Category (2006) (Tons per Day)

Source Category	Butte County						Colusa County					
	ROG	CO	NO _x	SO _x	PM ₁₀	PM _{2.5}	ROG	CO	NO _x	SO _x	PM ₁₀	PM _{2.5}
<i>Stationary Sources</i>												
Fuel Combustion	0.16	4.7	1.7	0.04	0.18	0.25	0.37	1.4	4.7	0.25	0.10	0.12
Waste Disposal												
Cleaning & Coatings	0.87						0.32					
Petroleum Processes	0.77	0.12	0.03				1.3					
Industrial Processes	0.30	0.01	0.03	0.01	3.7	1.8	0.28	.03	0.06		0.67	0.21
Total Stationary Sources	2.1	4.8	1.8	0.05	3.9	2.1	2.3	1.4	4.8	0.25	0.77	0.33
Total Area-Wide Sources	8.3	30.1	1.3	0.07	22.3	6.4	3.0	11.1	0.72	0.14	15.6	3.2
<i>Mobile Sources</i>												
On-Road	7.0	62.9	14.9	0.1	0.54	0.42	0.91	7.6	4.6	0.03	0.20	0.15
Other	4.7	23.5	8.7	0.24	0.55	0.50	1.2	4.8	4.0	0.06	0.22	0.20
Total Mobile Sources	11.7	86.4	23.6	0.34	1.1	0.92	2.1	12.4	8.6	0.09	0.42	0.35
Total Natural Sources	40.6						21.9					
Total Emissions	62.6	121.3	26.7	0.46	27.3	9.4	29.2	24.9	14.1	0.48	16.8	3.9
<i>Total Background Emissions, Butte and Colusa Counties Combined</i>							91.8	146.2	40.8	0.94	44.1	13.3
<i>Project Emissions</i>							0.02	0.11	0.14	0.00	0.02	0.01
<i>Project Emissions % of Total Background Emissions</i>							0.02	0.08	0.34	0.10	0.05	0.08

Source: BAAQMD

Fugitive Dust

One pollutant of concern during construction will be fugitive dust (PM₁₀ emissions) generated from the disturbance of soil during pipeline grading, trenching, and backfilling, construction vehicle movement, and excavation and placement of fill dirt at the Delevan Interconnect Site and RFS. Fugitive dust can also be generated by wind erosion of disturbed areas prior to the re-establishment of vegetation. On a hypothetical worst-case day, project dust generation will be approximately 0.05 percent of the average daily PM₁₀ emissions in the area. Construction emissions for PM₁₀ and PM_{2.5} shown in Table 3.3-3 are not significant for the project.

3.3.3.3 Operations

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

- combustion equipment (natural-gas-fired compressor engines, standby generators)
- relief vent system
- fugitive emissions from valves and flanges

Criteria Pollutants

Combustion Equipment Emissions

Combustion equipment associated with the Phase 3 Expansion will include four additional compressor units, two dehydration units, one 2.5 MW diesel generator, and two additional standby generators. Based on emissions from the existing facility, it is anticipated that emissions from the Project will exceed the threshold of significance for NO_x of 25 lbs/day. These new combustion units will include BACT as determined by the Butte County AQMD. Assuming the same emission rates as the existing equipment, the cumulative site emissions will exceed the 30.15-ton level for NO_x and trigger the requirement for additional offsets. WGS will apply for an amendment to its existing Permit to Operate issued by the Butte County AQMD and secure the necessary offsets. This will result in a net decrease in NO_x emissions in Butte County based on the 1.2 to 1 offset ration requirement.

Pressure Relief and Blowdown Vents

Pressure relief from compressor station piping is necessary for safe operation of the facility. The WGS gas compressor facility, like all gas facilities, has incorporated a number of redundant safety systems into the overall operation of the facility. During normal operations, sectional piping is usually automatically blown down whenever a compressor unit shuts down. Sensors in the compressor building monitor air gas composition. Methane levels at 40% and higher or a fire will trigger activation of emergency shutdown (ESD) valves, which blow down the entire

facility. Both of these blowdowns are rapid depressurization and are routed to a silencer for noise attenuation. The third type of depressurization is via the pressure safety valves. These valves activate only when the pressure exceeds the safe operating parameters of piping or vessels. Under these circumstances, the safest method is to immediately relieve the pressure directly to the atmosphere, not by a controlled release through a silencer. In normal operating mode and even under the first level of alarm mode where the ESDs are activated, the pressure relief valves do not open.

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

During a blowdown, the odor of the natural gas vented will be temporarily present in the vicinity of the vent. Because natural gas is lighter than air, odors will be rapidly dissipated. However, residences near the above-ground facilities may infrequently detect natural gas odors. Due to the infrequency of blowdowns and/or the distance to the nearest residences, these odors would not be considered a significant impact.

Valves and Flanges

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

The automatic natural gas valve actuators commonly used in compressor stations can be a potential source of natural gas emissions. These actuators may use the pipeline pressure to operate the valve, resulting in a constant bleed of natural gas during valve operations. The potential impact of these emissions is the odor of natural gas. Since the gas coming from the PG&E line will be odorized, natural gas odors may be present wherever these valve types are used. All WGS valves at the RFS will use compressed air (pneumatic) actuators, so these valves will not be an odor source. However, the remoteness of the Delevan Interconnect Site requires the use of pipeline pressure actuators because installation of an air compressor is not practical.

Due to the extremely small quantities of natural gas released by valves and flanges and/or the distance to the nearest residences, these odors would not be considered a significant impact.

Green House Gas Emissions

Combustion Equipment Emissions

Greenhouse gas emissions from combustion equipment associated with the Phase 3 Expansion will be dependent upon the actual volume of natural gas combusted as fuel. This in turn is dependent upon the actual compressor hours of operation and the load. Assuming that the combustion equipment associated with the Phase 3 Expansion operates for the same number of compressor hours as the existing compressors, and that the proportion of the facility total fuel combusted by the compressors remains the same as the proportion for the existing combustion equipment (94 percent in 2007) the GHG emissions from the Phase 3 Expansion are estimated to be 12,866 MTCO_{2e}.

Pressure Relief and Blowdown Vents

Greenhouse gas emissions resulting from blowdowns from 2007 through 2008 are estimated to equal 3,089 MTCO_{2e}, based on facility records. Given that the Phase 3 Expansion consists of the same number of compressor units, and assuming that blowdowns will occur at the same frequency, this is a reasonable estimate for project GHG emissions from blowdowns.

Valves and Flanges

The CARB is currently initiating an Oil and Gas Industry Survey to improve estimates of GHG emissions from oil and gas production, processing and storage. The results of this effort are expected to allow a more accurate estimate of fugitive emissions of GHGs from the project.

3.3.4 PROPOSED MITIGATION MEASURES

3.3.4.1 Construction

Emissions from Construction Vehicles and Equipment

Although short-term construction vehicle emissions are minimal relative to the ambient emission levels and are not regulated by Butte or Colusa County, the following mitigation measures have been incorporated into the Project to reduce ROG and NO_x emissions during construction activities:

- Maintain all construction equipment in proper tune according to manufacturer's specifications.
- Maximize to the extent feasible, the use of diesel construction equipment meeting the CARB's 1996 or newer certification standard for off road heavy-duty diesel engines.

- Electrify equipment where feasible.
- Substitute gasoline-powered for diesel-powered equipment, where feasible.
- Use alternatively fueled construction equipment on site where feasible, such as compressed natural gas (CNG), liquefied natural gas (LNG), propane or biodiesel.
- Use equipment that has Caterpillar pre-chamber diesel engines.
- Carpooling or bussing of workers will be encouraged.
- The pipeline contractor will prepare an Off-road Construction Equipment Reduction Plan prior to groundbreaking. The Plan will include a comprehensive inventory (i.e. make, model, engine year, emission year, emission rating, fuel consumption rate) of all the heavy-duty off-road equipment, 50 horsepower or greater, that will be used an aggregate of 40 or more hours for the construction project, and will include the following:
 - 20% of the heavy duty off-road equipment included in the inventory should be powered by EPA/CARB certified off-road engines or by engine retrofit technology, exhaust filtration and low-sulfur diesel fuel, emulsified diesel fuels, or other CARB verified or certified technology.
 - Construction equipment exhaust emissions will not exceed BCAQMD Rule 202 Visible Emission limitations.
 - Utilize existing power sources (e.g. power poles) or clean fuel generator rather than temporary power generators. Minimize idling time to 10 minutes.
 - Employ construction activity management techniques, such as: extending the construction period outside the ozone season of May through October; reducing the number of pieces used simultaneously; increasing the distance between emission sources; reducing or changing the hours of construction; and scheduling activity during off-peak hours.
- Develop a customized Construction Mitigation Program with assistance from the Air District.

The customized Construction Mitigation Program will incorporate the measures listed above, as feasible, and reduce the construction impacts below the significance thresholds listed in Table 3.3.2.

Fugitive Dust

Although the fugitive dust associated with Project construction is less than significant relative to the ambient PM₁₀ levels and is not regulated by either Butte or Colusa County, the following mitigation measures have been incorporated into the Project to ensure PM₁₀ emissions are minimized during construction activities:

- Water shall be applied by means of trucks, hoses, and/or sprinklers as needed prior to any land clearing or earth movement. A water truck shall be on site at all times. All visibly dry soil surfaces and unpaved roads shall be watered to minimize dust emission. Water shall be applied to disturbed areas a minimum of 2 times daily. Haul roads will be sprayed down at the end of the work shift to form a thin crust. This application shall be in addition to the minimum rate of application.
- Earthwork will be suspended when winds exceed 20 MPH.
- Haul vehicles transporting soil into or out of the property shall be covered.
- On-site vehicles will be limited to a speed which minimizes dust emissions on unpaved roads. Vehicles entering and exiting construction areas shall travel at a speed which minimizes dust emissions.
- A publically visible sign will be posted with the telephone number and person to contact regarding dust complaints. This person shall respond and take corrective actions within 24 hours. The telephone number of the district shall also be visible to ensure compliance with District Rule 200 and 205 (Nuisance and Fugitive Dust Emissions).
- Existing roads and streets adjacent to the Project will be cleaned at least once per day unless conditions warrant a greater frequency.
- Access points will be stabilized with 6 inches of gravel to remove mud from construction equipment prior to entering paved roads.
- Construction workers will park in designated parking areas to help reduce emissions.
- Soil pile surfaces will be moistened if dust is being emitted from the piles. Adequately secured tarps, plastic, or other materials may be required to further reduce dust emissions.
- Non-toxic chemical soil stabilizers or mulch will be used on construction areas that are inactive for at least four consecutive days.
- Disturbed areas will be vegetated following construction.

With the implementation of these mitigation measures, PM₁₀ emissions from construction activities will be further reduced and are considered less than significant.

3.3.4.2 Operations

Combustion Equipment

As described above, the combustion equipment associated with the Phase 3 Expansion will exceed the 30.15-ton threshold authorized by the current Butte County AQMD Permit to Operate for the site. Issuance of an amendment to the existing Permit to Operate by the Butte County AQMD will confirm potential air quality impacts associated with the Phase 3 Expansion are less

than significant. WGS will provide a copy of the Authority to Construct and/or Amended Permit to Operate to the CPUC prior to construction of the proposed combustion facilities and equipment. No further mitigation is proposed.

Pressure Relief and Blowdown Vents

No specific mitigation measures are required for these types of vents, since methane is not a regulated emission. Consequently, infrequent and short-term emissions will not cause or contribute to any failure to meet NSVAB requirements to attain the AAQS. Good maintenance practices will also minimize the need for relief vent operations. Although natural gas odor will be present following a blowdown, being lighter than air it will dissipate rapidly. Consequently, the odor associated with this infrequent event will not be significant.

Valves and Flanges

Although fugitive natural gas emissions and odors from valves and flanges are difficult to quantify, the following mitigation measures will minimize these fugitive emissions:

- Valves and flanges will be subject to a leak test following installation and following any maintenance on the valve.
- Welded connections will be used to the extent feasible to minimize the number of flanges and threaded connections.
- Unless necessitated by specific design requirements or valve location limitations, pipeline pressure valve actuators will not be used by WGS. At the Project site, pneumatic valve actuators are presently powered by compressed air.

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

Greenhouse Gas Emissions

As noted above, there are no adopted thresholds of significance yet for GHG emissions. However, as noted, the Project is expected to result in emissions in excess of 16,000 MTCO₂e annually, and mitigation for these emissions may be required. The CARB will be introducing new GHG emissions control requirements for natural gas storage facilities. As an initial step in selecting feasible control measures for GHGs, the CARB has produced a Clearinghouse of Technological Options for reducing GHG emissions from all economic sectors. These options are being evaluated by CARB for use in any regulatory control program for GHG. Many of the options under consideration are already part of WGS's program for emissions control, and will

be part of the project operational program. These options include, but are not limited to, the use of air-actuated valves, installation of lean-burn IC engines, and an aggressive inspection and maintenance program at the project site. Upon adoption of GHG emissions control requirements by CARB, WGS will implement all feasible GHG control measures.

3.4 BIOLOGICAL RESOURCES

3.4.1 INTRODUCTION

This chapter describes the biological resources that occur in the WGS Phase 3 Expansion Project area and the potential impacts that construction and operation of the Project could have on the habitats and species present in the area. Although construction could result in significant impacts to botanical and wildlife resources, these potential impacts will be mitigated to less than significant levels through avoidance of sensitive resources and/or through implementation of the mitigation measures described in section 3.4.5 of this report.

3.4.2 REGULATORY FRAMEWORK

In addition to the CEQA and the NEPA, the Project will comply with other state and federal laws, regulations and permitting requirements specifically associated with sensitive biological resources.

3.4.2.1 State Regulatory Requirements

The CDFG has jurisdiction over the state's fish and wildlife resources. For this Project, CDFG discretionary jurisdiction is found under section 2080 et. seq. (California Endangered Species Act (CESA)). As such, CDFG will be the responsible agency in the CEQA review. In addition, the CDFG also issues take permits for state-listed species under Section 2081(b) if the take is incidental to an otherwise lawful activity and impacts of the take are minimized and fully mitigated. Other laws enforced by CDFG as a trustee agency include the California Native Plant Protection Act, which requires protection of rare, threatened, and endangered plants in the state; and the Migratory Bird Treaty Act, which prohibits the taking of migratory bird species.

3.4.2.2 Federal Regulatory Requirements

Portions of the Project will affect some "waters of the US"; therefore, a permit will be obtained from the Corps under Section 404 of the Clean Water Act. Before issuing a permit, the Corps must ensure that any actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of critical habitat. As such, they must consult with the USFWS under Section 7 of the Federal Endangered Species Act (FESA). This process concludes with a written "biological opinion" from the USFWS. The Biological Opinion will detail how the action affects listed species and critical habitat, prescribe associated "terms and conditions" and "prudent measures," include a statement that the proposed action will not jeopardize the continued existence of the species, and provide an allowance for incidental take of affected species if appropriate. In addition, the Corps must ensure the Project complies with its 'no net loss' wetland policy mandate.

3.4.2.3 Special-status Species Overview

Special-status species are plants or animals that receive state and/or federal protection status in any of the following ways:

- Formal listing as threatened or endangered by the USFWS or National Marine Fisheries Service (NMFS)
- Formal listing as rare (plants only), threatened, or endangered by the CDFG
- Recognition as a candidate for listing by the USFWS or CDFG
- Recognition as proposed threatened or endangered by the USFWS or CDFG
- Recognition as a Species of Special Concern by the CDFG or a federal land-managing agency
- Protection under the Migratory Bird Treaty Act

In addition to the specific legal protection afforded by these state or federal laws and regulations, species may also warrant special consideration if they are considered rare by the scientific community; non-governmental organizations; or trustee agencies, particularly with regard to protection of isolated populations, nesting or denning locations, communal roosts, and other essential habitats. The California Native Plant Society's *Inventory of Rare and Endangered Vascular Plants of California* is one such list that ranks plant species and provides guidance for their treatment during the preparation of environmental documents under CEQA.

All species protected either by state or federal law, or by the above-described means, are cumulatively referred to as 'sensitive species' in this document.

3.4.3 EXISTING CONDITIONS

The Project study area historically has consisted of an extensive wetland and marsh system sustained by the Sacramento River and its tributaries, including Butte Creek and the Colusa Drain area. Over the last 100 years, most of this system has been developed into agricultural production, primarily rice and millet. The RFS is situated adjacent to a road and within an actively farmed rice field. To the west of the Glenn-Colusa Canal, which encompasses the Delevan Interconnect Site, the plant community type changes to upland annual grassland that contains vernal pools and swales. Therefore, plant community types consist of natural landscapes and human-altered landscapes (agriculture). In general, the natural landscapes can be found within the boundaries of the Sacramento National Wildlife Refuge, the Gray Lodge Wildlife Management Area, the grasslands west of the Glenn-Colusa Canal, and to a limited extent the Butte Sink. Valuable habitat for some species is provided by rice fields, ditches, and canals within the human-altered landscapes. The Project study areas are adjacent to the existing developed facilities. The habitat types in the Project area are illustrated in Figure 3.4-1.

3.4.3.1 Screening Process for Suitable Habitat and Sensitive Species

Known locations of sensitive species were obtained from the California Natural Diversity Database, the California Native Plant Society (CNPS), and the USFWS and are included as part of the Biological Technical Report in Appendix B. A total of 41 sensitive species – 19 plant and 22 wildlife species – were identified from these databases as potentially occurring in this portion of the Sacramento Valley. This list served as a starting point in determining if there were known locations of sensitive species and suitable habitat within the Project study area that could potentially be affected by the Project components. Subsequently, documents and survey reports prepared for the regulatory approval of the Base Project and the Expansion Project development were reviewed for information regarding sensitive species locations.

Following this process, it was determined that many of the 41 species identified by the USFWS and CDFG, listed in Appendix B, were eliminated from further consideration for one or more of the following reasons:

- Lack of suitable habitat in the Project study area
- Outside of species range
- Avoidance of suitable habitat by sensitive facility siting

The result of this evaluation indicates that two plant species and 15 wildlife species are known to occur in the Project study area or the proposed Project components may affect suitable habitat within their known range. These species are described below and listed in Table 3.4-1. For purposes of this document, if potential suitable habitat for sensitive species was determined to be present, then species presence was assumed likely and mitigation recommended.

Species-specific surveys were conducted for the Expansion project in the spring and early summer of 2001 to determine any new species' absence or presence. For the next phase of the Project, a general reconnaissance study of the site was conducted in the winter of 2008/2009. The Project area was visited on the ground for direct observation of the environmental conditions on December 4, 2008 and again on February 25, 2009.

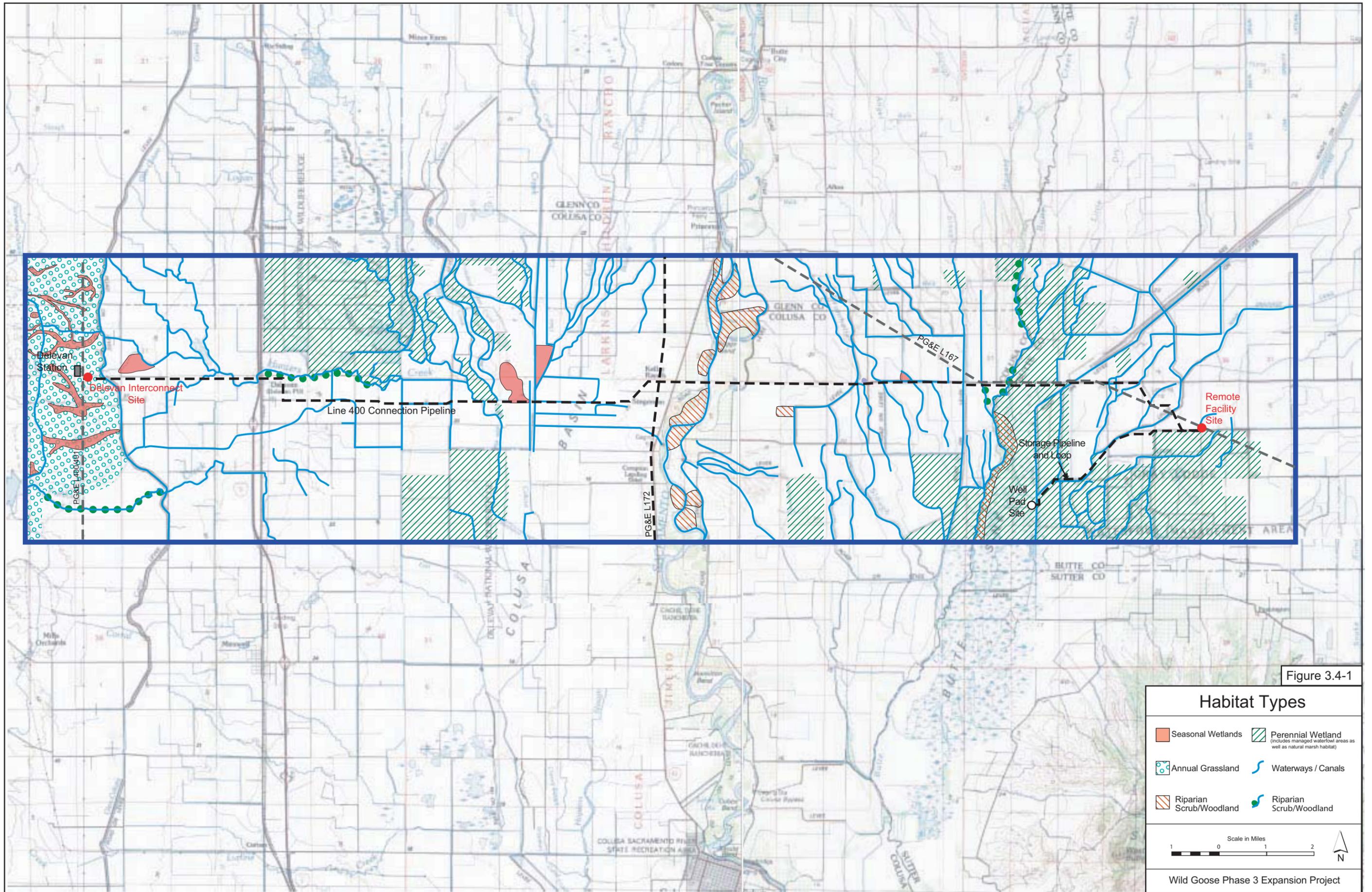


Figure 3.4-1

Habitat Types

Seasonal Wetlands	Perennial Wetland <small>(includes managed waterfowl areas as well as natural marsh habitat)</small>
Annual Grassland	Waterways / Canals
Riparian Scrub/Woodland	Riparian Scrub/Woodland

Scale in Miles
1 0 1 2

Wild Goose Phase 3 Expansion Project

Table 3.4-1: Special Status Species With Potential to Occur in the Project Area

Common Name Scientific Name	Legal Status			Plant Community / Habitat Association	Potential in the Project Study Area	
	Federal	State	CNPS		Remote Facility Site	Delevan Interconnect Site and Pipeline
<i>Plants</i>						
Palmate-bracted bird's beak <i>Cordylanthus palmatus</i>	FE	SE	1B	Chenopod scrub, low alkaline grasslands. Only three populations known to exist. Colusa County.	No suitable habitat.	Potential habitat present in the vicinity of the Project site.
Milo Baker's lupine <i>Lupinus milo-bakeri</i>	**	ST	1B	Foothill woodlands and valley grasslands. Known from 2 locations in Colusa County and 20 locations in Mendocino County. Colusa County.	No suitable habitat.	Potential habitat in the Project vicinity.
<i>Invertebrates</i>						
Conservancy fairy shrimp <i>Branchinecta conservatio</i>	FE			Endemic to vernal pools and swales in the Central Valley. Dependent on seasonal water fluctuations and water quality. Butte, Glenn, Sutter, Colusa Counties.	Vernal pool and related swale habitats are not found in the Project study area.	Vernal pool and related swale habitats are found along the access road to the Delevan Interconnect Site and will be avoided.
Vernal pool fairy shrimp <i>Branchinecta lynchi</i>	FT			Endemic to vernal pools and swales in the Central Valley. Dependent on seasonal water fluctuations and water quality. Listed for Butte, Glenn, Sutter, and Colusa Counties.	Vernal pool and related swale habitats are not found in the Project study area.	Vernal pool and related swale habitats are found along the access road to the Delevan Interconnect Site and will be avoided.

Vernal pool tadpole shrimp <i>Lepidurus packardi</i>	FE			Endemic to vernal pools and swales in the Central Valley. Dependent on seasonal water fluctuations and water quality. Listed for Butte, Glenn, Sutter, and Colusa Counties.	Vernal pool and related swale habitats are not found in the study area.	Vernal pool and related swale habitats are found along the access road to the Delevan Interconnect Site and will be avoided.
Amphibians						
Western spadefoot toad <i>Spea hammondi</i>	**	CSC		Valley and foothill grasslands, river floodplains, marshes, and alluvial fans. Requires loose, sandy, or gravelly soil. Grasslands with shallow temporary pools optimum (e.g., vernal pools). Susceptible to predation by red swamp crayfish and bullfrogs. Listed for Butte, Glenn, Sutter, and Colusa Counties.	Unlikely to occur in the Project vicinity.	Potential habitat west of the Glenn-Colusa Canal and vernal pool sites. Vernal pool areas will be avoided.
Reptiles						
Northwestern pond turtle <i>Actinemys marmorata marmorata</i>	**	CSC		Forage in wetlands, ponds, marshes, lakes, streams and irrigation ditches. Well-vegetated banks and basking logs required. Typically locate nests on unshaded slopes. Listed for Butte, Glenn, Sutter, and Colusa Counties.	Likely. Has been observed in Project study area.	No suitable habitat.

Giant garter snake <i>Thamnophis gigas</i>	FT	ST		Forage in permanent or seasonal slow-moving water with emergent vegetation, mud bottoms, and dirt banks. Occur in irrigation ditches year-round, rice fields during growing season. Absent from waters with predatory fish. Require upland sites or elevated features above floodwaters for winter refugia. Butte, Glenn, Sutter, Colusa Counties.	Likely. Has been observed in Project study area.	No suitable habitat.
Birds						
Tricolored blackbird <i>Agelaius tricolor</i>	**	CSC		Favors mature stands of cattails and scrub near water, blackberries, hay fields, wheat fields. Nesting synchronous. Colonies have been reported outside the Project study area. Butte and Glenn Counties.	Potential nesting habitat within 0.5 mile. Survey during the appropriate season.	Potential foraging habitat.
Western burrowing owl <i>Athene cunicularia</i>	**	CSC		Primarily grassland, also occasionally in levees and irrigation dikes, if there is enough soil for a burrow. Dependent on ground squirrels for burrows. Listed for Butte, Glenn, Sutter, and Colusa Counties.	No suitable habitat.	Potential suitable habitat in the Project vicinity. Survey suitable habitat.
Swainson's hawk <i>Buteo swainsoni</i>		ST		Riparian floodplain forest for nesting, foraging over any open land within 10 miles of nest site.	Potential nest trees within 0.5 mile. Survey during appropriate season.	Potential nest trees within 5 miles.
Black tern <i>Chlidonias niger</i>	**	CSC		Inland lakeshores and marshes. Some nesting in rice fields. Nests somewhat communally in small groups just over or on water. Listed for Butte, Glenn, Sutter, and Colusa Counties.	Observed foraging in Project study area in 2001. Survey suitable habitat.	No suitable habitat.

Northern harrier <i>Circus cyaneus</i>		CSC		Nests primarily in emergent wetlands, but also uses grasslands and open grain fields.	Potential foraging habitat in the Project vicinity.	Unlikely to occur in the Project vicinity.
White-tailed kite <i>Elanus leucurus</i>		FP		Hunts over all habitats, including agricultural areas. Perches and nests in trees and shrubs in riparian areas. Glenn, Sutter, and Colusa Counties.	Year-round resident. Potential nesting or roosting within 0.5 mile. Survey suitable habitat.	Unlikely to occur in the Project vicinity.
Loggerhead shrike <i>Lanius ludovicianus</i>	**	CSC		Common resident and winter visitor throughout the lowlands and foothills of California. Listed for Butte, Glenn, Sutter, and Colusa Counties. Confirmed on Gray Lodge near RFS. Prefers habitats with scattered shrubs, trees, posts, fences, utility lines and other perches.	Have been observed in the Project study area. Survey suitable habitat.	Unlikely to occur in the Project vicinity.
White-faced ibis <i>Plegadis chihi</i>	**	WL		Any water area, rice field or other harvested grain fields. Nests in aquatic vegetation, shrubs and low trees in large colonies. Listed for Butte, Glenn, Sutter, and Colusa Counties.	Potential foraging habitat in the Project vicinity.	Unlikely to occur in the Project vicinity.
<i>Mammals</i>						
San Joaquin pocket mouse <i>Perognathus inornatus</i>	**	CSC		Dry, open, grassy or weedy areas; fine-textured soil. Listed for Butte, Glenn, Sutter, and Colusa Counties.	No suitable habitat.	Unlikely. Not documented during previous surveys.

Sources:

STATUS CODES:

U.S. Fish and Wildlife Service

- FC = Listed as Candidate by the Federal Government
- FE = Listed as Endangered by the Federal Government
- FT = Listed as Threatened by the Federal Government
- ** = In 2002, this used to be Federal Species of Concern (FSC), but the Sacramento Fish and Wildlife office no longer maintains a list of species of special concern. However, various other agencies and organizations maintain lists of at-risk species. These lists provide essential information for land management planning and conservation efforts.

California Department of Fish and Game

- CSC = Listed as California Species of Special Concern
- FP = Fully Protected
- SE = Listed as Endangered by the State Government
- ST = Listed as Threatened by the State Government
- WL = Watch List

California Natural Plant Society

- CNPS 1A = Presumed extinct in California
- CNPS 1B = Rare, threatened, or endangered in California
- CNPS 2 = Rare, threatened, or endangered in California, but more common elsewhere
- CNPS 3 = Need more information about this plant (Review List)

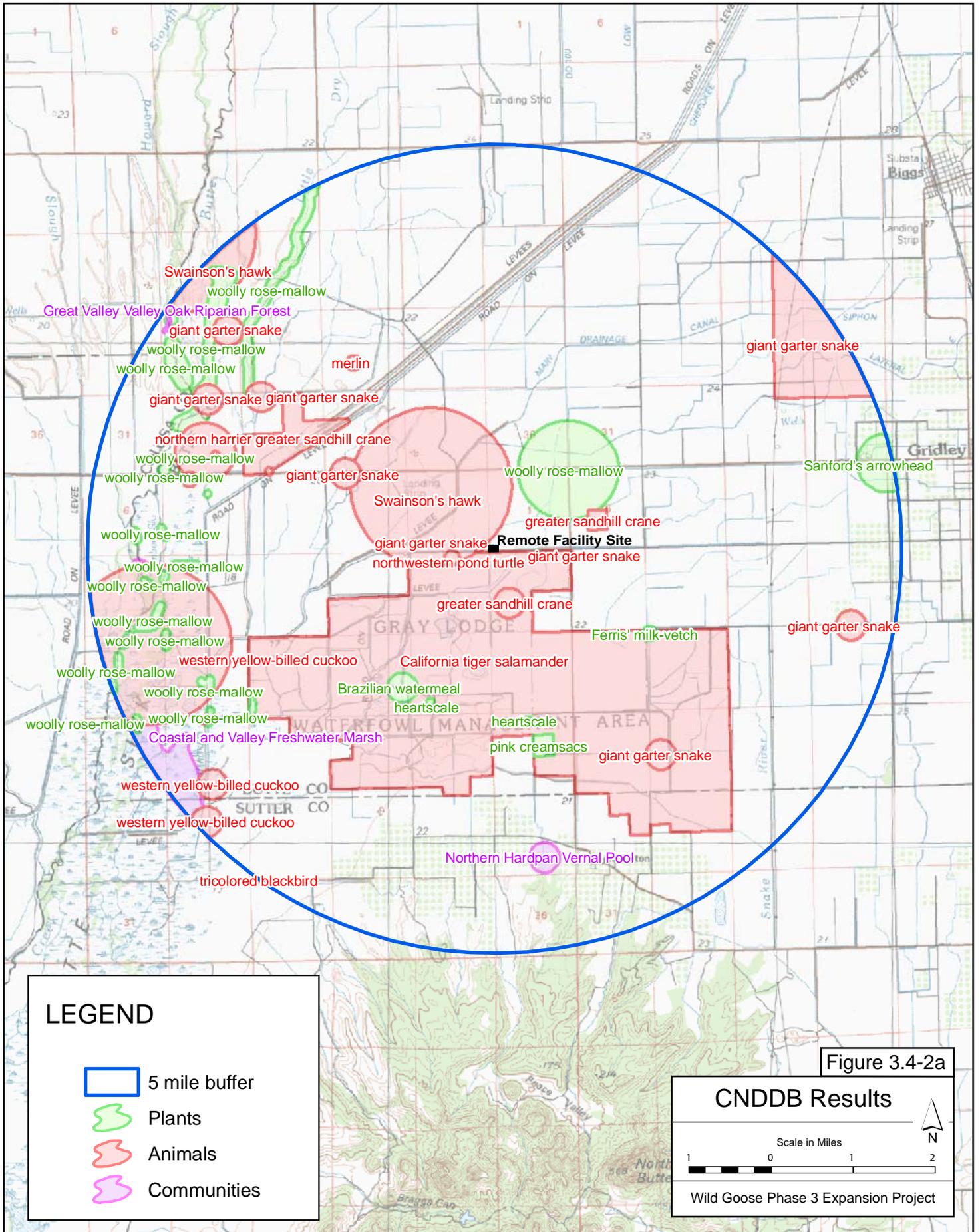
Plant community types in the Project study area are divided into natural communities and developed or agricultural categories. To a large degree, impacts will be minimized by avoiding the natural plant communities. These areas are also where the Project will most likely encounter the greatest diversity of sensitive species.

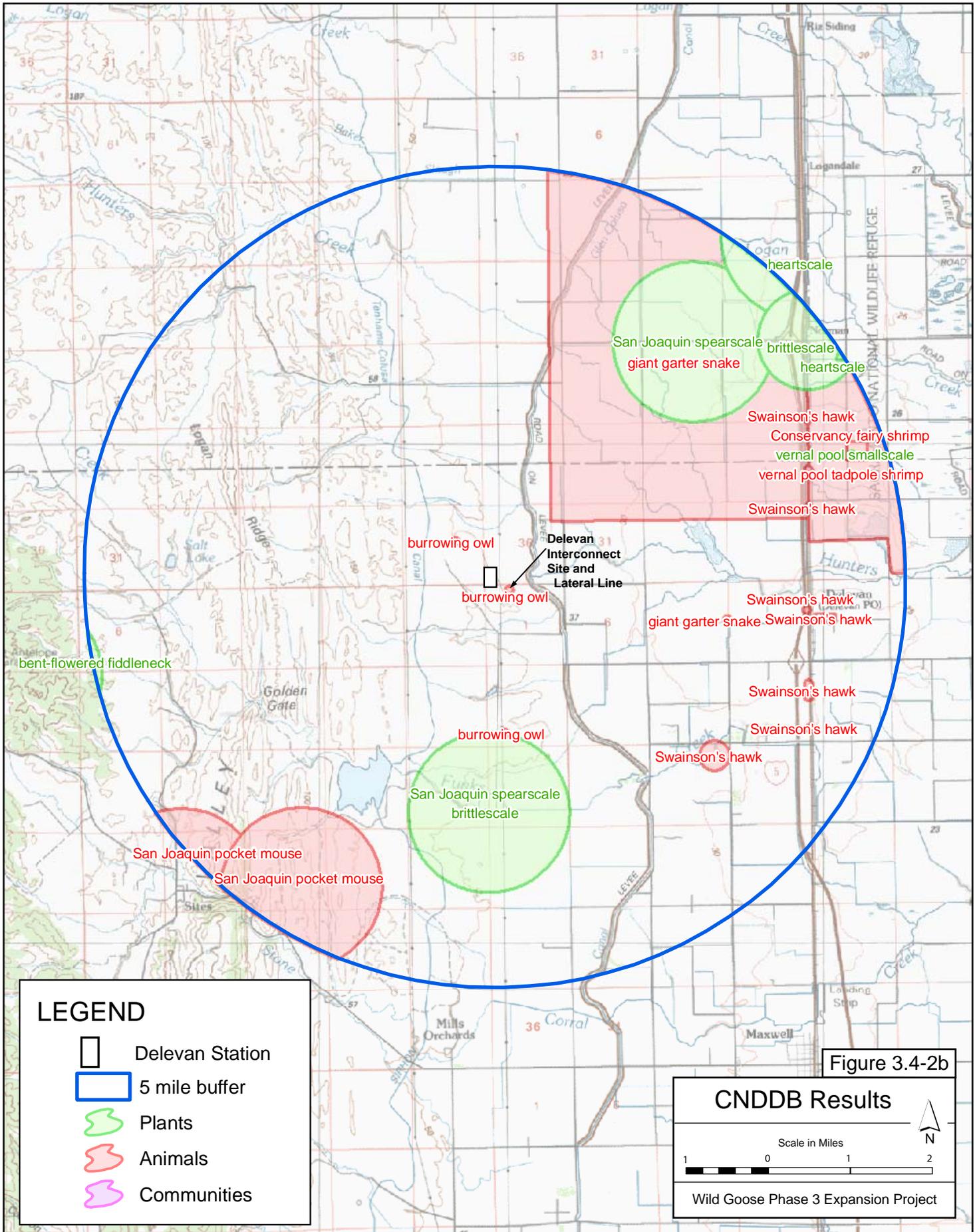
A natural community typically has high ecological value or functions, whereas developed or agricultural areas typically have lower ecological functions. Natural communities are considered important because their degradation or destruction could threaten populations of dependent plant and wildlife species and significantly reduce the regional destruction of these species. Loss of natural communities can also reduce important ecosystem functions, such as water filtration by wetlands and bank stabilization by riparian forests. Many natural communities, such as vernal pools and natural grasslands, have been significantly reduced by conversions to agriculture and flood control projects. Developed and agricultural uses are considered less sensitive from a biological perspective. Although these categories have habitat value for some species, locating proposed Project components in these areas is more desirable than in a natural community. Figures 3.4-2a and 3.4-2b illustrate the various habitat types found in the Project study area of the RFS and the Delevan Interconnect Site, respectively.

3.4.3.2 Delevan Interconnect Site

The Delevan Interconnect Site is predominantly annual grassland. Annual grassland is characterized by dominant naturalized non-native grasses that cover the slopes, hilltops, and well-drained uplands. Annual grassland often has a dominance of grasses such as wild oats, soft chess brome, ripgut brome, and cheatgrass. Forbs such as narrowleaf plantain, summer mustard, and rose clover may be present in lower numbers.

Several species of songbirds, such as sparrows and finches, use grasslands. In addition, game species such as the ring-necked pheasant (*Phasianus colchicus*) and the California quail (*Callipepla californica*), commonly use grassland areas near roads for cover. Sensitive species that may occur in the annual grasslands in the Project study area are Colusa layia (*Layia septentrionalis*) and western burrowing owl (*Athene cunicularia hypugea*). Grasslands provide important breeding and foraging habitat for the burrowing owls, and this species is likely to be found at the Delevan Interconnect Site and pipeline as illustrated on Figure 3.4-2b. Also, large or lightly grazed grasslands are important foraging habitat for tricolored blackbirds (*Agelaius tricolor*).





3.4.3.3 Remote Facility Site

The predominant agricultural crop that characterizes the RFS is rice. While flooded, this crop provides important foraging habitat for wintering waterfowl and the giant garter snake (*Thamnophis gigas*). Some of the sensitive species illustrated in Figure 3.4-2a forage in rice fields.

3.4.3.4 Sensitive Plant Species

Two sensitive plant species that have the potential to occur within the Project study area are the Palmate-bracted Bird's Beak (*Cordylanthus palmatus*) and Milo Baker's Lupine (*Lupinus milobakeri*). There is a low potential for these species to occur in the grasslands around the Delevan Interconnect Site and along the PG&E lateral pipeline route. Rare plant surveys will be performed in the grassland areas potentially affected by the Delevan Interconnect Site to determine whether any permanent impacts will occur.

3.4.3.5 Sensitive Wildlife Species

The sensitive wildlife species that have the potential to occur in the Project study area include invertebrates, amphibians, reptiles, birds, and mammals. The potential invertebrate species include types of fairy shrimp that are typically found in vernal pools and swales. Vernal pools occur within the annual grasslands in the vicinity of the Delevan Interconnect Site, but are quite a distance away and should not be affected. In addition, this area is potential suitable habitat for the western spadefoot toad (*Spea hammondi*). Potential breeding sites are in the form of vernal pools or swales and summer aestivation sites are in the form of cracks or small mammal burrows in the grasslands.

Suitable habitat for giant garter snakes in the form of ditches, canals, creeks, and flooded rice fields occurs near the RFS. There are known occurrences of giant garter snake on the Gray Lodge near the RFS, and on the Wild Goose Club. Several documented occurrences exist just north of Gridley Road in the Butte Creek area. During initial Project development, giant garter snakes were observed in a rice field irrigation ditch near the RFS, along the storage pipeline route near the 833 Canal, and near the junction of North Butte Road and the access road into the Wild Goose Club.

Northwestern pond turtles (*Clemmys marmorata marmorata*) were observed in several aquatic locations along the existing storage pipeline route, as well as in ditches and ponds near the RFS during Base Project development. They can be expected in any aquatic habitat near the RFS. Females typically deposit eggs within excavated holes on unshaded, often partially south-facing

slopes, with a substrate of high clay or silt fraction. Most nesting sites are located within 200 yards of an aquatic site.

Several sensitive bird species have been found in the Project site area. These raptors include the nesting Swainson's hawks (*Buteo swainsoni*) that had been found within the Project study area on Butte Creek north of Gridley Road, and near the town of Delevan. These hawks have potential to be encountered near proposed Project components at both the RFS and the Delevan Interconnect Site due to the abundance of preferred habitat in the Project study area. Potential nesting habitat includes riparian woodlands, isolated trees, oak groves, and roadside trees. This habitat is generally adjacent or in close proximity to agricultural fields. Other raptors, including white-tailed kite (*Elanus leucurus*) and the northern harrier (*Circus cyaneus*) could also nest in the Project study area.

While the other three hawks typically nest in trees, northern harrier nests on the ground in freshwater marsh, grasslands, or grain fields. Northern harriers were frequently seen over the wetlands at the Wild Goose Club and likely nest in the area. In 1998 during Base Project development, a female harrier was observed with nesting material on the Gray Lodge adjacent to West Liberty Road and Swainson's hawks were observed foraging in the vicinity of the storage pipeline but did not nest in the Project area.

The loggerhead shrike (*Lanius ludovicianus*) was observed and may have nested on the Gray Lodge during Base Project development, and could potentially occur in several other different locations in the Project study area of the RFS.

Ground or shrub-nesting birds may be potentially found at the RFS. These birds include the white-faced ibis (*Plegadis chihi*), black tern (*Chlidonias niger*) and the tricolored blackbirds (*Agelaius tricolor*). White-faced ibis are colony-nesting birds that form rookeries in aquatic vegetation, shrubs, or low trees near water or wetlands. Several flocks have been seen over the Wild Goose Club and it is likely that at least one rookery exists somewhere in the immediate area. Black terns nest communally over water and occasionally in rice fields. Colonies of tricolored blackbirds are likely to be found in thickets of riparian scrub or freshwater marsh near water at various locations in the Project study area.

Burrowing owls (*Athene cunicularia*) are known to occur in the annual grasslands adjacent to the PG&E Delevan Compressor Station. Though grasslands are their primary habitat, they can also be found in levees and irrigation dikes where ground squirrel burrows provide suitable burrow habitat.

San Joaquin pocket mouse (*Perognathus inoratus*) digs burrows in dry grassy or weedy areas where there is a fine-textured soil. This species could potentially occur within the annual

grasslands found in the vicinity of the Delevan Interconnect Site although none were detected during surveys in 2001.

3.4.4 POTENTIAL IMPACTS FOR THE PROPOSED PROJECT

3.4.4.1 Significance Criteria

Potential impacts to biological resources are separated into those likely to occur from construction (both short- and long-term impacts) and those that could occur as a result of operation and maintenance.

According to Section 15002(g) of the CEQA Guidelines, “a significant effect on the environment is defined as a substantial adverse change in the physical conditions which exist in the area affected by the proposed project.” As stated in the Section 15064(b) of the CEQA Guidelines, the significance of an activity may vary with the setting. According to Appendix G of the CEQA Guidelines, impacts to biological resources may be considered significant if the Project will:

- have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the CDFG or USFWS;
- have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the CDFG or USFWS;
- have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
- interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; and/or
- conflict with the provisions of an adopted HCP, NCCP, or other approved local, regional, or state HCP.

Permanent habitat loss is not considered a significant impact to sensitive species (other than for listed or candidate species under the state and federal endangered species acts) unless extensive areas of suitable habitat are degraded or somehow made unsuitable, or areas supporting a large proportion of the species population are substantially and adversely impacted.

3.4.4.2 Natural and Agricultural Communities

While all natural communities and agricultural areas were reviewed in a preliminary analysis, the detailed impact analysis and mitigation recommendations provided below only focus on the communities and agricultural areas which:

- are potentially subject to Section 404 of the Clean Water Act,
- are considered a sensitive habitat type that performs important ecological functions or are scarce or threatened in the region, and/or
- provide potential habitat for sensitive plant or wildlife species.

These include vernal pools and swales, annual grassland, and rice fields.

Vernal Pools

Vernal pools were identified in the vicinity of the Delevan Interconnect Site. Three low-quality vernal pools were identified in the grassland between the Delevan Interconnect Site and the Glenn-Colusa Canal. These vernal pools are along the road and almost 2,000 feet from the Project site location. There are no significant impacts from the Project as these areas will be avoided.

Annual Grassland

Up to 0.6 acre of annual grassland could be displaced if the Delevan Interconnect Site is expanded. At this time PG&E does not believe that expansion of the Delevan Interconnect Site area is required, but is conducting an engineering study to confirm this. Approximately 1.5 acres of annual grassland will be temporarily disturbed due to installation of the PG&E lateral pipeline. Up to an additional approximately 1 acre could be temporarily disturbed for access and staging for the pipeline and Interconnect Site work. The temporary and permanent impacts to annual grasslands would not be considered significant given the abundance of this habitat type in the immediate area, and its demonstrated ability to rapidly re-establish with routine restoration. Annual grasslands in this region provide foraging habitat for Swainson's hawks. Impact analysis and associated mitigation for Swainson's hawk is discussed below. WGS is further proposing specific restoration measures for temporary disturbance to annual grassland to ensure impacts remain less than significant.

Rice Fields

Approximately 4.5 acres of rice field will be permanently filled as a result of expansion at the RFS. A permanent loss of foraging habitat for giant garter snake will result from expansion of the RFS in the adjacent rice field. Although these impacts would be considered potentially

significant, mitigation implemented consistent with the requirements in USFWS Biological Opinion dated September 13, 2002 (File # 1-1-02-F-0060) and the CDFG Take Permit dated September 26, 2002 (File # 2081-2002-017-02) for the giant garter snake will fully mitigate the impacts to less than significant.

Freshwater Marsh

At the Remote Facility Site, freshwater marsh occurs mainly in small, isolated patches within drainage ditches associated with rice fields. The drainage ditch along West Liberty Road contains some freshwater marsh vegetation and open water. An area approximately 100 feet long could be impacted by access into the expanded facility and relocated parking area. These impacts would be offset by removal of existing access and restoration of the drainage ditch, with any additional mitigation acquired if necessary, that would be consistent with the Corps Section 404 permit dated December 17, 2002 (File # 200100383).

3.4.4.3 Sensitive Plant Species

Sensitive plant species that may be affected by Project development occur either in foothill grasslands or vernal pools, located at the Delevan Interconnect Site and PG&E lateral pipeline. Other sensitive plant species are more typically found in seasonal wetlands, such as those in the Butte Sink area west of the RFS. Impacts to sensitive plant species would be considered potentially significant. Rare plant surveys will be performed in the grassland areas affected by the Delevan Interconnect site to determine whether any impacts to rare plants will occur. With implementation of the mitigation measures listed in Section 3.4.5, potential impacts will be less than significant.

3.4.4.4 Sensitive Wildlife Species

Fairy Shrimp

Three species of fairy shrimp are typically found in vernal pools and swales. Any substantial disturbance or destruction of vernal pools indirectly resulting from adjacent construction activities would be considered a potentially significant impact on these species. Since the three small low-quality vernal pools near the Glenn-Colusa Canal can be avoided by construction, surveys for these species will not be required and impacts are not expected.

Spadefoot Toads

Large rain-pool complexes used by spadefoot toads for breeding and small mammal burrows which provide aestivation habitat are likely to be present at the vernal pool sites east of the Delevan Interconnect Site. Disruption of breeding or estivation habitat would be considered a

potentially significant impact. No work is expected to occur in the vicinity of potential breeding pools, so impacts to spadefoot toad are not expected.

Giant Garter Snake

Suitable foraging and hibernacula habitat for the giant garter snake can be found within canals, creeks, agricultural ditches, marshes, and flooded portions of rice fields. There are known occurrences of giant garter snake near the RFS. If construction occurs in suitable foraging habitat during the snake's active period, direct impacts to the species could occur and would be considered potentially significant. The temporary and permanent loss of foraging habitat and the destruction of suitable hibernacula during the snake's inactive period would also be considered a potentially significant impact.

Although the above-described impacts may occur, mitigation described in the Biological Resources Protection Plan prepared for the original project will be implemented consistent with the requirements in USFWS Biological Opinion and the CDFG Take Permit for the giant garter snake and will fully mitigate the impacts to less than significant.

Northwestern Pond Turtle

Suitable foraging and basking habitat for the northwestern pond turtle can also be found within canals, creeks, agricultural ditches, marshes, and flooded portions of rice fields. Potential impacts to this species will be similar to those described above for the giant garter snake. They can be expected in any aquatic habitat in the Project study area. Females typically deposit eggs within excavated holes on unshaded, often partially south-facing slopes, with a substrate of high clay or silt fraction. Most nesting sites are located within 200 yards of an aquatic site. Preconstruction surveys will be conducted to determine whether turtle habitat will be impacted by Project construction. If any habitat will be affected, it would be considered a potentially significant impact, which would be mitigated to less than significant levels by implementing the mitigation measures for reptiles described in Section 3.4.5.

Sensitive Birds

Noise from construction activities could disturb the following sensitive birds that may nest in the area:

- Swainson's hawks
- northern harriers
- white-tailed kites
- burrowing owls
- tricolored blackbirds
- white-faced ibis
- loggerhead shrikes
- black terns

Construction activities could cause them to abandon or avoid their nests, resulting in a failure to lay eggs or mortality of the chicks from neglect. These birds could also be impacted by removal of trees and shrubs that provide nesting or roosting sites. Noise from operational activities of the sites may cause nesting Swainson's hawk to temporarily leave their nests, which would be considered potentially significant. However implementation of the mitigation measures described in Section 3.4.5 will reduce impacts to less than significant levels. Permanent loss of grasslands could remove foraging habitat for Swainson's hawks that may nest within five miles of the Delevan Interconnect Site. This would be considered a less than significant impact due to the small amount of habitat that would be lost and the large quantity of available foraging habitat in the vicinity.

Burrowing Owls

Because burrowing owls live and nest in burrows, individual owls, their young, or eggs could be destroyed by construction vehicles if they were to move into Project work areas prior to or during construction. Surveys of suitable habitat during the nesting season will be conducted. Based on the results of the field surveys, the construction schedule or activity, if possible, will be modified during nesting periods of the sensitive species to preclude impacts. If it is not possible to adjust the construction activity or schedule, impacts to nesting burrowing owls would be considered potentially significant, however implementation of the mitigation measures described below will reduce impacts to less than significant levels.

Pocket Mouse

Impacts to the San Joaquin pocket mouse could occur if breeding and nesting were disrupted by construction activities or grading and trenching within the grasslands along the western portion of the Project study area. In addition, construction could result in direct mortality of individuals. These impacts would be considered significant, however implementation of the mitigation measures described below will reduce impacts to less than significant levels.

3.4.5 PROPOSED MITIGATION MEASURES

3.4.5.1 General

The following general measures will be employed to avoid or minimize potential impacts to biological resources. With conscientious implementation, the following measures will eliminate or reduce potential biological impacts.

- An environmental training program will be provided to all construction personnel. Training will include information about protection measures for sensitive species in the Project area, requirements for working in sensitive habitats, and consequences for noncompliance.

- Vehicles will be confined to existing roads and only approved access roads.
- Refueling and hazardous materials storage will be restricted to areas farther than 100 feet from the boundaries of all wetlands, streams, and drainages, or refueling will be limited to designated areas that are protected with berms lined with a non-porous material to ensure that accidental spills will not contaminate the water body. All hazardous materials spills will be cleaned up immediately and disposed of properly.
- The edge of the work area will be clearly marked to contain construction activities.
- A qualified biologist will be on-site during construction activities in suitable habitat for sensitive species to perform supplemental surveys just prior to construction and to monitor compliance with mitigation measures.
- The introduction of noxious weeds carried in with construction equipment will be minimized by washing the equipment before it is delivered to the Project. In addition, only weed-free erosion control materials will be used on the Project.
- Trench backfilling will occur within 72 hours of pipeline installation to preclude potential impacts to wildlife that may fall into the trench.
- At the conclusion of each day's trenching activity, the end of the trench will be left ramped at an approximate 2 to 1 slope to allow any wildlife falling into the trench to escape.
- Water withdrawal for hydrostatic testing will be timed and conducted in a manner to avoid adverse effects to fish and aquatic life

3.4.5.2 Natural and Agricultural Communities

Vernal Pools

There are no significant impacts from the Project as these areas will be avoided. No mitigation is necessary.

Annual Grassland

The following measures will reduce potential biological impacts to annual grassland:

- Surface disturbance along the pipeline ROW in grasslands will be scarified and allowed to re-establish using the existing seed base in the topsoil, or if necessary, will be hydroseeded with a suitable native seed mix.
- The Comprehensive Landscape Restoration Plan prepared during the Expansion Project will be implemented to ensure that vegetation is restored and noxious weeds are controlled.

Rice Fields

A small amount of rice field, 4.5 acres, will be permanently lost by expansion of the RFS, resulting in a permanent loss of foraging habitat for giant garter snake. The U.S. Fish and Wildlife Service will require that these losses be compensated for by off-site habitat preservation. Although these impacts would be considered potentially significant, mitigation implemented consistent with the requirements in USFWS Biological Opinion dated September 13, 2002 (File # 1-1-02-F-0060) and the CDFG Take Permit dated September 26, 2002 (File # 2081-2002-017-02) for the giant garter snake will fully mitigate the impacts. The rice fields may also be considered jurisdictional farmed wetlands according Corps. Potential impacts and mitigation for impacts to farmed wetlands are discussed in section 3.8 of this report.

Freshwater Marsh

Impacts to approximately 100 feet of jurisdictional drainage ditch along West Liberty Road would be offset by removal of existing access and restoration of the drainage ditch, and acquisition of mitigation credits, if necessary, consistent with the Corps Section 404 permit dated December 17, 2002 (File # 200100383).

3.4.5.3 Sensitive Plant Species

The following mitigation measures are proposed for potential impacts to sensitive plant species.

- Sensitive plant surveys will be conducted prior to construction within suitable habitat in and adjacent to Project work areas and during the appropriate survey window.
- Where sensitive plants occur within the construction work area, the work area will be adjusted to the extent feasible in order to minimize impacts.
- Exclusion fencing will be provided to protect sensitive plants that occur within 50 feet of construction work areas.
- Extra workspace will avoid locations with sensitive plants to the extent feasible.
- The sensitive plant species potentially present in the three vernal pools just west of the Glenn-Colusa Canal will be avoided by construction.
- Sensitive plant species that are unavoidable by construction will be transplanted or replaced.

3.4.5.4 Sensitive Wildlife Species

The following measures are intended to address potential impacts to sensitive wildlife species.

Invertebrates

- Vernal pool habitat for fairy shrimp will be avoided as described above.

Amphibians

- Breeding pools used by spadefoot toads will be avoided by all construction activities, as described above.

Reptiles

The following measures proposed by WGS will be supplemented with measures prescribed in the USFWS Biological Opinion and the CDFG Take Permit for the giant garter snake.

- A qualified biologist will monitor construction to ensure that no sensitive reptile species inadvertently enter the work area.
- The WGS biologists will obtain authorization from the USFWS and CDFG to handle the giant garter snake for the purposes of removing it from harm's way during construction and operation of the Project.
- Preconstruction surveys for giant garter snake and northwestern pond turtle will be performed within 24 hours prior to construction at the RFS. If a giant garter snake or any other sensitive species is found, it will be allowed to escape on its own, or will be removed from harm's way by an authorized biologist and relocated to suitable habitat. USFWS and CDFG will be notified whenever a snake is handled by an authorized biologist.
- Other than isolation dike construction and irrigation flow culvert installation, earthwork adjacent to flooded rice fields and other potential habitat will be confined to May through September unless otherwise authorized by the USFWS and CDFG.

Birds

Raptors and Other Sensitive Nesting Species

Preconstruction surveys will be conducted in suitable habitat to determine whether raptors or other sensitive bird species are nesting along or near the Project construction areas. The construction schedule or activities may be modified during nesting periods for some species to preclude impacts. If it is not possible to adjust the schedule or construction activity, the following measures will be implemented:

- Construction within one-half mile of active Swainson's hawk nests will be avoided between April 15 and August 1 if feasible. If not feasible, nesting hawks within one-half mile will be monitored, construction activities will be halted if signs of disturbance are noted, and CDFG will be consulted to determine possible options.
- A minimum 500-foot buffer will be maintained for other tree-nesting species such as the white-tailed kites and the loggerhead shrike until after the young have fledged.

- A minimum 250-foot buffer will be maintained for ground-nesting or shrub-nesting species (northern harriers, tricolored blackbird, black tern, white-faced ibis breeding colonies, and loggerhead shrikes) until after nesting is complete.

Burrowing Owls

Detailed preconstruction surveys will be conducted for burrowing owls to determine locations within the annual grasslands. To the extent feasible, proposed Project facilities will avoid active burrows. If it is not possible to avoid burrowing owls, the following measures will be implemented:

- If burrowing owls occur within the proposed construction area, a 250-foot exclusion zone will be maintained around the burrows until relocation is complete. Passive relocation may be used during the non-breeding season (September 1 through January 31) if it is determined that construction activities would disturb owls. Passive relocation would include installing one-way doors on the entrances of burrows located within the Project area.
- Under the supervision of a qualified biologist, burrows within the proposed construction area will be excavated using hand tools and then refilled to prevent reoccupation. If any owls are found during the excavation, the excavation will cease and the owls will be allowed to escape.
- For each burrow excavated, one natural or artificial burrow will be provided outside the 250-foot buffer zone.

Mammals

Detailed preconstruction surveys of suitable habitat will be conducted for the San Joaquin pocket mouse. To the extent feasible, the final location of Project components in the grasslands west of the Glenn-Colusa Canal will avoid confirmed San Joaquin pocket mouse habitat. If avoidance is not entirely possible, then the Project area will be narrowed to the minimum necessary to safely conduct pipeline installation and the CDFG will be consulted for site-specific recommendations.

3.5 CULTURAL AND PALEONTOLOGICAL RESOURCES

3.5.1 INTRODUCTION

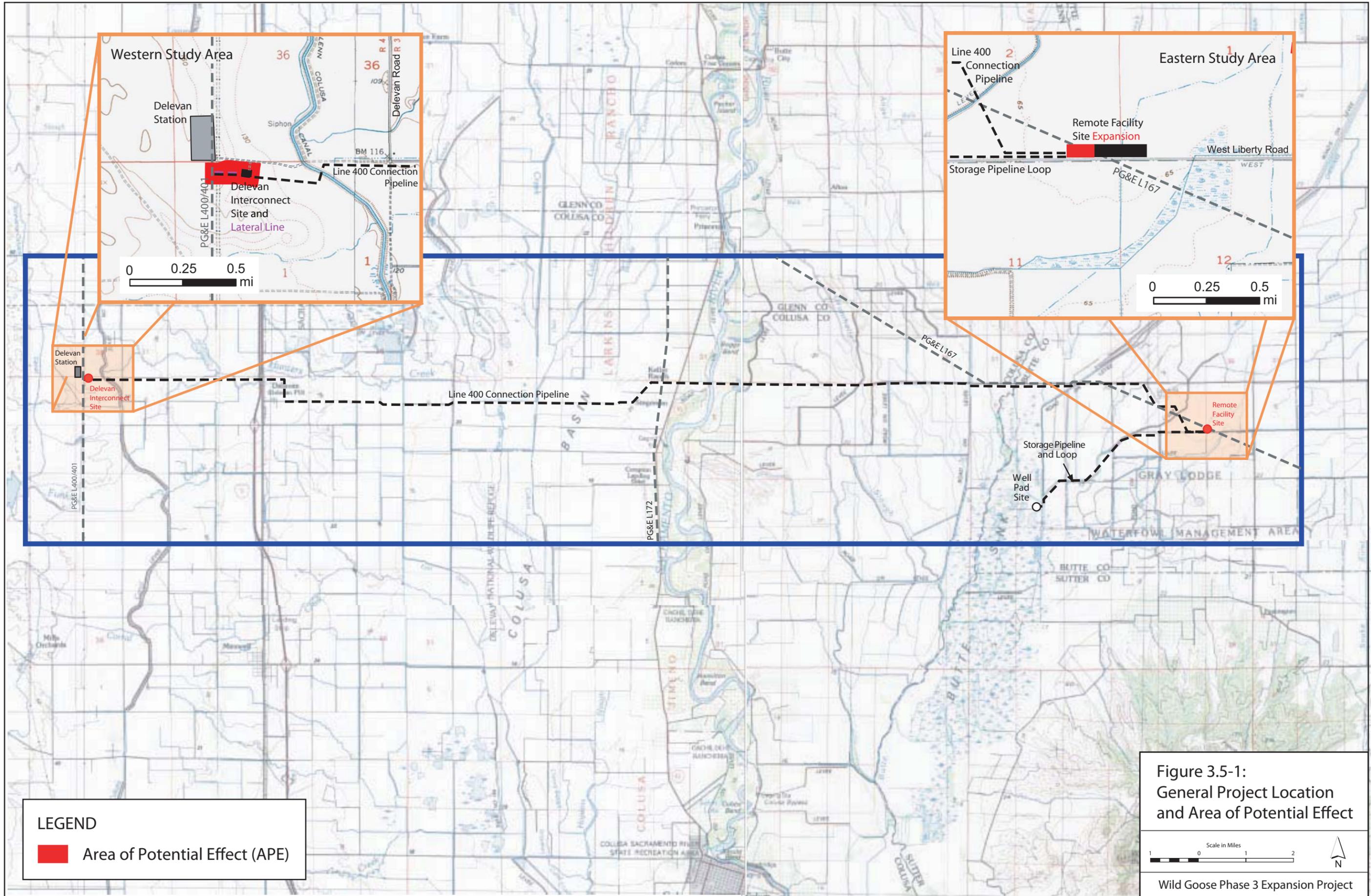
Wild Goose is proposing to expand the Approved Project facilities in Butte and Colusa Counties, California. The Project represents a supplemental expansion (an addition to the 2002 Expansion) that incorporates an expansion of the RFS to allow for installation of further process and compression equipment, and an expansion of the Delevan Interconnect Site, including construction of a lateral pipeline by PG&E to tie-in with PG&E's Line 401 to accommodate increased flow of gas resources. For simplicity, in this section the Project area is divided into two study areas: the eastern study area incorporates the RFS and the western study area incorporates the Delevan Interconnect Site and PG&E lateral pipeline (see Figure 3.5-1). This section of the PEA documents the basis for evaluating Project impacts, assessing current survey requirements, and reviewing cultural and paleontological resources likely to be present in the proposed Project areas. For more detailed information see Appendix C: Cultural Resources Report.

3.5.2 REGULATORY FRAMEWORK

In addition to the CEQA and the NEPA, the Project will comply with state and federal laws, regulations, and permitting requirements specifically associated with cultural and paleontological resources.

Cultural resources include prehistoric and historic archaeological sites, districts, and objects; standing historic structures, buildings, districts, and objects; and locations of important historic events or sites of traditional/cultural importance to various groups. The analysis of cultural resources can provide valuable information about the cultural heritage of both local and regional populations.

Paleontological resources include fossil remains, fossil localities, and formations that have produced fossil material. Fossils are an important resource to science, as they are useful in demonstrating and documenting the evolution of particular groups of organisms. Fossil remains enable geologists to reconstruct the environment in which the organisms lived, and hence the environment during deposition of the rock. Fossils are also extremely useful in determining the age of the rock in which they are preserved.



LEGEND

Area of Potential Effect (APE)

**Figure 3.5-1:
General Project Location
and Area of Potential Effect**

Scale in Miles



Wild Goose Phase 3 Expansion Project

3.5.2.1 California Regulatory Requirements

Historical Resource Significance

Applicable California regulations are found in the California Public Resources Code (PRC Sections 5020 through 5029.5 and Section 21177), and in CEQA Guidelines (California Code of Regulations Sections 15000 through 15387). CEQA equates a substantial adverse change in the significance of a historical resource with a significant effect on the environment (PRC Section 21084.1) and defines substantial adverse change as demolition, destruction, relocation, or alteration that would impair historical significance (PRC Section 5020.1). PRC Section 21084.1 stipulates that any resource listed in, or eligible for listing in, the California Register of Historical Resources (CRHR) is presumed to be historically or culturally significant.

Resources listed in a local historic register or deemed significant in a historical resource survey (as provided under PRC Section 5024.1g) are presumed historically or culturally significant unless the preponderance of evidence demonstrates they are not. A resource that is not listed in, or determined to be eligible for listing in, the CRHR, not included in a local register of historic resources, or not deemed significant in a historical resource survey, may nonetheless be historically significant (PRC Section 21084.1).

A resource identified as significant in a historical resource survey may be listed in the CRHR if the survey meets all of the following criteria:

- The survey has been or will be included in the State Historic Resources Inventory.
- The survey and the survey documentation were prepared in accordance with the Office of Historic Preservation procedures and requirements.
- The resource is evaluated and determined by the Office of Historic Preservation to have a significance rating of Category 1 to 5 on Department of Parks and Recreation Form 523.
- If the survey is five or more years old at the time of its nomination for inclusion in the CRHR, the survey is updated to identify historical resources that have become eligible or ineligible due to changed circumstances or further documentation and those that have been demolished or altered in a manner that substantially diminishes the significance of the resource.

Other state-level requirements for cultural resources management are written into the PRC Chapter 1.7, Section 5097.5 (Archaeological, Paleontological, and Historical Sites), and Chapter 1.75, beginning at Section 5097.9 (Native American Historical, Cultural, and Sacred Sites) for lands owned by the state or a state agency.

Archaeological Resource Significance

Where a project may adversely affect a “unique” archaeological resource, PRC Section 21083.2 requires the CEQA Lead Agency to treat that effect as a significant environmental effect. CEQA Guidelines sections 15064.5 and 15126.4 take a broader approach, using the term “important” in place of “unique,” and suggesting additional criteria to guide the Lead Agency in making a determination of uniqueness (the resource must be at least 100 years old and possess “substantial stratigraphic integrity” and the resource involves “important” research questions that historical research has shown can be answered only with archaeological methods). To resolve conflicts between the narrow and limiting statutory provision for mitigation of archaeological resources and the broadly protective statutory provision for determining the significance of historical resources, CEQA Guidelines Section 15064.5(c) provides that to the extent an archaeological resource is also an historical resource; the provisions regarding historical resources apply.

The CEQA provisions endorse a set of standardized mitigation measures for historic resources by providing that projects following the U.S. Secretary of the Interior’s Standards for Treatment of Historic Properties shall be considered as mitigated to a less-than-significant level.

Native American Burials

The disposition of Native American burials is governed by Section 7050.5 of the California Health and Safety Code and Sections 5097.94 and 5097.98 of the PRC, and falls within the jurisdiction of the Native American Heritage Commission (NAHC). If human remains are discovered, the County Coroner must be notified within 48 hours and there should be no further disturbance to the site where the remains were found. If the remains are determined by the coroner to be Native American, the coroner is responsible for contacting the NAHC within 24 hours. The NAHC, pursuant to PRC Section 5097.98, will immediately notify those persons it believes to be most likely descended from the deceased Native American so they can inspect the burial site and make recommendations for treatment or disposal.

Paleontological Resource Protection

Under CEQA, Appendix G (part V) provides protection to paleontological resources and indicates that a significant impact would occur in the event of disturbance to or destruction of a unique paleontological resource, site, or geologic feature. Any unauthorized removal of paleontological resources is a misdemeanor under Section 5097.5 of the California Public Resources Code, and penalties for damage or removal of paleontological resources is outlined under California Penal Code Section 622.5.

3.5.2.2 Federal Regulatory Requirements

The regulations implementing Section 106 (36 CFR Part 800 or Agency counterpart regulations) of the National Historic Preservation Act of 1966 (as amended) (NHPA) require federal agencies to identify all cultural properties on land under its control or jurisdiction that meet the criteria for inclusion in the National Register of Historic Places (NRHP) and to afford the Advisory Council on Historic Preservation an opportunity to comment on those actions that may affect them.

The NHPA established the federal government's policy on historic preservation and the programs, including the NRHP, through which that policy is implemented. Under the NHPA, historic properties include "... any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places (16 United States Code [USC] 470w (5))." Section 106 (16 USC 470f) of the NHPA requires federal agencies, prior to implementing an "undertaking" (e.g., issuing a federal permit), to consider the effects of the undertaking on historic properties and to afford the Advisory Council on Historic Preservation and the State Historic Preservation Office a reasonable opportunity to comment on any undertaking that would adversely affect properties eligible for listing on the NRHP.

If a permit is required from the Corps, the NHPA of 1966 (as amended) and its implementing regulations (16 USC 470 et seq., 36 CFR Part 800, 36 CFR Part 60, and 36 CFR Part 63) will apply to the Project, requiring the Corps to consider whether the Project would affect historic properties listed on or meeting the criteria for listing in the NRHP. Federal law states that paleontological resources are not regulated under Section 106 of the NHPA unless those resources are in the context of a cultural resource, in which case they are considered cultural resources.

3.5.3 CULTURAL SETTING

The proposed Project is located within the Sacramento Valley between the Southern Cascade Range and the Sierra Nevada, approximately 50 miles north of the city of Sacramento in Butte and Colusa Counties. As shown in Figure 3.5-1, there are two Project study areas approximately 24 miles apart. The eastern study area in Butte County, lies adjacent and north of the Gray Lodge Wildlife Area near the town of Gridley, and incorporates a proposed expansion of the Remote Facilities Site. The western study area is in Colusa County near the community of Delevan and incorporates a proposed expansion of the Delevan Interconnect Site and the PG&E lateral pipeline (refer to Figure 3.5-1). The Sutter Buttes, a notable geological and geographical landmark that rise from the Sacramento Valley floor, are located about four miles southeast of the eastern study area.

The Project study areas are part of the northern Sacramento Valley, an area with a long history of human occupation from 12,000 years ago to the present. This region includes a range of topography including valley floor, wetlands, riverine settings, and foothill areas. Ecologically speaking, the Project study areas have provided a favorable environment during the prehistoric period providing riverine and upland resources to native populations. The traditional subsistence practices of the early inhabitants of the region focused on hunting and the collection of resources offered primarily by regional wetlands. A change in climate to more arid conditions around 8,000 years ago resulted in an emphasis on the collection and processing of small hard seeds and the possible migration of Hokan-speaking Native Americans into the region. Between 5,000 and 3,000 years ago, a Penutian-speaking Native American group entered the area and focused on salmon and acorns as primary food staples as evidenced by archaeological remains. A cooler climate some 3,000 to 1,500 years ago saw movement from the uplands to the river and foothill areas and an increased reliance on acorn processing. The time from 1,500 to 200 years ago saw the entry of the ethnographic identified Wintu and Nomlaki in the northern Sacramento Valley along with the development of a sedentary, storage-based economy focused on the acorn processing and a village based social construct. Groups who did not adopt this way of life moved into the foothills and more mountainous areas.

3.5.3.1 Native American

The Project study areas are situated in the area claimed by the Patwin and an “unclaimed” area between the Patwin, Valley Maidu, and Konkow (also known as the Valley or Northwestern Maidu). The Patwin occupied the southern part of the Sacramento Valley to the west of the river from the town of Princeton south to San Pablo and Suisun bays. The main Valley Maidu settlement of Pinhuk, located near Butte City (about 10 miles northwest of the eastern study area), was the nearest Native American settlement on the east side of the Sacramento River. A number of River Patwin settlements were located on the west side of the Sacramento River near Colusa.

Native American groups who may have used the Project study areas occupied a specific home territory with several more-or-less permanent settlements. In addition, a larger number of seasonal campsites were used for an annual round of subsistence activities focused on gathering plants and hunting animals. The eastern study area lies about 3 miles east of the Butte Sink, which is part of a 3- to 4-mile-wide traditional hunting and fishing area that extends along Butte Creek. Additional information on Native Americans in the study areas is included in Kroeber (1925, 1932) and Johnson (1978).

3.5.3.2 Historic

The northern Sacramento Valley region was explored and lightly settled late in the Spanish-Mexican colonial era. The Spanish did not enter the area until 1808, and it was not mapped in any detail until 1843. From the late 1820s through the mid-1840s, Canadian and American fur trappers passed through the region. During the Hispanic Period, Native Americans worked with former neighboring groups at the missions, and later, after the secularization of the missions by Mexico in 1834, the majority gradually moved to ranches to work as agriculturists and manual laborers.

3.5.3.3 Hispanic Period

After an initial period of exploration, the Spanish concentrated on the founding of presidios, missions, and secular towns with the land held by the Crown (1769-1821). In contrast, the later Mexican policy stressed individual ownership of the land.

Half-dozen ranchos were established in 1844-47 at the end of the Mexican period for raising cattle. These vast land grants, ranging in size from 17,000 to 26,000 acres, were located for the most part along the Sacramento and Feather rivers to the east and north of the Project study areas.

The Larkins Children Rancho was located on the west side of the Sacramento River from about present-day Codora (west and slightly south of Butte City) south to Compton Landing. This 44,364-acre rancho was finally confirmed to Francis Larkin et al. Following the Mexican War of 1846-48, California was ceded to the United States.

3.5.3.4 American Period

The history of the Project areas is closely linked to the natural setting. Primary themes in the area's development during the American period include agriculture, land reclamation, irrigation, hunting, and wildlife management, with secondary pursuits including mining, transportation, and urban development.

3.5.3.5 Gold Rush

The first wave of settlement in the region occurred during the Gold Rush, beginning in 1848 and tapering off by the mid-1850s. Numerous mining camps sprang up along the Feather River and its tributaries, giving rise to permanent towns such as Oroville and Chico. By 1860, hydraulic mining companies dominated gold mining along the Feather River. These large-scale operations required elaborate systems of dams, reservoirs, ditches, and pipelines to deliver water to high-pressure hoses that washed away bluffs and hillsides to reach gold-bearing strata. Debris and

slickens from the mines washed downstream, causing floods and inundating farmland with sand and gravel. Litigation by agricultural interests led to an 1884 court order halting most hydraulic mining in the region.

3.5.3.6 Butte and Colusa Counties

California achieved statehood in 1850 at the height of the Gold Rush. Butte County (named for the Sutter Buttes) was established in that year as one of the state's original 27 counties. Originally much larger, Butte lost most of its territory to other counties with the current boundaries finally set by 1856. Colusa County, originally known as Colusi, was created but not separately organized in 1850. Between 1851 and 1855, public land in the county was surveyed and subdivided into townships and sections and gradually came under private ownership.

3.5.3.7 Agriculture

The general land survey was completed just as the Project study areas were beginning to make the transition from a mining-oriented economy to one based on agriculture and lumber. Early settlers in the study area established farms and ranches for cultivating grain (primarily wheat and barley) and raising livestock (primarily cattle and sheep). Dry farming of grain and the ranging of livestock remained predominant in the region through the first decade of the 20th century.

3.5.3.8 Railroad

The Project study areas remained sparsely settled through the 1860s. The first permanent towns in the region, Gridley and Biggs, were laid out around stations on the line of the California and Oregon Railroad in 1870. The railroad, which eventually consolidated with the Central/Southern Pacific system, had a key role in the development of the region by carrying out agricultural products and bringing in materials and supplies needed to build up the area.

3.5.3.9 Irrigation and Drainage Systems

Irrigation and drainage systems had a fundamental role in the development of the region by transforming farming practices. The year-round availability of water meant that large holdings could be subdivided into smaller parcels for resettlement and recultivation, a process that began at the turn of the century and accelerated in the 1910s and 1920s.

3.5.3.10 Rice

By World War I, the agricultural economy had expanded and diversified beyond grain and livestock to include a variety of irrigation-based crops. The most important of these new crops was rice. California's rice industry originated in southwest Butte County in the early part of the

century. A wartime boom in the rice market fueled a rapid expansion of rice farming in the Sacramento Valley. The intensive development of irrigation and drainage systems during this period was closely linked to rice farming. The rice market collapsed after the war, but then slowly stabilized. Between 1929 and 1981, California's total rice harvest increased from 82,500 acres to 590,000 acres, with 80 percent of the crop produced in the Sacramento Valley.

Because of the enormous amounts of water used in flood irrigation, rice farming had a significant impact on the region's wetlands by releasing water from the rice fields during the dry summer season. The proliferation of wetlands, in tandem with rice cultivation, increased waterfowl populations throughout the region, particularly in the vicinity of the Butte Sink. The bird populations attracted sport hunters, and a number of gun clubs were established in the area around Butte Sink and in other wetland areas of the Sacramento Valley during the 1910s and 1920s.

Since the 1920s, the Project study areas have been characterized by a continuity of uses that include large-scale reclamation systems, hunting, wildlife and habitat management, and rice farming. The major new development during this period involved the production of natural gas. The Wild Goose Gas Field was discovered in 1951 and ultimately developed with nine primary wells. Production ceased in 1988 when the field was depleted.

3.5.4 PALEONTOLOGY SETTING

The Sacramento Valley, including the Project study areas, has undergone several cycles of deposition and erosion since the beginning of the Pleistocene epoch, about three million years ago. During each of the depositional phases, river channel, levee, and overbank deposits accumulated within the more central portions of the valley, and alluvial fan deposits built up along the margins, near the bases of the previously uplifted Coast and Sierra Nevada mountain ranges. All deposits of these types hold the potential to yield fossil remains of vertebrate animals.

3.5.5 EXISTING CONDITIONS

The proposed Project is situated in a low-lying region of the Sacramento Valley characterized by extensive wetlands and farmland. The eastern study area is surrounded by rice fields (flooded at the time of the field survey in December 2008) to the north, east, and west, and is located adjacently north of the Gray Lodge Wildlife Area, which bears a relatively natural landscape. The western study area is located in the midst of rangeland featuring rolling hills of wild grasses.

Prior to the start of the field survey, a records search and literature review search request was made with the California Historical Resources Information System (CHRIS) to identify previously recorded cultural resources in the proposed Project vicinity. In addition, a Sacred

Lands File search was requested and consultations were initiated with the NAHC to inquire about and to identify recognized sacred lands and/or sensitive cultural resources in the area. Paleontological resource inquiries were made utilizing previous paleontological survey work and reports in the proposed Project vicinity.

3.5.5.1 Cultural Resources Methodology

The proposed Project incorporates two Project study areas, the RFS and Delevan Interconnect Site. Existing archival data, including the results of a prehistoric and historic site records and literature search conducted by the California Historical Resources Information System, Northeast Information Center (CHRIS/NEIC, CSU Chico), and the Northwest Information Center (CHRIS/NWIC, CSU Sonoma), were reviewed to determine the presence of cultural properties within the Project study areas.

Sources consulted for the review include archaeological site/primary record forms and compliance reports on file at the CHRIS/NEIC and CHRIS/NWIC, the California Register of Historical Resources, the Historic Properties Directory for Butte and Colusa Counties, the National Register of Historic Places, the California Inventory of Historic Resources, California Points of Historical Interest, California Historical Landmarks, the Handbook of North American Indians, Vol. 8, California, and Historic Spots in California.

A qualified TRC Solutions Inc. (TRC) archaeologist conducted a field visit (inventory) on December 4, 2008. A follow-up survey of the PG&E lateral pipeline area was conducted on February 25, 2009. For each survey area, an intensive pedestrian field survey was conducted in transect intervals of 5 meters. The survey encompassed a 500-foot by 1,200-foot area of the Phase 3 Expansion area on the west side of the RFS to account for disturbance associated with expanding the facility and relocating the hunter parking area. Although low probability, there is a chance that the Delevan Interconnect Site will need to be increased in size as a result of the Phase 3 Expansion. The extension would be approximately 140 feet by 200 feet adjacent to the existing Interconnect Site. An engineering study that's being conducted by PG&E, will confirm this requirement. To account for the possibility that additional spacing will be required at the Delevan Interconnect Site, an area extending 500 feet from the north, south, and east side and 800 feet from the west side of the Interconnect Site, was surveyed. To account for staging of equipment, temporary pipeline workspace, and access, the entire area between the existing access road and the new PG&E lateral pipeline was surveyed. These respective surface areas are considered the area of potential effect (APE) (refer to Figure 3.5-1).

3.5.5.2 Cultural Resources Field Inventory Results

Both the RFS and Delevan Interconnect Site and their vicinities are part of the WGS Project previously reviewed and surveyed during initial and subsequent project development. During the present field inventory, no evidence of prehistoric or historic cultural resources or paleontological resources, were identified within the APE.

In general, the Project study areas are considered to be sensitive for cultural resources, primarily unrecorded historic resources, based on historic cartographic information on file with the CHRIS/NEIC, CHRIS/NWIC, and local topographic features. Known cultural resources identified in Butte County within the eastern study area include the Gray Lodge Wildlife Area and two contributing elements of Reclamation District 833; in Colusa County, the Glenn-Colusa Canal is the only known cultural resource identified within the western study area. These cultural resources, however, are either not within the 0.5-mile radius of the records and literature search investigation or not identified in the records search results.

The existing Line 400 Connection Pipeline and Storage Pipeline Loop, which are not part of the proposed Project, cross the 833 Canal and Cherokee Canal. Studies conducted during Expansion development identified these features as contributing elements to a potentially eligible historic district/landscape comprising Reclamation District 833.

A Historic Properties Management Plan (HPMP) was completed during Base Project development as part of a Memorandum of Agreement (MOA) prepared and signed by the Corps Sacramento District in July 1997, and updated during the first facilities Expansion and signed in September 2002. These documents, which WGS intends to amend to include the proposed Project components, stipulate the compliance measures to be followed for any additional work or expansion associated with the Project.

The following resources identified during the archival research are present within or adjacent to the proposed Project components and are illustrated in Figure 3.5-2.

Remote Facility Site

- Location is adjacent to the Gray Lodge Wildlife Area.
- Location is within Reclamation District 833.

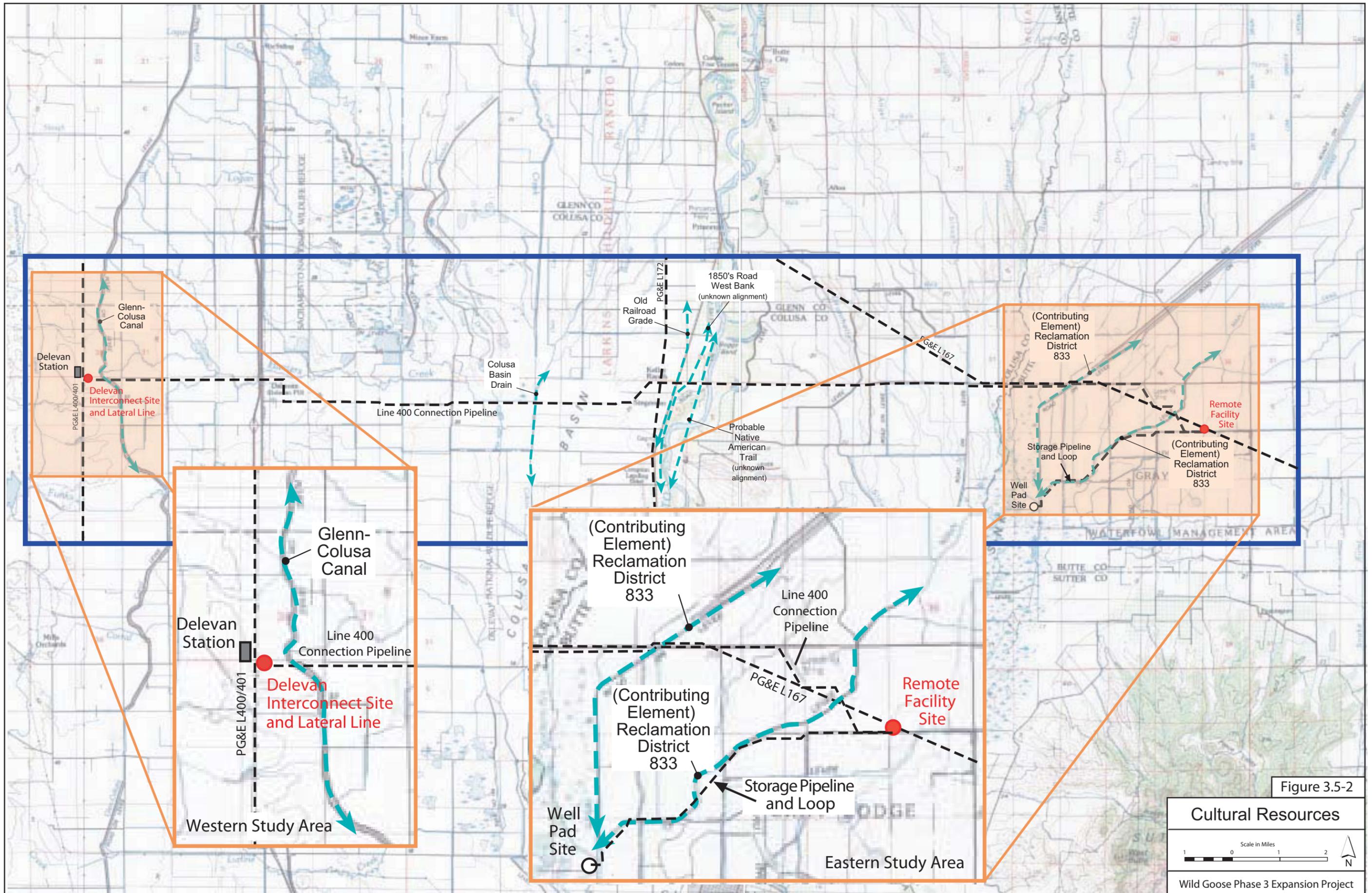


Figure 3.5-2

Cultural Resources

Scale in Miles

1 0 1 2

N

Wild Goose Phase 3 Expansion Project

Delevan Interconnect Site

- Location is adjacent to the Glenn-Colusa Canal in the Glenn-Colusa Irrigation District (Adams 1929)/Reclamation District 2047.

Traditional/Cultural Sites

In California, archaeological sites containing burials are considered by descendants of Native Americans to be culturally significant. TRC sent a letter on November 20, 2008 to the California NAHC to request a SLS search and list of concerned Native American tribes associated with the region in which the proposed Project will be developed.

Research conducted for the Project has not identified any known sites within or adjacent to the Project study areas that would qualify for listing on the NRHP/CRHR as traditional and/or cultural properties (e.g., Parker and King n.d.). Native American groups or individuals and other groups and individuals contacted may identify traditional cultural properties in or adjacent to the proposed Project facilities. The Chico Band of Meechoopda Indians, the Mooretown Rancheria of the Maidu Indians, and the Round Valley Reservation/Covelo Indian Community were consulted during Base Project and Expansion development. The Cachil DeHe Band of Wintun Indians of the Colusa Indian Community of the Colusa Rancheria was consulted during the first phase of Expansion in 2001-2002. For the proposed Project, the Berry Creek Rancheria of Maidu Indians, Butte Tribal Council, Mechoopda Indian Tribe of Chico Rancheria, Colusa Indian Community Council, Wintun Environmental Protection Agency, Paskenta Band of Nomlaki Indians, Grindstone Rancheria of Wintun-Wailaki, Mooretown Rancheria of Maidu Indians, Rumsey Indian Rancheria of Wintun, Cortina Band of Indians, KonKow Valley Band of Maidu, Enterprise Rancheria of Maidu Indians, and Kesner Flores were consulted for knowledge of sacred lands and cultural resources in the proposed Project vicinity.

Previous research completed for the Approved Project did not identify any locations that would qualify for listing on the NRHP as traditional/cultural properties. There are no contemporary Native American Rancherias (or communities) or notable geographic points of interest/concern present within or adjacent to the Project study areas.

National and California Register Significance

No recorded prehistoric/historic archaeological materials eligible for inclusion on the NRHP/CRHR were identified during the archival research or were observed during previously approved field inventories for the initial development of the Approved Project. Two recorded prehistoric/historic archaeological resources potentially eligible for inclusion on the NRHP/CRHR were identified during the archival research or were observed during previously approved field inventories for the Expansion of the Approved Project in 2001-2002.

No recorded prehistoric/historic archaeological materials eligible for inclusion on the NRHP/CRHR were identified during the archival research or were observed during previously approved field inventories for the current Phase 3 Expansion Project.

One potential NRHP/CRHR eligible historic district/landscape, Reclamation District 833, has been identified previously during the first project Expansion within the proposed eastern study area (refer to Figure 3.5-2). Two potential contributing elements of this district, 833 Canal and Cherokee Canal are crossed by both the Line 400 Connection Pipeline and the Storage Pipeline Loop, which are not, however, components of the Phase 3 Expansion. This district appears potentially eligible for the NRHP/CRHR under criterion A.

In addition, the Glenn-Colusa Canal, which is just east of the Delevan Interconnect Site in the western study area (refer to Figure 3.5-2), is a contributing element to a potential historic district/landscape in the Glenn-Colusa Irrigation District. This district may be eligible for the NRHP/CRHP under criterion A.

3.5.5.3 Paleontological Resources

Two recognized depositional units of Pleistocene age, the Modesto Formation and the older Riverbank Formation, underlie the eastern study area (see Figure 3.5-3). Both formations have the potential to yield significant vertebrate fossils but are only locally exposed at the surface within this area and are buried elsewhere by younger Holocene sediments.

The western study area encompasses larger surface-exposure areas of both the Modesto and Riverbank Formations. Localized exposures of the still older Red Bluff Formation cap some of the lower foothills at the western end of the western study area. All these units are of Pleistocene age, between about ten thousand and three million years. The sediments of the first two units may be expected to include more alluvial fan deposits than in the eastern study area, but are also potentially productive of significant fossils. The third unit consists of weathered gravels, probably deposited as a thin veneer or “pediment surface” during a period of impeded drainage of the Sacramento River. Two of the units have produced significant Pleistocene fossils near the western study area. During the initial Expansion Project, two fossils were found midway between Interstate 5 and the Delevan Station. No fossils were found in the area of the Delevan Interconnect Site during trenching for the pipeline.

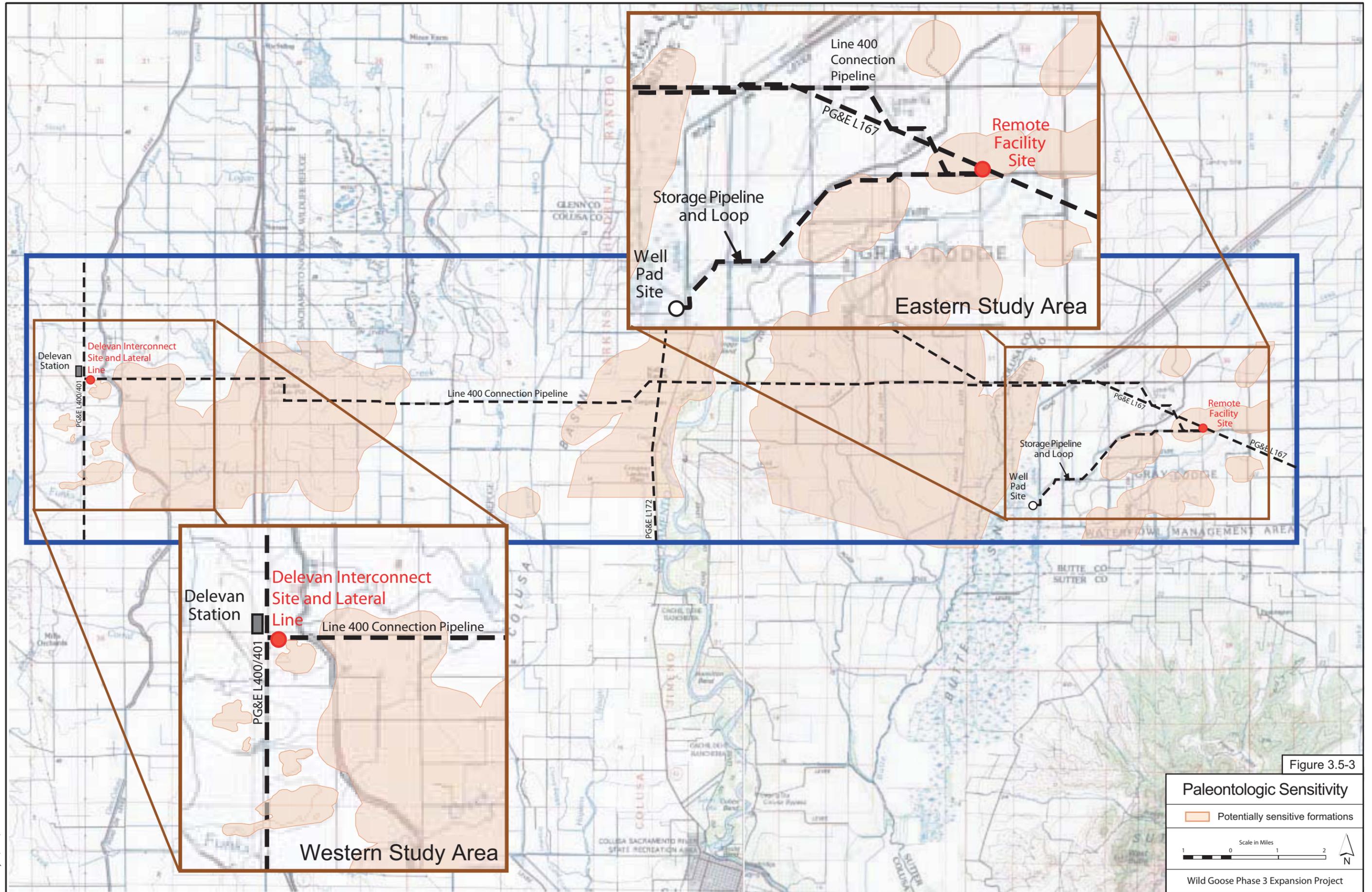


Figure 3.5-3

Paleontologic Sensitivity

- Potentially sensitive formations

Scale in Miles
1 0 1 2

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The western study area also includes exposures of Late Cretaceous marine sedimentary rocks. Invertebrate fossils are known to be locally abundant in some of these older units, but because they have been extensively studied and described from nearby areas, new invertebrate fossil finds would probably not be significant. In contrast, vertebrate fossils are extremely rare in equivalent Cretaceous rocks of northern California, and the probability of discovery of identifiable vertebrate fossils in areas of the Cretaceous exposures within the western study area is very low. Any such discoveries, however, could be of considerable scientific importance. Refer to Figure 3.5-3 to review paleontological sensitive areas within the western study area.

3.5.6 POTENTIAL IMPACTS

Ground-disturbing construction and maintenance activities have the potential to directly impact cultural and paleontological resources in the Project areas by disturbing both surface and subsurface soils. For simplicity, references to potential construction impacts in the following paragraphs also apply to maintenance activities that involve similar earth disturbance.

3.5.6.1 Significance Criteria

The regulatory framework and methodology for determining impacts to cultural resources associated with the Project include compliance with the requirements of the CEQA, as defined in Section 15064.5 of the CEQA Guidelines. CEQA calls for the identification of cultural resources that could be affected by the Project, the evaluation of the significance or importance of such resources, an assessment of Project impacts to significant or important resources, and the development of a treatment plan to avoid or address adverse effects to significant resources. The criteria for determining potential impacts to cultural resources associated with the Project were developed from the CEQA Initial Study Checklist.

Under CEQA, effects to significant resources associated with the Project must be considered. According to CEQA, a resource is unique or important if it:

- is associated with an event or person of recognized importance in California or American history or scientific importance in prehistory;
- can provide useful information of demonstrable public interest and is useful in addressing scientifically consequential and reasonable archaeological research questions;
- has a special or particular quality such as oldest, best example, largest, or last surviving example of its kind;
- is at least 100 years old and possesses substantial stratigraphic integrity; and/or
- involves important research questions that historical research has shown can only be answered with archaeological methods.

Construction related subsurface and surface disturbances could result in a loss of integrity of cultural deposits, a loss of scientific information, and the alteration of archaeological site setting. Potential indirect impacts, primarily vandalism, can result from increased access and use of the general area during construction and long-term maintenance and operational activities. There is also the potential for the inadvertent discovery of buried or masked archaeological materials during construction activities.

According to Section 15002(g) of the CEQA Guidelines, “a significant effect on the environment is defined as a substantial adverse change in the physical conditions which exist in the area affected by the proposed Project.” As stated in the Section 15064(b) of the CEQA Guidelines, the significance of an activity may vary with the setting. According to Appendix G of the CEQA Guidelines, impacts to cultural resources may be considered significant if the Project:

- causes a substantial adverse change in the significance of a historical resource as defined in Section 15064.5 of the CEQA Guidelines;
- causes a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5 of the CEQA Guidelines; and/or
- disturbs any human remains, including those interred outside of formal cemeteries.

“Substantial adverse change” means demolition, destruction, relocation, or alteration such that the significance of an historical resource would be impaired. Section 21084.1 stipulates that any resource listed in, or eligible for listing in, the CRHR is presumed to be historically or culturally significant. Section 21084.1 of the CEQA Guidelines requires treatment of any substantial adverse change in the significance of an historical resource listed in, or eligible to be listed in, the CRHR as a significant effect on the environment.

3.5.6.2 Thresholds of Significance

For the proposed Project, a cultural resource impact would be considered significant if it:

- would cause damage to, disrupt, or adversely affect an important archaeological resource such that its integrity could be compromised or eligibility for future listing on the NRHP/CRHP diminished; or
- would cause damage to or diminish the significance of an important historic resource such that its integrity could be compromised or eligibility for future listing on the NRHP/CRHP diminished (see CEQA Guidelines/36 CFR Part 800).

3.5.6.3 Historic District/Landscapes

The Project study areas encompass three contributing elements to the potentially eligible Glenn-Colusa Irrigation District and Reclamation District NRHP/CRHP historic districts/landscapes associated with irrigation and reclamation efforts. These elements include the Main Drainage/833 Canal, the Cherokee Canal, and the Glenn-Colusa Canal. The physical features associated with each element typically include canals, ditches, levees, bridges, weirs, and other similar features/structures. If the shape/configuration or the site setting associated with each element was altered or their integrity was otherwise adversely affected by earth moving equipment excavating, filling, or otherwise permanently modifying the element during Project development, a significant impact would result. There will be no impact to these elements from the current Project.

3.5.6.4 Prehistoric/Historic Archaeological Resources

No recorded prehistoric/historic archaeological materials eligible for inclusion on the NRHP/CRHR were identified during the archival research or were observed during previously approved field inventories for the Base Project development and subsequent Expansion. These research and field inventories included the RFS, Delevan Interconnect Site, WPS, Line 400 Connection Pipeline, and the Storage Pipeline Loop. The proposed Project warranted further archaeological inventory investigations of the RFS and Delavan Interconnect Site. Additional archaeological inventory of these Project components failed to identify any cultural or paleontological resources.

However, there is also the potential for the inadvertent discovery and disturbance of prehistoric/historic resources during construction. Such disturbance could result in the loss of integrity of cultural deposits, loss of information, and the alteration of a site setting. These potential impacts to prehistoric resources would be considered less than significant with implementation of the mitigation measures described in Section 3.5.7.

3.5.6.5 Native American Concerns

There are no known sites within the Project area that would qualify for listing on the NRHP/CRHR as traditional/cultural properties. There are no contemporary Native American rancherias (or communities) or notable geographic points of interest/concern present within or adjacent to the Project areas. Further contact with Native American and/or other ethnic groups could result in the identification of other traditional cultural properties.

3.5.6.6 Paleontology

Project-related excavation using the required heavy equipment within paleontological sensitive geologic formations may damage or destroy significant fossils, including those of vertebrate animals. This impact would be considered less than significant with implementation of the mitigation measures described below.

3.5.7 PROPOSED MITIGATION MEASURES

The following recommendations are similar to those prepared for the Base Project and Expansion project with the exception of the paleontological monitoring recommendations and are consistent with the compliance and management requirements of those projects' MOA. The HPMP of the MOA is applicable to the current Project and includes an Archeological Data Recovery Plan and a Monitoring and Historic Property(ies) Protection Plan with a Native American Burial Protection Plan, which describes procedures in the event that buried human remains are encountered. The following general measures will be implemented.

- WGS will amend the existing MOA to incorporate the proposed Project components and implement relevant components of the HPMP to reduce general cultural resource potential impacts to a less-than-significant level. Discussion with Ms. Patti Johnson, Archaeologist, Planning Division, U.S. Army Corps of Engineers, Sacramento District, indicates that this may be appropriate although subject to regulatory review and approval.

3.5.7.1 Prehistoric/Historic Archaeological Resources

The following measures are intended to address potential direct and indirect impacts to prehistoric/historic resources and are included in the HPMP.

- If any unanticipated significant cultural materials are exposed, construction operations should stop within 100 feet of the find and a qualified archeologist should be contacted for further recommendations regarding the integrity of the cultural deposits, potential of the deposits to provide information, and the cultural site setting of the discovery.
- WGS will include language in the construction specifications and worker training regarding trespass on and restricting public access to known or potential cultural resources, and the procedures to be followed by the contractor during an unexpected discovery situation.

3.5.7.2 Paleontology

Potential impacts on paleontological resources will be reduced to a less- than-significant level through implementation of the following measures.

Monitoring

No fossils were found during pipeline excavation for the Expansion Project near the Delevan Interconnect Site. Monitoring of construction activities for paleontological resources is not recommended unless an encounter with a paleontological resource occurs. Pre-arrangements will be made with a qualified paleontologist. In the event that paleontological resources are discovered during pipeline excavation activities, the excavation at that site will immediately cease, and a qualified paleontological monitor will be called to investigate and evaluate the discovery.

3.6 GEOLOGY, SOILS, AND SEISMICITY

3.6.1 INTRODUCTION

This section describes existing geologic and soil conditions at the WGS Project in Colusa and Butte Counties, California, and the potential impacts to these resources that could result from construction and operation of the Project at the RFS and Delevan Interconnect Site. Project construction activities will comply with all applicable federal, state, and local regulatory requirements. Mitigation measures are recommended, where applicable. Construction and operation of the Project are expected to have less than significant impacts on geological and soil resources.

3.6.2 REGULATORY BACKGROUND

The regulatory requirements applicable to these resources include the following:

- the Alquist-Priolo Earthquake Fault Zones Act of 1975 (Amended 1994) which prohibits development within 50 feet of an active fault zone;
- the 2001 California Building Code (CBC) (founded on the 1997 Uniform Building Code (UBC)), which requires more extensive structural seismic provisions and acceptable design criteria for structures with respect to seismic design and load bearing capacity; and
- government Code Sections 65302(f) and 65302.1 which requires a city to take seismic and other natural hazards into account in their planning programs and to outline them in the general plan.

3.6.3 ENVIRONMENTAL SETTING

3.6.3.1 Topography

The topography of the Project area is relatively flat, with increasing elevation and gradient moving east and west away from the Sacramento River. In Colusa County elevations range from 55 feet above sea level at the Butte/Colusa County line to 150 feet above sea level at the Delevan Interconnect Site. In Butte County elevations range from approximately 67 feet above sea level at the RFS to 55 feet above sea level at the Butte/Colusa County line.

3.6.3.2 Regional Geology

The Project lies in the Sacramento Valley portion of the Great Valley Geomorphic Province of California. The Sacramento Valley is filled with about 30,000 feet of marine and non-marine sedimentary deposits, which are underlain by the Sierra Nevada granitic basement rock to the east and ultramafic basement rocks to the west. These two basement complexes are separated by the Coast Ranges-Sierran Block Boundary Zone (CRSBBZ). The CRSBBZ trends roughly north

to south and passes beneath the Project area west of the Sacramento River (see Figure 3.6-1). It appears to coincide with portions of the Willows fault south of the Project area and the active Chico Monocline fault north of the Project area.

Sacramento Valley fill consists (from the basement rock to the surface) of Cretaceous formations, Tertiary formations, and Quaternary formations. Cretaceous formations (up to approximately 20,000 feet thick) are predominantly well-consolidated marine sandstone and shale; the Kione Formation comprises the existing gas storage zones of the WGS Field. Tertiary formations (up to approximately 10,000 feet thick) consist of interbedded marine and non-marine sandstone and shale, non-marine conglomerates, and a few volcanic flows, tuff layers and diatomaceous rocks. Quaternary sedimentary deposits (up to approximately 1,000 feet thick) typically consist of alluvial and lacustrine sediments that range from semi-consolidated to unconsolidated. Tertiary and Quaternary formations form a cap over the proposed gas storage zones and contain groundwater used for agricultural, commercial, and drinking purposes.

An inactive volcanic structure, called Sutter Buttes, is located about 10 miles southeast of the Project area. The volcanic dome, which consists of andesite and rhyolite with volcanoclastic sediments and pyroclastic mudflow deposits, pushed through the Cretaceous and Tertiary sedimentary rocks. The volcanic activity that created the Sutter Buttes appears to have occurred in the Early to Middle Pleistocene and the youngest volcanic domes were emplaced approximately 1.6 to 1.4 million years ago.

3.6.4 BUTTE COUNTY EXISTING CONDITIONS

3.6.4.1 Geologic Setting

The geologic history of the Project area includes the deposition of ancient marine and alluvial sediments, uplifting of the Coast Ranges, and volcanic activity. The RFS is located in the northern portion of the Great Valley Geomorphic Province of California, which includes Sacramento Valley to the north, and the San Joaquin/Sacramento River delta area between. This province is characterized by thousands of feet of marine and non-marine sedimentary rocks of Cretaceous (sandstone and shale), Tertiary (interbedded sandstone and shale, conglomerates and volcanic flows, tuff layers and diatomaceous rocks) and Quaternary non-marine sediments (alluvial and lacustrine sediments). These deposits fill a large northwest trending basin over 400 miles in length and 50 miles wide. Topography is very flat, with elevations ranging from approximately 67 feet above sea level at the RFS to 55 feet above sea level at the Butte/Colusa County line. Aside from the Sutter Buttes located several miles to the southeast, there are no unique geologic or physical features in the Project area. Geologic resources in the Project area are illustrated in Figure 3.6-1.

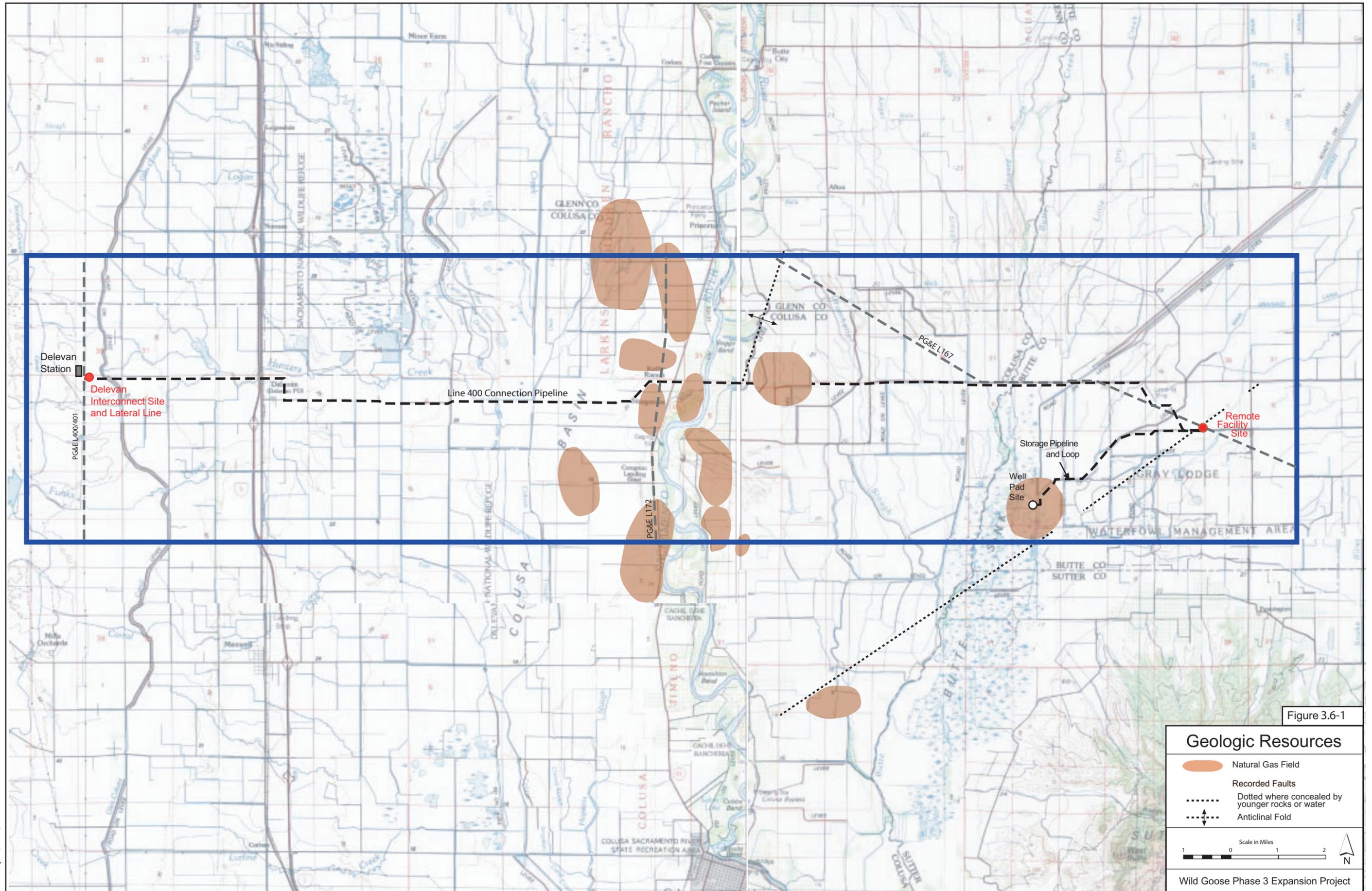


Figure 3.6-1

Geologic Resources

-  Natural Gas Field
-  Recorded Faults
-  Dotted where concealed by younger rocks or water
-  Anticinal Fold

Scale in Miles
 1 0 1 2

Wild Goose Phase 3 Expansion Project

3.6.4.2 Soils Overview

The soils in the Project area are a byproduct of alluvial deposits formed by the ongoing uplifting of the Coast and Sierra Nevada mountain ranges over the last 135 million years. Most of the valley soils are alluvial silt loams, clays, and sands deposited by the Sacramento River and Butte Creek and their tributaries. These sedimentary deposits may reach depths of several miles.

Shallow soil at the RFS consists of clay and silt, with some poorly graded sand near the southwest corner of the Project area. Project area soils are characteristically fine-textured, poorly drained, with erosion potential rated slight to none. The majority of the alluvial soils on the valley floor has high agricultural productivity and is largely designated as Prime Agricultural soils. Some soils are limited in their ability to support many forms of agriculture because of alkali problems and/or drainage problems caused by the presence of a cemented hardpan layer. These poorly drained soils are particularly well suited for growing rice.

Based on previous geotechnical investigations by Kleinfelder, the Project area can be developed using conventional grading and foundation construction techniques. However, near-surface expansive soils and loose, potentially compressible, near-surface soils were encountered across a majority of the site. Specific recommendations for reducing the potential adverse effects of near-surface expansive soils and loose, potentially compressible near-surface soil, and geotechnical aspects of Project design and construction, were discussed in the Kleinfelder *Geotechnical Investigation Report Proposed Remote Facility and Well Pad Expansion* dated April 18, 2002.

3.6.5 COLUSA COUNTY EXISTING CONDITIONS

3.6.5.1 Geologic Setting

The Project area within Colusa County has a similar geologic history to Butte County's, including a mixture of ancient marine and alluvial deposits, uplifting of the Coast Ranges along clearly defined faults, and volcanic activity. A vast sea occupied the valley and upland areas of Colusa County about 300 million years ago. This was followed by periods of volcanic activity, uplifting and folding that formed the Coast Ranges. The Delevan Interconnect Site is located in the northern portion of the Great Valley Geomorphic Province of California. The Project area is underlain by Pre-Tertiary metamorphic, intrusive and sedimentary rocks. Other geologic units mapped near the Project area include the Red Bluff Formation (weathered bright red gravels), Basin Deposits (fine grained silt and clay), Alluvium (unweathered gravel, sand and silt) and River Bank Formation (red semi-consolidated gravel, sand and silt). The topography of the Project area is generally flat, with increasing elevation gradient moving west. Elevation ranges from 55 feet above sea level at the Butte/Colusa County line to 150 feet above sea level at the Delevan Compressor Station.

3.6.5.2 Soils Overview

Most of the soils of the valley floor are alluvial silt loam, clays, and sands formed from the sedimentary, igneous and metamorphic rocks deposited by the Sacramento River and various side channels. The sedimentary deposits on the valley floor form some of Colusa County's best agricultural soils. The soils in western foothills of the county include undifferentiated loams and adobes that may contain fragments of the sandstone and shale they were derived from. Only Interim Farmland Maps are available in Colusa County, so prime farmland and farmland of statewide importance have not yet been designated by the U.S. Natural Resource Conservation Service. Shallow soil at the Delevan Interconnect Site consists of stiff clay with some gravels, underlain by silt/clay and interbedded decomposed to highly weathered sandstone and siltstone bedrock. The clay was characterized as having a high potential for expansion based on testing conducted by Kleinfelder.

Based on a previous geotechnical investigation by Kleinfelder, the Project area can be developed using conventional grading and foundation construction techniques. However, expansive soils were encountered across a majority of the Project area. Specific recommendations for reducing the potential adverse effects of near-surface expansive soils and geotechnical aspects of Project design and construction were discussed in the Kleinfelder *Geotechnical Investigation Report Proposed Wild Goose Meter Site* dated July 25, 2002.

3.6.6 GEOLOGIC HAZARDS

3.6.6.1 Liquefaction

Liquefaction, a process by which water-saturated sediment suddenly loses strength, commonly accompanies strong ground motions generated by earthquakes. Liquefaction is most likely to occur in unconsolidated, granular sediments that are water-saturated less than 30 feet below the ground surface. The Project area is underlain by basin deposits and alluvium with varying stability. Based on previous geotechnical investigation data, construction activities at the RFS and Delevan Interconnect Site will need to follow the CBC and the Colusa and Butte County Building Departments' requirements and standards.

3.6.6.2 Subsidence

Subsidence is the settling of the ground surface due to compaction of underlying unconsolidated sediments. Subsidence is most common in uncompacted soil, thick unconsolidated alluvial material, and improperly constructed artificial fill. Subsidence in Sacramento Valley has occurred in areas of agricultural development, areas of over-pumped artesian basins, and places compacted through the wetting of moisture-deficient soils by irrigation.

Areas in the western portion of Butte County and the eastern portion of Colusa County (which includes the Project area) have been cited as areas of greatest concern for subsidence. The specific cause of subsidence within these areas has not been identified. Groundwater extraction is thought to be the cause of some local subsidence issues. Although gas extraction in extreme cases can cause subsidence, subsidence related to gas withdrawal alone does not reach magnitudes comparable to oil or groundwater withdrawal.

3.6.6.3 Expansive Soils

Expansive soils shrink or swell with changes in moisture content. This characteristic is typically associated with high clay content soils, such as those found in the western part of Butte County. The soils in the Project area, mainly the basin deposits, exhibit these characteristics. Expansive soils could affect the stability of building and equipment foundations at the RFS and Delevan Interconnect Site, causing them to settle or crack. Based on Kleinfelder's previous geotechnical investigation data, construction activities at the Remote Facility and Delevan Interconnect Site will need to follow the CBC and the Colusa and Butte County Building Departments requirements and standards.

3.6.6.4 Seismicity

Historically Active Faults

There are no known "historically active" faults, or active faults with clear evidence of Holocene displacement (last 10,000 to 12,000 years) crossing the Project area. Such faults would be classified as Alquist-Priolo Earthquake Fault Zones (AP Zones) under the 1975 Act as amended in 1994. Other faults that are near or crossing the Project area are classified as potentially active, conditionally active (potential activity unknown), or inactive.

One historically active fault is the Cleveland Hill fault (part of the Foothills Fault System), located approximately 24 miles northwest of the Project area, which produced the Richter magnitude (M) 5.7 Oroville earthquake in 1975. Holocene ground rupture has occurred on the Dunnigan Hills fault located about 40 miles south of the Project area.

Small, unnamed faults on the southern side of the Sutter Buttes, approximately 6 miles southeast of the WPS, are classified as potentially active and could produce a maximum earthquake of M 5.8. A northeast-southwest trending fault traverses the Project area (in Butte County), crosses the Cherokee Canal approximately 4,000 feet south of the WPS and passes near or beneath the RFS. This unnamed fault is classified as Pre-Quaternary, meaning there is no evidence of displacement during the last five million years.

The Willows fault trends in a roughly north-northwest direction, through Colusa and south of the Sutter Buttes, approximately 9 miles southwest of the WPS. Regionally, the Willows fault is characterized as a steeply (74 degrees) east-dipping plane, with movement upward on the east side. Fault offset decreases towards the surface. The Willows fault is believed to form the Coast Ranges-Sierran Block Boundary Zone and is classified by the State as pre-Quaternary. Faults in this category are not necessarily inactive. The Willows fault is considered “potentially active” due to the historical seismic events in the vicinity of the fault. The nature and activity level of the Willows fault and a related fold have not been extensively studied.

Potentially Active Faults

A “potentially active” fault is defined as a known fault in an area of historic seismic activity, but where there has been no activity between 10,000 and approximately 2 million years ago. Several small faults located around the southern side of the Sutter Buttes, approximately six miles southeast of the WPS, are classified as Early Quaternary, meaning they have shown displacement in the last 700,000 to two million years. These faults could produce a maximum credible earthquake of magnitude 5.8. The Willows fault runs in a northwest-southeast direction, through Colusa and south of the Sutter Buttes, approximately nine miles southwest of the WPS. This fault is classified as Pre-Quaternary, with a maximum credible earthquake of magnitude 7.3. Both the Sutter Butte faults and the Willows fault are considered “potentially active” in the Butte County General Plan Seismic Safety Element. The Project area is not located in an Alquist-Priolo Earthquake Fault Zone.

Other Recorded Faults

The only recorded fault traversing the Project area in Butte County crosses the Cherokee Canal in a northeast-southwest orientation approximately 4,000 feet south of the WPS and appears to extend through the vicinity of the RFS. This unnamed fault is classified as Pre-Quaternary, meaning there is no evidence of displacement during the last five million years.

Four minor quakes on an unknown fault in the Coastal Range foothills occurred in April and May of 1985, the largest registering 3.7 on the Richter Scale. The only recorded and mapped fault traversing the Project area in Colusa County is an anticlinal fold running in a generally north-south direction, crossing the Glenn-Colusa county line just east of the Sacramento River. For the location of this fault refer to Figure 3.6-1.

3.6.7 POTENTIAL IMPACTS

3.6.7.1 Significance Criteria

According to Section 15002(g) of the CEQA Guidelines, “a significant effect on the environment is defined as a substantial adverse change in the physical conditions which exist in the area affected by the proposed project.” As stated in the Section 15064(b) of the CEQA Guidelines, the significance of an activity may vary with the setting. According to Appendix G of the CEQA Guidelines, impacts to the following resources may be considered significant if they:

Geology

- result in severe damage or destruction to one or more Project components as a direct consequence of a geologic event;
- result in exposure of people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving:
 - rupture of a known earthquake fault,
 - strong seismic ground shaking,
 - seismic-related ground failure, including liquefaction, or landslides; or
- are located on a geologic unit that is unstable, or that would become unstable as a result of the Project, and potentially result in on-site or off-site landsliding, lateral spreading, subsidence, liquefaction, or collapse.

Soils

- result in a substantial soil erosion or loss of topsoil;
- are located on a soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on-site or off-site landsliding, lateral spreading, subsidence, liquefaction, or collapse; or
- create a substantial risk to life or property due to the presence of expansive soils.

3.6.7.2 Soil Compaction

Compaction could be a concern in areas subject to temporary construction disturbance, including approximately 1.5 acres of annual grassland that will be temporarily disturbed due to installation of the PG&E lateral pipeline and up to 1 acre for access and staging for the pipeline and Interconnect Site work. Compaction can reduce soil productivity by lowering water infiltration and gas exchange, reducing the soil’s water holding capacity and increasing runoff and erosion. Standard engineering and construction practices will be followed during all phases of work, including decompaction of the ROW if necessary, along with recommendations from the geotechnical reports prepared by Kleinfelder for the Expansion Project. Impacts to soil from compaction will be less than significant.

3.6.7.3 Soil Structure

Recent alluvial soils are present along both sides of the Sacramento River in the vicinity of the site. These soils have deep permeable profiles, but may have alkali problems in some areas due to poor drainage. This soil type is ideal for orchards. The majority of the other agricultural areas surrounded by the Project are farmed primarily for rice because of the presence of cemented clay hardpan which restricts vertical drainage and helps retain water in the field checks. Due to the permeable depth of these soils, Project construction and maintenance will not result in any impacts to soil structure.

Most of the soils in the area are susceptible to expansion, consolidation, chemical reactivity, and settlement. Data are insufficient to provide specific quantitative conditions for each geologic unit; however, Basin Deposits are the most widespread unit and moderate to very high expansion indices indicate that there is a substantial amount of clay in these surficial deposits.

Consolidation (and long-term settlement) is most prominent in clay-rich and silt-rich soils. This consolidation and settlement can be much more dramatic under severe seismic shaking (dynamic settlement). The structure, chemistry and particle size of clay materials give them unique properties including high action exchange capacity, catalytic properties, high sorption affinities, and plastic behavior when moist. In general this increases their potential for chemical reactivity and potentially adverse physical properties. Standard engineering and construction practices will be followed during all phases of work which will limit any significant impacts to soil.

3.6.7.4 Liquefaction, Subsidence, and Expansive Soils

Previous geotechnical study recommendations will be used to determine proper construction and engineering protocol at the RFS and Delevan Interconnect Site expansion areas. The applicable structural design and construction requirements prescribed in the California Building Code (2001) Seismic Zone Criteria will be used to compensate for liquefaction and potential subsidence. Foundation areas at the RFS will be over-excavated and backfilled with structural fill material to compensate for these soil conditions. Therefore, potential effects of liquefaction and subsidence will be accounted for in Project design and construction, and no impacts will result.

Expansive soils, subsidence, and liquefaction may affect the stability of building and equipment foundations at the RFS and the Delevan Interconnect Site, causing them to settle or crack. Standard engineering and construction practices will be followed during all phases of work which will limit any significant impacts to soil. This impact will be less than significant since the building permit process and compliance with California Building Code regulations will ensure adequate engineering for foundations.

The PG&E lateral pipeline will be constructed according to DOT pipeline safety standards and according to the recommendations of PG&E's geotechnical consultant; therefore impacts from liquefaction, subsidence, and expansive soils will be less than significant.

3.6.7.5 Erosion

There are no Project-affected slopes with the potential for erosion identified in the areas of expansion. The flat gradient along the RFS and Delevan Interconnect Site will not be prone to erosion. WGS will ensure that Project erosion will be minimal and any potential impacts will be less than significant.

3.6.7.6 Seismicity

The nature of the geographic coincidence of the Willows fault with the Sacramento River and presence of the doubly-plunging anticline (a dome structure) present in the subsurface east of the river at the same general location, is suggestive of active or potentially active fault conditions within the Project area, due to the apparent very youthful (Holocene-age) influence on surface drainages. The Willows and Corning faults may well be connected in the subsurface. A large, local earthquake centered on the Willows fault, or presently poorly understood blind thrust faults, could cause ground movement at or near the Project site. Therefore, design considerations must account for this potential ground movement.

Project construction and the expanded operations will not affect any existing geologic feature or expose people to geologic hazards. However, should a significant seismic event occur near the Project area, existing and proposed Project facilities could be affected. Construction of all phases of the Project would be in accordance with all applicable state and county building and construction codes and ordinances. The PG&E lateral pipeline will be constructed to DOT pipeline safety standards and the recommendations of PG&E's geotechnical consultant. Therefore, there should be little or no damage from seismic activity. The flexibility inherent to steel pipelines allows them to deflect and shift with slight ground motion without suffering any damage. As such, seismic impacts would be considered less than significant.

3.6.8 PROPOSED MITIGATION MEASURES

3.6.8.1 Soil Compaction and Structure

The project will not result in significant impacts from compacted soils, therefore no mitigation is required.

3.6.8.2 Liquefaction, Subsidence, and Expansive Soils

The project will not result in significant impacts from liquefaction, subsidence, and expansive soils, therefore no mitigation is required.

3.6.8.3 Seismicity

Although the Project will not result in any impacts to geologic resources, these resources will affect the manner in which the Project is designed and constructed. Construction of all phases of the Project will be in accordance with all applicable state and county building and construction codes and ordinances to minimize the potential effects of seismicity on the Project from known faults in the region.

Previous geotechnical study data are sufficient to conclude that the surface facilities could be safely built if the latest CBC seismic structural design and construction requirements, in addition to requirements of the Colusa and Butte County Building Departments, are used to minimize impacts. No additional mitigation is required by CEQA.

3.7 HAZARDS AND HAZARDOUS MATERIALS

3.7.1 INTRODUCTION

This chapter describes the existing conditions and potential Project-related impacts resulting from potential physical hazards and presence of hazardous materials during Project construction and operation. These potential hazards include storage of natural gas, construction activities, use of hazardous materials, and generation of hazardous wastes. The expansion of the Delavan Interconnect Site in Colusa County and RFS in Butte County will not significantly increase risk to sensitive receptors in the Project area.

3.7.2 EXISTING CONDITIONS

3.7.2.1 Natural Gas Safety Standards

Regulatory Overview

Methane, the primary component of natural gas, is a colorless, odorless gas that disperses rapidly because it is lighter than air. Unconfined mixtures of methane in air are not explosive, but flammable concentrations of 5 to 15 percent in air within an enclosed space, and in the presence of an ignition source, can explode. Consequently, natural gas transportation and storage safety are regulated by the DOT through CFR Title 49, Parts 191, 192, and 199, and the California Public Utilities Commission General Order 12-E.

The current regulations address reporting requirements, pipeline materials, minimum design standards, construction requirements, corrosion protection, testing requirements, and procedures for uprating pipelines to allow an increase in the maximum allowable operating pressure. In addition, these regulations cover specific operation and maintenance procedures and inspections, including employee drug testing, to ensure adequate protection from a natural gas facility failure.

Required Operation and Maintenance Plans

The requirements of the CFR Title 49, Part 192 include specific written operating, maintenance, and emergency response plans, including:

- An Operating and Maintenance Plan, which includes annual leak testing of pipelines; annual inspection, servicing, and operation of block, relief, and pressure regulating valves; annual testing of at least 10 percent of the cathodically protected pipeline; and testing of all the cathodic protection system rectifiers six times per year.
- A Damage Prevention Program, including a “one call” system such as Utility Service Alert.
- A Hazardous Substance Control and Emergency Response Plan for pipelines and compressor facilities, coordinated with local public safety officials.

These existing plans are maintained at the RFS operations building and will be revised and updated as necessary to include the proposed facilities.

Hazardous Materials Sites – Environmental Data Resources Report

The Environmental Data Resources Report identified sites with potential soil and/or groundwater contamination that have been registered on one or more environmental oversight agency database list. No known or suspected hazardous materials sites were identified in the vicinity of the proposed Project site.

On November 6, 2001 a natural gas release from the RFS was recorded in the California Hazardous Materials Incident Report System. No contamination, injuries or fatalities were recorded. The leak resulted from a failed gasket which was repaired.

3.7.2.2 Existing Natural Gas Storage and Transportation Safety Record

Fire and Explosion Risks

WGS, and its parent company, NGS, have an excellent safety track record regarding well/reservoir drilling and operation. WGS and NGS have experienced zero unplanned gas release events since commencing operation. WGS and NGS perform extensive engineering analysis to ensure the reservoir is a prime candidate for gas containment before pursuing conversion of the depleted gas formation to gas storage. NGS employs an extensive quality control process and ensures appropriate safety equipment/systems are incorporated during the drilling, well completion, pipeline, facility design/installation process. WGS employs a sub-surface safety valve in each of the gas storage producer/injector wells, which blocks gas flow from the reservoir when triggered to close. The sub-surface safety valve is a safety device installed in the upper wellbore to provide emergency closure of the producing conduits in the event of an emergency. The safety-valve system is designed to be fail-safe, so that the wellbore is isolated in the event of any system failure or damage to the surface production/injection facilities. In the event that the control pressure is lost, the air pressure will be released from the valve actuation mechanism, forcing it to close. This reduces the risk of a well gas release from occurring. A detailed integrity management program is also in place, which minimizes the chance that a gas release would ever occur. In the unlikely event that an incident should occur, a carefully designed alarm/shutdown system will ensure that the gas volume released is kept to a minimum.

Industry-Wide Historic Safety Record

Gas production has occurred in the region for over 40 years and buried gas pipelines are commonplace. 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 with

property damage or fatalities. Data collected by the DOT for pipeline safety for 1986 through 2008 indicate the following facts:

- There are approximately one million miles of natural gas transmission and distribution pipelines in the United States subject to DOT jurisdiction.
- Reportable incidents (significant leaks) during the period occurred at a rate of approximately 0.20 per year per 1,000 miles of pipeline.

Of these reportable incidents, approximately half are caused by “outside forces,” such as construction excavation equipment striking the line, or by weather or geologic forces.

The average for the 23-year period was 19 fatalities per year and 79 injuries per year for all natural gas pipelines.

Project Proponent’s Existing Safety Program

NGS, the parent company of WGS, is an established gas storage, and pipeline operator with excellent safety records. NGS maintains a strong commitment to the safety of its employees, contractors, and the environment they work in. It is the policy of the company to provide and maintain safe and healthy working conditions. NGS manages its affairs to meet or exceed regulations and industry standards and, where possible, attempts to eliminate situations that could result in injury, illness, or other impairment to employees, contractors, customers, or members of the public. For the Approved Project, pipeline safety standards exceed the following minimum standards:

- Cathodic Protection Surveys: DOT standard is annual testing of the cathodic protection system. WGS conducts an annual survey on the system twice per year, and Operations staff take monthly readings in between the surveys. Timing for the surveys is dependent on surface conditions and access during the hunting season.
- Leak Surveys: DOT standard is annual leak surveys. WGS drives/walks each pipeline right-of-way once per year, checking for leaks, anomalies, and/or damaged pipeline markers.
- Leak Patrols: DOT Standard is annual patrols of the right-of-way. WGS utilizes a third party to conduct visual aerial inspection of the pipeline easement every month.
- Pipeline Internal Inspection: WGS has employed a pipeline integrity management program per DOT regulations. WGS presently pigs the storage pipeline regularly and injects a corrosion inhibitor when water is produced. A batch pig run with a slug of corrosion inhibitor is also performed on the storage pipeline prior to the start of the injection season, as well as an aggressive pig run to remove any sand or debris that has collected in the pipeline during the withdrawal cycle. Besides adversely affecting pipeline hydraulics, the buildup of such fluids

can result in internal corrosion of the pipe. WGS performed a smart pig inspection run on the storage and interconnect pipelines in Fall 2007, and will follow up with future pipeline internal inspection runs every five years thereafter.

At NGS's Gas Storage Division, which includes the WGS Project, activities to ensure safety and health are ongoing and have become fully integrated into the entire operation. Identification of potential hazards is well understood, and where possible, measures are taken to eliminate them, or procedures are followed to minimize the chances of an undesired event occurring.

WGS is a member of the Utility Service Alert notification program and has established a toll-free number for the public to call regarding the location of its facilities. This number is posted on its pipeline marker signs and will be posted at each of the proposed aboveground facilities.

Since beginning operations, WGS has coordinated with emergency service providers in the Gridley area. Facility tours have been conducted and the compressor station and pipeline operations, controls and safety equipment and systems are explained and demonstrated where appropriate. WGS's Emergency Response Plan was also reviewed and explained during the tours. As such, local emergency service providers have a working understanding of the Project facilities and operations systems that will facilitate a focused, coordinated and effective response should an emergency situation arise. WGS will continue to conduct these orientation and familiarization sessions as requested by the emergency service providers (e.g. for new staff or refreshers for existing staff), or when Project facility or operations changes warrant.

Gas Migration

The Approved Project has been in operation since 1999, and is currently certificated to provide up to 450 million cubic feet per day (MMcfd) of injection capability, 700 MMcfd of withdrawal, and approximately 29 billion cubic feet (Bcf) of storage capacity. The Approved Project has in no way posed a hazard to public health or the environment. Continuous monitoring of reservoir pressure and well inspection logging has provided a means of detecting if any anomalies exist within the reservoir or wellbore. There has been no indication of gas migration from the gas storage reservoir to neighboring formations, or to surface, through manmade or natural pathways. The Wild Goose Gas Field originally held dry natural gas for millions of years, which indicates that the cap rock is capable of preventing the migration of stored gas.

In letters dated August 5, 1997, July 23, 2002, and August 3, 2007, DOGGR granted WGS approval to operate the L-1, L-4 and U1/U2 formations up to 0.7 psi per foot of true vertical depth (TVD). The reservoir/core studies, conducted as part of the Base Project and Expansion, confirmed the integrity of the cap rock for each of the respective L-1, L-4, U-1 and U-2, and the ability of each zone to sustain pressure beyond the DOGGR approved maximum allowable

injection pressure gradient. Reservoir pressure monitoring and annual mechanical integrity inspection exercises have provided no evidence of gas migration.

In expectation of this Phase 3 Expansion, WGS performed a reservoir modeling study on the impact of increasing the working gas volume to 50 Bcf and found that the pressure gradient will be contained within DOGGR's acceptable limit. Observation wells completed in each of the L1, L4, U1/U2 formations, monitor the pressure with real time SCADA measurement devices, which trip an alarm should the operating condition set point be surpassed. This provides an additional pre-cautionary measure that the reservoirs will be operated within the approved DOGGR limit.

In addition, in the fall of each year, WGS conducts surface gas monitoring and vegetation inspections at each abandoned well within the original gas producing area. No indications of leaks from the formation have been detected during these inspections. Inspections will continue on an annual basis as part of our monitoring program.

3.7.2.3 Construction Safety

Construction contractors will implement their own safety programs, including regular tail gate safety refresher sessions. The WGS Construction Project Manager and construction inspectors will monitor construction activities to ensure that work is conducted in a safe manner.

3.7.2.4 Hazardous Materials

During construction and operation of the Phase 3 Expansion Project, several types of hazardous materials will be stored and hazardous wastes will be generated. These materials and wastes are described below.

Methanol

Methanol is a chemical commonly used to prevent the formation of hydrates in pipelines and other equipment. Hydrates are ice-like blockages that are formed in the presence of water and natural gas at high pressures. About 1000 gallons of methanol is currently stored at the RFS for injection into plant piping and process equipment. The containment structure provides 110 percent of the tank capacity. Methanol is injected downstream of inlet separation and is used on an as-needed basis to prevent freezing across the pressure let-down valves. Project operations to date have not indicated that hydrates are a problem, but operations staff will continue to monitor the temperatures and use methanol when and if necessary.

Corrosion Inhibitor

Corrosion inhibitor is currently stored at the WPS, and injected into the pipeline system when formation water from the reservoir is produced. A poly pig run in conjunction with a batch of corrosion inhibitor is also conducted at the end of the withdrawal season to remove any residual formation water, and coat/inhibit the gathering pipeline system. The inhibitor is used to protect the integrity of the pipeline, valves, and well components currently used on the Approved Project. No further upgrade/increase to the corrosion inhibitor injection system is required for the Project.

Lubricants and Solvents

Lubricants will be required for the construction equipment and the reciprocating compressor engines and other engines located at the RFS, including engine oil and petroleum-based solvents.

Vehicle Fuels

Fuel will be required for the construction equipment at both sites. This will consist of both gasoline and diesel fuel.

3.7.2.5 Hazardous Wastes

The Phase 3 Expansion Project operations will generate approximately 4,000 additional gallons of hazardous waste annually from maintenance of the compressors and emergency generator. These wastes will be stored temporarily in storage tanks – either underground or on skids – in the compressor building pending off-site shipment to permitted treatment, storage, or disposal facilities by a licensed hauler. Containment will provide 110 percent of the capacity of the storage tank. Small quantities of oily rags, glycol filters, and oil filters will also be generated both during construction and Project operations.

3.7.2.6 Hazardous Materials Handling and Storage

Best Management Practices

During construction, hazardous materials and wastes will be handled in accordance with the best management practices prescribed in the SWPPP (refer to section 3.8 Hydrology and Water Quality). This plan is required by the RWQCB in compliance with the National Pollution Discharge Elimination System General Permit for Construction Activities under the federal Clean Water Act.

Hazardous waste will be handled in accordance with all applicable manufacturers' specifications for storage and handling, and in compliance with local, state, and federal requirements. Wastes, consisting of used oil, glycol, and lubricants, will be stored at the site in enclosed, secured areas

for a maximum of 90 days, until removed by licensed hazardous waste transporters. Where appropriate, wastes will be recycled by a licensed facility. If the wastes are disposed of, this will be done using approved treatment, storage, and disposal facilities will be utilized. For the types of hazardous wastes generated by this facility, Ramos Oil Company of Marysville is a licensed hauler presently providing this service for WGS.

Hazardous Materials Release Response Plan

A Hazardous Materials Release Response Plan (HMRRP), consistent with the requirements of Section 25500 of the California Health and Safety Code, was prepared during Base Project development and will be amended as needed to include any new materials or quantities associated with the operation of the Phase 3 Expansion facilities.

Worker Environmental Awareness Program

A Worker Environmental Awareness Program (WEAP) was prepared during Base Project development and will be amended as needed to include any new materials or quantities associated with the operation of the Phase 3 Expansion facilities. WGS shall conduct WEAP training for construction crews (primarily crew and construction foremen) before construction activities begin. The WEAP shall include a brief review of sensitive resources that could occur in the proposed Project area. The program shall also cover all mitigation measures, environmental permits and proposed Project plans, such as SWPPP, BMPs, erosion control and sediment plan, reclamation plan, and any other required plans. The program shall also present the locations of sensitive resources on construction drawings. WEAP training sessions shall be conducted as needed for new personnel brought onto the job during the construction period. A list of all personnel who have attended the WEAP training shall be kept at the office trailer and shall be available for CPUC review in the field at all times, and a copy shall be submitted to the CPUC. During WEAP training, construction personnel shall be informed of the importance of avoiding ground-disturbance outside of the designated work area.

3.7.2.7 Construction Fire Prevention and Safety

A Fire Prevention Plan in compliance with California fire laws and local fire prevention requirements will be followed during construction, as was done during Base Project development and Expansion. At a minimum, the Plan will include the following measures:

- procurement of the appropriate burning or welding permits from local agencies when required;
- measures for prohibiting smoking except in designated areas;

- measures for fire prevention, including spark arresters on equipment, minimum clearances around facilities, procedures for grinding and welding, and fire suppression equipment to be maintained on the job site;
- training on fire awareness and suppression techniques;
- methods and equipment to control any fire started by construction activities; and
- methods for reporting any fires observed in or near the Project area.

3.7.2.8 Facility Security

Access to aboveground Project facilities will be controlled to the greatest extent feasible. At the RFS, the perimeter 6-foot high chain link fence has a barbed-wire outrigger to discourage intruders. The single entrance gate is open while staff is present, and is closed and locked when the station is unmanned. Motion sensors in the office building notify the Butte County Sheriff's Department and the on-call operator when activated.

The Delevan Interconnect Site will be enclosed by 6-foot high chain link fences and locked gates with barbed wire or razor wire on outriggers.

3.7.3 POTENTIAL IMPACTS

3.7.3.1 Significance Criteria

According to Section 15002(g) of the CEQA Guidelines, "a significant effect on the environment is defined as a substantial adverse change in the physical conditions which exist in the area affected by the proposed Project." As stated in the Section 15064(b) of the CEQA Guidelines, the significance of an activity may vary with the setting. According to Appendix G of the Guidelines, Project impacts are considered significant if they:

- create a hazard to public health or the environment through the routine transport, use, or disposal of hazardous materials;
- create a hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment
- emit hazardous emissions or handle hazardous materials within 0.25 mile of a school;
- are located at a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a hazard to the public or the environment;
- are located within 2 miles of a public or private airport and would result in a safety hazard for people residing or working in the Project area;

- impair implementation of or physically interfere with an adopted emergency response or evacuation plan; and/or
- expose people or structures to a risk of loss, injury, or death involving wildland fires.

3.7.3.2 Sensitive Receptors and Facilities

Residences within 220 yards of Project facilities would be considered sensitive receptors for potential health and safety impacts. There are no sensitive receptors near the Project facilities; therefore, no impact will occur. There are no private or public schools located within 0.25 mile of Project facilities; therefore, no impact will occur. There are no public airports located within 2 miles of Project facilities; therefore no impact will occur. Given that the Project is an expansion of an existing facility and will not increase the height of any structures, the Project will have a less than significant impact on the private airstrip owned by Jensen, which is located approximately 1 mile from the RFS.

3.7.3.3 Hazardous Materials and Hazardous Materials Sites

As described above, Project operations presently include the use, storage, handling and disposal of hazardous materials – consisting of methanol, corrosion inhibitor, solvents and lubricants – in accordance with the existing Hazardous Materials Release Response Plan. Hazardous material storage, handling, and disposal during construction will be consistent with the Best Management Practices in the SWPPP described above. Compliance with these Plans and all appropriate regulations concerning the use and storage of hazardous materials and wastes will ensure potential impacts to public health and safety are less than significant.

No known or suspected hazardous materials sites were identified in the vicinity of the proposed Project site; therefore there will be no impact associated with this hazard.

3.7.3.4 Gas Migration

The Approved Project has in no way posed a hazard to public health or the environment. Continuous monitoring of reservoir pressure, and well inspection logging has provided a means of detecting if any anomalies exist within the reservoir or wellbore. There has been no indication of gas migration from the gas storage reservoir to neighboring formations, or to surface, through manmade or natural pathways. The Wild Goose Gas Field originally held dry natural gas for millions of years. This indicates that the cap rock is capable of preventing the migration of stored gas. For this reason, escape through manmade wellbores or alongside these wellbores is the main avenue for potential gas migration from the storage field. WGS utilizes premium casing, modern cementing practices and regular casing inspection in its well design and operations. The

utilization of these preventative measures, combined with prudent operation of the storage field will ensure potential impacts to public health and safety are less than significant.

Mercaptin and other odorizing agents are present in the stored gas. These agents are not present at the Project site in an undiluted form. The standard operating procedures at WGS prevent significant emissions of these agents as a component of stored gas.

3.7.4 PROPOSED MITIGATION MEASURES

The various measures described above have become part of WGS's standard operating procedures for the existing facilities. Incorporation of the construction and operation of the proposed Project facilities into these plans and programs will ensure potential health and safety impacts are less than significant and no additional mitigation measures are proposed.

3.8 HYDROLOGY AND WATER QUALITY

3.8.1 INTRODUCTION

This chapter describes the existing conditions and potential Project-related impacts to hydrology within the Project area. Expansion to both the Delevan Interconnect Site and RFS will not significantly impact the local hydrology surrounding these facilities. Project construction activities will comply with all applicable federal, state, and local regulatory requirements. With implementation of existing plans and compliance with regulatory permits, construction and operation of the Project are expected to have less than significant impacts on hydrological resources.

3.8.2 COLUSA COUNTY EXISTING CONDITIONS

3.8.2.1 Surface Water

The Glenn-Colusa Canal is located 0.25 mile west of the Delevan Interconnect Site. Its main use is for agricultural purposes and will not be affected by Project activities.

3.8.2.2 Wetlands

Vernal pools occur within the annual grasslands greater than 2000 feet away from the Delevan Interconnect Site and will not be affected by Project activities.

3.8.2.3 Flood Zones

The Delevan Interconnect Site is located within the 100 to 500-year flood zone as shown in Figure 3.8-1.

3.8.2.4 Groundwater

Groundwater is scarce in the western foothills of Colusa County where the Delevan Interconnect Site is located. Groundwater flows from the north in a southeastern direction to the Sacramento River. Groundwater quality in the Sacramento Valley as a whole is considered good for irrigation and domestic uses. However, there is a high concentration of boron in some irrigation water and high concentrations of nitrates and chloride in some domestic water. All domestic and municipal systems in Colusa County are supplied by groundwater.

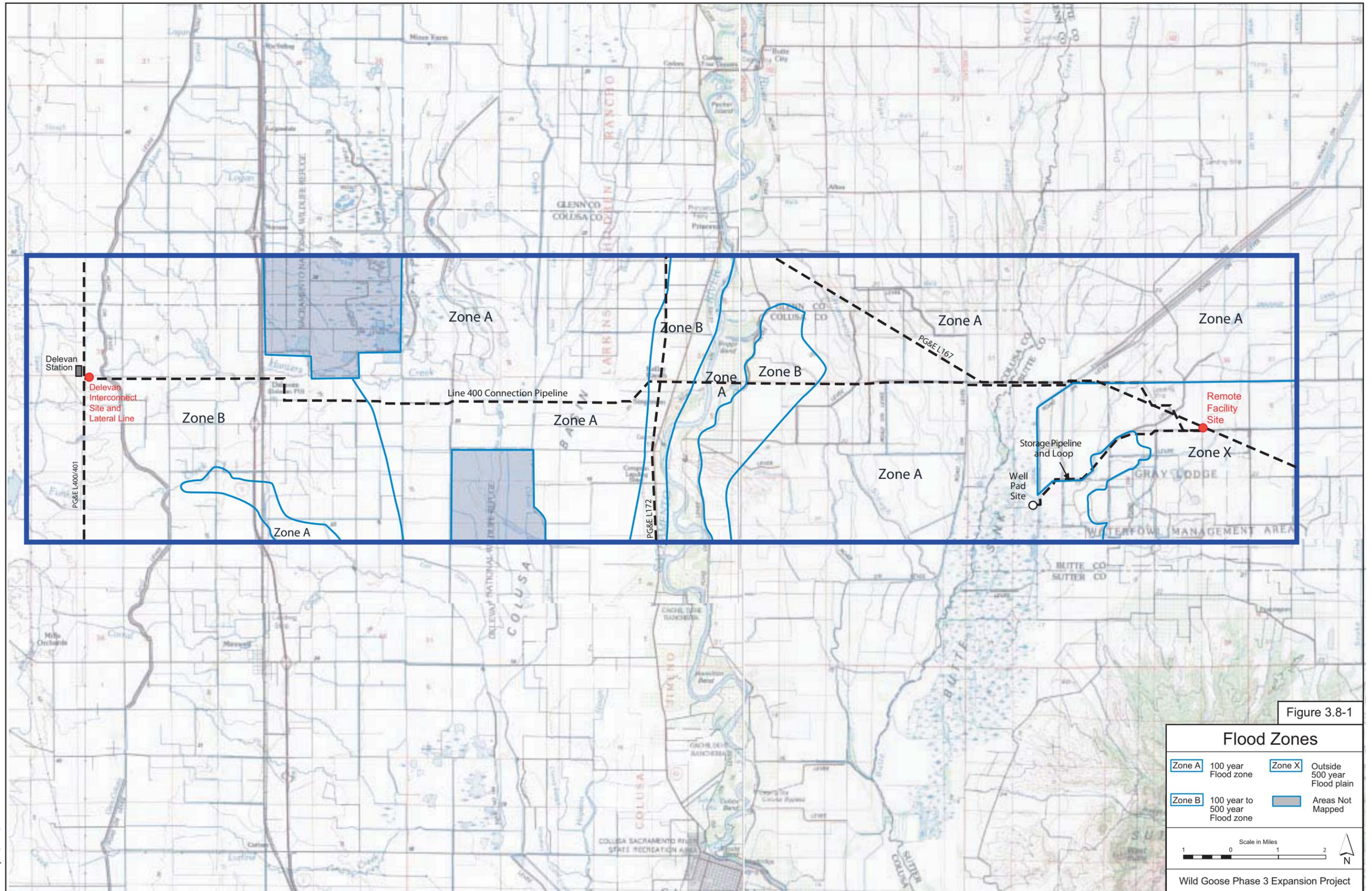


Figure 3.8-1

Flood Zones

<p>Zone A 100 year Flood zone</p> <p>Zone B 100 year to 500 year Flood zone</p>	<p>Zone X Outside 500 year Flood plain</p> <p>Areas Not Mapped</p>
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Scale in Miles

Wild Goose Phase 3 Expansion Project

3.8.3 BUTTE COUNTY EXISTING CONDITIONS

3.8.3.1 Surface Water

Agricultural irrigation water in the area is almost entirely surface water from Lake Oroville. Canals and ditches in the Project study area serve both irrigation and drainage functions. A major local ditch called the Belding Lateral Drain crosses West Liberty Road approximately one-half mile east of the RFS. A branch off this drainage flows through a culvert under the existing RFS and enters to a drainage ditch along West Liberty Road. This drainage then flows west to the 833 Canal at the west end of West Liberty Road. This drainage (referred to as Site No. 10) was considered jurisdictional by both the CDFG and the Corps during construction of the Expansion Project and will likely still be considered jurisdictional as it has a defined bed and bank and flows to Butte Creek via the 833 Canal and Cherokee Canal.

The RFS is situated adjacent to a road and within an actively farmed rice field. Flooded rice fields also provide wetland and wildlife habitat values during parts of the year.

3.8.3.2 Wetlands

Levees have been constructed along Butte Creek to prevent or reduce the seasonal flooding that once sustained extensive wetlands and marshes. The Gray Lodge and Upper Butte Basin Wildlife Management Areas and the waterfowl hunting clubs now manage and maintain their wetland areas by conducting seasonal flooding programs that allow seed-producing plants to grow and flower during spring. In the fall, the areas are re-flooded to provide resting and feeding grounds for migratory waterfowl, primarily various species of geese and ducks. Outside the Butte Sink area, many of these managed wetlands were under agricultural production before being converted back into wetlands. The rice fields to the west of the RFS may be considered farmed wetlands by the Corps.

3.8.3.3 Flood Zones

The RFS is located outside of the 500-year flood zone as designated by the Federal Emergency Management Agency (FEMA). See Figure 3.8-1 for the FEMA designated flood zones in the Project study area.

3.8.3.4 Groundwater

Groundwater in the Butte County Project study area is quite shallow – as close as three feet below the surface in the Butte Sink area. Well water in this area is normally obtained between 100 and 200 feet below the surface. Water quality is considered acceptable, but typically has elevated concentrations of iron, manganese, and total dissolved solids. Sulfur is also sometimes

present in low, yet detectable concentrations. Filter systems are usually effective in removing these constituents. With the abundance of surface water available in the Project study area, ground water is rarely used for agricultural irrigation.

The soils in at the RFS are dominated by clay. They have very slow infiltration rates, a large percentage of clay particles, a high water table or shallow to an impervious layer. The depth to groundwater is greater than 60 inches and it is classified as a hydric soil.

3.8.4 POTENTIAL IMPACTS

3.8.4.1 Significance Criteria

According to Section 15002(g) of the CEQA Guidelines, “a significant effect on the environment is defined as a substantial adverse change in the physical conditions which exist in the area affected by the proposed project.” As stated in the Section 15064(b) of the CEQA Guidelines, the significance of an activity may vary with the setting. According to Appendix G of the CEQA Guidelines, impacts to hydrology and water quality may be considered significant if the Project:

- violates any water quality standards or waste discharge requirements;
- substantially depletes groundwater supplies or interferes substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level;
- substantially alters the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on- or off-site;
- substantially alters the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increases the rate or amount of surface runoff in a manner that would result in flooding on- or off-site;
- creates or contributes to runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provides substantial additional sources of polluted runoff;
- otherwise substantially degrades water quality;
- places housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary, Flood Insurance Rate Map, or other flood hazard delineation map;
- places within a 100-year flood hazard area structures that would impede or redirect flood flows;

- exposes people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam; and/or
- causes inundation by seiche, tsunami, or mudflow.

3.8.4.2 Surface Water

The Project will not alter existing drainage patterns. Following construction, all temporarily disturbed surfaces will be returned to their pre-construction elevation and slope. Above-ground facilities will be covered with gravel to allow storm water infiltration and any runoff will flow to existing drainage ways. Consequently, the Project will not increase the rate or amount of surface runoff in a manner that would result in flooding. The potential for erosion and siltation will be addressed in the Storm Water Pollution Prevention Plan described in Section 3.8.5. Further, the Project activities and facilities will not contribute or create runoff that exceeds the capacity of the existing drainage canal and ditch systems in the Project area. Therefore impacts will be less than significant.

If necessary for temporary access to the RFS expansion area, a culvert may be placed within the drainage that flows along West Liberty Road. WGS intends to amend its existing Individual Permit with the Corps, its 401 Certification with the RWQCB, and its Streambed Alteration Agreement with CDFG to address this temporary construction impact, if required. Compliance with these permits will ensure potential impacts to surface waters are less than significant.

Water Usage

Local surface water sources will be used during construction for dust control and hydrostatic testing of the pipelines. Approximately 40 thousand gallons of water will be drawn from local drainage canals for dust control during grading activities at the Delevan Interconnect Site and RFS. Permission will be obtained from local irrigation and reclamation districts to obtain water from their facilities. During Base Project and Expansion development, the quantities of water used were considered insignificant by these districts, and no fees were charged. If required, this water will be purchased from the districts' available allocations. The water used to hydrostatically test the facilities will also be drawn from local canals. Following testing, the water will be tested for contaminants and, if clean, released back into the canals or into adjacent fields. Test water from hydrotesting new facilities typically does not contain contaminants and meets water quality standards for release. Release of hydrostatic test water will be in compliance with the General Permit for Dewatering and Other Low Threat Discharges to Surface Water described below. Compliance with this permit will ensure potential impacts associated with this activity are less than significant.

3.8.4.3 Wetlands

If the Corps determines that the rice fields to the west of the RFS are jurisdictional farmed wetlands, the Project will result in conversion of 4.5 acres of farmed wetlands to an industrial use. Compliance with the Corps permit will ensure potential impacts to jurisdictional rice fields are less than significant.

3.8.4.4 Flood Zones

The Cherokee Canal represents the eastern edge of the primary Butte Sink flood channel. Expansion of the RFS will not involve work within the 100-year flood zone.

3.8.4.5 Groundwater

Section 3.7.2.6 Hazardous Materials Handling and Storage includes a discussion on standard measures that WGS implements manage hazardous materials, which will ensure that any impacts to groundwater quality will be less than significant.

3.8.4.6 Storm Water

Areas disturbed during construction may be subject to erosion and the resulting turbidity and siltation. However, the Project study area is very flat and has a low susceptibility for erosion. Only the fill and landscaped berm at the RFS will have slopes which may be subject to erosion. In addition, the project will implement the standard practices described in Section 3.7.2.6 Hazardous Materials Handling and Storage to prevent discharge of hazardous substances to storm water. As discussed in Section 3.8.5, the Project will be required to comply with two general permits from the RWQCB, which will ensure impacts to storm water from construction and operation of the project will be less than significant.

3.8.4.7 Construction Dewatering

Excavation for the PG&E lateral pipeline at the Delevan Interconnect Site is not anticipated to reach ground water. Based on RFS construction experience during Base Project and Expansion development, the foundation excavations will need to be dewatered. Such discharges will be performed in compliance with the RWQCB General Permit for Dewatering and Other Low Threat Discharges to Surface Waters, which is described in Section 3.8.5. With the implementation of this permit, impacts from construction dewatering to water quality will be less than significant.

3.8.4.8 Hazardous Materials and Waste Storage

The Project will not cross or affect any officially listed hazardous material sites. As described in section 3.7: Hazards and Hazardous Materials, the Project will involve the storage and handling of small quantities of hazardous materials and wastes. The Project's HMRRP prepared during Base Project development will be amended as needed to include equipment, facilities and practices associated with the proposed Project components. Adherence to the HMRRP will ensure the potential impacts associated with the use, handling and storage of hazardous materials are less than significant.

All hazardous material and waste containers at the RFS will be constructed and operated in compliance with federal, state, and county laws and regulations. By designing, constructing, and operating the facility to preclude storm water contact with hazardous substances at the individual source, most of the RFS area will be allowed to drain to natural water courses. Since no hazardous materials or wastes will be stored at the Delevan Interconnect Site, storm water at this facility will drain into the natural water courses. Therefore impacts to water quality from storage of hazardous materials and wastes will be less than significant.

3.8.5 PROPOSED MITIGATION MEASURES

3.8.5.1 Surface Water

Any work required within the roadside ditch along West Liberty Road will be done in compliance with a 404 permit from the Corps, a 401 Certification with the RWQCB, and a Streambed Alteration Agreement from CDFG, if required. The culvert will be designed to convey the maximum flow rate of the roadside ditch, and the inlet and outlet would be protected against erosion and scour. No additional mitigation is required.

3.8.5.2 Wetlands

If the Corps determines that the rice fields to the west of the RFS are jurisdictional farmed wetlands, WGS will amend its existing Section 404 Individual Permit to address this permanent impact. WGS will procure appropriate compensatory mitigation as required by the Corps permit. No additional mitigation is required.

3.8.5.3 Storm Water

The Project study area falls within the jurisdiction of the Redding Branch Office of the Central Valley Regional RWQCB (Region 5). The Project will comply with the statewide Construction Storm Water General Permit by filing a Notice of Intent with the RWQCB. A key component of

this General Permit is the preparation of a SWPPP. Management of storm water during the construction phase will use standard best management practices (BMPs) and conform to conditions established in the General Permit. The SWPPP prepared for Base Project development will be revised to include the proposed Project components. By implementing the SWPPP during construction, WGS, will ensure that storm water runoff from the Project will be minimal and will not adversely affect surface water quality.

Storm water that collects in subsurface vaults and secondary containment structures at the existing and proposed facilities will be discharged in compliance with the Project's existing RWQCB Statewide General Permit for Discharges by Utility Companies to Surface Waters and the associated Pollution Prevention Plan prepared specifically for Project facilities. This Plan will be revised as necessary to include any subsurface vaults or containment associated with the operation of the proposed Project components. No additional mitigation is required.

3.8.5.4 Construction Dewatering

WGS proposes to discharge testing water and excavation dewatering to the irrigation and drainage canals and upland adjacent to the Project facilities. As such, a Notice of Intent will be submitted to the RWQCB for the General Permit covering Dewatering and Other Low Threat Discharges to Surface Water.

Water used to hydrostatically test and flush the new facilities will be discharged into fields or back into the irrigation or drainage canal from which the water was obtained, subject to a determination of suitable quality consistent with the General Permit. No additional mitigation is required.

3.8.5.5 Hazardous Materials and Wastes

As described above, proper handling and storage of hazardous materials and wastes have become part of WGS's standard operating procedures for the existing facilities. Incorporation of the construction and operation of the proposed Project facilities into these plans and programs will ensure potential impacts to water quality are less than significant and no additional mitigation measures are proposed.

3.9 LAND USE AND PLANNING

3.9.1 INTRODUCTION

This chapter describes existing land use and resources in the area of the Project, as well as impacts to land use and agricultural resources that could result from construction and operation of the Project. Project construction activities will comply with all applicable federal, state, and local non-discretionary regulatory requirements. Construction and operation of the Project will have a less than significant impact on land use and planning.

3.9.2 COLUSA COUNTY EXISTING CONDITIONS

3.9.2.1 Planning Policies

The principal policy of the Land Use Plan for Colusa County is to preserve and enhance agriculture. The land use designation for the majority of the land within the Project study area is Agriculture (A-G). Land within this designation is generally used for orchard and crop production. Secondary uses in A-G areas include oil and natural gas drilling, non-intensive recreation, agricultural industry, and agricultural support uses; providing that these uses do not interfere with the viability of agriculture or create environmental hazards. As accessory facilities to natural gas drilling and production, the proposed Project components are consistent with Colusa County's General Plan.

The two zoning districts which encompass the majority of the Project study area in Colusa County are Agricultural Preserve (A-P) and Exclusive Agriculture (E-A). The two other zoning districts in the Project study area are Rural Service Center (RSC) and Designated Floodway (DF). The north-south strip along Interstate 5 near the Delevan Road interchange is designated RSC. This is an area of small, predominantly residential settlements. Commercial and residential uses are permissible within this area, provided that they conform to the zoning requirements for such uses. The agricultural areas along the Sacramento River and the Colusa Drain have a zoning overlay classification of DF which has been designated by the State Reclamation Board of the Department of Water Resources.

The Colusa County zoning ordinance provides a general allowance for pipelines and associated facilities in all zoning districts, following Planning Commission review and approval of site, route, and facility plans as part of a land use permit. As such, the Delevan Interconnect Site will require county review and approval.

3.9.2.2 Summary of Current Land Uses

Agriculture

Agriculture land use within Colusa County is discussed in section 3.2 of this report.

Residential

Residential land use within Colusa County is discussed in section 3.12 of this report.

Resource Management and Recreation

In Colusa County, the U.S. Fish and Wildlife Service manage two national wildlife refuges – the Delevan National Wildlife Refuge and the Sacramento National Wildlife Refuge. These areas provide wildlife viewing opportunities and hunting as part of their primary function of waterfowl and habitat management. Private-governmental cooperative programs provide recreational hunting for waterfowl and upland game birds (pheasant) on some of the private lands in the Project vicinity, and a few property owners lease their rice fields to hunters during the fallow fall and winter months. There are no local, state, or federal recreation areas in the Colusa County portion of the Project area. There are no habitat conservation plans or natural community conservation plans in the Project area.

For additional information on recreational land use within Colusa County, see section 3.14 of this report.

3.9.3 BUTTE COUNTY EXISTING CONDITIONS

3.9.3.1 Planning Policies

The Project study area within Butte County is currently used for agriculture and resource management. The Agricultural Element and the Land Use Element of the Butte County General Plan encourage the protection and enhancement of agriculture and prime agricultural lands. The portion of the Project study area within Butte County is designated “Orchard” and “Field Crop” land. This designation generally allows orchard and crop production as the primary use, with hunting and water-related recreation and resource extraction and processing as secondary uses. Non-agricultural uses may be considered where buffers can be incorporated into the design of the non-agricultural land use. Butte County also has an Energy Resource Policy, which encourages the development of natural gas fields. Implementation of these land use policies is provided in the county zoning ordinance. Accordingly, the proposed Project components are consistent with Butte County’s General Plan.

3.9.3.2 Summary of Current Land Uses

Agriculture

Agriculture land use within Butte County is discussed in section 3.2 of this report.

Residential

Residential land use within Butte County is discussed in section 3.12 of this report.

Resource Management and Recreation

The California Department of Fish and Game manages the Gray Lodge Wildlife Management Area just south of the RFS and the Upper Butte Basin Wildlife Management Area north of the project in the Butte Sink. These areas provide wildlife viewing opportunities and hunting as part of their primary function of waterfowl and habitat management. Private-governmental cooperative programs provide recreational hunting for waterfowl and upland game birds (pheasant) on some of the private lands in the project vicinity, and many property owners lease their rice fields to hunters during the fallow fall and winter months. The rice fields surrounding the RFS are utilized for waterfowl hunting, and a hunter parking/camping area is situated just west of the RFS. Duck hunting season typically starts in early- to mid-October and concludes by the end of January. Pheasant season is usually one month long, beginning in early- to mid-November.

There are no habitat conservation plans or natural community conservation plans in the Project study area. Current resource management and recreation land use is discussed in further detail in section 3.14 of this report.

3.9.4 POTENTIAL IMPACTS

3.9.4.1 Significance Criteria

According to Section 15002(g) of the CEQA Guidelines, “a significant effect on the environment is defined as a substantial adverse change in the physical conditions which exist in the area affected by the proposed Project.” As stated in the Section 15064(b) of the CEQA Guidelines, the significance of an activity may vary with the setting. According to Appendix G of the CEQA Guidelines, impacts to land use and planning may be considered significant if the Project:

- physically divides an established community;
- conflicts with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the Project (including but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect; and/or

- conflicts with any applicable habitat conservation plan or natural community conservation plan.

3.9.4.2 Land Requirements

Delevan Interconnect Site

Construction at the Delevan Interconnect Site may permanently displace up to 0.6 acre of grassland and will temporarily occupy approximately one acre of grassland, for laydown, staging and access. Another one and a half acres will be temporarily impacted by pipeline construction activities to accommodate installation of the PG&E lateral line to PG&E Line 401. Figure 3.9-1a shows existing land use and all land owner parcels within 300 feet of the Delevan Interconnect Site with the following data: APN number, mailing address, and parcel's physical address.

Remote Facility Site

During development of the Base Project and Expansion, the 12.2-acre RFS tract was obtained under a long-term lease, and 8.4 acres were fenced for operation of the existing aboveground facilities. The remainder was retained as a buffer area for the landscaped berm and farm access road. To accommodate the facilities and equipment associated with the Phase 3 Expansion, the lease area will be extended approximately 540 feet to the west to coincide with the existing parking area and rice field layout. The Phase 3 Expansion area will increase the lease area an additional 4.5 acres, for a total of 16.7 acres. The fenced operations area will increase by 3.7 acres, for a total of 12.4 acres. The perimeter landscaped berm will be extended to the west and a new access driveway may be added to the west edge of the lease area as part of the Phase 3 Expansion. Figure 3.9-1b shows existing land use and all land owner parcels within 300 feet of the RFS with the following data: APN number, mailing address, and parcel's physical address.

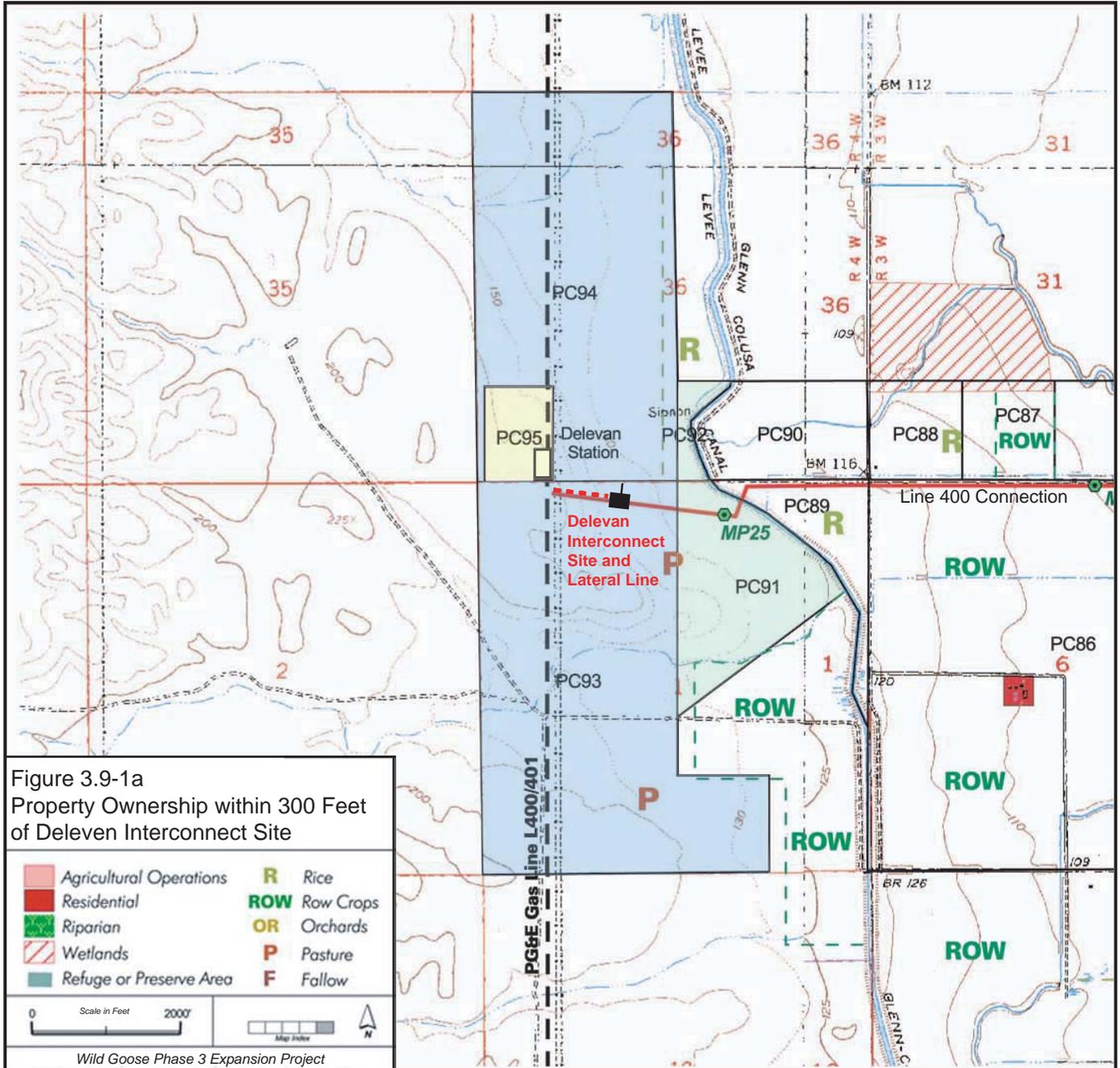
3.9.4.3 Construction Impacts

Agriculture

There will be an expected impact to agricultural rice land and production from expansion of the RFS. Further discussion of agriculture effects are discussed in section 3.2 of this report.

Residential

There will be no expected impacts to residential areas. Further discussion of residential and population effects are discussed in section 3.12 of this report.



February 27, 2009, TRC

PC/PB & SL Numbers	APN	Owner's Name	Owner's Address	Owner's Phone	Tenant's Name/Address	Tenant's Phone
PC 91	011-140-021	Allen E. & Mary A. Azevedo/ Right of Survivorship	P.O. Box 629 Maxwell, CA 95955-0629	530-438-2454 530-908-3217		
PC 92	011-040-029	Same as above				
PC 93	011-140-004	Leo M. & Diane M. Holthouse	25039 Hwy 395 South Canyon City, OR 97820-8709	541-575-0126 (shop)	Enerland, LLC c/o Robert Mussetter PO Box 838 Williams, CA 95987	530-473-2123
PC 94	011-040-026	Same as above				
PC 95	011-040-013	Pacific Gas and Electric Company	One Market, Spear Tower San Francisco, CA 94105	415-973-7000		

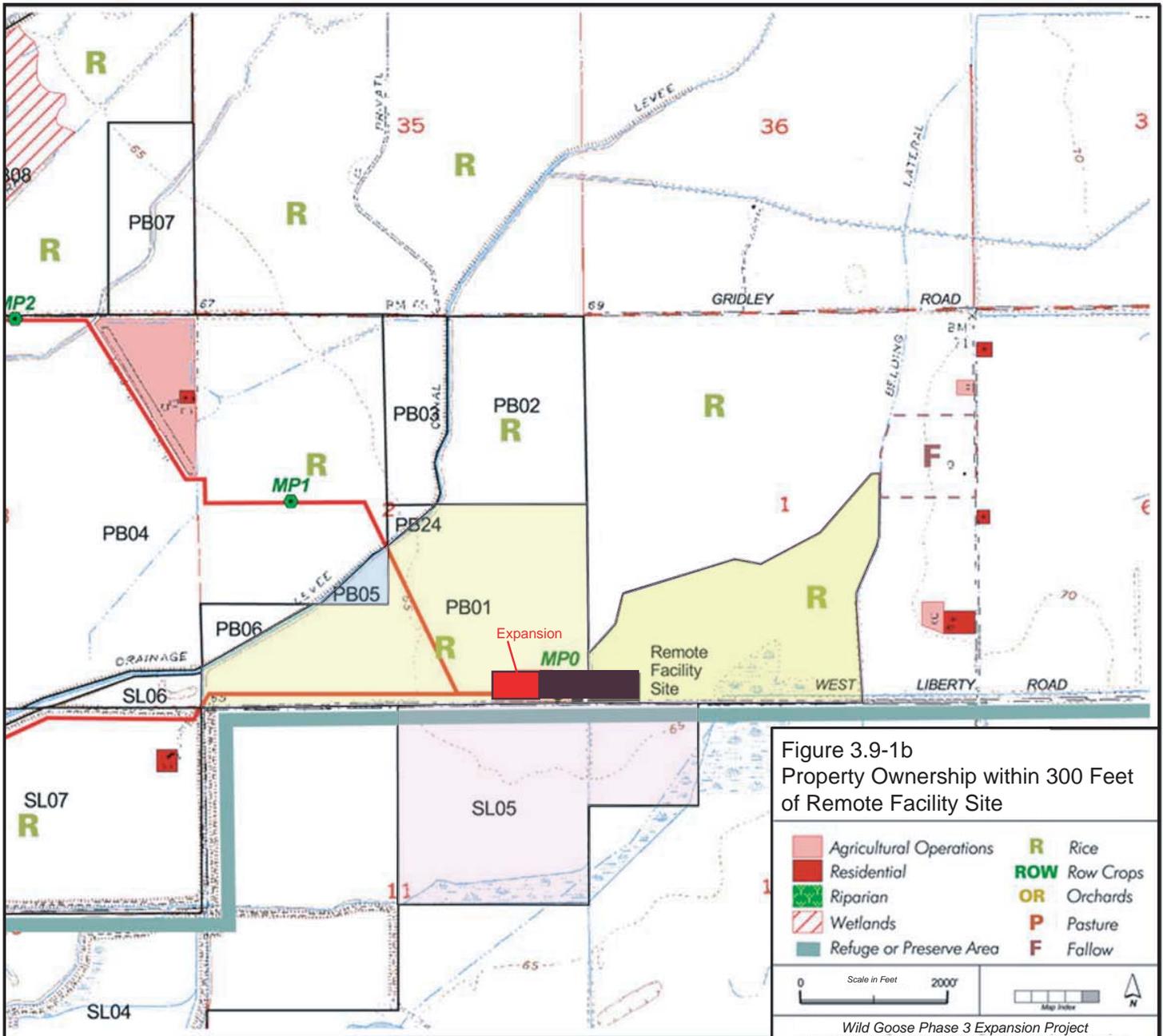


Figure 3.9-1b
Property Ownership within 300 Feet
of Remote Facility Site

February 27, 2009, TRC

PC/PB & SL Numbers	APN	Owner's Name	Owner's Address	Owner's Phone	Tenant's Name/Address	Tenant's Phone
PB 01	021-010-046	Eric Waterbury	PO Box 193 Gridley, CA 95948-0193	530-846-5411 (home) 530-682-7555 (cell) 530-846-2982	Devin Waterbury (Co-owner & Tenant) 1283 Pennington Rd Gridley, CA 95948	530-846-0408
PB05	011-140-004	Birdie C. Vanderford Thelma Jensen Mills, Trustee	PO Box 1048 Gridley, CA 95948-1048	530-846-5730		
SL05	021-010-022	California Department of Fish and Game	1416 Ninth Street Sacramento, CA 95814	916-653-7664		

Resource Management and Recreation

The hunter parking area will be displaced during by the Project. With proposed mitigation measures, there will be no expected significant impacts to resource management and recreation. Further discussion of resource management and recreation is discussed in section 3.14 of this report.

3.9.4.4 Operation Impacts

Agriculture

No significant impacts to agricultural rice land and production from the operation of the expanded RFS are anticipated. Further discussion about operation impacts on agriculture are discussed in section 3.2 of this report.

Residential

No significant impacts to residential uses are anticipated from the operation of the proposed Project. Further discussion about operation impacts on residential resources are discussed in detail in section 3.12 of this report.

Resource Management and Recreation

Outside noise-producing routine operations and maintenance activities at the RFS during the hunting season may adversely affect waterfowl hunting success on the adjacent rice fields and across the road on the Gray Lodge. Depending on the timing (day or night), frequency and duration of these activities, this impact could be considered potentially significant. Operation impacts to resource management and recreation are discussed in further detail in section 3.14 of this report.

3.9.5 PROPOSED MITIGATION MEASURES

3.9.5.1 Construction

Agriculture

Proposed mitigation measures for agricultural resources are discussed in detail in section 3.2 of this report.

Residential

There are no residential impacts expected as a result of the construction of the Project; thus, no mitigation measures are necessary. Further details are discussed in section 3.12 of this report.

Resource Management and Recreation

Proposed mitigation measure for resource management and recreation are discussed in detail in section 3.14 of this report.

3.9.5.2 Operation

Agriculture

There are no agriculture impacts as a result of operations of the Project; thus, no mitigation measures are necessary.

Residential

There are no residential impacts expected as a result of the operations of the Project; thus, no mitigation measures are necessary.

Resource Management and Recreation

The Plant Manager at the RFS will, to the extent possible, develop a schedule where major outside noise-producing routine operations and maintenance activities avoid the hunting season. Proposed mitigation measures for operational impacts on resource management and recreation are discussed in detail in section 3.14 of this report.

3.10 MINERAL RESOURCES

3.10.1 INTRODUCTION

This section describes existing mineral resources at the WGS Project in Colusa and Butte counties, California, and the potential impacts to these resources that could result from construction and operation of the Project at the RFS and Delevan Interconnect Site. Project construction activities will comply with all applicable federal, state, and local regulatory requirements. Construction and operation of the Project will have a less than significant impact on mineral resources.

3.10.2 EXISTING CONDITIONS

3.10.2.1 Sand and Gravel Resources

In the Sacramento Valley, sand and gravel represent major economic natural resources. Sand and gravel used as construction aggregate are extracted from young stream deposits associated with present rivers and creeks. In addition, deposits are found along riverbanks, on flood plains and in alluvial fans from former channels.

In the Project vicinity, the Sacramento River and its tributaries represent potentially commercial economic sand and gravel resources. The California Geological Survey is the agency responsible for designating potential sand and gravel resource area. Under the 1975 State Mining and Reclamation Act (SMARA), areas of economic interests are designated. In the immediate Project vicinity, no specific sand and gravel resources are currently designated under SMARA. No active surface mineral resources would be affected by the Project in either Butte or Colusa County. The active gravel extraction operations are located along the east bank of the Sacramento River.

The nearest active gravel extraction operation in Butte County is located on the north edge of the Sutter Buttes near Pennington, approximately 6 miles to the southeast of the RFS. The other nearby gravel operation is located on West Butte Road, approximately 19 miles south of the WPS in Sutter County.

3.10.2.2 Natural Gas

Natural gas fields are located in the western part of Butte County and throughout the eastern portion of Colusa County, concentrated mainly along the Sacramento River. Natural gas reserves in the Wild Goose gas field were depleted in the late 1980s. Small pockets of untapped original gas may remain within some of the more complex reservoir intervals or in shallower zones (Tertiary age). In the Sacramento Valley, natural gas is also present in shallower zones (Tertiary

age). In some areas, shallow zones have produced commercial quantities of natural gas. Although these shallow deposits (below about 1,600 feet) are present above the WGS Kione formation, they are not productive. Data collected from shallow zones penetrated during drilling indicates the presence of some natural gas above the deeper Kione formation sands. Evaluation of these shallow zones indicates that they are “wet” (containing water with gas), and therefore, non-commercial gas occurrences. It is unlikely that any attempt would be made to develop shallow gas bearing zones overlying the Wild Goose Storage field.

3.10.3 DELEVAN INTERCONNECT SITE

Mineral extraction activity in Colusa County is limited to sand and gravel extraction and natural gas exploration and production. The main commercial deposits in the area include sand and gravel, and volcanic cinder, which are used primarily by local paving and construction industries. The sand and gravel resources are used for asphalt, providing surface material for roads. The Project will not interfere with any mineral resource or mineral operations. The nearest active gravel extraction operation is located along the east bank of the Sacramento River near Moulton Weir. Natural gas fields are located throughout the eastern portion of Colusa County, concentrated mainly along the Sacramento River.

3.10.4 REMOTE FACILITY SITE

Mineral resources in Butte County are primarily sand and gravel and natural gas deposits. The nearest active gravel extraction operation is located on the north edge of the Sutter Buttes near Pennington, approximately six miles to the southeast of the RFS. The other nearby gravel operation is located on West Butte Road, approximately 19 miles south of the WPS in Sutter County. Natural gas fields are located in the western part of Butte County, but there are no active fields in the Project study area. The nearest fields are located five miles northwest and five miles southwest of the WGS Field. Other than the stored gas in the L-4 and L-1 reservoirs, gas remaining in the other WGS Gas Field reservoirs is economically unrecoverable and will contribute to the cushion gas required for operation of those reservoirs as storage

3.10.5 POTENTIAL IMPACTS

3.10.5.1 Significance Criteria

According to Section 15002(g) of the CEQA Guidelines, “a significant effect on the environment is defined as a substantial adverse change in the physical conditions which exist in the area affected by the proposed project.” As stated in the Section 15064(b) of the CEQA Guidelines, the significance of an activity may vary with the setting. According to Appendix G of the CEQA Guidelines, impacts to mineral resources may be considered significant if the Project:

- results in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state; and/or
- results in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan.

3.10.5.2 Construction and Operation Impacts

Project implementation should not adversely affect known natural gas, sand and gravel, or other energy or mineral resources. Natural gas reserves in the Wild Goose Storage field were depleted in the late 1980s and it was believed shallow deposits present above WGS Kione formation are not productive. It is unlikely that any attempt would be made to develop shallow gas bearing zones overlying Wild Goose Storage field.

Quaternary alluvium east of the Sacramento River may have properties suitable for mining of sand and gravel. None of these areas are known to have been designated by the California Geological Survey as potential mineral resource zones, although this does not preclude such designation in the future.

Therefore the project will have no impact on mineral resources.

3.10.6 PROPOSED MITIGATION MEASURES

No potentially significant impacts related to future extraction of natural gas or sand and gravel are anticipated based on the Project as defined. Subsequently, no mitigation measures are required.

3.11 NOISE

3.11.1 INTRODUCTION

This chapter describes the ambient noise levels in the area of the WGS Project, as well as impacts that could result from construction and operation of the Project. Project construction activities will comply with all applicable federal, state, and local non-discretionary regulatory requirements. Construction and operation of the Project will have a less than significant impact from noise.

3.11.2 SETTING

3.11.2.1 Regulatory Setting – Remote Facility Site - Butte County

The current Butte County General Plan Noise Element, completed in 1985, is a minor revision of the 1975 element. Although the 1985 update included development of a Noise Ordinance as an implementation measure, it has not been adopted. Currently, disputes over excessive noise in Butte County are settled in local courts.

In the interim, the county is using the Land Use Compatibility for Community Noise Environment Table (see Table 3.11-1). This noise compatibility standard has been adopted from the November 1998 California General Plan Guidelines published by the Governor's Office of Planning and Research. As shown in Table 3.11-1, the normally acceptable maximum noise level in agricultural areas is 75 "A-weighted" decibels (dBA). These noise levels are measured as "L_{dn}," which applies a 10-dBA penalty to noise-producing sources during the night and evening hours (10:00 p.m. to 7:00 a.m.) because of greater residential sensitivity to noise during later hours. When prorated over a 24-hour period, the L_{dn} represents a 6.4-dBA penalty for noise-producing sources. For example, a noise source that produces an equivalent noise level (L_{eq}) of 60 dBA is assumed to be producing the noise effect of 66.4 dBA on the L_{dn} scale. The L_{dn} scale is used in County General Plan documents as a means of better describing the compatibility of various land uses within a community.

3.11.2.2 Environmental Setting – Remote Facility Site - Butte County

Noise Sensitive Receptors

Sensitive receptors in the vicinity of the RFS include farm and hunting club caretaker residences, and are classified based on their proximity to the RFS. Residences within one mile of the RFS in Butte County were considered to be sensitive receptors.

Table 3.11-1: Land Use Compatibility for Community Noise Environment Table

Land Use Category	Community Noise Exposure L _{dn} or CNEL, dB					
	55	60	65	70	75	80
Residential – Low Density Single Family, Duplex, Mobile Homes	Light Gray	Light Gray	Light Gray	Light Gray	Dark Gray	Black
Residential – Multi Family	Light Gray	Light Gray	Light Gray	Light Gray	Dark Gray	Black
Transient Lodging – Motels, Hotels	Light Gray	Light Gray	Light Gray	Light Gray	Dark Gray	Black
Schools, Libraries, Churches, Hospitals, Nursing Homes	Light Gray	Light Gray	Light Gray	Light Gray	Dark Gray	Black
Auditoriums, Concert Halls, Amphitheaters	Light Gray	Light Gray	Light Gray	Light Gray	Dark Gray	Black
Sports Arena, Outdoor Spectator Sports	Light Gray	Light Gray	Light Gray	Light Gray	Dark Gray	Black
Playgrounds, Neighborhood Parks	Light Gray	Light Gray	Light Gray	Light Gray	Dark Gray	Black
Golf Courses, Riding Stables, Water Recreation, Cemeteries	Light Gray	Light Gray	Light Gray	Light Gray	Dark Gray	Black
Office Buildings, Business Commercial and Professional	Light Gray	Light Gray	Light Gray	Light Gray	Dark Gray	Black
Industrial, Manufacturing, Utilities, Agriculture	Light Gray	Light Gray	Light Gray	Light Gray	Dark Gray	Black

INTERPRETATION:



Normally Acceptable
Specified land use is satisfactory based on the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.



Conditionally Acceptable
New Construction or development should be undertaken only after a detailed analysis is made of the noise reduction requirements and needed noise insulation features included in the design.
Conventional construction, but with closed windows and fresh air supply systems or air conditioning, will normally suffice.



Normally Unacceptable
New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.



Clearly Unacceptable
New construction or development should generally not be undertaken.

Source: Office of Planning and Research, General Plan Guidelines Appendix A (11/1998)

Another category of sensitive receptors is seasonal hunters between early-September and mid-January. Hunting areas include the hunting clubs in the Butte Sink, the rice fields adjacent to Project facilities, and the Gray Lodge area.

Within one-mile of the RFS, the only identified noise-sensitive structures were the Waterbury Residence, located 4,500 feet east of the RFS, and the Ratto Residence, which is affiliated with the Gray Eagle Hunting Club, located 5,800 feet west of the RFS.

Ambient Noise Sources

Primary noise sources are vehicle traffic on local roads, agricultural equipment operating in fields, crop dusters and other low flying aircraft, and wildlife noises. The wetlands maintenance activities in the area use various sizes of tractors and occasionally a bulldozer during the summer months. During the spring and fall months, farmers in the area typically use bulldozers for creating rice dikes, deep plowing, and leveling, tractors for other field preparation activities, backhoes for repairing and maintaining water control structures, and combines for harvesting the rice. Additional seasonal noise sources include:

- propane powered zone guns used in mid- to late-summer to scare birds from the rice fields as the seed heads mature;
- low-flying crop dusters applying seed, fertilizer, or pesticides, or buzzing the fields to scare off birds in the spring, summer, and fall just before harvest; and
- firearm noise from pheasant, upland game bird, and waterfowl hunting during the fall and winter.

Ambient Noise Levels

Noise surveys conducted in the Project area prior to Base Project development indicated that ambient noise levels were in the range of 38 to 40 dBA L_{eq} during the day and about 36 dBA L_{eq} at night. These noise levels are considered representative of existing agricultural uses in the Project area.

Ambient noise surveys were taken on June 23, 1999 while both compressors installed during Base Project development were operating. Survey locations included the perimeter fence and the two nearest residences. Noise measurements taken along the fence line ranged from 48 dBA at the southeast corner of the site, to 72 dBA along the north side between the two compressor engine exhaust stacks. The residential measurements were also taken at the Waterbury residence and the Weiking (now Ratto) residence. The results of these surveys indicated both by specific measurement and subjectively that the noise emissions from the RFS were not audible at either location.

The ambient noise surveys were repeated at the Waterbury residence and Ratto residence (at entrance to Gray Eagle Hunting Club) on December 4, 2008. Although the compressor units at the WGS gas storage facility were not in operation on this day, the ambient noise survey results indicate that ambient conditions were similar to those documented previously. Specifically, average daytime noise levels were measured at the Waterbury Residence to be 45 dBA L_{eq} and at the Entrance to the Gray Eagle Hunting Club to be 41 dBA L_{eq} . Such similarity is to be expected since the RFS was not audible at the Waterbury and Ratto residences in 1999 with the compressors running, indicating that ambient noise conditions at these two nearest sensitive areas are defined by sources of noise other than the RFS.

3.11.3 POTENTIAL IMPACTS

3.11.3.1 Significance Criteria

According to Section 15002(g) of the CEQA Guidelines, “a significant effect on the environment is defined as a substantial adverse change in the physical conditions which exist in the area affected by the proposed project.” As stated in the Section 15064(b) of the CEQA Guidelines, the significance of an activity may vary with the setting. According to Appendix G of the CEQA Guidelines, noise impacts may be considered significant if the Project:

- results in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
- results in exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels;
- results in substantial permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project;
- results in substantial temporary or periodic increase in ambient noise levels in the Project vicinity above levels existing without the Project;
- lies within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, and, as a result, exposes people residing or working in the Project area to excessive noise levels; and
- lies in the vicinity of a private airstrip, and, as a result, exposes people residing or working in the Project area to excessive noise levels

3.11.3.2 Construction Noise Impacts

Since construction will be occurring entirely in agricultural areas, the target construction noise level will be the conditionally acceptable standard applicable to agricultural areas, which is 75 dBA L_{dn} . For the loudest construction equipment, the 75-dBA L_{dn} noise level would be experienced at approximately 200 feet from the source.

Remote Facility Site

Construction of the RFS during Base Project development occurred on several schedules. During summer heat waves in 1998, construction occasionally began as early as 4:00 a.m. when concrete foundation pours needed to be placed before the mid-day heat. Otherwise, construction typically occurred between 6:00 a.m. and 7:00 p.m. During the 1998 hunting season, construction was restricted to low-noise-producing outside activities during daylight hours to preclude impacts to local hunting activities. Beginning in early-January 1999, two work schedule adjustments were implemented to ensure that the project met its April 1, 1999 operation date. Starting January 4, 1999, normal outside daytime construction activities resumed after compensation for lost waterfowl hunting opportunities was negotiated with the Gray Lodge and the hunting lessee on the adjacent rice fields. On January 18, a 10-hour night welding shift (from 6:00 p.m. to 4:00 a.m.) was added for eight weeks. Provisions were made to minimize noise during this shift by saving the low-noise-producing tasks for the evening shift, and ensuring that the workers understood the noise sensitivity of the area. The following measures were implemented to minimize noise impacts during the night welding shift:

- The existing site electrical power was used in lieu of internal- combustion-engine-driven generators for the arc welders' power source.
- A strobe light system was used in lieu of the back-up safety beeper on some mobile equipment.
- Heavy canvas portable enclosures were placed over work locations to limit grinding noise.
- Four-inch grinders were used in lieu of the standard seven-inch grinders to reduce noise.

The Gray Lodge manager was contacted and initially expressed concern that noise during the late afternoon and evening might deter waterfowl from feeding in the Gray Lodge area across from the RFS. However, based on implementation of the above mitigation measures, the manager indicated that the reduction in noise satisfied his initial concerns, and that actual adverse effects on waterfowl in the immediate area were minimal, if any. In summary, through close coordination with adjacent property owners and implementation of effective mitigation measures, no significant noise impacts resulted during construction of the current facilities at the RFS.

For the Project facilities, construction work hours and the adjustment during the hunting season will be similar to that described above. While the normal work day will be between 6:00 a.m.

and 7:00 p.m., weather or construction schedule variables may require noise-producing work outside this 13-hour window. Similar coordination and noise mitigation will be implemented for the construction of the proposed facilities.

Sound from a fixed location decreases by approximately 6 dBA for each doubling of distance from the source due to spherical spreading of sound waves, and by an additional 1.5 dBA per thousand feet due to atmospheric absorption and excess ground attenuation. Therefore, given a conservative construction noise generation estimate of 75 dBA L_{dn} at a distance of 200 feet, that level would be reduced to approximately 40 dBA L_{dn} or less at the nearest residences. Because the predicted construction noise levels are well below the applicable county noise level standard, and because construction activities would not result in a significant increase in noise levels at those sensitive receptor areas, noise impacts associated with the construction at the RFS are expected to be less than significant.

Delevan Interconnect Site

As noted in the Project description, construction at the Delevan Interconnect Site will consist of modification to piping and meter facilities within the existing Delevan Interconnect Site, and construction of a PG&E lateral pipeline from the Interconnect Site to PG&E Line 401.

Although construction activities at the Delevan Interconnect Site will be considerably less intensive than those at the RFS, a conservative estimate of 75 dBA L_{dn} at a distance of 200 feet was applied to this location as well for the assessment of potential construction noise impacts.

As noted above, sound from a fixed location decreases by approximately 6 dBA for each doubling of distance from the source due to spherical spreading of sound waves, and by an additional 1.5 dBA per thousand feet due to atmospheric absorption and excess ground attenuation. Therefore, given a conservative construction noise generation estimate of 75 dBA L_{dn} at a distance of 200 feet, that level would be reduced to approximately 40-45 dBA L_{dn} at the nearest residence to the southwest (including estimated shielding for topography in that direction), and to approximately 35 dBA L_{dn} at the nearest residence to the southeast. Because the predicted construction noise levels are well below the applicable county noise level standard, and because construction activities would not result in a significant increase in noise levels at those sensitive receptor areas, noise impacts associated with the construction at the Delevan Interconnect Site are expected to be less than significant.

3.11.3.3 Operational Noise Impacts

The Project is located in areas used exclusively for agricultural production and resource management where the conditionally acceptable noise level limit is 75 dBA L_{dn} . For the purposes

of this Project, it is assumed that the target operational noise level at the property line of all aboveground facilities will not exceed 75 dBA L_{dn} . Given the distance to the nearest residences, noise increase over the ambient level is a more realistic indicator of potential Project impacts. Consequently, noise level increases of 5 dBA L_{dn} or less (excluding pressure safety valve releases described below) at the nearby residences would be considered less than significant.

Remote Facility Site

As with current operations, the greatest operational noise generation of the expanded RFS will come from pressure relief valves and pipeline blow downs at the RFS. These can produce over 120 dBA each time the valve releases. This is equivalent to a diesel locomotive whistle or a commercial jet plane during takeoff. Without proper mitigation, the sudden impulsive events of the pressure releases can be harmful to wildlife as well as humans near the valve. The radius of effect from these impulsive releases could be extended by atmospheric conditions. Loud, impulsive noises such as these create a higher level of annoyance than steady noise levels.

Pressure relief from compressor station piping is necessary for safe operation of the facility. The WGS gas compressor facility, like all gas facilities, has incorporated a number of redundant safety systems into the overall operation of the facility, and similar systems will be incorporated into the new components of the facility. During normal operations, sectional piping is usually automatically blown down whenever a compressor unit shuts down. Fire and gas readings of 40% and higher trigger activation of emergency shutdown (ESD) valves, which blow down the entire facility. Both of these types of “blowdowns” are rapid depressurization and are routed through silencers for noise attenuation. Silenced blowdown vents are installed as part of the current facilities, and additional silenced blowdown vents will be installed as appropriate to serve the Phase 3 Expansion.

The third type of depressurization is via the pressure safety valves. In normal operating mode and even under the first level of alarm mode where the ESDs are activated, the pressure relief valves do not open. These valves activate only when the pressure exceeds the safe operating parameters of piping or vessels. Under these circumstances, the safest method is to immediately relieve the pressure directly to the atmosphere, not by controlled release through a silencer. Consequently, these blowdowns are extremely loud, but last only five to ten seconds.

By routing normal operations and ESD blowdowns to silencers, these operational activities will not result in significant noise impacts. While the pressure safety valves generate potentially significant noise, their infrequent occurrence and short duration would be considered a less-than-significant impact.

Another significant source of on-site noise generation is the large (approximately 13,700 horsepower, soon to be increased to 21,000 horsepower) caterpillar engines used to drive the facility compressors. The existing facility currently has 4 such compressors housed in two large compressor buildings, with another two compressor units expected to be installed during September to December 2009. The Phase 3 Expansion at the RFS would add four additional compressors within another similar compressor building.

The existing compressor buildings have incorporated extensive noise control features which dramatically limit sound from compressor operations from escaping into the surrounding area. Specifically, the compressor building cooling air inlet and exhaust ports include acoustic silencers and acoustically lined plenums. The interior surface of the entire compressor building is lined with acoustically absorbent materials, and the compressor engine exhaust gas is routed through appropriately sized acoustic mufflers. As a result, the substantial noise generation of the large caterpillar engines is attenuated to noise levels below 75 dBA L_{dn} at the Project property lines. Previous observations and acoustic testing with the compressors in operation indicated that the facility was inaudible at the nearest residences, with noise levels undetectable over ambient conditions.

Because similar noise control features will be included in the proposed compressor building and related facilities, overall facility noise generation is predicted to remain well below county noise level limits at the nearest residences and typically inaudible during normal operating and atmospheric conditions. As a result, noise impacts associated with the expanded facility are predicted to be less than significant.

Delevan Interconnect Site

As with existing operations at the Delevan Interconnect Site, noise-producing activities at the expanded site will consist of the continuous sound of gas passing through control valves, and the very infrequent noise generated by blowdowns. Blowdowns normally occur only during emergencies or very infrequent maintenance, when large volumes of natural gas are vented from the pipeline. Noise measurements of the current facility operations indicate that gas passing through the valves generates low noise levels of approximately 45 dBA L_{eq} at the property line. Because these noise levels occur 24-hours per day, the L_{dn} associated with this noise at the property line would be approximately 52 dBA, which is well below the Project target noise level of 75 dBA L_{dn} . Following expansion of the facility, which is conservatively estimated to result in noise levels within 3 dBA of existing facility noise generation, property line noise levels would remain well below the 75 dBA L_{dn} target noise levels. At the nearest residences, located approximately 2,800 feet southwest and over 6,000 feet southeast of the Delevan Interconnect Site, a property line noise level of 55 dBA L_{dn} (assumed to be approximately 50 feet from the

main noise sources), would be reduced to below 20 dBA L_{dn} . As a result, noise impacts from typical operations at this facility are not predicted to be significant.

Although the noise from PG&E lateral pipeline blowdown activities will exceed 75 dBA L_{dn} at the property line and may result in an increase in excess of 5 dBA at the nearest sensitive receptors, noise impacts from blowdowns at these sites will occur so infrequently that they are not considered significant.

3.11.4 PROPOSED MITIGATION MEASURES

3.11.4.1 Construction Noise Mitigation Measures

Remote Facility Site

As discussed above, coordination and measures implemented during construction of the existing RFS mitigated construction noise to a less-than-significant level. These same measures and coordination will be implemented for the Phase 3 Expansion facilities so noise impacts will be less than significant.

Delevan Interconnect Site

Project construction will not result in significant impacts to noise-levels, therefore no mitigation is necessary.

3.11.4.2 Operations Noise Mitigation Measures

Remote Facility Site

As concluded in the June 1999 ambient noise survey, operational noise produced at the RFS even at the quietest time of the evening was not audible at the nearest residence. This existing level of noise attenuation was accomplished by housing the compressors and engine drivers in a metal-framed and sided building with sound insulation designed into the wall thickness, openings and vents, and by routing normal operations blowdowns and ESD blowdowns into silencers.

Because similar noise control measures are proposed for the new facilities proposed as part of the Phase 3 Expansion, noise impacts from operations at the RFS will be less than significant and no additional noise control measures beyond those proposed are needed.

Delevan Interconnect Site

No noise control measures are required for the normal operation of the Delevan Interconnect Site due to the very low noise levels which will result from such operations at both the property lines and nearest residences.

No noise attenuation will be added to the vent stacks at these locations due to the infrequency of pipeline maintenance blowdowns and the need to vent large quantities of gas in the event of an emergency (thereby rendering silencers infeasible). Instead, pipeline operators will notify nearby residents when a maintenance blowdown is planned, so they will not be alarmed by the noise and/or can make plans to be elsewhere while the blowdown will take place.

3.12 POPULATION AND HOUSING

3.12.1 INTRODUCTION

This chapter describes the existing conditions and potential Project-related impacts to population and housing in the affected counties within the Project area. Expansion of the Delevan Interconnect Site and RFS will neither significantly impact the regional or local population, nor require the displacement of existing housing. The Project will have a positive impact on the needs of the local and state communities.

3.12.2 EXISTING CONDITIONS

3.12.2.1 Colusa County

Colusa County has a current estimated population of 21,022 and is predominantly rural, as are most of the counties in the Sacramento Valley (see Table 3.12-1). The county has historically been one of the slowest growing areas in California. However, between 1990 and 2000, the county population grew by approximately 15 percent.

Since the most densely populated areas of Colusa County are located in Williams and Colusa City, most of the available housing lies there. Williams lies approximately 11 miles north from the Delevan Interconnect Site and Colusa City lies approximately 18 miles southeast from the Delevan Interconnect Site. The total number of housing units is currently estimated at 7,358 with a vacancy rate of approximately 8.9 percent.

Table 3.12-1: Total Population

Geographic Region	2000	2007	% Increase
Butte County	203,171	217,191	7.5
Colusa County	18,804	21,022	11.8

Source: U.S. Census Bureau 2008

3.12.2.2 Butte County

Butte County has a current estimated population of 217,191 and is predominantly rural, with the exception of the cities of Chico and Oroville and their surrounding suburban areas (refer to Table 3.12-1). The county experienced a population increase of approximately 12 percent between 1990 and 2000. The total number of housing units is currently estimated at 93,573 with a

vacancy rate of approximately 9.6 percent. Table 3.12-2 provides a summary of the total housing units and vacancy rates of both Butte and Colusa Counties.

Population in the Project study area is very sparse. Housing consists primarily of single family dwellings associated with agricultural activities and multiple occupancy dwellings associated with the hunting clubs. No people, residential housing or business establishments will be displaced by the proposed Project components.

Table 3.12-2: Total Housing Units and Vacancy Rates (2007)

Geographic Region	Total Housing Units	Vacancy Rate (%)
Butte County	93,573	9.6
Colusa County	7,358	8.9

Source: U.S. Census Bureau 2008

3.12.3 POTENTIAL IMPACTS

3.12.3.1 Significance Criteria

According to Section 15002(g) of the CEQA Guidelines, “a significant effect on the environment is defined as a substantial adverse change in the physical conditions which exist in the area affected by the proposed project.” As stated in the Section 15064(b) of the CEQA Guidelines, the significance of an activity may vary with the setting. According to Appendix G of the CEQA Guidelines, impacts to population and housing may be considered significant if the Project:

- induces substantial population growth in the Project area either directly or indirectly;
- displaces a large number of existing residences, causing the construction of replacement housing elsewhere; and/or
- displaces a substantial number of people, causing the construction of replacement housing elsewhere.

3.12.3.2 Construction

The planned Project is minimal in scope and expansion of the Delevan Interconnect Site and RFS will not induce substantial population growth in the Project area directly or indirectly and nor will it displace any residences. The Project will not displace any persons from the area, thus the construction and expansion of the RFS and Delevan Interconnect Site will have no significant effects.

3.12.3.3 Operation

The Project will require hiring up to three new workers to assist in the operation and maintenance of the facilities. Since only up to three new employees are expected as a result of the Phase 3 Expansion, no new housing will be needed. Consequently, there will be no adverse or significant impacts resulting from Project operations and maintenance.

3.12.4 PROPOSED MITIGATION MEASURES

The project will not result in significant impacts to population and housing, therefore no mitigation is necessary.

3.13 PUBLIC SERVICES

3.13.1 INTRODUCTION

This chapter describes the existing conditions and potential Project-related impacts to public services. Public services include fire and police protection; and public facilities such as schools, parks, recreation areas and solid waste disposal sites. Expansion of the Delevan Interconnect Site in Colusa County and RFS in Butte County will not significantly impact city or regional public services. The Project will have a positive impact on the needs of the local and state communities.

3.13.2 COLUSA COUNTY EXISTING CONDITIONS

3.13.2.1 Police/Sheriff

3.12 The unincorporated areas of Colusa County receive general safety and law enforcement services from the County Sheriff's Department. The Department, which also serves as the Coroner's Office and the County Emergency Services Center, is located in the City of Colusa.

3.13.2.2 Fire Protection

Fire protection services in Colusa County are provided by eight rural districts, two city fire departments, the California Department of Forestry, and the U.S. Forest Service. The majority of these districts are staffed by volunteer fire fighters. The Project components will be located in the Glenn-Colusa, Colusa Rural, and the Maxwell Rural fire districts. The nearest stations to the Project components are in Butte City, Maxwell, and the City of Colusa. Ambulance and emergency medical services are provided by private contractors.

3.13.2.3 Schools

There are four school districts within Colusa County, which include seven elementary schools, three middle schools, and five high schools. The Project components will be located in the Colusa Unified, Princeton, and Maxwell Unified School Districts. The school districts require school impact fees for new development if impacts are expected.

3.13.2.4 Parks and Recreation

There are no public parks nearby to the Project area in Colusa County. Located to the east of the Delevan Interconnect Site are the Sacramento National Wildlife Refuge and the Delevan National Wildlife Refuge.

The Delevan National Wildlife Refuge in Colusa County is one of six refuges in the Sacramento Refuge Complex in the Sacramento Valley of north-central California. The 5,797-acre refuge is

approximately 80 miles north of Sacramento and consists of over 4,500 acres of intensively managed wetlands and 1,200 acres of uplands. Approximately 7,000 people hunt on the refuge each year and an estimated 1,000 visitors observe wildlife from a primitive roadside overlook along the Maxwell-Colusa Highway. The Delevan Interconnect Site is located approximately 7.85 miles from the northwest corner of the refuge.

The Sacramento National Wildlife Refuge in Colusa County is the headquarters for the Sacramento National Wildlife Refuge Complex. Approximately 9,000 people hunt on the refuge each year, and 73,000 people use the visitor center, auto tour route, and walking trail. The Delevan Interconnect Site is located approximately 3.75 miles from the southwest corner of the refuge.

3.13.3 BUTTE COUNTY EXISTING CONDITIONS

3.13.3.1 Police/Sheriff

Butte County Sheriff and Constables, which serves the unincorporated areas of Butte County, is headquartered in Oroville, with substations in Gridley, Chico, and Magalia. The unincorporated areas of Butte County receive general safety and law enforcement services from the County Sheriff's Department.

3.13.3.2 Fire Protection

The Butte County Fire Department provides the primary protection to the county's unincorporated areas. The nearest station is located in Gridley, approximately 6 miles east of the Project area, and an engine is located at the Gray Lodge Wildlife Area headquarters, approximately 1.5 miles south of the RFS. Ambulance and emergency medical services are provided by private companies.

3.13.3.3 Schools

Butte County currently operates ten elementary school districts, two high school districts, four unified school districts, and the Butte Community College District. The proposed Project components in Butte County are within the Gridley School District boundaries.

3.13.3.4 Parks and Recreation

There are no public recreation facilities or areas within the Butte County portion of the Project study area. The nearest developed recreation site is the Lake Oroville State Recreation Area where boating, camping and other outdoor recreation opportunities are provided. Within the Project study area, recreational activities are predominately waterfowl and upland game bird

hunting which occur on private lands and at the Gray Lodge Wildlife Area, a state wildlife and resource management area described in section 3.9 of this report, Land Use and Planning.

3.13.4 POTENTIAL IMPACTS

3.13.4.1 Significance Criteria

According to Section 15002(g) of the CEQA Guidelines, “a significant effect on the environment is defined as a substantial adverse change in the physical conditions which exist in the area affected by the proposed Project.” As stated in the Section 15064(b) of the CEQA Guidelines, the significance of an activity may vary with the setting.

According to Appendix G of the CEQA Guidelines, impacts to public services may be considered significant if the Project results in the need for new or altered government services, such as fire and police protection, schools, parks, or other public facilities.

3.13.4.2 Construction

Police/Sheriff

Construction activities will have little, if any, effect on the need for police/sheriff and fire protection services. No additional law enforcement or fire protection services were required during the Base Project and the first Expansion development, and none are expected for the Phase 3 Expansion. Therefore there will be no impact.

Fire Protection

Because there are currently many natural gas wells and pipelines throughout Butte and Colusa Counties, the fire districts over the years have developed the experience to provide emergency response if a fire or other emergency should arise with the Project. Typically, emergency response personnel would secure the area and evacuate the area of influence, as necessary. A command post would be established from which emergency operations would be directed. The minor expansion will not incur any additional need for fire protection thus there will be no impact on the demand for fire protection at the site.

Schools

There are no schools nearby to the Project area thus no schools within the county will be affected. The Project will not affect school enrollment since the volume of new workers will be minimal relative to the local population. Thus, no new schools will be necessary as a result of the Project.

Parks and Recreation

There will be no effect to any parks or public access to the nearby wildlife refuges due to expansion of the site. Expansion of the RFS to the west will affect the parking and storage area that is used by hunters, sportsmen, and landowners. This property will be shifted from its existing location to the west side of the RFS, as discussed in section 3.14 of this report.

3.13.4.3 Operation

The increased expansion of the two sites as described will likely not create additional noise or interference with the Gray Lodge Wildlife Area. The Plant Manager at the RFS has, to the extent possible, developed a schedule where major outside noise-producing routine operations and maintenance activities avoid the hunting season. However, should non-routine operations and maintenance activities be required during the hunting season, the Plant Manager will coordinate these activities with the adjacent property owner(s) and the Gray Lodge Manager to minimize any adverse effects on hunting. This may include scheduling activities for non-hunting days or avoiding the morning hours when noise will have the greatest effect on hunting success. Through close coordination with the adjacent property owner(s) and the Gray Lodge Manager, potential operation impacts to recreational hunting will be minimized to a less-than-significant level.

3.13.5 PROPOSED MITIGATION MEASURES

The project will not result in significant impacts to public services, therefore no mitigation is necessary.

3.14 RECREATION

3.14.1 INTRODUCTION

This chapter describes existing recreation facilities in the WGS Project area as well as impacts to recreation resources that could result from construction and operation. Project construction activities will comply with all applicable federal, state, and local regulatory requirements. Construction and operation of the Project will have a less than significant impact on recreational resources.

3.14.2 EXISTING CONDITIONS

3.14.2.1 Delevan Interconnect Site

There are no local, state, or federal recreation areas in the Colusa County portion of the Project study area. The U.S. Fish and Wildlife Service manage two national wildlife refuges – the Delevan and the Sacramento – well to the east of the Delevan Interconnect Site.

3.14.2.2 Remote Facility Site

The California Department of Fish and Game manages the Gray Lodge Wildlife Area just south of the RFS and the Upper Butte Basin Wildlife Management Area north of the Project in the Butte Sink. These areas provide wildlife viewing opportunities and hunting as part of their primary function of waterfowl and habitat management. Private-governmental cooperative programs provide recreational hunting for waterfowl and upland game birds (pheasant) on some of the private lands in the Project vicinity, and many property owners lease their rice fields to hunters during the fallow fall and winter months. Duck hunting season typically starts in early-to-mid-October and concludes by the end of January. Pheasant season is usually one month long, beginning in early- to mid-November. There are no local, state, or federal recreation areas in the Butte County portion of the Project study area.

3.14.3 POTENTIAL IMPACTS OF THE PROJECT

3.14.3.1 Significance Criteria

According to Section 15002(g) of the CEQA Guidelines, “a significant effect on the environment is defined as a substantial adverse change in the physical conditions which exist in the area affected by the proposed project.” As stated in the Section 15064(b) of the CEQA Guidelines, the significance of an activity may vary with the setting. According to Appendix G of the CEQA Guidelines, impacts to recreational resources may be considered significant if the Project:

- increases use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated; and/or
- includes recreational facilities or requires the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment.

3.14.3.2 Construction

The hunting clubs affected during Base Project and Expansion development stipulated restricted construction activities during the hunting season. Similarly, the construction schedule for the Phase 3 Expansion of the RFS has been developed to avoid waterfowl hunting season. Should schedule variables necessitate any outdoor or noise-producing construction activities during the hunting season, hunting opportunities may be temporarily lost due to waterfowl or other game species avoiding the area, resulting in a potentially significant impact.

Additional effects to the Waterbury property, which is adjacent the RFS, will include the existing parking area used by hunters that will be relocated to the west of the existing RFS. This effect will be temporary and will not occur during the hunting season; thus, will not be considered a significant impact.

3.14.3.3 Operation

Expansion of the RFS will remove an additional 4.5 acres of recreational hunting land (refer to Figure 2-5b). The rice field area to be occupied by the RFS expansion is currently leased for hunting during the waterfowl season. The property owner will be reimbursed for the loss of hunting lease revenue attributable to the Project. Given that there are thousands of acres of similar hunting opportunities in this portion of the Sacramento Valley, the loss of this small amount of hunting opportunity is not considered significant.

Outside noise-producing routine operations and maintenance activities at the RFS during the hunting season may adversely affect waterfowl hunting success on the adjacent rice fields and across the road on the Gray Lodge. Depending on the time-of-day, frequency and duration of these activities, this impact could be considered potentially significant; therefore WGS is proposing mitigation to reduce this potential impact to less than significant.

3.14.3 PROPOSED MITIGATION MEASURES

3.14.4.1 Construction

Every effort will be made to avoid outside noise-producing construction activities at the RFS during the waterfowl hunting season. However, as occurred during Base Project and Expansion development, unforeseen variables may require the need to encroach on the waterfowl hunting

season to ensure that the Project operation date is met. Should this occur with construction of the proposed facilities, compensation for missed hunting opportunities will be negotiated with the affected hunting clubs and the Gray Lodge manager so that this potential impact will be mitigated to a less-than-significant level.

3.14.4.2 Operation

The Plant Manager at the RFS has, to the extent possible, developed a schedule where major outside noise-producing routine operations and maintenance activities avoid the hunting season. However, should non-routine operations and maintenance activities be required during the hunting season, the Plant Manager will coordinate these activities with the adjacent property owner(s) and the Gray Lodge manager to minimize any adverse effects on hunting. This may include scheduling activities for non-hunting days or avoiding the morning hours when noise will have the greatest effect on hunting success. Through close coordination with the adjacent property owner(s) and the Gray Lodge manager, potential operation impacts to recreational hunting will be mitigated to a less-than-significant level.

3.15 TRANSPORTATION AND TRAFFIC

3.15.1 INTRODUCTION

This chapter describes existing conditions and potential Project-related impacts to transportation and traffic from construction and operation of the Wild Goose Phase 3 Expansion Project. The roads and conditions surrounding the Delevan Interconnect Site and RFS are discussed as well as the expected effects to these areas as a result of the Project. The Project will not have a significant impact on transportation and traffic and will not conflict with any adopted transportation policies

3.15.2 EXISTING CONDITIONS

3.15.2.1 Colusa County

Within Colusa County, access to the Delevan Interconnect Site will be via existing paved, gravel, and dirt private and public roads. The existing farm roads in the area are generally sufficiently wide to serve construction traffic, since they currently accommodate large farm tractors and harvesters. No additional access roads are anticipated. The Project study area roadways within Colusa County have a “Level A” Level of Service (LOS). Traffic counts have not been conducted on these roads because local population and traffic volumes are very low.

3.15.2.2 Butte County

Several state highways and local roads provide access to the Project study area in Butte County. East of the Sacramento River, the primary access to the Project is via State Route 99 through Gridley and the Gridley-Colusa Highway (referred to as the Gridley Road in this report).

In Butte County, Gridley Road, Pennington Road and West Liberty Road have a “Level A” LOS rating of percent of capacity. Level A represents free flowing traffic and indicates that only 60 percent or less of these roads’ traffic volume capacity is currently being utilized. The other roads in the Project study area also have very low traffic volumes. The most recent traffic counts (obtained in 2002) showed the following average daily traffic volumes:

- Gridley Road - 750 cars
- Pennington Road at Gridley Road - 450 cars
- Pennington Road at Sutter County line - 260 cars
- West Liberty Road - 142 cars.

These counts were obtained prior to implementation of the first Expansion and will be slightly higher now that the project is operational. West Liberty Road is typically used by workers and

delivery vehicles driving to the RFS, farmers accessing their fields, the caretaker at the duck club located at the end of the road, and fishermen using the road to access the 833 Canal.

The two Sutter County roads that may be used during construction include North Butte Road and West Butte Road. North Butte Road is gravel west of its intersection with West Butte Road; and paved east of this intersection. West Butte Road is paved along its entire length. Traffic counts conducted in 1999 for these two roads indicated average daily traffic volumes of 369 cars on North Butte west of Almond Orchard Road and 244 cars on West Butte Road north of Pass Road. Both roads have a “Level A” LOS.

3.15.3 POTENTIAL IMPACTS

3.15.3.1 Significance Criteria

According to Section 15002(g) of the CEQA Guidelines, “a significant effect on the environment is defined as a substantial adverse change in the physical conditions which exist in the area affected by the proposed project.” As stated in the Section 15064(b) of the CEQA Guidelines, the significance of an activity may vary with the setting. According to Appendix G of the CEQA Guidelines, impacts to transportation and traffic may be considered significant if the Project:

- results in an impact to existing traffic flows, including a substantial increase in traffic;
- exceeds an established LOS standard;
- causes a change in air traffic patterns;
- results in a substantial increase in hazards due to design feature or incompatible uses;
- results in inadequate emergency access;
- results in inadequate parking capacity; and/or
- conflicts with adopted policies, plans, or programs supporting alternative transportation.

3.15.3.2 Construction

Potential transportation impacts fall into two categories: traffic impacts associated with construction, and physical impacts to existing roads and bridges from the weight and volume of construction vehicles.

Traffic Impacts

Worker Commute

The primary traffic flow to and from the Project study area will result from daily construction worker commute trips. During the peak construction worker employment period, approximately 100 workers will be present at the Delevan Interconnect Site and at the RFS. Workers are expected to commute to these worksites from various communities within Butte and Colusa Counties. Since these communities are located in all directions from the Project study area,

commute traffic concentration on any one route will be minimal. Trips to the two work areas may be noticeable for the short term of the construction activity, but because local roads in the Project study area have extremely low traffic volumes, no alteration of the LOS is expected from construction related traffic and this impact is considered less than significant.

Material Delivery Traffic

Secondary traffic flow to and from the Project study area will be generated by trucks delivering equipment and supplies. As many as 25 daily truck trips are anticipated at both the Delevan Interconnect Site and the RFS.

The greatest concentration of material delivery traffic during construction will be to the RFS for delivery of imported fill. Approximately 23,000 cubic yards of imported fill material is needed to elevate the expanded parking area. Assuming the West Butte gravel operation is the source of fill for the RFS, approximately 66 daily round trips (132 vehicle trips) by dump trucks will be necessary to provide the required fill during the pad construction period. The project-generated truck traffic will represent a 54 percent short-term increase in traffic volumes on West Butte Road which will be noticeable to local residents. Since this short-term increase in traffic volume will not affect the existing LOS, this impact is less than significant.

Heavy equipment for the construction at the RFS will be brought in on West Liberty Road via Gridley Road and Pennington Road. The existing bridge on West Liberty Road was upgraded during Base Project development to handle standard maximum weight loads. Material delivery from Sutter County will use West Butte Road, North Butte Road and Pennington Road. As was done during Base Project and Expansion development, the condition of these roads will be reviewed with Butte and Sutter County Public Works Department staff prior to construction and then following construction. The counties will be reimbursed for road repairs necessitated by damage from construction traffic and hauling. This potential impact is expected to be less than significant.

This Delevan Interconnect Site is located on the existing private paved road to the Delevan Compressor Station. Access to this private road is via graveled Delevan Road from Glenn County to the north, or from the east via the end of Dirks Road in Colusa County. There will be no impacts as a result of expanding the Delevan Interconnect Site and constructing the PG&E lateral pipeline.

Physical Impacts to Roads

Light grading and graveling may be required to prepare unpaved county roads for construction usage. However, heavy traffic on these roads may result in washboard or other surface impacts.

Paved roads in rural areas typically do not have sufficient road base and asphalt to sustain heavy construction traffic, and potholes may result. Although a nuisance, this impact would be considered less than significant.

Interference with Emergency Service Providers

Construction will take place in areas of low population and low traffic volumes. Access to all residences near Project construction will be maintained.

3.15.3.3 Operations

Since the Project will eventually need only up to three additional permanent employees there will be an insignificant increase in worker commute traffic.

The construction and operation of the RFS expansion will displace the current hunting parking area located to the west of the current RFS. The parking lot will be moved approximately 540 feet to west of its current location. During construction, this area will be temporarily unavailable for use; however, upon completion the expanded area will mitigate any temporary effects the Project may cause. Since this effect will only be temporary, the effects are considered less than significant.

3.15.4 PROPOSED MITIGATION MEASURES

Although Project-related potential transportation and traffic impacts described above are not considered significant, WGS will further reduce impacts by implementing the following measures:

- Implement relevant measures from the Transportation Management Plan prepared for the Expansion Project.
- Coordinate the timing and route selection for movement of heavy equipment and truck traffic on county roads with the Butte, Sutter, and Colusa County Road Departments to minimize traffic and physical road impacts.
- Conduct a preconstruction assessment of access roads and repair any damage to county roads and bridges or private roads caused by Project construction activities and traffic.
- Coordinate construction activities with county officials, landowners, and lessees to minimize disruption to local traffic, farming activities and movement of agricultural equipment.
- The removal of the parking facility to the west of the RFS will be mitigated by moving the available parking site 540 west of its current location.

As a result of the implementation of these measures and close coordination with Butte, Sutter, and Colusa County Road Departments, potential construction traffic and road impacts on the lightly traveled county roads and agricultural roads in the Project study area will be less than significant.

3.16 UTILITIES AND SERVICES SYSTEMS

3.16.1 INTRODUCTION

This chapter describes existing conditions and potential Project-related impacts to utilities and service systems from construction and operation of the Wild Goose Phase 3 Expansion Project. Services and the utilities surrounding the Delevan Interconnect Site and RFS are discussed as well as the expected effects to these areas as a result of the Project. There will be a peak construction workforce of up to 100 workers, although it is expected to average much fewer. The present complement of six operations and maintenance staff will need to be supplemented with up to three additional positions, in conjunction with the Phase 3 Expansion. The Project will not have a significant impact on utilities and service systems.

3.16.2 COLUSA COUNTY EXISTING CONDITIONS

3.16.2.1 Gas and Electric

Pacific Gas and Electric (PG&E) serves the Project study area within Colusa County with electricity and natural gas. Delevan Compressor Station provides compression for PG&E's 36-inch and 42-inch Line 400/401 pipelines, which serve as the backbone natural gas pipeline system for transporting gas from Canada to the California markets. Two 230 kilovolt (kV) electric transmission tower lines follow a north-south alignment along the east side of the station.

At the Delevan Interconnect Site, minimal electrical load for site lighting and air conditioning operation would likely be served by a service drop from one of the existing 12kV electric distribution poles along the Delevan Station access road.

3.16.2.2 Telephone

Telephone service will not be required to the Delevan Interconnect Site in Colusa County.

3.16.2.3 Water and Sewer

There are no water or wastewater treatment facilities in the Colusa County portion of the Project study area. Water supplies for agricultural purposes are drawn from the Sacramento River or the myriad of canals crossing through the Project study area. Domestic water supplies are drawn exclusively from private wells and individual septic systems handle wastewater produced in the Project study area. Water used for dust control during construction will be drawn from existing canals as described in section 3.8 of this report. The Delevan Interconnect Site in Colusa County will not require domestic water.

There are no storm water drainage facilities located in the Colusa County portion of the Project study area, with the exception of flood control and management channels and levee systems discussed in section 3.8 of this report.

3.13.2.4 Solid Waste Disposal

There are two central disposal sites in Colusa County – one south of Stonyford and another on Evans Road. There is also a 10-acre transfer station south of Maxwell. The county expects these sites to have sufficient capacity through 2064.

3.16.3 BUTTE COUNTY EXISTING CONDITIONS

3.16.3.1 Gas and Electric

PG&E currently serves the Project study area within Butte County with electricity and natural gas. An electric distribution line is located adjacent to the RFS. In addition to the 12-inch PG&E Line 167 gas line running through the RFS, an 8-inch lateral of Line 167 extends to the west along the north side of West Liberty Road, terminating with a service tap to the Gray Eagle Hunting Club located at the end of the road. Another lateral of Line 167 runs east from the Wild Goose Mixer Station along West Liberty Road.

The increased electrical peak load from the proposed Phase 3 Expansion equipment is expected to be 0.7 MW. PG&E is in the process of determining whether an upgrade to the existing 12kV line serving the RFS will be required. The existing circuit serving the RFS has segments with lighter duty conductor. The upgrade would likely consist of replacing those circuit segments with heavier conductor.

3.16.3.2 Telephone

During Base Project development, Pacific Bell extended telephone service from Pennington Road into the RFS and PG&E provided electrical service from its existing 12 kV line running along West Liberty Road. The existing phone service at the RFS is adequate to accommodate the Phase 3 Expansion.

3.16.3.3 Water and Sewer

There are no water or wastewater treatment facilities in the Butte County portion of the Project study area. Water supplies for agricultural purposes are drawn from the myriad of canals crossing through the Project study area. Domestic water supplies are drawn exclusively from private wells and individual septic systems handle wastewater produced in the Project study area. Water used for dust control during construction will be drawn from existing canals as described

in section 3.8 of this report. Water needs during operations will be minimal; required only at the RFS where the existing domestic well will also serve the Phase 3 Expansion.

3.16.3.4 Solid Waste Disposal

In Butte County, the Neal Road Landfill is the central collection and disposal site for the county. The county expects this site to have sufficient capacity through 2015. Solid waste from the Project will be collected by one of three licensed haulers that transport solid waste to the Ord Ranch Road Transfer Station in Gridley. This service is presently provided at the RFS by North Valley Disposal and Recycling.

3.16.4 POTENTIAL IMPACTS

3.16.4.1 Significance Criteria

According to Section 15002(g) of the CEQA Guidelines, “a significant effect on the environment is defined as a substantial adverse change in the physical conditions which exist in the area affected by the proposed Project.” As stated in the Section 15064(b) of the CEQA Guidelines, the significance of an activity may vary with the setting. According to Appendix G of the CEQA Guidelines, impacts to utilities and service systems may be considered significant if the Project:

- exceeds wastewater treatment requirements of the Regional Water Quality Control Board;
- results in the need for new or altered water or wastewater treatment facilities or drainage facilities;
- results in the need for the construction of new stormwater drainage facilities;
- results in the need for a new or expanded water supply;
- results in extension of a sewer trunk line with capacity to serve new development;
- results in inadequate access to a landfill with sufficient permitted capacity to accommodate; the Project’s solid waste disposal needs, and/or
- causes a breach of published national, state, or local standards relating to solid waste.

3.16.4.2 Construction

Construction of the Phase 3 Expansion is anticipated to occur over a 19 to 23-month period and will follow the schedule described in the Project Description and shown in Figure 2-7, in section 2.0 of this report. Construction activities may occur up to 13 hours a day, five to seven days a week, depending on the particular task and overall construction progress. Up to 100 workers may be on site during the peak of construction, although the average is expected to be much lower. The “local” labor pool is assumed to extend into Sacramento. It is also assumed that nonlocal labor will be used only for specialized skills not readily available locally.

Gas, Electric, and Telephone

Utilities present in the project study area include underground and overhead telephone cables, overhead electric distribution and transmission lines, and underground gas distribution and transmission pipelines. Project construction could inadvertently contact these facilities, resulting in temporary service interruptions. Although an annoyance to the affected customers, temporary service interruptions would not be considered a significant impact. WGS is a member of the Utility Service Alert network, and existing utilities in all construction areas will be identified by the owner of the utility prior to construction.

Water and Sewer

Any need for construction water would likely be withdrawn with the permission of local irrigation and reclamation districts. If necessary, water requirements will be purchased from the districts' available allocations. No impacts are anticipated. Construction workers will use temporary portable toilets. No impacts are anticipated to water or sewer systems. Construction impacts to stormwater are addressed in Section 3.8.

Solid Waste

Approximately 200 pounds of nonhazardous waste will be generated each week during construction. All wastes will be collected by a licensed solid waste disposal company. North Valley Disposal and Recycling presently provides this service for WGS. Based on the limited amount of solid waste generated by the project, the permitted capacity of the local land fills is sufficient to accept the project's solid wastes, so no impacts will result.

3.16.4.3 Operation

The present complement of six operations and maintenance staff will need to be supplemented with up to three additional positions, in conjunction with the Phase 3 Expansion.

Gas, Electric, and Telephone

The existing PG&E electric distribution system may require upgrade at specific locations to serve the additional load associated with the Project. This work will be done by PG&E as part of its normal/routine electric distribution system reinforcement to serve growing customer load, so no impacts will result.

Water and Sewer

Water demands during operations would be minimal, and only required at the RFS where the existing domestic well and septic system would be adequate to serve the Phase 3 Expansion. Above-ground facilities would be covered with gravel and the proposed project would not result

in runoff levels that would exceed existing drainage canal and ditch system capacity in the project area. No impacts are anticipated.

Solid Waste

Minimal amounts of solid waste would be generated during operation of the Project. Butte County has indicated that they have sufficient permitted landfill capacity for the foreseeable future; consequently, no impacts would result from operations at the RFS. Operation of the unmanned Delevan Interconnection Site will not generate significant solid waste.

3.16.5 PROPOSED MITIGATION MEASURES

There will be no impact to existing utilities and service systems during construction and operation of the project and no mitigation is required.

3.17 CUMULATIVE ANALYSIS

3.17.1 INTRODUCTION

Cumulative impacts are those that result from the incremental impacts of an action added to other past, present, and reasonably foreseeable future actions, regardless of who is responsible for such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

3.17.2 PHASE 3 EXPANSION

All potential environmental impacts associated with the Phase 3 Expansion of the WGS facility can be successfully mitigated, and no impacts of a cumulative nature would be considered significant.

3.17.3 OTHER DEVELOPMENTS IN THE PROJECT AREA

Based on consultation with planning departments in Glenn, Colusa, Butte, and Sutter Counties, the following Projects were either recently completed, currently under construction, or have been proposed for construction within the Project region.

3.17.3.1 Colusa Generation Station Project – Pacific Gas & Electric

The Colusa Generation Station Project (CGS Project), presently under construction (as of the filing of this document), involves the construction of a combined cycle power plant that will use Dry Cooling technology. The 660 MW electrical power plant is located near the town of Maxwell, directly west of PG&E's existing gas compressor station (Delevan Station), which is located west of Glenn-Colusa Bridge and Dirks Road and Noel Evan Road intersection in Colusa County, California. The CGS Project will be fueled by natural gas delivered to the site via a new 8 inch, 1,500-foot pipeline owned and operated by PG&E. Transmission interconnection will require four (4) double circuit 230 kV lines that will connect to PG&E's existing 230 kV north-south transmission lines located approximately 1,800 feet east of the project site. The distance of the Colusa Generation Station (CGS) from the Delevan Interconnect Site is 0.3 mile. The Delevan Interconnect Site and CGS are both accessed via the same access road. The Glenn-Colusa Canal Bridge and Teresa Creek Bridge will be replaced and the McDermott Road and Delevan Road intersection will be improved in connection with the CGS Project. Commercial operation of the CGS is planned for late spring 2010.

Based on a review of CGS Project documents, the distance of the plant from the WGS Project, and the proposed CGS Project operation schedule; there are potential cumulative impacts in the following two resource categories:

Air Quality

Since there are a limited number of bridges crossing the Glenn-Colusa Canal in the immediate area, simultaneous construction access may occur on area public and private roads. WGS and PG&E will work closely to ensure road dust from vehicles is minimized by coordinating regular water applications to these roads. Resulting cumulative road dust (PM₁₀ emissions) will be less than significant. Both WGS and PG&E will obtain permits from the respective Air Quality Management Districts, which will ensure combustion emissions are mitigated.

Biological Resources

Both projects will disturb the annual grasslands common in the area. WGS expects to avoid, transplant or replace any sensitive plant species potentially affected by the Project. Vernal pools, spadefoot toad, and fairy shrimp will be avoided by Project construction. Burrowing owls and San Joaquin pocket mouse will be avoided by construction activities, or CDFG will be consulted for measures to minimize potential impacts. Because their potential presence will not be known until just prior to construction, possible cumulative impacts to burrowing owls and San Joaquin pocket mouse may result. By implementing CDFG site-specific recommendations, potential cumulative impacts to these species will be less than significant.

Population and Housing and Public Services

Overlapping construction schedules will result in a cumulative demand for local labor and temporary housing and/or lodging. Since the greatest labor needs for the Phase 3 Expansion are at the RFS near Gridley, it is expected that the towns on the State Route 99 corridor will be the source for local labor and where most non-local labor will utilize existing lodging and services. It is anticipated that of the total 20 workers at the Delevan Interconnect Site and pipeline, only 5 will be non-local. For the CGS construction, it is expected that towns along the Interstate 5 (I-5) corridor will supply the bulk of the local labor, and lodging and associated services for the non-local labor. As such, potential cumulative impacts will be spread around the central region of the Sacramento Valley and should not be significant. The property taxes associated with the CGS will increase the net economic benefit to Colusa County.

Transportation and Traffic

The construction of the Delevan Interconnect Site is expected to require a total of 20 construction workers over an approximately 12 week period during the summer of 2010. Cumulative impacts to local roads, both in terms of traffic and surface impacts, would be short term, but potentially significant. WGS will work closely with PG&E and Colusa County to develop a construction access plan addressing timing and routes that minimizes traffic impacts

on local roads, and ensure that road surfaces are returned to pre-construction conditions following construction. By closely coordinating with the Colusa County Public Works Department, potential cumulative transportation and traffic impacts should be less than significant.

3.17.3.2 Other Projects

Besides the CGS Project, Colusa County reports only that a Request for Proposal for a General Plan Update has been released recently. The nature and scope of such a project effectively precludes the potential for cumulative impacts.

In Butte County, Caltrans recently completed the Butte 70/149/99/191 Highway Improvement Project, which widened State Route 149 in Butte County to a four lane expressway and constructed freeway to freeway interchanges at the existing SR 70/149 and SR 99/149 intersections. The project is approximately 14 miles northeast of the RFS. The nature of this type of project does not result in any cumulative impacts. Butte County is not aware of any other projects that could potentially result in cumulative impacts.

Sutter County Planning Department reports that the Environmental Impact Report for the Sutter Pointe Specific Plan (Sutter Pointe) is currently in process. Sutter Pointe is 7,500 acres located in the south county, within an area of land set aside for development in the 1996 General Plan adopted by the Board of Supervisors. Sutter Pointe is expected to generate: 3,600 acres for new offices, high-tech companies, industrial employers and job training; 1,000 acres of schools, parks, public buildings, and open space paid for by the development; and 2,900 acres of new homes located close to where residents will work. Additionally, the California Department of Transportation and the Federal Highway Administration are proposing a highway improvement project on State Route 99 (SR 99) in Sutter County, between the SR99/70 junction to Sacramento Avenue, and from Central Avenue to O'Banion Road. The proposed project would widen SR 99 to a four-lane facility with continuous median and left-turn lane from the SR70/99 junction to Sacramento Avenue, and upgrade to conventional highway or expressway standards between Central Avenue and O'Banion Road. The nature and scope of such projects effectively precludes the potential for cumulative impacts.

In Glenn County, the Planning Department recently approved a development permit for a gravel extraction project near Orland, located approximately 25 miles north of Delevan. Traffic from this project will be confined to Road 24. A Wal-Mart Store, located in Willows eleven miles north of the Delevan Interconnect Site, plans to expand its facility. In addition, a fiberboard manufacturing plant will be built west of Willows. A dairy is currently under construction west of the I-5 near Road 65, 5 miles north of the Delevan Interconnect Site. An application for an additional dairy has been filed. Approximately 50 gas wells will be installed in the area of

Highway 162. The Planning Department has indicated that planning for an electrical overhead transmission line adjacent to the existing one that parallels the I-5 is under way. A 1,500 dwelling community was proposed west of I-5 between Roads 25 and 27, but due to the county's reduced housing market this project has been temporarily cancelled. Besides these projects, Glenn County is not aware of any projects south of Highway 162 and east of I-5, or east and/or west of Highway 45. The land use in this area consists of rice fields, residences, and recreational hunting. The nature of these types of projects would not result in any cumulative impacts.

3.18 GROWTH-INDUCING IMPACT

3.18.1 INTRODUCTION

This chapter discusses potential growth inducing impacts related to the WGS Project. CEQA requires a discussion of the ways in which the Project may foster economic or population growth, either directly or indirectly, in the surrounding environment, including projects that would remove obstacles to population growth.

3.18.2 POTENTIAL TO INDUCE POPULATION GROWTH

3.18.2.1 Significance Criteria

According to CEQA Guidelines, projects are determined to be growth-inducing if they foster or remove obstacles to economic or population growth, provide new employment, extend access to services, tax existing services, or cause development elsewhere.

3.18.2.2 Project Study Area

As noted in the Project Description in section 2 of this report, up to 100 construction workers will be required during the 19 to 23 month construction period, only 25 of which will be non-local. Non-local workers will mobilize to the Project area for only the duration of their particular phase; subsequently, they will not become permanent residents. The present complement of six operations and maintenance staff will be supplemented with up to three additional staff at full Project expansion. As such, the Project will not directly induce population growth in the area.

The Project will require materials, supplies and services from local vendors both during construction and operations. Expenditures during construction operations are expected to be approximately \$750,000. However, the scope of this need will be such that it can be adequately served by existing businesses without significant expansions and/or additional staff.

3.18.2.3 Outside the Project Study Area

Population growth would only occur if a particular gas storage customer, by virtue of gas storage, was able to foster or remove an existing obstacle to population growth. The natural gas storage industry typically serves large industrial customers or power producers – entities that usually have no role in regulating, encouraging or discouraging population growth. Consequently, the Project will not significantly affect population growth outside the Project study area.

3.18.3 POTENTIAL TO INDUCE ECONOMIC GROWTH

3.18.3.1 Project Study Area

Both Butte and Colusa Counties have relatively high unemployment and relatively low per capita income. During Project construction, the need for local craft workers may provide a short term reduction in unemployment and increase in per capita income with local labor payroll expected to be approximately \$5 million. In addition, non-local expenditures for lodging, food and living expenses are expected to be approximately \$750,000 during construction.

Once operational, the Project will continue to support secondary local employment in its need for materials, supplies and services from local vendors, with expenditures estimated to be about \$350,000 per year. Property taxes payable in Butte County and Colusa County will increase by a combined amount of about \$600,000 per year.

Because construction expenditures are short-term, they are not expected to induce any economic growth in the area. Expenditures for supplies and services during Project operations may promote limited local economic growth in the Maxwell/Williams and Gridley/Live Oak/Yuba City areas, but that growth will not be significant. Property tax payments to the two counties will be directed primarily to school districts in the immediate Project area to support their current programs. It is not expected that these tax payments will induce local economic growth.

3.18.3.2 Outside the Project Study Area

As noted above, natural gas storage customers are typically large industrial users or power producers. While the cost of natural gas may be a substantial component of their operating expenses, the use of natural gas storage is expected to provide the primary benefits of price and supply stability. Long-term cost savings on natural gas would be a secondary benefit to these users, but would not be sufficient in and of itself to promote significant economic growth.

4.0 ALTERNATIVES

4.1 INTRODUCTION

This chapter describes the objectives of the WGS Project and evaluates a reasonable range of project options, including alternative ways of meeting the objective and alternative locations for the proposed facilities. In addition, the “No Project” alternative is evaluated.

The Delevan Interconnect Site and the RFS are existing facilities that will be expanded. As such, they are not subject to a detailed alternatives analysis. Alternative Delevan Interconnect Site locations are identified, and a discussion of electric motors as alternative compressor drivers is also provided. The rationale for Phase 3 Expansion locations at the RFS is described in Section 4.5.

4.2 PROJECT OBJECTIVE

The continuing objective of the Project is to provide highly flexible natural gas storage services to a variety of customers, which could include gas utilities, electric utilities, independent electric generators, gas marketers, gas producers, industrial gas users, and other wholesale and retail gas customers. The objective of the Phase 3 Expansion is to maximize the storage, injection and withdrawal capacity of the natural gas storage reservoir to meet customer demands into the foreseeable future.

4.3 CRITERIA FOR EVALUATING ALTERNATIVES

WGS is committed to thoroughly examining all potential alternatives sites for expansion of its facilities. In this connection, WGS has developed specific criteria for evaluating what specific parcels of land may be necessary for expansion of the Delevan Interconnect Site (should PG&E Engineering Study identify that increased Interconnect Site size is required) and the RFS. It is the goal of WGS to use these criteria, along with specifically defined processes, to evaluate potential expansion locations and to select the location which minimizes environmental impacts and is most compatible with the greatest public good and the least private injury. Further, WGS is committed to minimizing the disturbance of neighboring lands before, during and after the construction process, and to seeking access to or easements over only that land which is necessary for the construction, operation, and maintenance of the expanded Project. In each of the following sections, the necessity for the land comprising the proposed extensions of the two sites will be justified, and the proper balancing of greatest public good and least private injury will be weighed.

4.4 ALTERNATIVE COMPRESSOR DRIVERS

The primary components of the RFS are the compressor units which provide the injection of the natural gas into the storage field. While a natural-gas-fired reciprocating engine is the preferred driver for the compressors, electric motors are occasionally used for such applications.

Since the existing engines are natural gas-fired, natural gas fired engines are the logical choice for the proposed compressors. While the total site emissions resulting from the proposed combustion equipment will exceed the existing permitted limit, offsets can be secured to satisfy the requirements of the Butte County Air Quality Management District. For operational consistency and because air emission permit requirements can be met, electric motor drivers were not considered for the Phase 3 Expansion.

4.5 EXPANSION OF EXISTING FACILITIES

4.5.1 Remote Facility Site

Logic dictates that the Phase 3 Expansion of compression equipment and appurtenant facilities occurs adjacent to the existing facilities to maximize utilization of support equipment and operational controls. The location for the Base Project site was selected based on its proximity to Line 167, and on the property owner's preference. While expansion could occur into the rice fields to the east or north, the property owner prefers that expansion occur in the rice fields toward the west. The area needed would require extending approximately 540 feet west to match the existing rice field layout. From a construction and operations perspective, it makes most sense to expand the RFS to the west, versus the east side.

The existing hunters parking lot currently located to the west of the existing RFS will be relocated. Moving the parking lot further west will place it completely into California Department of Conservation (CDC) prime farmland whereas moving it east of the existing RFS would place it into CDC Farmland of Statewide Importance. However, the western side of the RFS is the quieter side and it is the landowner's preference to have the parking area on the west side.

4.5.2 Delevan Interconnect Site

A PG&E lateral pipeline will need to be constructed between the Delevan Interconnect Site and the hot tap site at PG&E Line 401. PG&E's preference would be to accommodate Phase 3 Expansion metering, and associated piping/ valves within the existing Interconnect Site footprint. PG&E is in the process of conducting an engineering study to confirm design and spacing requirements. Should the Interconnect Site require space over and above existing 0.6 acre lease site, engineering considerations and site-specific environmental surveys will serve as the basis for selecting an exact location and site arrangement that provides the greatest design and operational benefits, while minimizing potential environmental impacts.

4.6 THE NO PROJECT ALTERNATIVE

The CEQA requires consideration of the environmental consequences of the Project not being constructed. As stated previously, the objective of this Project is to allow WGS to continue to provide highly flexible gas storage services for utility electric generation, gas shippers and distribution utilities, and large industrial gas users. If the Project did not occur, the infrastructure, supply, market and ratepayer benefits outlined in section 1, Purpose and Need, would not be realized.

5.0 ENVIRONMENTAL IMPACT ASSESSMENT SUMMARY

The following checklist (excerpted from the CEQA Guidelines) summarizes the potential impacts of the Project development.

5.1 AESTHETICS

Would the Project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect on a scenic vista?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5.2 AGRICULTURAL

Would the Project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
<p>AGRICULTURE RESOURCES: In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland.</p>				
<p>a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?</p>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<p>b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?</p>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<p>c) Involve other changes in the existing environment that, due to their location or nature, could result in conversion of Farmland to non-agricultural use?</p>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

5.3 AIR QUALITY

Would the Project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
AIR QUALITY: Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations.				
a) Conflict with or obstruct implementation of the applicable air quality plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Expose sensitive receptors to substantial pollutant concentrations?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Create objectionable odors affecting a substantial number of people?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

5.4 BIOLOGICAL RESOURCES

Would the Project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Would the Project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

5.5 CULTURAL RESOURCES

Would the Project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a historical resource as defined by CEQA Guidelines section 15064.5?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Cause a substantial adverse change in the significance of unique archaeological resource as defined by CEQA Guidelines section 15064.5?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Disturb any human remains, including those interred outside of formal cemeteries?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

5.6 GEOLOGY AND SOILS

Would the Project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ii) Strong seismic ground shaking?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iii) Seismic-related ground failure, including liquefaction?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iv) Landslides?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in substantial soil erosion or the loss of topsoil?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Would the Project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

5.7 HAZARDS AND HAZARDOUS MATERIALS

Would the Project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Would the Project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
h) Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

5.8 HYDROLOGY AND WATER QUALITY

Would the Project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f) Otherwise substantially degrade water quality?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Would the Project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
h) Place within a 100-year flood hazard area structures that would impede or redirect flood flows?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
i) Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
j) Inundation by seiche, tsunami, or mudflow?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

5.9 LAND USE AND PLANNING

Would the Project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Physically divide an established community?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

5.10 MINERAL RESOURCES

Would the Project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

5.11 NOISE

Would the Project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) For a project located within an airport land use plan, or where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

5.12 POPULATION AND HOUSING

Would the Project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

5.13 PUBLIC SERVICES

Would the Project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
Fire protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Police protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Other public facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

5.14 RECREATION

Would the Project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5.15 TRANSPORTATION AND TRAFFIC

Would the Project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Cause an increase in traffic, which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Result in inadequate emergency access?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Result in inadequate parking capacity?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

5.16 UTILITIES AND SERVICE SYSTEMS

Would the Project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Result in a determination by the wastewater treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g) Comply with federal, state, and local statutes and regulations related to solid waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

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6.1 REFERENCES

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