5: ALTERNATIVES TO THE PROJECT

5.1 Introduction

Section 15126.6 of the CEQA Guidelines requires that an EIR describe a range of reasonable alternatives to a project that would feasibly attain the basic project objectives. Alternatives may be eliminated from detailed analysis in the EIR if they fail to meet the most basic of project objectives, are determined to be infeasible, or cannot be demonstrated to avoid or lessen significant environmental impacts. The following alternatives analysis presents a discussion of potential impacts associated with two alternate pipeline alignments, alternate locations for one of the project components, and a no project alternative. This section contains discussion of the following elements:

- Alternative Route Selection Process
- Routing Criteria for Evaluating Line 400/401 Connection Pipeline Alternatives
- Potential Impacts Associated With the Alternative 400/401 Connection Pipeline Routes
- Alternative Well Pad Site Expansions
- Alternative Remote Facility Site Expansions
- No Project Alternative

5.2 Alternative Route Selection Process

The objective of the WGSI Expansion Project is to provide highly flexible natural gas storage services to a variety of customers, as discussed in Section 2, Project Description. The purpose of the project is to maximize storage, injection, and withdrawal capacity of the existing WGSI natural gas storage reservoir with a connection to PG&E's Line 400/401 to meet customer demands into the foreseeable future.

The WGSI system currently connects to PG&E Line 167; this line has inadequate capacity to accommodate the WGSI's proposed storage capacity increase. The proposed expansion

would require connecting to PG&E Line 400/401 at the Delevan Interconnect Site in Colusa County. With the fixed locations of the Well Pad Site, Remote Facility Site, and the connection point at the Delevan Interconnect Site, principal project alternatives are limited to alternative alignments for the Line 400/401 Connection Pipeline.

The Applicant proposed 12 alternative Line 400/401 Connection Pipeline alignments in their Proponent's Environmental Assessment (PEA). The CPUC reviewed these alternative pipeline alignments and selected one of the alignments designed by the Applicant for further consideration. The CPUC also developed an additional roadway alternative that runs primarily along existing roadways to avoid impacts to agricultural land uses and sensitive habitats. WGSI alternatives eliminated from further consideration included several variations on the alternatives discussed in this section. Five WGSI Alternatives were eliminated because they followed along the PG&E line L167 (from the Remote Facility to Gridley Road), rather than the zig-zag pathway described for the Proposed Route and the South Crossing route. Land owners potentially affected by pipe route segments between the Remote Facility Site and Gridley Road indicated that they preferred the route to follow field edges (zig-zag option) rather than parallel to L167 running diagonally through their fields (WGSI 2001). Several of the WGSI alternatives were also eliminated from further consideration because they impacted a significantly greater amount of wetlands (in several cases double the acreage potentially impacted by the Proposed Route and South Crossing route alternative). The CPUC chose the North Crossing and South Crossing alternatives for further analysis to allow for impact assessment at three different crossing locations along the Sacramento River. The alternative alignments and selection criteria used to select the proposed alternative are described below.

STUDY AREA SELECTION

The proposed Line 400/401 Connection Pipeline would connect the Remote Facility Site to PG&E Line 400/401 at the Delevan Compressor Station. Gridley Road, which runs one mile north of the Remote Facility Site, follows the township line between Townships 17 and 18 North, Mount Diablo Base and Meridian. The westerly projection of this line runs directly to the Delevan Station. The study area was established to include all lands within 2.5 miles north and south of this axis line, creating a study corridor five miles wide. Given the relatively homogeneous nature of the environment and land uses in the region, this size study area provides sufficient variability to identify several alternative alignments. The project study area is shown in Figure 1.1-1.

ALTERNATIVE ROUTE CONSTRAINTS

Following designation of the study area boundaries, WGSI evaluated which parcels of land would be necessary to construct each portion of the proposed project, including the Line 400/401 Connection Pipeline, the Delevan Interconnect Site, and the expansion of existing facilities. WGSI identified alternative alignments within the general study corridor described above. The alignments were based on several general constraints described below. WGSI developed these criteria to minimize potential impacts to environmental resources in the project area. The overall length of the pipeline route was also minimized based on the assumption that a shorter pipeline would minimize potential impacts and minimize construction costs.

Exclusion Areas. Environmentally sensitive areas where pipeline construction would cause potentially significant impacts, would not be in character with the principal use of the land, and may not be permitted due to regulations or policy mandates.

Avoidance Area. Environmentally sensitive areas where pipeline construction may cause adverse environmental effects and should be avoided if practicable.

Based on literature reviews, database searches, and preliminary contact with resource agencies, the following areas within the study area were identified by WGSI as either exclusion or avoidance areas.

Sacramento and Delevan National Wildlife Refuges. The Sacramento and Delevan National Wildlife Refuges were considered exclusion areas due to the sensitive nature of the lands and the regulatory policies of the U.S. Fish and Wildlife Service.

Gray Lodge and Upper Butte Basin State Wildlife Management Areas. Gray Lodge and the Upper Butte Basin State Wildlife Management Areas were also considered exclusion areas due to the sensitive nature of the lands and the regulatory policies of the California Department of Fish and Game. The location of Gray Lodge precluded consideration of alignments to the south. The Upper Butte Basin occupies most of the Butte Sink north of Gridley Road and effectively bounded the upper portion of the study area for routing consideration.

Seasonal and perennial wetlands. Seasonal and perennial wetlands are potential habitat for sensitive species in the project area and were considered avoidance areas. Wetlands were avoided in all areas except in the Butte Sink where the north-south orientation of the Sink precluded avoidance by pipeline routing.

Riparian areas. Riparian areas were also considered avoidance areas due to the likely presence of sensitive species. The two primary locations in the study area supporting riparian vegetation are the Butte Sink and the Sacramento River. In addition, there are several isolated riparian stands located along remnant natural drainage ways adjacent to the agricultural fields. As mentioned above, the Butte Sink would have to be crossed, so some riparian areas could be affected. At the Sacramento River, the riparian areas are generally found within the levees and can be avoided by pipeline routing and bores.

Cultural resource sites. During alternative alignment selection three cultural sites along the west side of the Sacramento River were avoided – a recorded archaeological site, an archaeologically sensitive area, and a Native American village.

The exclusion and avoidance areas are either currently under management as a public trust by a state or federal agency for the benefit of the public, or represent sensitive resources that Congress and the state legislature have determined to be of value to the public. The following factors were also considered during the alignment selection process.

River crossing. The crossing of the Sacramento River would be directionally bored. The routing objective was to identify the shortest crossing locations where the bore entry and exit points allowed sufficient room for the bore equipment and pipe stringing. One side of the crossing requires a clear area at least the length of the crossing on a straight projection of the crossing to allow stringing and welding the pipe prior to pulling it through the bore.

Orchards. As deep-rooted species representing long-term private agricultural investments, orchards were avoided where possible and crossed only where there is sufficient space between tree rows or individual orchards to limit the impact to two rows.

Residences and residential areas/clusters (sensitive receptors). Due to dust, noise and access constraints, private residences were avoided where practicable. Otherwise, the number of residences within 220 yards was minimized.

The following opportunities and factors to minimize potential impacts to agricultural operations and private residences were also considered during the alignment selection process:

- Presence of existing public roads and private farm roads parallel and contiguous to the proposed alignment that could provide construction and maintenance access.
- Ability to follow or parallel existing rice field edges, field breaks, and irrigation facilities to minimize agricultural impacts.
- Ability to route the pipeline alignment through row crops rather than rice where possible, for greater construction schedule flexibility and reduced agricultural crop impacts.
- In orchards, ability to parallel existing rows or irrigation systems (no diagonal alignments).
- In irrigated lands, location of the alignment at the low/drain end of the field where possible to avoid disturbing facilities that provide the irrigation water source to the field. Based on experience during initial project development, relocating check boxes at the low end of the field would be preferable to installing and maintaining irrigation water flow culverts across the ROW.
- Ability to follow other existing linear utilities where feasible to take advantage of common access and right-of-way maintenance across private property.

The following construction, operations, maintenance factors were also assessed:

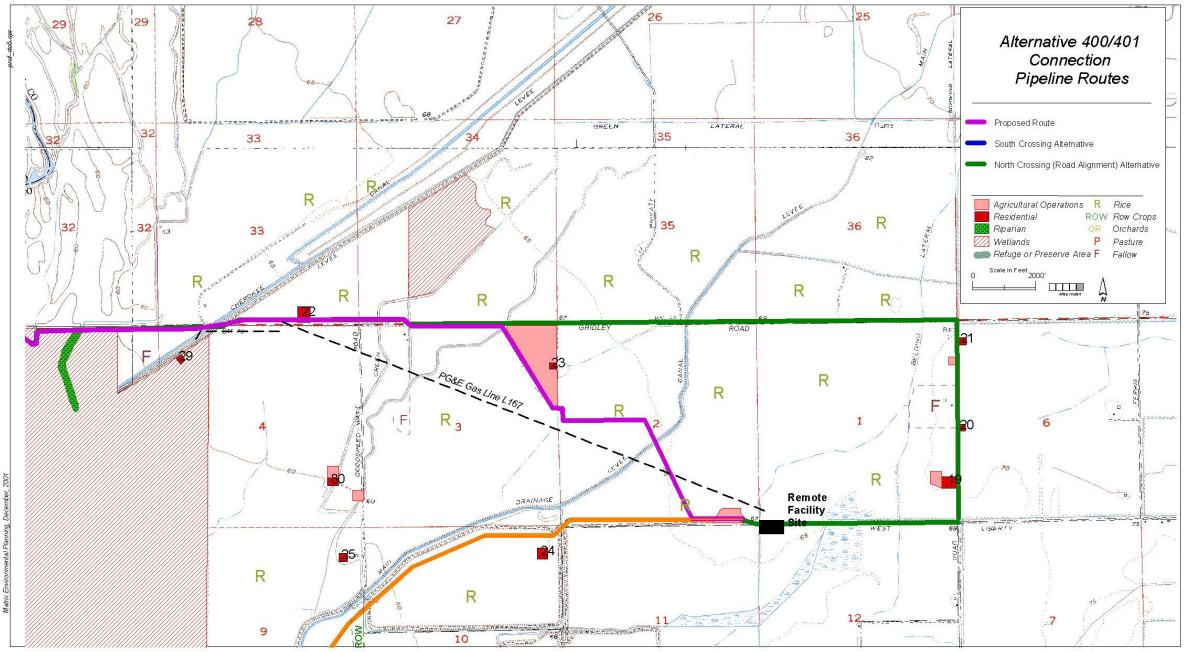
- Availability of additional work space on both sides at bored crossings, including in-line space to string and weld the Line 400/401 Connection Pipeline segments to be pulled back through the bore.
- Suitable locations for the directionally bored crossing of the Sacramento River. To minimize the bore length, crossings should be at the narrowest point and as perpendicular to the river as possible.
- Availability of pipe laydown and material/equipment storage sites along the proposed alignment.
- Ability to accommodate future pipeline maintenance and operation requirements.

ALTERNATIVE ROUTE DESCRIPTIONS

The two alternative alignments and the proposed alignment are illustrated on Figures 5.1a-e. The names for each of the two alternate alignments and proposed alignment, chosen for analysis in this section, correspond to the Sacramento River crossing locations. Identification of a North Crossing (roadway alignment), Central Crossing or Proposed Alignment), and South Crossing alternative allows for consideration of alternatives with crossings at three different locations along the Sacramento River.

As discussed above, several WGSI alternatives were eliminated from further consideration due to the greater acreage of wetlands potentially affected by the majority of their alternatives. The South Crossing route, a WGSI proposed route, was chosen for further

Figure 5-1a: Alternative Line 400/401 Connection Pipeline Routes



SOURCE: MHA 2002

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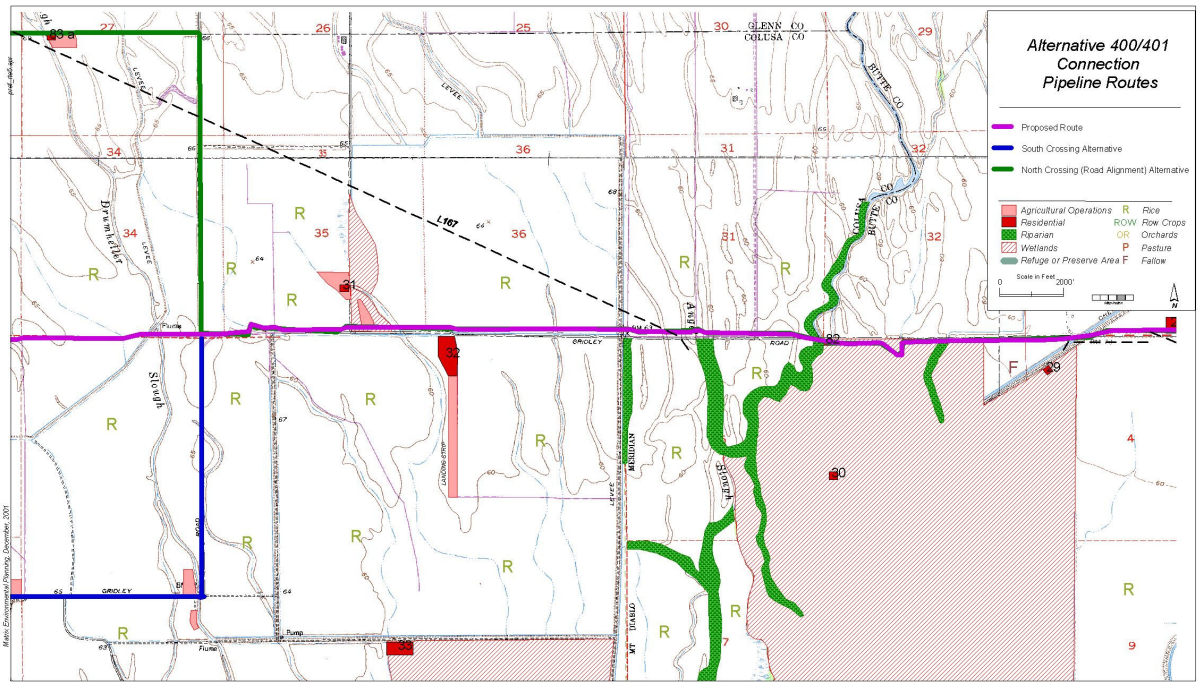
Figure 5-1b: Alternative Line 400/401 Connection Pipeline Routes



SOURCE: MHA 2002

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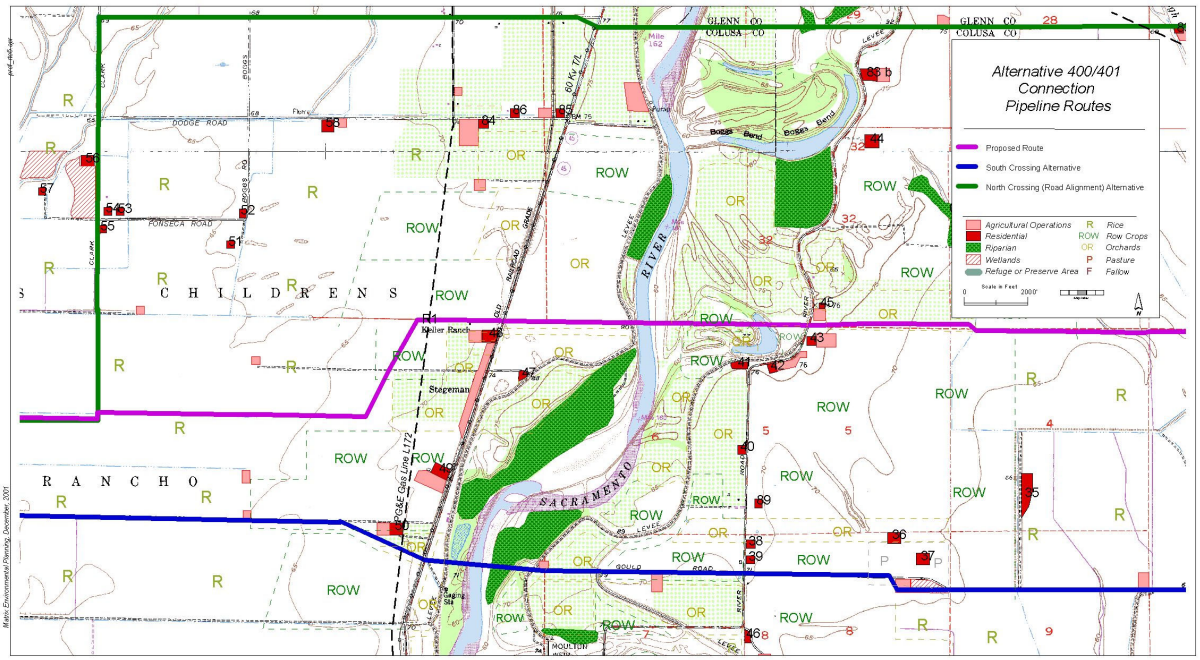
Figure 5-1c: Alternative Line 400/401 Connection Pipeline Routes



SOURCE: MHA 2002

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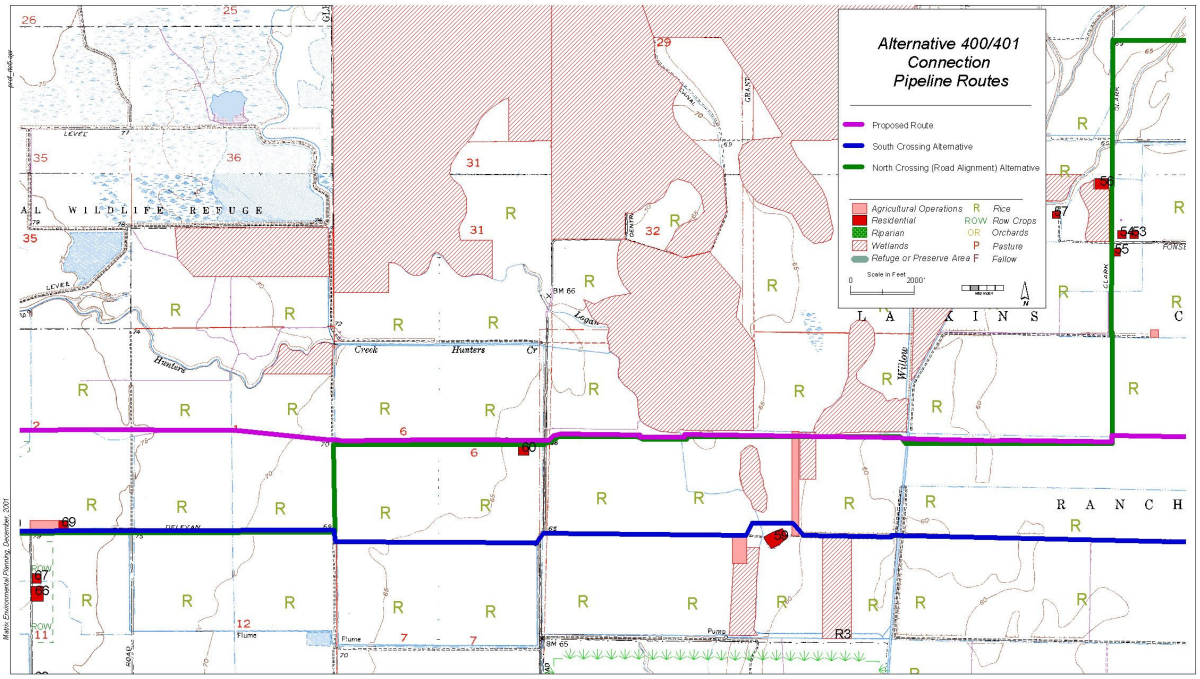
Figure 5-1d: Alternative Line 400/401 Connection Pipeline Routes



SOURCE: MHA 2002

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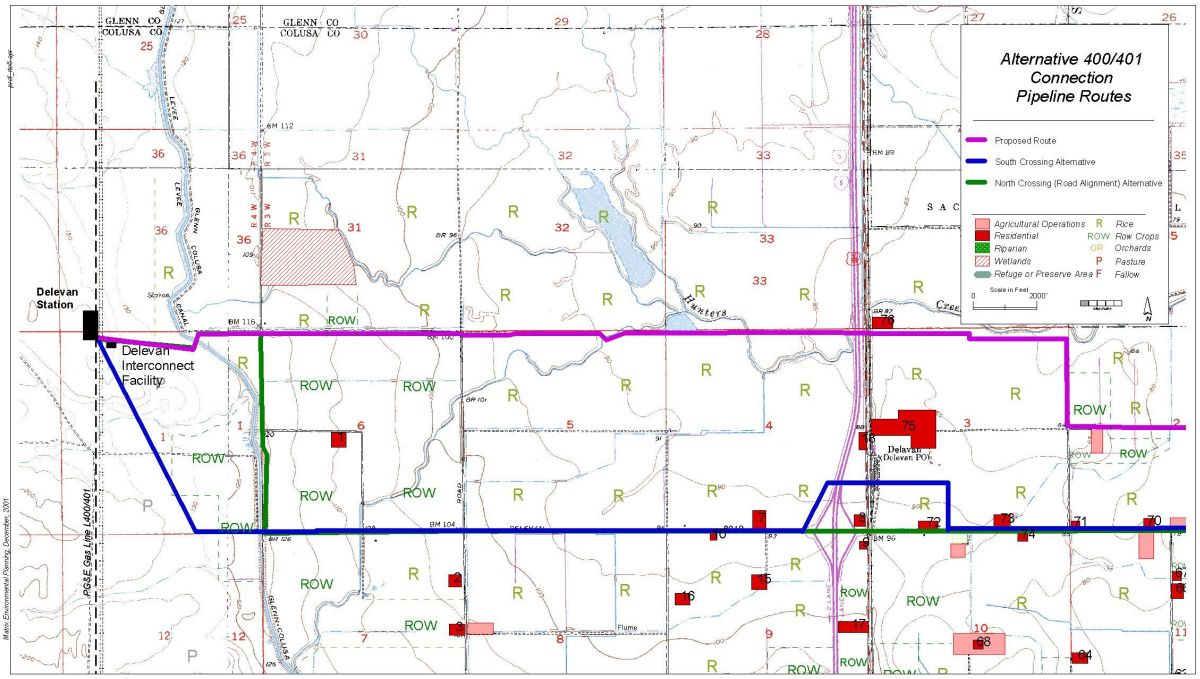
Figure 5-1e: Alternative Line 400/401 Connection Pipeline Routes



SOURCE: MHA 2002

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consideration because it resulted in the least impact to wetlands among the 12 WGSI alternatives. The North Crossing alternative, developed by the CPUC, minimizes potential impacts to agricultural land uses by following existing roadways.

North Crossing (Roadway Alignment)

Route Description. The North Crossing alternative alignment would run primarily along existing roadways. The pipeline alignment would run in the roadway, within the road's right-of-way, or just outside the right-of-way thereby avoiding sensitive garter snake habitat and minimizing impacts to agricultural land uses by avoiding agricultural fields. From the Remote Facility site, this pipeline alignment would run east along West Liberty Road. The alignment would then go north along Ferris Road and then turn to heading due west along Gridley Road. The alignment is coincident with the proposed alignment until it reaches Adobe Road where it turns and heads north until it intercepts East Glenn Road. The alignment continues due west along Adobe Road until it reaches the Sacramento River where it would cross the river north of the proposed alignment. The crossing would begin in a row crop field inside the river levee and exit in a row crop field on the western side of the Sacramento River. The river crossing length for this alternative would be approximately 2500 feet.

After emerging on the western edge of the Sacramento River, the North Crossing pipeline alignment would continue westward along Southam Road until it intersects Clark Road. The alignment then turns south along Clark Road and continues due south along the edges rice fields until it intersects the proposed alignment and turns west. The North Crossing alternative alignment is coincident with the Proposed Alignment traveling west along Delevan Road. The North Crossing and Proposed Alignment would continue west through rice fields to connect at the Delevan Site. The North Crossing alternative would dip south, remaining on Delevan Road and intercept the South Crossing alternative described below. The alignment is coincident with the South Crossing alternative until it reaches the end of Delevan Road. Instead of traveling through row crops and pasture, as does the South Crossing alternative, the North Crossing alternative turns north, traveling along existing roadways. The North Crossing alternative alignment then intercepts and is coincident with the Proposed Alignment, traveling west and north along Delevan Road. The North Crossing alternative intercepts the and travels through a rice field before the route crosses the Glenn-Colusa canal into the Delevan Interconnect Site. The total length for the North Crossing alternative pipeline alignment would be approximately 32.2 miles (170,040 feet).

Impacts Avoided. The North Crossing pipeline alignment would be longer than the but would avoid significant impacts to agricultural land uses and garter snake habitat by following along existing roadways.

Central Crossing (Proposed Alignment)

Route Description. Details of the Proposed Alignment are described in Section 2.0 Project Description. The Proposed Alignment Sacramento River crossing location begins on the east side in a row crop field inside the river levee and exits between two prune orchards on the west side, outside the levee by Keller Ranch. The river crossing would be approximately 2,400 feet long. The total length for the proposed pipeline alignment would be approximately 26.9 miles (14,1900 feet).

Impacts Avoided. The Proposed Alignment minimizes effects to residential land uses and potential impacts to wetlands in the project area.

South Crossing

Route Description. The South Crossing alternative is coincident with the Proposed Alignment from the Remote Facility Site to the point in Colusa County where Gridley Road turns. Here, the Southern Crossing Alternative diverges from the Proposed Alignment, turning south and continuing along Gridley Road and rice field edges, then west to River Road. The alignment dips south to avoid a small, recently created wetland complex and the horse pastures and residences on the north side of Gridley Road. At River Road, it continues due west on the alignment of Gould Road.

The Sacramento River crossing location for the Southern Crossing alternative begins in a clearing between two orchards along the extension of Gould Road outside the river levee. It runs due west approximately 3,200 feet and exits in a row crop field on the west side of State Route 45 just south of a farm residence/operations area.

At the river, the bored crossing would continue due west, under the western levee and State Route 45, surfacing in a row crop field. From here, it would run diagonally northwest along the field edge adjacent to a farm residence/operations area, then continue west along field breaks and farm roads through row crops, then rice fields into the center of the Colusa Trough window. In the Gunnersfield Ranch complex, the alignment would follow around the north side of the complex, continues due west along farm roads and rice field breaks, then parallel to Delevan Road. One-half mile east of Interstate 5, it would turn north for about 1,000 feet, then west along the south side of the grain elevators at the Delevan siding to avoid the freeway interchange. Road 99, the Union Pacific Railroad tracks, and Interstate 5 would be bored. The alignment would then turn south along the edge of the Interstate 5 right-of-way to rejoin Delevan Road, where it would turn west to the Glenn-Colusa Canal. On the west side of the canal, it would continue west a short distance through row crops, then diagonally northwest through pasture to the Delevan Interconnect Site. The total length for this alternative pipeline alignment would be 26.9 miles (141900 ft).

Impacts Avoided. The South Crossing Alignment has less effect to orchards than the and has less impact to wetlands than other alternatives proposed by WGSI.

5.3 Routing Criteria for Evaluating Line 400/401 Connection Pipeline Alternatives

Once the alternative alignments were mapped, specific attributes of each were measured to apply the routing constraints described above. In an effort to solicit routing input from the public and property owners along the proposed pipeline alignment, WGSI conducted Open Houses in Gridley and Colusa during the preparation of the PEA. During the Open Houses, several property owners potentially affected by the Line 400 Connection Pipeline alignment indicated their preferences for alignment variations. These preferences have been incorporated in to the proposed alignment. The following criteria were used to compare potential impacts associated with the pipeline alignment alternatives.

Length in rice fields. In general, it is preferable to minimize alignment distance in rice fields for two principal reasons. First, isolation of the construction ROW represents certain

timing constraints for construction. In addition, rice fields are considered habitat for the giant garter snake, so compensation for temporary habitat loss is required.

Length in row or other agricultural crops. These agricultural uses are proposed because they do not have the constraints described above for rice fields. WGSI attempted to maximize routing through row crops rather than through rice fields.

Orchards. Due to the long-term investment incurred for orchards, impacts to this agricultural use should be avoided or minimized.

Fallow/Pasture. This agricultural use provides the same routing benefit as row crops. WGSI attempted to maximize routing through fallow/pasture lands rather than rice fields.

Wetlands. Due to their sensitive nature, impacts to wetlands should be avoided or minimized.

Total length. Generally, the shorter the pipeline, the fewer potential impacts.

Residences within 220 yards. The pipeline should be routed away from residences wherever possible to preclude construction impacts such as access constraints, noise, and dust. If this is not possible, then the number of affected residences along an alignment should be kept to a minimum. The proximity of the pipeline to residences can serve to dictate the classification rating of the pipe.

Table 5-1 provides a comparison of potential impacts (in acres) for the Proposed Alignment and the South Crossing alternative. Quantitative information about potential impacts to rice fields, wetlands, and other agricultural lands was estimated for the North Crossing (roadway alternative) because this alternative was added following the detailed engineering assessment completed by WGSI. The principal advantages and disadvantages associated with each of these alternative alignments are summarized below.

NORTH CROSSING (ROADWAY ALIGNMENT) ALTERNATIVE

Advantages

- Minimizes potential impacts to sensitive garter snake habitat (avoidance of rice fields) by following existing roadways
- Minimizes potential impacts to agricultural operations (including rice, orchards, and row crops) by following existing roadways
- Approximate Sacramento River crossing length shorter than South Crossing alternative (same as the)

Disadvantages

- Could result in potentially significant short-term impacts to traffic along affected roadways
- Requires several additional alignment turns at 90-degree angles in order to remain on existing roadways; these 90-degree turns may cause increased potential for hydraulic and construction problems
- Longer than either the South Crossing alternative or the proposed alignment (approximately 32.2 miles in length)

Table 5.3-1: Comparison of Approximate Acreage Impacts for the Proposed Alignment and the Alternative Line 400 Connection Pipeline Routes

Resource Potentially Impacted	Proposed Route (Central Crossing)	South Crossing Alternative	North Crossing Alternative
Rice (ft/ac) (Minimize)	96,100 ft/ 220 ac	10,1650 ft/233 ac	15,500 ft/35.6 ac
Row/Other (ft/ac) (Maximize)	16,900 ft/39 ac	23,975 ft/55 ac	3000 ft/6.9 ac
Orchard (ft/ac) (Minimize)	4900 ft/11 ac	1400 ft/3 ac	1000 ft/2.3 ac
Fallow/Pasture (ft/ac) (Maximize)	8400 ft/19 ac	5900 ft/14 ac	0
Wetland (ft/ac) (Minimize)	4250 ft/10 ac	5775 ft/13 ac	4250 ft/10 ac
Sacramento River Crossing (ft/ac) (Minimize)	2600 ft	3200 ft	2600 ft
Total Length (ft/mi) (Minimize)	13,3150 ft/25.6 mi	141,900 ft/26.9 mi	170,040 feet/ 32.2 miles
Residences within 220 yds Minimize	9	18	23

Notes: The numbers in this table assume the (Z) option is chosen for the initial pipeline alignment segment between the Well Pad Site and Gridley Road (Taken from Table 4-1 of the WGSI PEA).

"Minimize" and "Maximize" in the first column indicate that WGSI attempted to either minimize or maximize corresponding parameters.

Approximations for potential impacts associated with the North Crossing alternative assume that where the route follows along existing roadways (in the middle of the road, within existing ROW, or just outside the ROW) adjacent land uses would not be significantly impacted.

SOURCE: WGSI and MHA Environmental Consulting, Inc. 2001

- Potentially impacts a greater number of residences than the South Crossing alternative and the proposed alignment (greatest number of sensitive receptors (23) within 220 yards of the alignment), which could result in a requirement for a higher-rated pipeline

PROPOSED ALIGNMENT (CENTRAL CROSSING)

Advantages

- Impacts fewer acres of wetlands than the South Crossing alternative (at least 1,500 acres less than the South Crossing alternative)
- Shortest total pipeline alignment length among alternatives (25.6 miles)

- Shorter river crossing length than South Crossing
- Orchard affected by this alternative would be a prune orchard that is very old and beyond its most productive years
- Impacts fewest number of residences

Disadvantages

- Impacts the greatest acreage of orchard among the alternatives (11 acres for the proposed alignment vs. 3 acres for the South Crossing alternative)
- Effects to giant garter snake habitat

SOUTH CROSSING ALTERNATIVE

Advantage

- Impacts fewer acres of orchards than the proposed alignment (3 acres vs. 11 acres)
- Impacts fewer wetlands than the other alternatives proposed by WGSI.

Disadvantages

- The alignment through the eastern portion of study area is considered to have higher sensitivity for paleontological resources and also potential habitat for burrowing owl and other sensitive species; this alignment has a longer distance through this area and could result in impact to these resources
- Sacramento River Crossing is about 1000 ft longer than for and North Crossing Alternative

5.4 Potential Impacts Associated With the Alternative Line 400/401 Connection Pipeline Routes

Potential impacts associated with the proposed alignment are discussed in Section 3 of this document. The following section discusses potential impacts associated with each of the alternative Line 400/401 Connection Pipeline alignments as they differ from the proposed alignment. When impacts are expected to be similar for each of the two alternatives, the reader is referred to the section in this document where potential impacts of the proposed alignment are discussed in detail. Differences in potential impacts are discussed only in terms of potential impacts along the Line 400/401 Connection Pipeline alignment, as this is the only component that would differ between the two alternatives. Potential impacts associated with expansion of the Well Pad Site, Remote Facility Site, and Storage Loop Pipeline would be the same for each of the two alternatives. Potential impacts are described in general terms. Further engineering and environmental studies would be necessary to perform a more detailed comparison of potential impacts associated with the two alternatives.

AESTHETICS

Potential impacts to aesthetics of the project area would be similar for each of the alternative Line 400/401 Connection Pipeline alignments. Potential impacts to visual resources are discussed in Section 3.1. Because there are a greater number of residences within 220 yards of the North Crossing (roadway alignment) alternative, there would be greater potential for temporary visual impacts to sensitive viewers along the alignment

during construction activities. There are 23 residences located within 220 yards of the North Crossing alternative alignment, 18 along the South Crossing alternative alignment, and 9 along the proposed alignment. Because the North Crossing alternative principally follows along existing roadways, a greater number of people traveling along these roads (Gridley, East Glen Road, Southam Road, Clark Road, and Delevan Road) would be able to view construction activities along the alignment. Both the North and South Crossing alternatives would potentially impact a greater number of sensitive viewers in the project area than the proposed alignment. In all cases, the aesthetic impacts would be temporary in nature.

AGRICULTURAL RESOURCES

Potential impacts to agricultural resources associated with the Proposed Alignment are discussed in Section 3.2. Table 5-1 shows that the South Crossing alternative would impact greater acreages of rice fields and row crops than the proposed alignment. The North Crossing alignment would likely impact the least amount of agricultural areas by following primarily along existing roadways.

AIR QUALITY

Potential impacts to air quality associated with the proposed alignment are discussed in Section 3.3. Potential impacts to air quality would differ among the two alternatives and the proposed alignment primarily in relation to air quality impacts to sensitive receptors along the pipeline alignment during construction activities. As discussed above, there are a greater number of potentially affected sensitive receptors along both the North Crossing alignment alternative and the south-crossing alignment. However, as discussed in Section 3.3, construction would be short term and mitigation would be applied to reduce the effect on air quality to a less than significant level. It is anticipated that sensitive receptors could be located directly adjacent to construction activities along the pipeline without being significantly impacted during project construction. No significant differences between the two alternatives would be expected.

BIOLOGICAL RESOURCES

Potential impacts to biological resources associated with the proposed alignment are described in Section 3.4. The South Crossing alternative would result in a cumulatively greater area of impact to wetlands than the proposed alignment (13 acres vs. 10 acres). The Sacramento River crossing locations for both the North and South Crossing alternatives would pass through sensitive riparian areas. This area represents potential habitat for the burrowing owl and giant garter snake. The avoids sensitive riparian habitat at its Sacramento River crossing location by passing through row crops and orchards at its entry and exit points.

CULTURAL RESOURCES

Potential impacts to cultural resources are described in Section 3.5, Cultural Resources, for the proposed alignment. Potential impacts are expected to be similar for the two alternatives. As discussed above, WGSI identified several locations in the project area that could potentially contain sensitive cultural resources. The exit point for the river-crossing bore for the North Crossing alternative may be close to a known Native American village site. Although the exact crossing location has not yet been determined for this alternative, its proximity to the known site increases the likelihood that additional cultural resources

would be uncovered during pipeline excavation. The western portion of the study area was considered to have a higher sensitivity for paleontological resources, especially the area west of the Glenn-Colusa Canal. Consequently, the North Crossing and South Crossing alternatives, with their longer distances through this area, would have greater potential to impact those resources.

GEOLOGY

Potential impacts to geology are described in Section 3.6, Geology, for the proposed alignment. Throughout most of the project area, potential impacts are expected to be similar for the two alternatives. A longer river crossing may result in potentially greater impacts to geology as discussed in Section 3.6. Because the South Crossing alternative has a longer Sacramento River crossing than the North Crossing alternative and the , this would have a greater potential for impacts associated with geology. Engineering and geologic analysis (similar to that for the proposed project) would be required to determine potential impacts associated with the North Crossing alternative. The impacts are expected to be similar to those of the proposed project.

HAZARDS

Potential hazards associated with natural gas pipelines are described in Section 3.7 Hazards. As discussed in Section 3.7, WGSI has not provided a specific pipeline design for the Line 400/401 Connection Pipeline or the Storage Loop Pipeline. Without special design consideration, and possibly additional design measures, the project would result in a potentially significant impact to existing and future populations adjacent to the pipeline due to the geologic and earthquake hazards described in Section 3.7. Because a greater number of sensitive receptors are located along both the North Crossing alternative and the southern crossing alternative, these alternatives would potentially expose a greater number of people to hazards along the pipeline alignment (if pipeline rupture or explosion were to occur), although this could be mitigated with the application of more stringent pipeline design standards.

The data on exiting residences was sorted to find the number of residences in the three established risk zones (zero to 660 feet, 661-2000 feet, and >2000) for each component. These are termed most, intermediate, and least risk. Table 5-2 shows these risk zones for each pipeline alternative.

The Proposed Route has the fewest number of existing residences in the Most Risk category (9 percent) as compared to the North Crossing/Road Alignment (23 percent) and Crossing Alignment (19 percent). The proposed alignment also has the greatest number of existing residences outside the 2000-foot distance (84 percent) compared to the North Crossing/Road Alignment (63 percent) and South Crossing Alignment (63 percent).

The CPUC has proposed several mitigation measures that would be implemented as a condition of project approval to reduce potential impacts to a less than significant level and minimize potential hazards to residences in the project area.

Table 5-4-1: Number of Residences and Relative Risk from an Unplanned Natural Gas Release for Each Line 400/401 Pipeline Alternative

	Existing Residences		
Project Alternative Line 400/401 Pipeline Route	**Most Risk (Zero – 660 ft)**	**Intermediate (660 ft- 2000 ft)**	**Least Risk (>2000 ft)**
Proposed (Central) Route	8	6	77
North Crossing / Road Alignment	21	13	57
South Crossing	17	17	57

SOURCE: MHA 2002

HYDROLOGY

Potential impacts to hydrology associated with the proposed alignment are described in Section 3.8, Hydrology. Potential impacts are expected to be similar for both alternatives. The North Crossing alternative may pass near substantially more groundwater supply wells. If so, the potential exists to affect more wells. Any impact to groundwater supply or quality would be temporary in nature and not significant following implementation of mitigation measures. Potential impacts associated with the North Crossing alignment alternative do not differ from the Proposed Route.

The South Crossing alternative may pass near substantially fewer groundwater supply wells. If so, the possibility of affecting wells may be substantially lower. Any impact to groundwater supply or quality would be temporary in nature and not significant following implementation of mitigation measures. Potential impacts associated with the south alignment alternative do not differ significantly from the Proposed Route.

The shorter Sacramento River crossing lengths associated with the North Crossing alternative and the Proposed Route would minimize potential impacts to water quality associated with the possibility of a "frac-out" and resulting degradation of water quality during construction.

LAND USE

Potential impacts to land use in the project area are described in Section 3.9. The North Crossing (roadway alignment) alternative would result in fewer impacts to agricultural land uses in the project area than either the South Crossing alternative or the proposed alignment by following existing roadways along the majority of the alignment. The South Crossing alternative would result in the greatest impacts to agricultural land uses in the area.

The North Crossing alternative would have the greatest effect on residential land uses from construction activities and the proximity to the buried pipeline. The proposed alignment would have the least effect on the residential land uses.

NOISE

Potential impacts to ambient noise levels in the project area are described in Section 3.10 for the proposed Line 400/401 Connection Pipeline alignment. A greater number of

residences are located within 220 yards of both the North and South Crossing alternatives. The Proposed Route passes by fewer residences so potential impacts associated with increased noise during construction and operations would be minimized for this alignment. As discussed in Section 3.10, WGSI would coordinate with local residences to mitigate for potential impacts associated with noise-producing construction activities along the pipeline alignment.

POPULATION AND HOUSING

Potential impacts to population and housing in the project area are described in Section 3.11 for the proposed Line 400/401 Connection Pipeline alignment. Potential impacts are expected to be similar for both alternatives.

PUBLIC SERVICES AND SOCIOECONOMICS

Potential impacts to public services and socioeconomics in the project area are described in Section 3.12 for the proposed Line 400/401 Connection Pipeline alignment. Potential impacts are expected to be similar for both alternatives.

RECREATION

Potential impacts to recreation activities are described in Section 3.13, Recreation for the proposed Line 400/401 Connection Pipeline alignment. Potential impacts to recreation activities in the project area would be similar for both alternatives. All three alignments are the same distance from the four hunting clubs in the project area. The north alignment alternative runs through a portion of the Gray Lodge Waterfowl Management Area along West Liberty Road; however, this portion of the alignment would run along the existing roadway so potential impacts would not be expected to be significant.

TRANSPORTATION

Potential impacts associated with the proposed project on transportation in the project area are described in Section 3.14. The North Crossing (roadway alignment) alternative would likely result in greater impacts to transportation/circulation in the project area because it follows primarily along existing roadways. Potential impacts to transportation would include temporary increased congestion along local roadways resulting from construction activities along the alignment. The South Crossing alternative would result in impacts similar to the proposed Line 400/401 Connection Pipeline alignment.

UTILITIES

Potential impacts to utilities in the project area are discussed in Section 3.15. Potential impacts are expected to be similar for both alternatives as for the proposed Line 400/401 Connection Pipeline alignment.

5.5 Summary of Impacts Associated With the Alternatives

The CPUC considered alternative Line 400/401 Connection Pipeline routes and alternatives for the Well Pad and Remote Facility. This section summarizes the effects of these alternatives.

NORTH CROSSING ALTERNATIVE

The North Crossing alternative would minimize potential impacts to agricultural land uses and garter snake habitat (rice fields) by following existing roadways; however, this route is longer than the South Crossing alternative and the Proposed Route and passes closer to a greater number of residences than the other two routes. This alternative would result in greater potential impacts associated with aesthetics, noise, and potential hazards to residences in the vicinity of the pipeline. It would also result in potentially significant impacts to traffic and circulation in the area due to construction activities along existing roadways. Potential impacts to wetlands would not differ substantially from those associated with the Proposed Route.

SOUTH CROSSING ALTERNATIVE

The South Crossing alternative would impact fewer acres of orchards than the Proposed Route but would impact a greater acreage of rice fields than either the Proposed Route or the North Crossing alternative. The South Crossing alternative would therefore result in the greatest potential for impacts to garter snake habitat. The South Crossing alternative would also result in greater impacts to wetlands than either the Proposed Route or the North Crossing alternative. The Sacramento River crossing length for this alternative is longer than that for both the North Crossing alternative and the Proposed Route. This alternative would result in greater potential impacts to geology and water quality due to the longer crossing length.

PROPOSED ROUTE

The Proposed Route would minimize potential impacts to residential land uses and associated hazards, aesthetics, and noise impacts by avoiding more densely populated portions of the project area. Because the Sacramento River crossing length for this alignment is shorter than the South Crossing alternative, the Proposed Route would also minimize potential impacts associated with water quality and geology. The potential impact to wetlands would be less for the Proposed Route than for the South Crossing alternative (equal to that for the North Crossing alternative). The Garter Snake Enhancement Plan would be expected to reduce potential impacts to garter snake habitat associated with running the Proposed Route through rice fields. The Proposed Route is considered the preferred route because it minimizes impacts to wetlands and minimizes potential impacts associated with hazards, noise, and aesthetics in the area by avoiding residential land uses.

NO PROJECT ALTERNATIVE

CEQA and the CEQA Guidelines require consideration of the environmental consequences of the project not being constructed. As stated previously, the objective of this project is to allow WGSI to provide highly flexible gas storage services for various customers through the provision of increased storage capabilities. This would be accomplished by maximizing storage, injection, and withdrawal capacity of the natural gas storage reservoir with a connection to PG&E's Line 400/401 to meet customer demands into the foreseeable future. If the proposed expansion were not constructed, these project objectives would not be met.

The adverse impacts described in Section 3 would not occur if the No Action alternative is selected. The temporary effects from construction activities would not occur. The effects to

wetlands and biological resources would not occur and the habitat enhancement and mitigation would not occur. Potential hazards impacts to nearby residences in the project area associated with close proximity to a buried pipeline would not occur. Potential impacts to cultural resources in the western portion of the project area would not occur. Potential impacts to geology and water quality associated with crossing the pipeline beneath the Sacramento River and other waterways would not occur with the No Action alternative.

OTHER ALTERNATIVES CONSIDERED

In reviewing alternatives, the CPUC also considered the environmental effects of an alternate Well Pad expansion and Remote Facility site expansion. The impacts of the alternatives were slightly less or similar to the proposed project.

Alternate Well Pad Site Expansion

The existing Well Pad Site occupies approximately 1.5 acres of an 8.5 acre leased parcel on the Wild Goose Club and is situated over the top of the gas storage field. Expansion for additional wells would logically occur at this site where the new wells would connect with the existing piping header, and utilize the existing monitoring and controls installed during initial project development. The arrangement of the existing wells and piping would accommodate additional wells lined up toward the west. Because of the presence of existing support equipment, connection piping, and the availability of an additional existing lease area, expansion of the pad surface would occur toward the west.

It is conceivable that the amount of expansion proposed by WGSI could be reduced with a different surface arrangement of the new wells. The applicant has stated that it is possible to install some of the additional wells within the existing Well Pad Site, although this alternative would result in a less than desirable surface arrangement for the wells from the perspective of drilling, operation, and maintenance. A reduced expansion of the Well Pad Site would cause less effect to biological resources, as described in Section 3.4.

Alternative Remote Facility Site Expansions

The proposed expansion of the Remote Facility Site is proposed to the west of the existing Facility. An alternative to the proposed expansion would be to the east of the existing Site. Overall, the impacts from this alternative would be similar to the proposed westward expansion. There would be a different physical arrangement of equipment and buildings, but the overall physical appearance would be similar to the proposed expansion.

An eastern expansion would require that the existing PG&E Line 167 be relocated, which would result in impacts similar to the proposed Storage Loop Pipeline's construction.