

5.0 NATURAL GAS SUPPLY

A new 16-inch diameter pipeline, approximately 0.9 miles long, will supply natural gas to the Russell City Energy Center (RCEC). This section describes the proposed gas supply line route, its selection from a group of candidate routes, and the anticipated environmental impacts from its construction and operation. An overview of the expected construction methods and the operating practices for this gas supply pipeline is also included.

During the project development phase, Pacific Gas and Electric Company (PG&E) was requested to perform a route evaluation study for this pipeline. A total of seven routes were identified and considered. The route selected and described in this section was designated Route 3 in PG&E's response to the Calpine/Bechtel (Appendix 5-A). This route was selected primarily because it would lie entirely within the City of Hayward and would require the disruption of traffic and damage to pavement on the fewest streets.

5.1 PROPOSED NATURAL GAS PIPELINE ROUTE

The new 16-inch diameter pipeline will connect with PG&E's 30-inch diameter gas distribution pipeline, Line 153, which parallels the east side of the Union Pacific Railroad Company (UPRR) right-of-way (ROW) through Hayward. From there it will cross the UPRR ROW and will extend west along the south property line of Berkeley Farms, immediately adjacent to an existing City of Hayward utility easement. After crossing Clawiter Road, the new pipeline will extend west along Enterprise Avenue, entering the southeast corner of the RCEC plant site off of Whitesell Street, approximately 500 feet south of its intersection with Enterprise Avenue (Figure 5-1).

For essentially its entire length from the tie-in with PG&E's Line 153 to the RCEC plant site, the pipeline follows either an existing utility corridor across a private property (Berkeley Farms) or is routed along primarily Enterprise Avenue.

The pipeline will cross the UPRR ROW with an uncased crossing installed by the jack-and-bore method, at a depth of more than 10 feet below the tracks. From the end of the jack-and-bore section, which will be located just north of the intersection of the ROW and the southern boundary of the Berkeley Farms property, the pipeline will be constructed by conventional trenching along an alignment approximately 18 feet north of the southern edge of the Berkeley Farms property immediately adjacent to an existing, gravel-covered utility corridor for a distance of approximately 1200 feet. This 20-foot wide corridor currently contains a City of Hayward 42-inch diameter sewer main and various Berkeley Farms yard utilities, including a firewater loop and power for outdoor lighting fixtures.

From the point that this utility corridor intersects Clawiter Road, for a distance of some 300 feet, the pipeline will be constructed by either conventional trenching or jack-and-bore diagonally across Clawiter Road to its intersection with Enterprise Avenue.

From the intersection of Enterprise Avenue and Clawiter Road, the pipeline will be installed by trenching in the Enterprise Avenue right-of-way, for a distance of approximately 2000 feet. Existing large-diameter stormwater and sewer mains are currently routed under the pavement along this portion of Enterprise Avenue. The gas pipeline will be routed parallel with these pipelines on an alignment that avoids interference with them.

At the intersection of Enterprise Avenue and Whitesell Street, the pipeline route turns south along Whitesell Street for a distance of approximately 550 feet. From this point, the pipeline route again turns west, to enter the RCEC plant site at a distance of about 180 feet north of the railroad crossing of Whitesell Street. All of these segments will also be installed by trenching.

5.2 ALTERNATIVE ROUTES

Seven alternative routes, including the preferred route described above, were investigated by PG&E (Figure 5-1). These routes connected with PG&E's Line 153 at a total of four candidate locations along the east side of the UPRR right-of-way. The combination of the three other tie-in points, all to the north of the one described in the preferred route, and various alternate routes along city streets and across various private properties, resulted in the identification of six additional routes for the gas pipeline. Each of the seven routes was judged to be technically feasible, using conventional trenching methods and city-street pipeline construction techniques (with the exception of the jack-and-bore railroad crossing). A discussion of the alternative natural gas pipeline routes is included in Section 9, Alternatives.

5.3 CONSTRUCTION PRACTICES

The natural gas pipeline will be constructed with a minimum of at least one crew ("spread") working continuously along the pipeline ROW. One additional construction crew will be required for the railroad crossing. Construction of the entire pipeline will require a peak workforce of approximately 15 people. Workers would park in the designated craft parking area and be transported to the construction area along the pipeline ROW by bus or van. Most major pieces of construction equipment (backhoes and trucks) may remain in the existing on-street parking lanes along the pipeline ROW during the course of construction. In addition to providing worker parking, the laydown area will serve as the primary location for storing the pipe and other pipeline construction materials. Any additional storage locations will be in existing paved or graveled areas along the pipeline route. Pipeline construction will take approximately 2 to 3 months and is expected to occur during the summer of 2003.

The pipeline will be fabricated of alloyed carbon steel material in accordance with the American Petroleum Institute (API) specification for pipeline. A factory-applied corrosion protection coating will be applied on the pipe. Joints will be welded.

1. **Trenching**—Trenching will consist of digging a 3- to 7-foot-wide trench. Trench width will depend on the type of soils encountered and underground obstructions. Trench depth will be sufficient to meet the requirements of the governing agencies. However, the pipeline will be buried to provide a minimum cover of 36 inches. 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 for the railroad crossing, which will be installed by the jack and bore method.
2. **Stringing**—Stringing will consist of trucking lengths of pipe to the ROW and laying them on wooden skids beside the open trench.
3. **Installation**—Installation will consist of bending, welding, and coating the weld joint areas of the pipe after it has been strung, padding the ditch with sand or fine spoil, 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

-  Pipeline Route
-  Route Selection
-  Alternative 1
-  Alternative 2
-  Alternative 4
-  Alternative 5
-  Alternative 6
-  Alternative 7

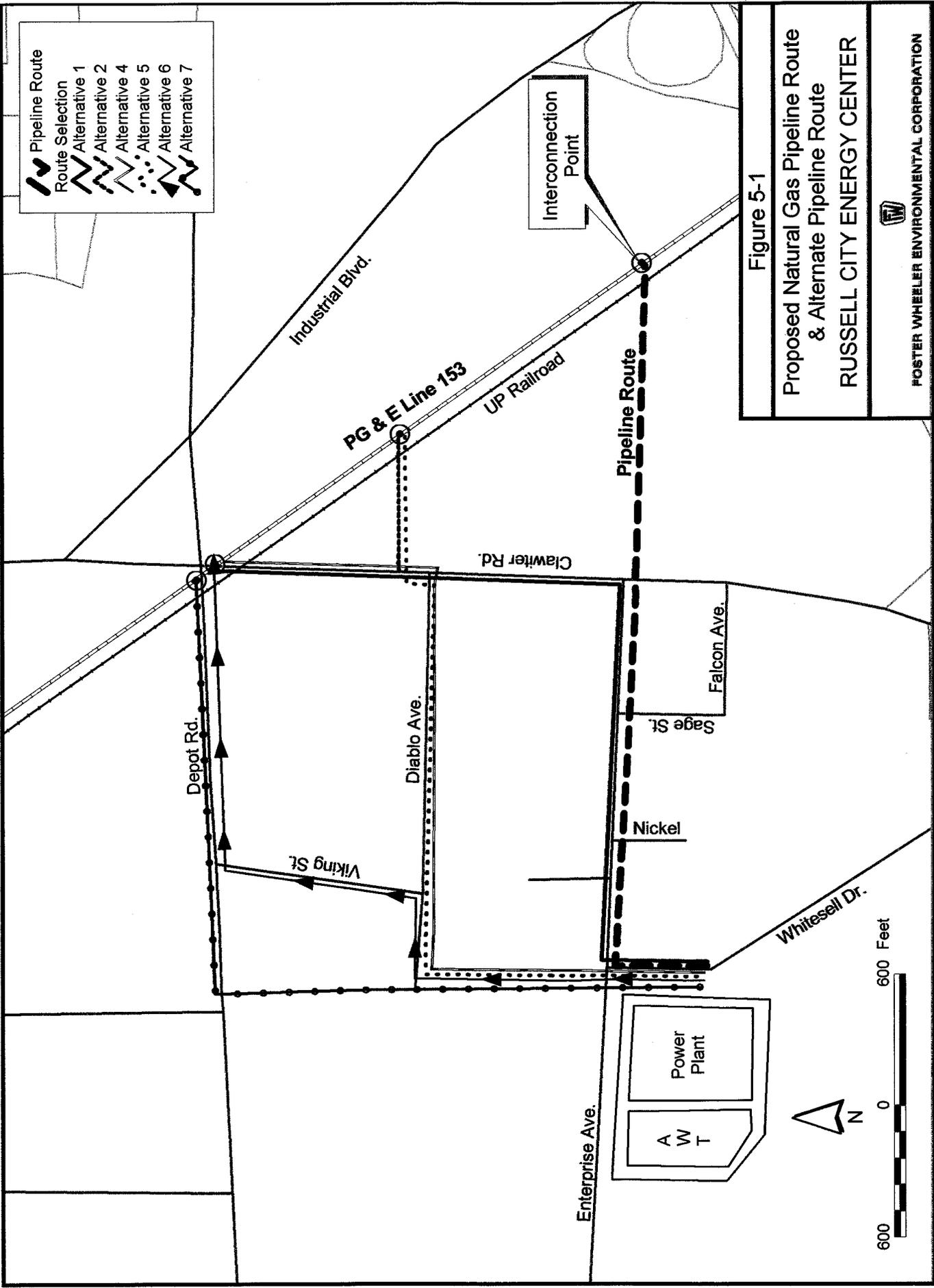


Figure 5-1

Proposed Natural Gas Pipeline Route
 & Alternate Pipeline Route
 RUSSELL CITY ENERGY CENTER

 FOSTER WHEELER ENVIRONMENTAL CORPORATION

Russell City Energy Center AFC

May 2001

API Standard 1104. Welds will undergo 100 percent radiographical inspection by an independent, qualified radiography contractor. All coating will be checked for holidays (i.e., defects) prior to lowering into the trench.

4. **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.
5. **Plating**—Plating will consist of covering any open trench at the end of a workday with steel plates 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.
6. **Boring**—The boring method will be used for the moderately short crossing under the UPRR tracks, and may be required for the crossing under Clawiter Road. Boring pits will be dug on each side of the railroad right-of-way. 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. Provided that the pipeline is installed at a depth greater than 10 feet between the top of pipe and the bottom of the tracks, it is anticipated that this track crossing can be installed without casing.
7. **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. It is expected that the fresh water required can be drawn from the municipal water supply. 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.
8. **Cleanup**—Cleanup will consist of restoring the surface of the ROW by removing any construction debris, grading to the original grade and contour, and repairing and repaving where required.
9. **Commissioning**—Commissioning will consist of drying the inside of the pipeline, purging air from the pipeline, and filling the pipeline with natural gas.
10. **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 streets, and other areas as required by permits.

5.4 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 CFR 192) and the California Public Utility Commission's General Order (G.O.) 112-E. 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 36 inches, as required by Alameda County, Caltrans, or UPRR.

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 and G.O.112-E. The pipeline will be under a continuous 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 near the pipeline. Buried warning tape will be placed above the pipeline to warn of its presence.

The transported gas will be odorized as received from PG&E's main pipeline. PG&E 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. These valves will be manually controlled, lockable, gear-operated ball valves. Only PG&E will have access to the isolation block valve at the mainline tap, and the RCEC alone will have access to the downstream isolation ball valve at the RCEC property. A pipeline Supervisory Control and Data Acquisition (SCADA) system will provide flow rate and pressure data to PG&E and the RCEC.

5.5 ON-SITE FUEL SUPPLY SYSTEM

A description of the fuel supply system within the RCEC is provided in Section 2.2.

5.6 PERMITS AND PERMITTING SCHEDULE

The California Streets and Highways Code, Division 2, Chapter 5.5, Sections 1460-1470, mandates that an encroachment permit must be obtained from the City of Hayward Public Works Department if there is an opening or excavation for any purpose in any roadway. This and other permits, as well as the schedule for obtaining the permits, are discussed in Section 8.6, Land Use.