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SECTION 6.0

Natural Gas Supply

Natural gas will be obtained from PG&E's transmission backbone pipelines 400 and 401 located in Winters, CA, and transported through the District's 50-mile pipeline network. A 24-inch diameter pipeline will be constructed from a connection to the District's pipeline network tap point at the Carson Ice-Gen Project to the CPP site. This section describes the proposed gas supply line route and alternative routes. The gas supply line construction methods and the pipeline operating procedures are also described.

6.1 The Proposed Route

The CPP natural gas pipeline extension is approximately 26 miles in length. The proposed route is shown on Figures 6.1-1 through 6.1-7 at the end of this section. The proposed route follows the tracks of the Western Pacific Railroad south to Core Road. At Core Road, the route proceeds east to Ed Rau Road, and continues east in conjunction with the existing electric tower lines for the Rancho Seco Plant to the intersection of that alignment with a farm road just west of a significant drainage ditch and grape crops, between Carroll and Eschinger roads. The primary route then follows the farm road south to Eschinger Road, then follows Eschinger Road east to the first turn north on Eschinger Road, where it proceeds south on the unimproved farm road to the intersection with another unimproved farm road that runs primarily east-west, and then proceeds directly across a farm field to the proposed crossing of the Cosumnes River. At this point the corridor enters the Cosumnes River Preserve. The route continues across the farm field on the southeast side, to an unimproved maintenance road paralleling (on the north side) electric tower lines. This tower line maintenance road is followed east to the west side of the Union Pacific Railroad (UPRR) tracks. The route proceeds southeast and reconnects with the road south of Badger Creek and east of the UPRR. Once across the tracks, the route follows the maintenance road and its projection southeast to Arno Road on the east side of Highway 99. From the east side of Highway 99 the route follows Arno Road and Valensin Road east to Colony Road. From the intersection of Valensin and Colony roads, proceed east on Valensin Road to Alta Mesa Road. Continue east on Alta Mesa Road to the unimproved extension of Laguna Road, following Laguna Road to Twin Cities Road (State Route 104). At this point Twin Cities Road is paralleled on the northwest by the spur line railroad tracks of the UPRR. The route continues east along highway 104 to Clay East Road. At Clay East Road, the route departs from the UPRR/Twin Cities Road alignment, and proceeds east on Clay East Road to the CPP.

The proposed route sweeps south then east, away from population centers shown on current Sacramento County planning maps. The route would have minimal disruption to regional traffic patterns, and much of the piping would be constructed in existing easements and near country roadways for convenient pipeline operations and maintenance. The proposed route's south sweep lends itself to future connections with gas supply in the central valley to the south. This would enhance plant reliability.

6.2 Alternative Routes

To determine the optimal route for the gas supply pipeline, several alternative alignments were evaluated. These alignments fall into three general categories, and are described below.

- **Alternative alignments along the proposed route.** As an alternative using Western Pacific Railroad right of way (ROW), the roadway equivalent is to proceed east on Dwight Road to Franklin Boulevard (see Alternative G2 on Figure 6.1-1), and south on Franklin Boulevard to Core Road, then proceed east on Core Road to the railroad right of way. At Ed Rau Road, another alternative alignment becomes available: proceed south on Ed Rau Road to Eschinger Road, then east on Eschinger Road to where the proposed route again meets Eschinger Road.
- **Carson Northeast Corridor Routes.** The Carson Northeast corridor alternate is shown as Alternative G4 on Figure 6.1-1. The Northeast Corridor routes follow Dwight Road east to Franklin Boulevard, and continue east along Big Horn Boulevard to Bruceville Road. At this juncture the primary route turns north on Bruceville Road at its juncture with Big Horn Boulevard, and runs east on Sheldon Road to Bader Road. Turning south on Bader Road, the route proceeds to Pleasant Grove School Road, where it turns east. The route runs east on Pleasant Grove School Road to Grant Line Road. The alternate route continues southeast along Big Horn Boulevard to Laguna Boulevard, turning east on Laguna Boulevard, crossing Highway 99, and continuing east on Bond Road to Grant Line Road, and northeast on Grant Line Road, where it again converges with the primary route.

  In this vicinity the PG&E electric tower lines cross Grant Line Road. The possible use of this tower line as a route was explored, and subsequently discarded because of the lack of access to the alignment for most of the route. The towers themselves follow a direct route, but the lack of a maintenance road and continuous access made it infeasible for further consideration.

  At the intersection of Grant Line Road and Wilton Road, the route turns southeast on Wilton Road to Dillard Road. For approximately two-thirds of this distance the Central California Traction Railroad tracks run parallel to and immediately northeast of the roadway, providing additional options to place the gas pipeline. At Dillard Road, however, the primary route continues southeast and south along the Central California Traction Railroad right of way to the east projection of Valensin Road, then east to Colony Road. Alternatively, the route could turn northeast at Dillard Road, and southeast and south on Colony Road to Valensin Road.

  As in the case of the proposed route, from the intersection of Valensin Road and Colony Road, the route proceeds east on Valensin Road to Alta Mesa Road. Continue east on Alta Mesa Road to the unimproved extension of Laguna Road, following Laguna Road to Twin Cities Road (State Route 104). At this point Twin Cities Road is paralleled on the northwest by the spur line railroad tracks of the UPRR. Since the road right of way appears constricted in a number of places by topography, it would be preferable to place the pipeline within the railroad right of way. At Clay East Road, the route departs from the UPRR/Twin Cities Road alignment, and proceeds east on Clay East Road to the CPP.

This route goes through more populated and developed areas than the preferred route and has potential for land use compatibility issues, permitability and right-of-way issues, and higher maintenance and operations costs. This route would be more disruptive to traffic during construction, compared to the preferred route. It would also be more expensive to construct.

- **Procter & Gamble Cogeneration Facility Corridors.** The Procter & Gamble Cogeneration facility is located on 83rd Avenue, at 24th Street; the tie-in point is on Fruitridge Road, at 83rd Avenue. From that point, the two identified route corridors share a common path: east on Fruitridge Road to the Central California Traction Railroad (CCTRR) right of way, and southeast along that right of way to Florin Road. At that point the two routes split.
  - Procter & Gamble Southwest Corridor Route—The southwest route continues along the CCTRR right of way to the vicinity of Sheldon, where it converges with the northeast corridor route from the Carson Ice-Gen Project, and follows that corridor to the CPP.
  - Procter & Gamble Southeast Corridor Route—The southeast route turns east on Florin Road, and follows Florin Road several miles to the Folsom-South Canal right of way, at which point it turns south, following the Folsom-South Canal right of way south to the existing District pump station, north of Twin Cities Road. From there, the route follows the existing District water line easement east to the CPP.

The Procter & Gamble alternative routes do not provide suitable gas supply without significant upstream pipeline parallel reinforcement. There is also a significant impact to gas supply, efficiency, and operations for the cogeneration facility at Procter & Gamble. Also, the pipeline does not offer the same flexibility for connecting to future gas pipelines from the south as the proposed route. This may affect plant reliability. The Procter & Gamble Southwest corridor alternative route has significant land use compatibility issues and would be disruptive to traffic during construction. The Procter & Gamble Southeast corridor alternative route has significant permitability and right of way issues. Due to these impacts, the Procter & Gamble alternate routes were not studied further.

6.3 Selection Criteria

The proposed route and alternative gas pipeline segments were selected based on the following:

- engineering and construction feasibility
- environmental impacts
- compatibility with land uses
- availability of rights of way and permitting
- cost
- maintenance and operation of the completed pipeline
- impacts to the existing and future District pipeline network

Engineering and construction feasibility is an assessment of whether the pipeline can be physically placed along a given route. Environmental impacts consider biological and cultural impacts during construction. Current and future land uses were researched to determine best routes to avoid disruption to the public. The proposed alignment makes use of existing easements to the maximum extent. Cost is an important factor because of the District's duty to minimize cost to its customers. The pipeline route must be selected where maintenance and operation activities could easily be achieved. Finally, the route should not impact existing pipeline operations, and should accommodate expansion and enhance reliability if possible.

It was determined that the proposed route and all route alternatives had environmental impacts that could be mitigated through (a) avoidance of sensitive habitat by route selection or alternate construction method; (b) post-construction restoration; or (c) compensation by setting aside habitat in a conservation easement.

All of the above factors were considered for all routes identified at the early project stages, and a proposed pipeline route was selected to best accommodate each of the selection criteria.

6.4 Construction Practices

The natural gas pipeline will be constructed with a minimum of at least one crew ("spread") working continuously along the pipeline ROW. Workers will park along the pipeline ROW or at designated parking areas and be transported to the work site. The ROW will be accessed from existing roads. Most major pieces of construction equipment may remain along the ROW over the course of construction. Piping will be stored in the plant laydown areas or along the pipeline ROW. Pipeline construction is estimated to occur during the timeframe and with the workforce described in Section 8.8. Construction will be done in accordance with an environmental mitigation plan prepared for the project.

The line pipe will be of alloyed carbon steel material in accordance with the American Petroleum Institute (API) specification for line pipe. A factory-applied corrosion protection coating will be on the pipe. A cathodic protection system will be installed to further protect the pipeline from external corrosion. Joints will be welded and radiographically inspected. The construction of the natural gas pipeline will consist of the following activities:

- **Trenchin**g – Trenching will consist of digging a 3- to 7-foot-wide trench. Trench width will depend on the type of soils encountered and slope required by OSHA regulations. Trench depth will be sufficient to meet the requirements of the codes and agency having jurisdiction. However, the pipeline will be buried to provide a minimum cover of 5 feet. The excavated soil will be piled on one side of the trench and used for backfilling after the pipe is installed in the trench. The pipeline will be installed through trenching at all locations except where boring or directional drilling is required to pass beneath a highway, railroad, natural water course, canal, or any other location where boring is the preferred method of construction.

- **Stringing** – Stringing will consist of trucking lengths of pipe to the ROW and laying them on wooden skids beside the open trench.

- **Installation** – Installation will consist of bending, welding, and coating the weld joint areas of the pipe after it has been strung, as well as padding the ditch with sand or fine spoil in accordance with specifications, and lowering the pipe string into the trench. Bends will be made by a cold bending machine or shop fabricated as required for various changes in bearing and elevation. Welding will meet the applicable API standards and be performed by qualified welders. Welds will be inspected in accordance with API Standard 1104. Welds will undergo 100 percent radiographical inspection by an independent, qualified radiography contractor. All coatings will be checked for holidays (i.e., defects) prior to being lowered into the trench.
- **Backfilling** – Backfilling will consist of returning spoil back into the trench around and on top of the pipe, ensuring that the surface is returned to its original grade or level. The backfill will be compacted to protect the stability of the pipe and to minimize subsequent subsidence.
- **Plating** – Plating will consist of covering any open trench in areas of foot or vehicle traffic at the end of a workday. Plywood plates will be used in areas of foot traffic and steel plates will be used in areas of vehicle traffic to ensure public safety. Plates will be removed at the start of each workday. Efforts will be made to minimize the length of open trench along the ROW.
- **Boring** - The boring method will be used for moderately short crossings under roads, highways, canals, etc., where dictated by a government agency or where it would be inconvenient or environmentally unsound to use the open-cut method. Boring pits will be dug on each side of the crossing. On the inlet side, a boring machine with an auger typically will be used, or a ramming device may be used to "jack" the pipe into place.
- **Horizontal Directional Drilling** – Horizontal directional drilling will be used to route the pipeline under water features or other crossings where trenching or jack and bore are inappropriate. The horizontal directional drilled equipment will initially drill a pilot hole, which will be followed by a pilot hole drill string. A reaming device will be attached to the drill string and will be pulled through the pilot hole. The reamer will enlarge the pilot hole to a diameter of 35 to 50 percent greater than the final pipeline size. The pipeline will then be welded, radiographed, hydrotested, and pulled through the enlarged borehole.
- Drilling mud will be used as part of the horizontal directional drill process to lubricate and cool the drill. The mud will be non-toxic bentonite. Approximately 1,300 barrels of drilling mud will be used and will require disposal. The drilling mud will be collected at the directional drilling site. It will then be disposed of at a Class III landfill.
- Typically, railroad companies require all pipelines transporting flammable materials to be encased in a larger pipe or conduit when crossing under railroad tracks. However, pipelines installed via the horizontal directional drill method can be installed deep enough to eliminate this casing pipe requirement.
- **Hydrostatic Testing** – Hydrostatic testing will consist of filling the pipeline with water, venting all air, increasing the pressure to the specified code requirements, and holding the pressure for a period of time. After hydrostatic testing of the pipeline, the test water will be chemically analyzed for contaminants and discharged into a dewatering

structure consisting of hay bales, geotextile fabric, and silt fencing. The discharged water will filter through the hay bales and silt fence onto a jute matting before it is discharged. Temporary approvals for test water use and permits for discharge will be obtained as required.

- **Cleanup** – Cleanup will consist of restoring the surface of the ROW by removing any construction debris, grading to the original grade and contour, and revegetating and repairing where required.
- **Commissioning** – Commissioning will consist of pigging and drying the inside of the pipeline, purging air from the pipeline, and filling the pipeline with natural gas.
- **Safety** – A construction safety plan will be prepared for the project. This plan will address specific safety issues, such as working in an active railroad right of way, traffic control, working along traveled city or county streets, and other areas as required by permits.

6.5 Pipeline Operations

The proposed gas supply pipeline will be designed, constructed, and operated in accordance with Title 49, Code of Federal Regulations, Part 192 (49 CFR192). Specifically, the pipeline will be designed in accordance with the standards required for gas pipelines in proximity to populated areas, based on actual population densities along the proposed pipeline route. It will be buried a minimum of 5 feet, or deeper, as required by local regulations.

An operations and maintenance plan will be prepared addressing both normal procedures and conditions, and any upset or abnormal conditions that could occur. Periodic cathodic protection surveys will be performed along the pipeline, as required by 49 CFR 192. The pipeline will be under a continuos cathodic protection system.

The proposed pipeline will adopt a proactive damage prevention program. Markers identifying the location of the pipeline will be placed at all road crossings. The markers will identify a toll-free number to call prior to any excavation in the vicinity of the pipeline. A tripwire will be installed and connected to an alarm system, notifying the District of digging or earthwork in the pipeline's proximity.

The transported gas will be odorized as received from PG&E's main pipeline. The owners of the proposed pipeline will develop an emergency plan to provide prompt and effective responses to upset conditions detected along the pipeline or reported by the public.

Isolation block-valves will be installed at both ends of the proposed pipeline extension and periodically along the length of the pipeline as required by code. These valves will be manually controlled, lockable, gear-operated ball valves. The District alone will have access to the isolation ball valves. The District will own and operate a metering facility to measure the gas supply to CPP. A pipeline Supervisory Control and Data Acquisition system will provide flow rate and pressure data to the District.

6.6 References

Union Pacific Railroad. Pipeline Installation Engineering Specifications. Available: http://www.uprr.com/uprr/business/re/pipeline/pipespec.shtml.