

E. COMPARISON OF ALTERNATIVES

This section summarizes and compares the environmental advantages and disadvantages of the Proposed Project and the alternatives evaluated in this Environmental Impact Report (EIR). This comparison is based on the assessment of environmental impacts of the Proposed Project and each alternative, as identified in Sections D.2 through D.13. This section, for comparative purposes, also contains information describing economic considerations for each of the alternatives carried forward for evaluation in the EIR.

Section E.1 describes the methodology used for comparing alternatives. Section E.2 compares each alternative with the Proposed Project, including comparison with the No Project Alternative, and Table E.1 presents the Class I impacts for each alternative. Table E-2 in this section provides a comparison of the environmental impact conclusions between the Proposed Project and each alternative. Section E.3 defines the environmentally superior alternative, based on this comparison. Section E.4 provides economic considerations for each of the alternatives as compared to the Proposed Project.

E.1 Comparison Methodology

The California Environmental Quality Act (CEQA) does not provide specific direction regarding the methodology of alternatives comparison. Each project must be evaluated for the issues and impacts that are most important; this will vary depending on the project type and the environmental setting. Issue areas that are generally given more weight in comparing alternatives are those with permanent long-term impacts (e.g., loss of habitat or land-use conflicts). Impacts associated with construction (i.e., temporary or short term) or those that are easily mitigable to less-than-significant levels, are considered to be less important.

This comparison is designed to satisfy the requirements of State CEQA Guidelines section 15126.6, subd. (d), Evaluation of Alternatives, which states that:

The EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project. A matrix displaying the major characteristics and significant environmental effects of each alternative may be used to summarize the comparison. If an alternative would cause one or more significant effects in addition to those that would be caused by the project as proposed, the significant effects of the alternative shall be discussed, but in less detail than the significant effects of the project as proposed.

The following methodology was used to compare alternatives in this EIR:

- Step 1: Identification of Alternatives.** An alternative screening process (described in Section C) was used to identify ~~17~~18 alternatives to the Proposed Project. That screening process identified six alternatives for detailed EIR analysis. Three of the alternatives consist of alternative storage site locations and the remaining alternatives consist of project design alternatives. A No Project Alternative was also identified.
- Step 2: Determination of Environmental Impacts.** The environmental impacts of the Proposed Project and alternatives were identified in Sections D.2 through D.13, including the potential impacts of construction and operation of the SNGS Facility.
- Step 3: Comparison of Proposed Project with Alternatives.** The environmental impacts of the Proposed Project were compared to those of each alternative to determine the environmentally superior alternative.
- Step 4: Economic Considerations.** The screening analysis and the comparison of alternatives provided in Section C did not consider economic factors as a screening tool in comparison to the potential environmental impacts of the Proposed Project. Step 4 is included to provide further comparison between the alternatives and the Proposed Project. The CPUC's CPCN proceedings may separately and specifically consider cost issues as they pertain to economic feasibility.

E.2 Evaluation of Project Alternatives

Six alternatives in addition to the No Project Alternative were identified for evaluation in this EIR. A detailed analysis of environmental impacts and mitigation for all project alternatives is provided in Sections D.2 through D.13. Table E-1 provides a summary of significant unmitigable (Class I) impacts for the Proposed Project and alternatives. Table E-2 provides a summary of environmental impact conclusions for the Proposed Project and each of the alternatives for each environmental issue area. Impacts determined to be significant and unmitigable are identified as Class I impacts. Impacts that can be reduced to a less than significant impact through the use of mitigation measures are identified as Class II impacts. Impacts that are less than significant without the need for mitigation are identified as Class III impacts.

Significant and unmitigable (Class I) impacts were identified in three categories, including (1) hazardous materials, public health and safety (Impacts HAZ-2a and ~~HAZ-2b~~; potential hazards associated with reasonably foreseeable upset and accident conditions involving the release of hazardous materials); (2) hydrology and water quality (Impact H-8: operation and maintenance

impacts to surface waters and groundwater quality); and (3) noise (Impact N-1: construction activities would temporarily impact local noise levels).

Table E-1
Proposed Project vs. Alternatives: Summary of Significant
Unmitigable (Class I) Impacts

Issue Area	Significant Impacts (Class I)
<i>Proposed Project</i>	
Hazardous Materials, Public Health and Safety See Section D.6	Potential hazards associated with reasonably foreseeable upset and accident conditions involving the release of hazardous materials Impact HAZ-2a: Potential impact from gas leaking from the gas reservoir after repressurization of the gas field for gas storage. Impact HAZ-2b: Potential for release of natural gas and resulting fire and explosion from pipelines. Potential for hazards, such as the release of natural gas and/or rupture of the proposed pipelines resulting in fire, explosion, and release of toxic substance.
Hydrology and Water Quality See Section D.7	Impact H-8: Operation and maintenance impacts to surface-water and groundwater quality. Release of gas due to failure of the cap rock resulting in contamination of the aquifer.
Noise and Vibration See Section D.9	Impact N-1: Construction activities would temporarily impact local noise levels. Well drilling at the wellhead site would exceed the City of Sacramento's noise standard impacting nearby sensitive receptors.
<i>Alternatives—Class I Impacts Eliminated or Remaining by Alternative</i>	
Freeport Gas Field Alternative	Class I impacts remain for hazardous materials, public health and safety (HAZ-2a and HAZ-2b). Class I impacts related to hydrology and water quality (H-8) also remain. Impacts regarding construction noise (N-1) would be less than significant.
Snodgrass Slough and Thornton Gas Field Alternatives	Changes Impacts HAZ-2a and HAZ-2b Class I impacts to Class II impacts (less than significant with mitigation). The mitigation would be for potential hazards associated with reasonably foreseeable upset and accident conditions involving the release of hazardous materials. Class I impacts related to hydrology and water quality (H-8) remain. Impacts regarding construction noise (N-1) would be less than significant.
Project Design Alternative Wellhead to Compressor Station Pipeline Routes 1 and 2	Class I impacts remain for hazardous materials, public health and safety (HAZ-2a and HAZ-2b); hydrology and water quality (H-8); and noise (N-1).
Project Design Alternative Wellhead to Compressor Station Pipeline Route 3	Class I impacts would remain for hazardous materials, public health and safety (HAZ-2a). <u>Impacts would be slightly less for hydrology and water quality and HAZ (-2b);</u> Impacts would be slightly less for hydrology and water quality (H-8) and construction noise (N-1), but would still remain significant.

As shown in Table E-1, Class I unmitigable impacts were identified that would potentially occur with the Proposed Project and some of the identified alternatives. Short-term Class I unmitigable construction noise impacts would be reduced to less than significant at all three alternative gas field locations due to their rural location, but would remain Class I for the project design alternatives (wellhead to compressor station pipeline routes 1, 2, and 3) as construction of the wellhead proposed by the project would remain the same. While leakage of stored gas into the overlying aquifer and ground surface (Impact HAZ-2a) ~~or from project facilities (HAZ-2b)~~ is unlikely to occur for the Proposed Project and mitigation has been provided to reduce this already low probability; the possibility of a release of gas would still remain. Although impacts HAZ-2a ~~and HAZ-2b~~ with mitigation would *be unlikely to occur*, a release of gas in a densely populated area such as the Proposed Project could have substantial consequences. The potential for hazards associated with upset and accident conditions involving the release of gas (Impacts HAZ-2a ~~and HAZ-2b~~) at the Freeport Gas Field would remain a Class I impact, as it is located near the populated area of Elk Grove. Due to the remote locations of the Snodgrass Slough and Thornton Gas Fields, Class I impacts for hazards would be reduced to Class II with implementation of mitigation measures outlined in Section D.6. While leakage of stored gas into the overlying aquifer (Impact H-8) is unlikely to occur for the Proposed Project and mitigation has been provided to reduce this already low probability; the possibility of a release of gas into the aquifer would still remain. Class I impacts to hydrology and water quality (Impact H-8) remain during operation for all the alternatives due to the potential for migration of gas into a drinking water aquifer.

The EIR analysis indicates that, assuming implementation of applicant proposed measures (APMs) presented in Section B and mitigation measures described in Sections D.2 through D.13, all other significant impacts to environmental resources can be mitigated to a level that is less than significant.

E.2.1 Summary of Environmental Impact Conclusions

The following table summarizes all of the conclusions about whether there are significant impacts associated with the Proposed Project and alternatives.

**Table E-2
Proposed Project vs. Alternatives Summary of Environmental Impact Conclusions**

Issue Area	Proposed Project	Snodgrass Slough Gas Field Alternative	Freeport Gas Field Alternative	Thornton Gas Field Alternative	Project Design Alternative Wellhead Site to Compressor Station Pipeline Route 1	Project Design Alternative Wellhead Site to Compressor Station Pipeline Route 2	Project Design Alternative Wellhead Site to Compressor Station Pipeline Route 3
Air Quality	Impact A-2 (for construction in Sacramento County) was determined to be Class II. Impacts A-1, A-3, A-4, A-5, and A-6 were determined to be Class III.	Impacts similar to the Proposed Project during operation. Greater short-term construction impacts due to longer construction time because of increased pipeline length.	Impacts similar to the Proposed Project during operation. Less short-term construction impacts due to shorter construction time because of decreased pipeline length.	Impacts similar to the Proposed Project during operation. Greater short-term construction impacts due to longer construction time because of increased pipeline length.	Impacts similar to the Proposed Project but this alternative would have a slightly longer construction time and greater impact area since the pipeline route between the wellhead and compressor station is 450 feet longer than the Proposed Project.	Impacts similar to the Proposed Project but this alternative would have a slightly longer construction time and greater impact area since the pipeline route between the wellhead and compressor station is 350 feet longer than the Proposed Project.	Impacts similar to the Proposed Project but this alternative would have a slightly shorter construction time and decreased impact area since the pipeline route between the wellhead and compressor station is 250 feet shorter than the Proposed Project.
Biological Resources	Impacts B-1 and B-3 were determined to be Class II. Impacts B-2, B-4, and B-5 were determined to be Class III. Impact B-6 involved no impact.	Impacts greater than the Proposed Project as alternative would increase impact area due to greater pipeline length. Similar to the Proposed Project, Impacts B-1 and B-3 would be Class II and would require	Impacts slightly greater than the Proposed Project because it has a greater potential to impact special-status species and wetlands. Similar to the Proposed Project, Impacts B-1 and B-3 would be	Since the Proposed Project is in an urbanized area, impacts substantially greater than the Proposed Project due to location in the Cosumnes River Preserve, which is one of the biologically richest	Impacts slightly less than the Proposed Project as a portion of the pipeline between the wellhead and compressor station crosses an industrial yard. No biological resources would	Impacts similar to the Proposed Project because it would disturb the same areas of habitat and wetlands. The additional length of pipeline between the wellhead and	Impacts slightly less than the Proposed Project because the shorter pipeline length between the wellhead and compressor station would slightly reduce impacts to the

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Table E-2 (Continued)

Issue Area	Proposed Project	Snodgrass Slough Gas Field Alternative	Freeport Gas Field Alternative	Thornton Gas Field Alternative	Project Design Alternative Wellhead Site to Compressor Station Pipeline Route 1	Project Design Alternative Wellhead Site to Compressor Station Pipeline Route 2	Project Design Alternative Wellhead Site to Compressor Station Pipeline Route 3
		mitigation.	Class II and would require mitigation.	regions in California's Central Valley.	be impacted through this portion of the alignment, reducing the amount of impact to grassland habitat and potential wetlands.	compressor station would impact urbanized areas. Similar to the Proposed Project, Impacts B-1 and B-3 would be Class II and would require mitigation.	resources. Similar to the Proposed Project, Impacts B-1 and B-3 would be Class II and would require mitigation.
Cultural Resources	Impact C-1 was determined to be Class III for project facilities and involved no impact to historical features of the former Army Depot. Impact C-2 was determined to be Class II; Impact C-3 involved no impact.	Impacts similar to the Proposed Project. However, the increased pipeline length may have the potential to impact additional sites, resulting in overall greater impacts.	Impacts similar to the Proposed Project because similar ground disturbance activities would occur during construction.	Impacts similar to the Proposed Project. However, the increased pipeline length may have the potential to impact additional sites, resulting in overall greater impacts.	Impacts slightly greater than the Proposed Project due to increased length of pipeline required between the wellhead and compressor station. The longer pipeline may have the potential to impact additional sites, resulting in slightly greater impacts. Similar to the Proposed Project, Mitigation Measures would be required to	Impacts slightly greater than the Proposed Project due to increased length of pipeline required between the wellhead and compressor station. The longer pipeline may have the potential to impact additional sites, resulting in slightly greater impacts. Similar to the Proposed Project, Mitigation Measures would be required to	Impacts slightly less than the Proposed Project due to decreased length of pipeline required between the wellhead and compressor station.

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Table E-2 (Continued)

Issue Area	Proposed Project	Snodgrass Slough Gas Field Alternative	Freeport Gas Field Alternative	Thornton Gas Field Alternative	Project Design Alternative Wellhead Site to Compressor Station Pipeline Route 1	Project Design Alternative Wellhead Site to Compressor Station Pipeline Route 2	Project Design Alternative Wellhead Site to Compressor Station Pipeline Route 3
					reduce impacts to less than significant Class II.	reduce impacts to less than significant Class II.	
Geology and Soils	Impacts G-1, G-4, G-6, and G-8 involved no impact. Impacts G-2 and G-9 were determined to be Class II. Impacts G-3, G-5, and G-7 were determined to be Class III.	Impacts similar to the Proposed Project because the geologic conditions are similar.	Impacts similar to the Proposed Project because the geologic conditions are similar.	Impacts similar to the Proposed Project because the geologic conditions are similar.	Impacts similar to the Proposed Project since it is passing through the same area as the Proposed Project with the same geologic conditions.	Impacts similar to the Proposed Project since it is passing through the same general area.	Impacts similar to those of the Proposed Project since it is passing through the same general area.
Hazardous Materials, Public Health and Safety	Impacts HAZ-1a, HAZ-1b, and HAZ-1c, and HAZ-2b were determined to be Class II. Impacts HAZ-2a and HAZ-2b were <u>was</u> determined to be Class I. Impact HAZ-3 was determined to be Class II. Impact HAZ-4 was determined to be Class III. Impact HAZ-5 was determined to have no impacts. Impact HAZ-6 was determined to be Class II.	Impact HAZ-2a would remain Class I; however, the consequences of the impact is considered less than that of the Proposed Project since less people would be at risk due to lower population densities. Other impacts would be similar to those of associated with the Proposed Project.	Impact HAZ-2a would be less than the Proposed Project due to this alternative's location in a less populated area, reducing the consequences of a gas leak or pipeline rupture to Class II. Other impacts would be similar to those associated with the Proposed Project.	Impact HAZ-2a would be less than the Proposed Project due to this alternative's location in a less populated area, reducing the consequences of a gas leak or pipeline rupture to Class II. Other impacts would be similar to those associated with the Proposed Project.	Impacts similar to those of the Proposed Project since it is passing through the same area as the Proposed Project.	Impacts similar to those of the Proposed Project since it is passing through the same area as the Proposed Project.	Impacts similar to those of the Proposed Project since it is passing through the same area as the Proposed Project.

Table E-2 (Continued)

Issue Area	Proposed Project	Snodgrass Slough Gas Field Alternative	Freeport Gas Field Alternative	Thornton Gas Field Alternative	Project Design Alternative Wellhead Site to Compressor Station Pipeline Route 1	Project Design Alternative Wellhead Site to Compressor Station Pipeline Route 2	Project Design Alternative Wellhead Site to Compressor Station Pipeline Route 3
Hydrology and Water Quality	Impact H-8 (operation of natural gas field) was determined to be Class I. Impact H-3 (belowground facilities), H-4 (aboveground facilities), H-5, and H-6 (aboveground facilities) were determined to be Class II. Impacts H-1, H-2, H-4 (belowground facilities), H-6 (belowground facilities), and H-7 were determined to be Class III Impacts. Impact H-3 (aboveground facilities) involved no impact with the exception of the compressor station site with regard to wetland resources (addressed in above as Biological Resources).	Short-term construction impacts greater than the Proposed Project due to location in San Joaquin Delta Region. Similar impacts to the Proposed Project due to the potential release of gas into aquifer (H-8).	Short-term construction impacts greater than the Proposed Project due to location in San Joaquin Delta Region. Similar impacts to the Proposed Project due to the potential release of gas into aquifer (H-8).	Short-term construction impacts greater than the Proposed Project due to location in San Joaquin Delta Region. Similar impacts to the Proposed Project due to the potential release of gas into aquifer (H-8).	Impacts slightly greater than the Proposed Project due to increased construction disturbance (longer pipeline route) between the wellhead and compressor station.	Impacts slightly greater than the Proposed Project due to increased construction disturbance (longer pipeline route) between the wellhead and compressor station.	Impacts slightly less than the Proposed Project due to decreased construction disturbance (shorter pipeline route) between the wellhead and compressor station.
Land Use, Agriculture, and Recreation	Impacts L-2 (compressor station and pipeline segment two and Florin Gas Field), L-4, L-6, and L-7	Impact LU-1 may be greater because site may not be compatible with current land use	Impact LU-1 may be greater because site may not be compatible with current land use	This alternative has greater impacts to land use as it may not be compatible with current land use	Impacts similar to the Proposed Project since it is passing through the same area as	Impacts similar to the Proposed Project since it is passing through the same area as	Impacts similar to the Proposed Project. But less impact to land use due to the

Table E-2 (Continued)

Issue Area	Proposed Project	Snodgrass Slough Gas Field Alternative	Freeport Gas Field Alternative	Thornton Gas Field Alternative	Project Design Alternative Wellhead Site to Compressor Station Pipeline Route 1	Project Design Alternative Wellhead Site to Compressor Station Pipeline Route 2	Project Design Alternative Wellhead Site to Compressor Station Pipeline Route 3
	were determined to have no impact. Impacts L-1, L-2 (wellhead site and pipeline segment one), and L-5 were determined to be Class III and Impact L-3 (wellhead site, pipeline segment one, compressor station site, and pipeline segment two) were determined to be Class II.	plans for the area. Impacts to LU-6 and LU-7 greater due to potential loss of agricultural land. Other land use impacts similar to the Proposed Project.	plans for the area. Impacts to LU-6 and LU-7 greater due to potential loss of agricultural land. Other land use impacts similar to the Proposed Project.	plans and due to the potential loss of agricultural lands (Impacts L-1, L-6, and L-7). It could result in impacts to the Cosumnes River Preserve. Other land use impacts similar to the Proposed Project.	the Proposed Project.	the Proposed Project.	reduced length length of pipeline.
Noise and Vibration	Impact N-1 (wellhead site construction noise) was determined to be Class I. For the wellhead site and pipeline segment one (Impacts N-2 through N-4), impacts were determined to be Class III.	Noise impacts associated with this alternative would be less than the Proposed Project since the wellhead site would be located farther from sensitive uses.	Noise impacts resulting from the development of this alternative would be slightly less than those of the Proposed Project since drilling activities at the wellhead site would be located farther from sensitive uses.	Generally, the noise impacts associated with this alternative would be less than those of the Proposed Project since drilling activities at the wellhead site would be located farther from sensitive uses.	Impacts slightly greater than the Proposed Project due to increased pipeline length between the wellhead and compressor station.	Impacts slightly greater than the Proposed Project due to increased pipeline length between the wellhead and compressor station.	Impacts slightly less than the Proposed Project due to decreased pipeline length between the wellhead and compressor station.
Population and Housing	Impacts P-1, P-3, and P-5 were determined to	Population and housing impacts	Population and housing impacts	Population and housing impacts	Impacts similar to those of the	Impacts similar to those of the	Impacts similar to those of the

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Table E-2 (Continued)

Issue Area	Proposed Project	Snodgrass Slough Gas Field Alternative	Freeport Gas Field Alternative	Thornton Gas Field Alternative	Project Design Alternative Wellhead Site to Compressor Station Pipeline Route 1	Project Design Alternative Wellhead Site to Compressor Station Pipeline Route 2	Project Design Alternative Wellhead Site to Compressor Station Pipeline Route 3
	have no impact. Impact P-2 was determined to be Class III. Impact P-4 would not result in disproportionate degradation of inequality of economic benefits to low-income/minority communities. For safety issues, see Section D.6, Hazardous Materials, Public Health and Safety.	resulting from this alternative would not be substantially different from the Proposed Project because this alternative would not place substantial facilities in the area and would presumably provide royalties to the land owners.	resulting from this alternative would not be substantially different from the Proposed Project because this alternative would not place substantial facilities in the area and would presumably provide royalties to the land owners.	resulting from this alternative would not be substantially different from the Proposed Project because this alternative would not place substantial facilities in the area and would presumably provide royalties to the land owners.	Proposed Project since it is passing through the same area as the Proposed Project.	Proposed Project since it is passing through the same area as the Proposed Project.	Proposed Project since it is passing through the same area as the Proposed Project.
Public Services and Utilities	Impacts U-1 (utility disruptions) and U-2 (fire and police services) were determined to be Class II. Impact U-3 was determined to be Class II for wastewater and remaining services were Class III. Impact U-2 (schools) was determined to have no impact.	Due to the increased length of pipeline required to connect this gas field to the SMUD system, this alternative would potentially increase conflicts with existing utilities and could cause public service disruptions. This alternative would require similar U-1 mitigation measures	Impacts similar to the Proposed Project. This alternative would require similar U-1 mitigation measures as the Proposed Project which would reduce this impact to less than significant Class II. Similar to the Proposed Project, no impacts would	Due to the increased length of pipeline required to connect this gas field to the SMUD system, this alternative would potentially increase conflicts with existing utilities and could cause public service disruptions. This alternative would require similar U-1 mitigation measures	Impacts related to utility disruptions would be slightly greater than those of the Proposed Project due to increased length of pipeline required between the wellhead and compressor station. This alternative would require similar U-1	Impacts related to utility disruptions would be slightly greater than those of the Proposed Project due to increased length of pipeline required between the wellhead and compressor station. This alternative would require similar U-1	Impacts related to utility disruptions would be slightly less than those of the Proposed Project due to decreased length of pipeline required between the wellhead and compressor station. This alternative would require similar U-

Table E-2 (Continued)

Issue Area	Proposed Project	Snodgrass Slough Gas Field Alternative	Freeport Gas Field Alternative	Thornton Gas Field Alternative	Project Design Alternative Wellhead Site to Compressor Station Pipeline Route 1	Project Design Alternative Wellhead Site to Compressor Station Pipeline Route 2	Project Design Alternative Wellhead Site to Compressor Station Pipeline Route 3
		<p>as the Proposed Project which would reduce this impact to less than significant Class II. Implementation of this alternative would result in longer response times for fire and police due to its rural location. However, the construction and operation impacts related to fire and police services would be similar to the Proposed Project and would require implementation of similar U-2 mitigation measures which would reduce this impact to less than significant Class II. As with the Proposed Project, no impacts would occur to schools. Although</p>	<p>occur to schools. Implementation of this alternative would result in slightly longer response times for fire and police due to its suburban location. However, the construction and operation impacts related to fire and police services would be similar to the Proposed Project and would require implementation of similar U-2 mitigation measures which would reduce this impact to less than significant Class II. Impacts to utility and public service demands (water, solid waste, and wastewater) would be similar to</p>	<p>as the Proposed Project which would reduce this impact to less than significant Class II. Implementation of this alternative would result in longer response times for fire and police due to its rural location. However, the construction and operation impacts of the facilities would be similar to the Proposed Project and would require implementation of similar U-2 mitigation measures which would reduce this impact to less than significant Class II. Similar to the Proposed Project, no impacts would occur to schools. Although impacts to utility and</p>	<p>mitigation measures as the Proposed Project between the wellhead and compressor station which would reduce this impact to less than significant Class II. Impacts to public service system disruptions (fire, police, and schools) and utility and public service demands on water, solid waste, and wastewater would be similar to the Proposed Project as the pipeline route is in the same area.</p>	<p>mitigation measures as the Proposed Project between the wellhead and compressor station which would reduce this impact to less than significant Class II. Impacts to public service system disruptions (fire, police, and schools) and utility and public service demands on water, solid waste, and wastewater would be similar to the Proposed Project as the pipeline route is in the same area.</p>	<p>1 mitigation measures as the Proposed Project between the wellhead and compressor station which would reduce this impact to less than significant Class II. Impacts to public service system disruptions (fire, police, and schools) and utility and public service demands on water, solid waste, and wastewater would be similar to the Proposed Project as the pipeline route is in the same area.</p>

Table E-2 (Continued)

Issue Area	Proposed Project	Snodgrass Slough Gas Field Alternative	Freeport Gas Field Alternative	Thornton Gas Field Alternative	Project Design Alternative Wellhead Site to Compressor Station Pipeline Route 1	Project Design Alternative Wellhead Site to Compressor Station Pipeline Route 2	Project Design Alternative Wellhead Site to Compressor Station Pipeline Route 3
		impacts to utility and public service demands (water, solid waste, and wastewater) would be greater than the Proposed Project due to rural location, impacts are anticipated to be less than significant Class III.	the Proposed Project.	public service demands (water, solid waste, and wastewater) would be greater than the Proposed Project due to rural location. Impacts are anticipated to be less than significant Class III.			
Transportation and Traffic	Impacts T-1 (wellhead site and compressor station) and T-7 were determined to be Class III. Impacts T-1 (connecting pipelines), T-2, T-3, T-5, T-6, and T-9 were determined to be Class II. Impacts T-4 and T-8 involved no impact.	Because of its rural location, impacts would be less than the Proposed Project.	Because of its rural location, impacts would be less than the Proposed Project.	Because of its rural location, impacts would be less than the Proposed Project.	Impacts less than the Proposed Project.	Impacts similar to the Proposed Project.	Impacts similar to the Proposed Project.
Visual Resources	Impact V-1 (glare associated with wellhead site and HDD construction) was determined to be Class	As with the Proposed Project, implementation of this alternative with mitigation would not	As with the Proposed Project, implementation of this alternative with mitigation would not	This alternative has a potential to create visual resource impacts for visitors/hikers to the	Short-term construction-related impacts slightly greater than the Proposed	Short-term construction-related impacts slightly greater than the Proposed	Short-term construction-related impacts slightly less than the Proposed

Table E-2 (Continued)

Issue Area	Proposed Project	Snodgrass Slough Gas Field Alternative	Freeport Gas Field Alternative	Thornton Gas Field Alternative	Project Design Alternative Wellhead Site to Compressor Station Pipeline Route 1	Project Design Alternative Wellhead Site to Compressor Station Pipeline Route 2	Project Design Alternative Wellhead Site to Compressor Station Pipeline Route 3
	II. Impacts V-1 (remaining aboveground and belowground construction) and V-2 were determined to be Class III.	result in significant impacts to visual resources. Night-time light and glare associated with construction activity is considered a temporary significant impact (Class II) and would require mitigation.	result in significant impacts to visual resources. Night-time light and glare associated with construction activity is considered a temporary significant impact (Class II) and would require mitigation.	Cosumnes River Preserve due to views of project construction activities and long-term views of aboveground facilities. However, as with the Proposed Project, implementation of this alternative with mitigation would not result in significant impacts to visual resources.	Project due to increased length of pipeline required between the wellhead and compressor station. Impacts are anticipated to be less than significant Class III.	Project due to increased length of pipeline required between the wellhead and compressor station. Impacts are anticipated to be less than significant Class III.	Project due to decreased length of pipeline required between the wellhead and compressor station. Impacts are anticipated to be less than significant Class III.

E.2.2 Gas Field Alternatives

Freeport Gas Field

The Freeport Gas Field alternative would result in similar impacts to the environment as those for the Proposed Project. As with the Proposed Project, the Freeport Gas Field alternative would result in the following significant Class I impacts:

- (1) Hazardous materials, public health and safety because of the potential for hazards, including release of natural gas ~~and/or rupture of the proposed pipelines resulting in fire, explosion, and release of toxic substances~~. Although located in a less-densely populated area than the Proposed Project, public health and safety impacts (~~Impact HAZ-2a and HAZ-2b~~) to nearby Elk Grove would remain significant and unmitigable (Impact HAZ-2a). This is due both to the increased length of the proposed pipeline and that there would be a substantial number of people that could be affected by ~~a fire or explosion~~ the release of natural gas.
- (2) Hydrology and water quality due to potential release of gas because failure of the cap rock resulting in contamination of the aquifer, which could affect the local drinking water supply (Impact H-8). Due to the location in a less populated area, the impact would be reduced, as it would affect fewer people's drinking supply; however, it would remain a significant and unmitigable impact since it would result in contamination of an aquifer.

Class I construction noise impacts would be eliminated at the Freeport Gas Field alternative site.

The Freeport Gas Field alternative would eliminate the unmitigable short-term construction noise impact, as it is anticipated that required well drilling would not occur near sensitive receptors. Impacts to biological resources, cultural resources, hydrology and water quality, land use, agriculture, and recreation would be greater due to the rural character of the site. Impacts to air quality would be similar during operation; however, impacts would be slightly less during project construction due to a shorter construction period. Impacts to public services and utilities would be slightly less due to the decreased pipeline length and the potential to increase conflicts with existing utilities and to cause public service disruptions. Visual resource impacts would be similar to those of the Proposed Project because a portion of the gas field is currently a wastewater treatment plant. Geology and soils impacts would be similar because geologic conditions are similar to those of the Proposed Project. Impacts to population and housing under this alternative would be similar to the Proposed Project. This alternative would not result in significant environmental justice issues since it would not place a large number of facilities in the area and presumably land owners would receive royalties from the project. Noise and transportation/traffic would be less due to avoiding a more densely populated area.

Snodgrass Slough Gas Field

The Snodgrass Slough Gas Field alternative would result in greater short-term construction-related impacts to the environment than the Proposed Project due to the increased length of the connecting pipeline route (5 miles) and longer construction period. These short-term construction impacts to biological and cultural resources can be mitigated to less than significant (Class II) through avoidance of resources, restoration, or compensation for impacted resources.

Impacts to land use, agriculture, recreation, and public services and utilities would be greater due to the rural character of the site. Construction impacts to air quality and biological and cultural resources would also be slightly greater due to the increased length of the connecting pipeline route. These impacts can be mitigated to less-than-significant levels (Class II). These mitigation measures would include avoidance of resources, compensation for impacted resources, and dust control measures. Geology and soil impacts would be similar, as geologic conditions are similar to those of the Proposed Project. Visual resource impacts are similar to the Proposed Project with implementation of project mitigation measures. Impacts to population and housing under this alternative would be similar to the Proposed Project. This alternative would not result in significant environmental justice issues since it would not place a large number of facilities in the area and presumably land owners would receive royalties from the project. Noise and transportation/traffic would be less, due to avoiding a more densely populated area.

The Snodgrass Slough Gas Field alternative would eliminate the significant unavoidable short-term construction noise impact as drilling for wells would not occur near sensitive receptors. Similar to the Proposed Project, the Snodgrass Slough Gas Field alternative would involve a significant Class I impact to hydrology and water quality (see Section D.7) due to potential release of gas because of failure of the cap rock resulting in contamination of the groundwater aquifer, which could affect the local drinking water supply (Impact H-8).

Due to the remoteness of the site, Class I significant and unavoidable impacts to hazardous materials, public health, and safety (Impacts HAZ-2a and HAZ-2b) would be reduced to Class II with implementation of mitigation measures outlined in Section D.6. This is also due to the area being remote and fire and explosions the release of natural gas would result in substantially less mortality risk than the Proposed Project.

Thornton Gas Field

The Thornton Gas Field alternative would result in greater impacts to the environment than the Proposed Project due to the increased impacts related to the longer length of the connecting pipeline route (7 miles) and its location adjacent to the Cosumnes River Preserve. Greater impacts would occur to biological resources, hydrology and water quality, land use, agriculture, public services and utilities, and visual resources. Impacts to cultural resources would be slightly

greater due to the increased length of connecting pipeline routes. Impacts to population and housing would be similar to that of the Proposed Project. This alternative would not result in significant environmental justice issues since it would not place a large number of facilities in the area and presumably land owners would receive royalties from the project. Impacts to air quality would be similar yet would include greater short-term construction impacts due to a longer construction period. Geology and soil impacts would be similar as geologic conditions are similar to those of the Proposed Project. Noise and transportation/traffic impacts would be less due to avoiding a more densely populated area.

The Thornton Gas Field alternative would eliminate the unmitigable short-term construction noise impact as drilling for wells would not occur near sensitive receptors. Similar to the Proposed Project, the Thornton Gas Field alternative would involve a significant Class I impact to hydrology and water quality due to potential gas migration causing contamination of the groundwater aquifer, which could affect the local drinking water supply.

Due to the remoteness of the site, HAZ-2a and HAZ-2b (Class I) impacts would be reduced to less than significant (Class II) with implementation of mitigation measures outlined in Section D.6. This would also be due to the low number of people that would be affected should a ~~fire or explosion~~ gas leak occur.

E.2.3 Project Design Alternatives

Alternative Wellhead Site to Compressor Station Pipeline Route 1

Generally, development of the Proposed Project using the Pipeline Route 1 design alternative between the proposed Florin Gas Field wellhead site to the proposed compressor station would result in slightly greater impacts to the environment due to a slightly greater construction impact area. Similar to the Proposed Project, Alternative Pipeline Route 1 would involve significant Class I impacts, including the following:

- (1) Hazardous materials, public health and safety impacts because of the potential for hazards, such as release of natural gas ~~and/or rupture of the proposed pipelines resulting in fire, explosion, and~~ and release of toxic substances. ~~Due to the location in a more rural area, the impact would be reduced, as it would affect a smaller population; however, it would remain an unmitigable impact.~~
- (2) Hydrology and water quality impacts due to potential release of gas because failure of the cap rock resulting in contamination of the aquifer, which could affect the local drinking water supply. ~~Due to the location in a less populated area, the impact would be reduced, as it would affect fewer people's drinking supply; however, it would remain an unmitigable impact.~~

- (3) Short-term construction noise due to the project being located near sensitive receptors would remain significant.

Due to a greater construction impact area, impacts to cultural resources, hydrology and water quality, noise, and public services and utilities would be slightly greater. Impacts to air quality and visual resources would be similar yet would include greater short-term construction-related impacts due to a longer construction period. Impacts to geology and soils, land use, agriculture, recreation, and population and housing would be similar due to the project having the same general impact as the Proposed Project. Impacts to transportation and traffic would be less, due to the pipeline route being located away from Power Inn Road. Impacts to biological resources would be slightly less, as a portion of the pipeline crosses an industrial yard.

Alternative Wellhead Site to Compressor Station Pipeline Route 2

Generally, development of the Proposed Project using the Pipeline Route 2 design alternative between the proposed Florin Gas Field wellhead site to the proposed compressor station would result in slightly greater impacts to the environment due to a slightly greater construction impact area. Similar to the Proposed Project, Alternative Pipeline Route 2 would involve significant Class I impacts, including the following:

- (1) Hazardous materials, public health and safety impacts because of the potential for hazards, such as release of natural gas ~~and/or rupture of the proposed pipelines~~ resulting in fire, explosion, and release of toxic substances. ~~Due to the location in a more rural area, the impact would be reduced, as it would affect a smaller population; however, it would remain an unmitigable impact.~~
- (2) Hydrology and water quality impacts due to potential release of gas because failure of the cap rock resulting in contamination of the aquifer, which could affect the local drinking water supply. ~~Due to the location in a less populated area, the impact would be reduced, as it would affect fewer people's drinking supply; however, it would remain an unmitigable impact.~~
- (3) Short-term construction noise due to the project being located near sensitive receptors would remain significant.

Due to a greater construction impact area, impacts to cultural resources, hydrology and water quality, noise, and public services and utilities would be slightly greater. Impacts to air quality and visual resources would be similar yet would include greater short-term construction impacts due to a longer pipeline length and construction period. Impacts to biological resources, geology and soils, land use, agriculture, recreation, population and housing, and transportation and traffic would be similar, due to this alternative having a similar general impact area as the Proposed Project.

Alternative Wellhead Site to Compressor Station Pipeline Route 3

Generally, development of the Proposed Project using the Pipeline Route 3 design alternative between the proposed Florin Gas Field wellhead site to the proposed compressor station would result in slightly less impacts to the environment due to a slightly smaller construction impact area. Similar to the Proposed Project, Alternative Pipeline Route 3 would involve significant Class I impacts, including the following:

- (1) Hazardous materials, public health and safety because of the potential for hazards, such as release of natural gas ~~and/or rupture of the proposed pipelines~~ resulting in fire, explosion, and release of toxic substances. ~~Due to the location in a more rural area, the impact would be reduced, as it would affect a smaller population; however, it would remain an unmitigable impact.~~
- (2) Hydrology and water quality due to potential release of gas because failure of the cap rock resulting in contamination of the aquifer, which could affect the local drinking water supply. ~~Due to the location in a less populated area, the impact would be reduced, as it would affect fewer people's drinking supply; however, it would remain an unmitigable impact.~~
- (3) Short-term construction noise due to the project being located near sensitive receptors would remain significant.

Impacts to geology and soils, land use, agriculture, and recreation, population and housing, and transportation/traffic would be similar due to this alternative having a similar general impact area as the Proposed Project. Impacts to air quality and visual resources would be similar but would involve less short-term impacts due to a slightly shorter construction period. Due to a shorter pipeline length and construction period, impacts to biological and cultural resources, hydrology and water quality, noise, and public services and utilities would be slightly less.

E.2.4 No Project Alternative

The No Project Alternative is described in Section C.6. Under the No Project Alternative, none of the facilities associated with the Proposed Project or alternatives evaluated in this EIR would be developed. Therefore, none of the short-term disruption impacts or long-term operation impacts as described in this EIR would occur, including Class I impacts for: (1) the potential release of natural gas ~~and/or rupture of the proposed pipelines~~ resulting in fire, explosion, and release of toxic substances (Section D.6); (2) release of gas due to failure of the cap rock, resulting in contamination of the aquifer (Section D.6); and (3) exceedance of the City of Sacramento's noise standard due to well drilling at the wellhead site (Section D.9).

However, in the event of disruption of the Pacific Gas and Electric (PG&E) natural gas pipelines 400/401, the Sacramento Municipal Utility District (SMUD) may be required to implement

cutbacks on non-essential energy use and may run out of natural gas at some locations, thereby potentially effecting existing energy supply in the Sacramento metropolitan area.

E.3 Environmentally Superior Alternative

CEQA requires that the environmentally superior alternative be selected from a range of reasonable alternatives that could feasibly attain the basic objectives of the project. Based on the analysis presented in Sections D.2 through D.13 of this EIR, the environmentally superior alternative was determined to be the No Project Alternative. Under the No Project Alternative, the proposed SNGS Facility would not be constructed. All environmental impacts associated with the construction and operation of the Proposed Project would be eliminated, and existing environmental conditions would be unaffected. The No Project Alternative would not meet the goals and objectives of this project as established by SNGS, LLC. This alternative would also not derive the benefit of the Proposed Project, which would provide an emergency natural gas supply source to SMUD for the Sacramento metropolitan area. As described above, under this alternative, in the event of disruption of the PG&E natural gas pipelines 400/401, SMUD may be required to implement cutbacks on non-essential energy use and may run out of natural gas at some locations, thereby potentially effecting energy supply in the Sacramento metropolitan area.

State CEQA Guidelines section 15126, subd. (d)(2) further stipulates that “if the environmentally superior alternative is the No Project Alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives.” In addition to the No Project Alternative, six alternatives in two categories were identified for evaluation in this EIR, including gas field alternatives and project design alternatives.

The EIR analysis indicates that the Snodgrass Slough Gas Field alternative would rank as the environmentally superior alternative, as it would develop the Proposed Project within a largely agricultural area that is currently undeveloped. Under the Snodgrass Slough Gas Field alternative, the significant and unavoidable (Class I) short-term construction noise impacts would be reduced to less than significant with mitigation (Class II). Due to the location away from dense population centers, this alternative with mitigation as presented in Section D.6 of this EIR would also reduce public health and safety significant and unavoidable (Class I) impacts to less than significant (Class II). Due to the alternative’s location away from a dense population center, this alternative would reduce significant and unavoidable (Class I) impacts to groundwater resources. However, while impacts to groundwater would be reduced, they would remain significant and unavoidable (Class I). Implementation of this alternative would increase short-term construction-related impacts to air, soil erosion, cultural and biological resources, hydrology/water quality, and agriculture due to the increased length of connecting pipeline required to connect to SMUD’s natural gas pipeline system. While the EIR analysis indicates

that short-term construction impacts generated by this alternative are significant, they can be mitigated to less than significant (Class II). Therefore, from a strictly environmental perspective, the Snodgrass Slough Gas Field alternative ranks as the environmentally superior alternative, as it would reduce short-term construction noise impacts from significant and unavoidable (Class I) to less than significant with mitigation (Class II). In addition, due to its location away from dense population centers, public health and safety impacts (Class I) would be reduced to less than significant with mitigation (Class II). Also, because of this alternative's location away from dense population centers, the Class I impact to groundwater contamination of a municipal aquifer would be reduced; however, it would remain a Class I impact.

Because the Thornton Gas Field alternative would have less public health and safety impacts than the Freeport Gas Field alternative, it would rank second as the environmentally superior alternative and the Freeport Gas Field alternative would rank third.

The ~~P~~roposed ~~P~~roject, use of the Florin Gas ~~F~~ield, would rank below these alternatives in terms of environmental impacts. Although the Proposed Project would probably have less impacts to biological resources than the other alternatives, it will have significant and unavoidable (Class I) impacts to public safety associated with ~~the potential for fire and explosion associated with the proposed pipelines. The~~ the remote potential for leakage of gas into the aquifer and surface will also cause significant and unavoidable (Class I) impacts due to the high population density in the area.

E.4 Economic Considerations

Economic feasibility was not considered in this EIR in the evaluation of alternatives to the Proposed Project and may be considered separately in the CPUC's CPCN proceedings. The following economic factors are provided to evaluate the comparative merits of the alternatives when compared to the Proposed Project.

SNGS, LLC estimates that in order to be economically viable, a natural gas reservoir needs to be able to contain approximately 5 to 10 billion cubic feet (bcf) of working gas. This is the gas that customers store. If the reservoir is less than 5 bcf, the overall cost of the project is such that the investors would not recover their investment. Any size over approximately 10 bcf would require such a large volume of cushion gas (gas required to pressure up the reservoir for operations) costing approximately \$7,000,000 per bcf that the project could not pay for itself (SNGS, LLC August 10, 2007).

Florin Gas Field—Proposed Project

The Proposed Project would permit approximately 7.5 bcf of working gas storage capacity. The requisite cushion gas for operation is already in place. The Proposed Project would require an

estimated \$40 million to develop and would return a projected annual revenue of \$15 million (SNGS, LLC ~~May~~-2008).

Freeport Gas Field Alternative

The Freeport Gas Field would permit approximately 1+bcf of working gas storage capacity. This alternative would require an estimated \$60 million to develop and would return a projected annual revenue of \$2.2 million (SNGS, LLC ~~May 27~~, 2008). Given the relatively low return on investment, it is doubtful that the alternative would be financially feasible.

Snodgrass Slough Gas Field Alternative

The Snodgrass Slough Gas Field would permit approximately 2+ bcf of working gas storage capacity. This alternative would require an estimated \$61 million to develop and would return a projected annual revenue of \$4.4 million (SNGS, LLC ~~May 27~~, 2008). Given the relatively low return on investment, it is doubtful that the alternative would be financially feasible.

Thornton Gas Field Alternative

The Thornton Gas Field is large and would require approximately 18 bcf of cushion gas to develop. This would require an estimated \$126 million for cushion gas. Total capital cost to develop this field is estimated to be \$186 million and would return a projected annual revenue of less than \$15 million (SNGS, LLC ~~May~~-2008). Given the relatively low return on investment, it is doubtful that the alternative would be financially feasible.

E.5 References

14 CCR 15000 et seq. CEQA (California Environmental Quality Act) Guidelines.

CEQA (California Environmental Quality Act). 1970. California Public Resources Code (PRC) Sections 21000–21177.1.

SNGS (Sacramento Natural Gas Storage), LLC. 2007a. *Proponent's Environmental Assessment (PEA) for the Sacramento Natural Gas Storage (SNGS) Project*. Sacramento, California: Sacramento Natural Gas Storage, LLC and EIP Associates, a division of PBS&J. April 5, 2007.

SNGS, LLC. 2007b. Response to CPUC Deficiency Letter. August 10.

SNGS, LLC. 2008. Response to CPUC Data 1 Request 1. May 27.

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