B. DESCRIPTION OF PROPOSED PROJECT, ALTERNATIVES AND SCENARIO FOR ANALYSIS OF CUMULATIVE IMPACTS

B.1 INTRODUCTION

Section B describes the Northeast San Jose Transmission Reinforcement Project ("proposed project") that is proposed by PG&E Co. and the project alternatives. The information is intended to provide for a common understanding of the project parameters as they are analyzed in the Environmental Settings, Impacts and Mitigation sections.

Section B.2 describes the components of the proposed project, with additional details in Sections B.3 (Construction) and Section B.4 (Operation and Maintenance).

Sections B.5 through B.7 address project alternatives that were evaluated as required by the California Environmental Quality Act (CEQA). These are alternatives that might have potential environmental advantages over the proposed project and could feasiblely attain the basic overall project objectives. Section B.5 describes the process through which the potential alternatives to this project were considered and selected. Section B.6 describes each of the alternatives selected for further consideration in this EIR and provides a description of the alternatives. The No Project Alternative is described in Section B.7.

A cumulative impacts scenario has also been prepared (Section B.8). This scenario describes future pending or approved projects which, taken together with the proposed project or alternatives, could affect the same environment or community. Each discipline in Section C considers the potential for cumulative impacts based on the projects identified in this section.

B.2 DESCRIPTION OF THE PROPOSED PROJECT

Section A.1 describes PG&E Co.'s existing transmission and distribution system in the San Jose area, and explains how the proposed project would connect to and enhance that system. Section A.2 describes the need for the project.

B.2.1 Overview of the Proposed Project

The Northeast San Jose Transmission Reinforcement Project is needed to meet the projected electric demand in the Cities of Fremont, Milpitas, San Jose, and Santa Clara (the greater San Jose area). As illustrated in Figure B.2-1, the project is located within the Cities of Fremont and San Jose and includes a small unincorporated area of Santa Clara County. Figure B.2-1 illustrates the four major components of the proposed project, which are:

- **Los Esteros Substation**: A new 230/115 kV substation located in unincorporated Santa Clara County to provide 230kV power, which would be transformed to 115kV power and distributed to existing distribution substations. In addition, the new substation will be large enough to expand its distribution facilities in the future (when justified

by demand, a 21kV substation would be installed, including four 230/21kV transformers and 21kV distribution feeders).

- **230kV Transmission Line**: A new approximately 7.3-mile-long 230 kV double-circuit transmission line from the existing 230kV Newark Substation (in the City of Fremont) to the proposed Los Esteros Substation.

- **Newark Substation Modification**: Modification of the existing Newark Substation to accommodate the new 230 kV double-circuit transmission line.

- **115kV Connections and Distribution Line Upgrade:** The Los Esteros Substation would initially be connected to four existing 115kV distribution lines that connect to 115kV substations and facilities (Kifer, Trimble, Montague, and Agnews). Connection to the Montague Substation would require replacement of a segment of an existing 115 kV single-circuit wood pole line with a double-circuit steel pole line along Trimble Road and Montague Expressway (in the City of San Jose).

Each of these components is described in the following sections.

B.2.2 Proposed Project Components

Table B.2-1 summarizes the primary facilities that will ultimately be installed as part of the project. Detailed descriptions of the project facilities, their locations, and construction methods are provided in the following sections.

Electric and Magnetic Field (EMF) Reduction. In accordance with CPUC Decision 93-11-013, PG&E Co. will incorporate "no cost" and "low cost" magnetic field reduction steps in the proposed transmission and substation facilities. Proposed measures to reduce potential exposure to magnetic fields generated by the proposed facilities will be consistent with PG&E Co.'s Transmission and Substation EMF Design Guidelines. According to PG&E Co., the design guidelines include the following measures that may be available to reduce the magnetic field strength levels from electric power facilities:

- Increase distance from conductors and equipment
- Reduce conductor spacing
- Minimize current
- Optimize phase configuration.

This issue is further addressed in Section C.9 of this EIR.

Northeast San Jose Transmission Reinforcement Project EIR

Figure B.2-1

Proposed Project Location and Facilities

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Table B.2-1 Summary of Project Facilities

Project Component	Description
Los Esteros Substation	• Developed acreage: 24 acres (approx.1,020 feet by 1,050 feet, including the Los Esteros 230/115 kV Substation, fenced with paved access road) • Voltage transformers, line traps, control, protection, and communications • Transformer size: four 420 megavolt amperes (MVA) 230/115 kV transformers (three in 2002) • Line switching equipment • Bus structures • Dead-end structures • One 115 kV three-step shunt capacitor bank (first three steps 2002)
230 kV Transmission Line Facilities	• Conductors: double-circuit, bundled 1113 kcmil all aluminum, each circuit with three phases and two sub-conductors per phase • Minimum ground clearance: 32 feet • Diameter: 1.22 inches • Distance between sub-conductors: 18 inches • Shield wire Diameter: 0.385 inches • Structure types: tubular steel poles (gray) • Structure heights: varies 95 feet to 195 feet • Approximate distance between structures: 800 to 1,600 feet • Total number of structures: 36 to 40
Newark Substation Modification	• Supporting structures: two line positions • Bus structures: three bay extension • Line switching equipment • Line traps, control, protection, and communication equipment
115kV Connections	
Los Esteros Substation 115kV Connections	• Conductors: Kifer, Trimble and Montague circuits: C one circuit bundled with two sub-conductors per phase 715.5 kcmil all aluminum • Conductors: Agnews circuit: C one circuit single 715.5 kcmil all aluminum conductor • Diameter: 0.974 inches • Minimum ground clearance: 32 feet • Shieldwire Diameter: 0.385 inches • Structure types: self-supporting (galvanized) tubular steel poles colored gray with wood poles for parts of Kifer and Agnews circuits • Structure heights: varies 80 feet to 110 feet • Approximate distance between structures: 300 to 800 feet • Total number of structures: 15 to 18 tubular steel structures and 10 to 12 wood pole structures
Los Esteros to Montague 115 kV Power Line (on Trimble Road and Montague Expressway)	• Conductors: double-circuit, 715.5 kcmil all aluminum bundled with two sub-conductors per phase on the northerly circuit (Los Esteros to Montague) and 715.5 kcmil all aluminum single conductor per phase for the southerly existing circuit (Montague to Trimble). • Minimum ground clearance: 32 feet • Diameter: 0.974 inches • Structure types: self-supporting tubular steel poles • Structure heights: varies 80 feet to 110 feet • Approximate distance between structures: 300 to 800 feet • Number of structures: 22 to 26

B.2.2.1 *Los Esteros Substation*

The proposed substation site is located on the north side of State Route 237, between Zanker Road and Coyote Creek. The southern boundary of the substation would be located about 1,200 feet north of State Route 237. The entire property is approximately 54 acres in size, and is currently occupied by greenhouses, agricultural facilities, and buildings that house agricultural workers. Only the northern 24 acres of the 54-acre property are required for the Los Esteros Substation. Figure B.2-2 illustrates the site and the area proposed for substation construction.

The Los Esteros Substation site is an agricultural property. During the 1997 growing season, (last inspection of crops) the east half of the site was planted in onchoi (a vegetable) and the west half was planted in flowers. While the agricultural operation may be productive, the property is designated in the San Jose General Plan for light industrial uses.

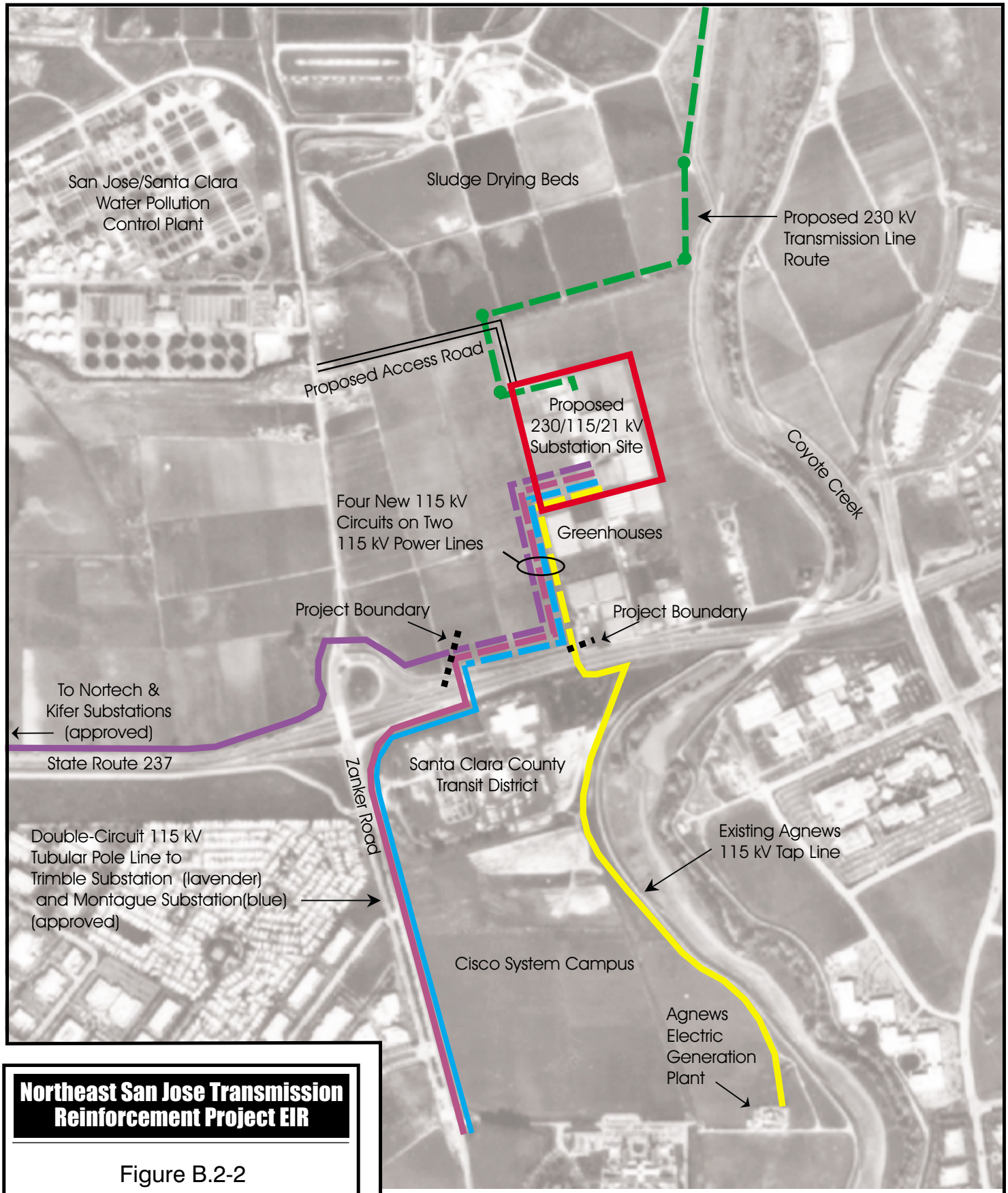
The substation will be an unattended, remote-controlled facility that will require periodic maintenance. The City of San Jose maps the area as Flood Zone B[1], and the elevation of the site is between 10 and 15 feet above mean sea level. PG&E Co. will install a spill prevention containment and countermeasure (SPCC) pond within the substation to process all water runoff from the operating areas. A paved driveway will be installed within the substation for internal circulation of vehicles. PG&E Co. will construct an all-weather access road about 20 feet wide across the San Jose/Santa Clara Water Pollution Control Plant property from Zanker Road east and south to the new substation. The substation will initially consist of circuit breakers, bus, capacitors, controls, and three 230/115 kV transformers. The substation site is large enough to accommodate a fourth 230/115 kV transformer, as well as a future 230/21kV distribution substation with 21kV distribution connections. These future facilities are not evaluated in this EIR because their installation would be subject to future demand and growth in the area, but the substation is sized to accommodate them so that future growth would not require installation of a substation on another site.

As of 1999, there were four agricultural businesses on the Los Esteros Substation site, three that grow flowers and one that grows onchoi, a vegetable. As of January 19, 1999 there were approximately 25 people living in nine residential units on the property. The nine units include eight homes ranging from cottages to metal buildings. The other unit is a 2,200 square foot living area that is a portion of a building that also houses a boiler, cooler and storage area. The building sizes range from 500 to 4,000 square feet.

Figure B.2-3 provides a plan view of the equipment that PG&E Co. will install at the Los Esteros Substation. Twenty-four acres are required for the combined 230/115 kV transmission and 230/21 kV (future) distribution substation. Major equipment for the 230/115kV transmission substation will include the following:

- 230 kV bus structures (for transmitting 230 kV power within the substation)
- Two 230 kV circuit breakers (for energizing and de-energizing circuits) for the 230 kV transmission lines from the Newark Substation
- One bus parallel 230 kV breaker (for switching maintenance purposes)

[1] Flood Zone B: Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than 1 foot or where the contributing drainage area is less than 1 square mile; or areas protected by levees from the base flood.



Northeast San Jose Transmission Reinforcement Project EIR

Figure B.2-2

Proposed Los Esteros Substation

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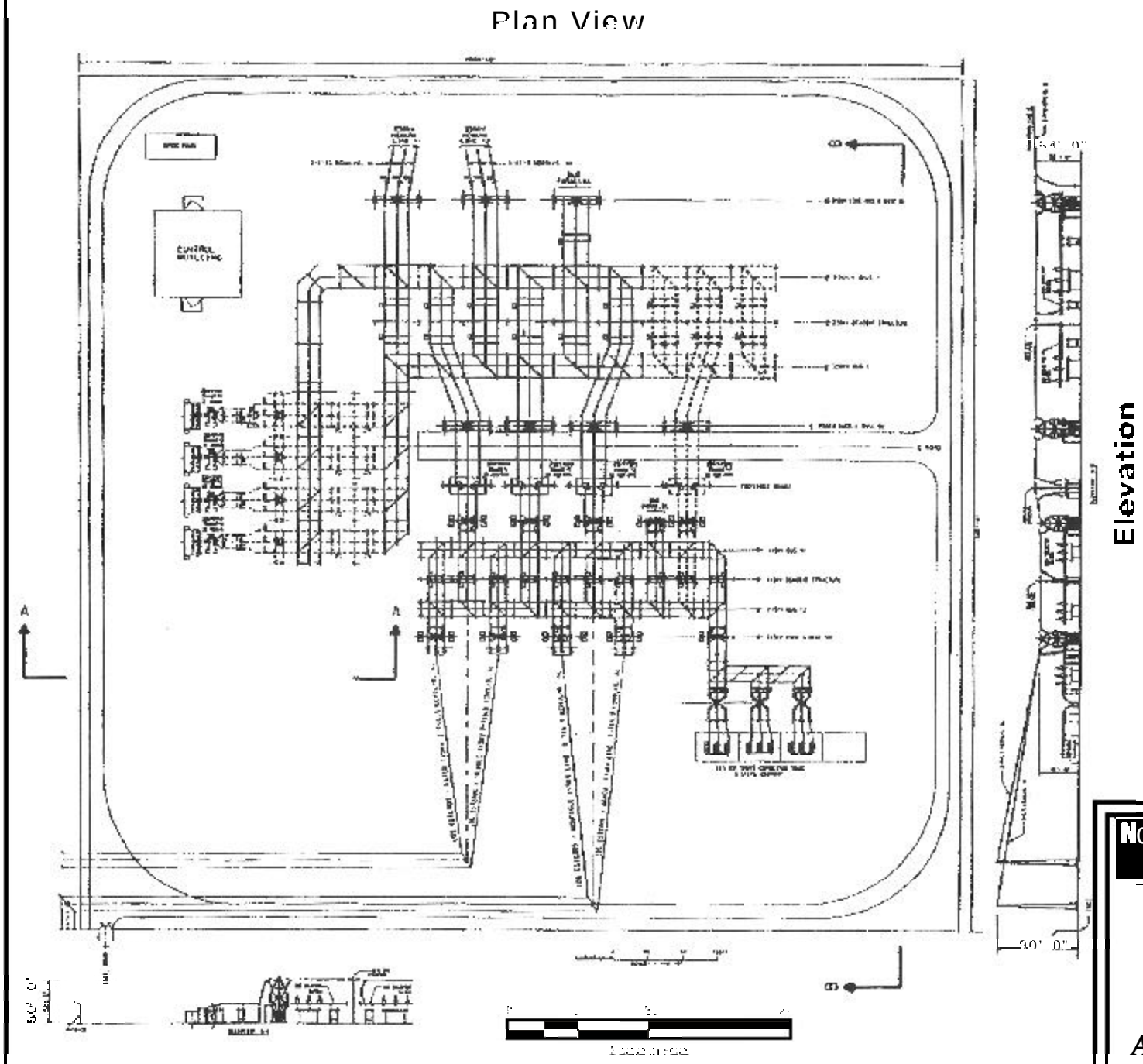

Source: SPEA,1999.

Northeast San Jose Transmission Reinforcement Project EIR

Figure B.2-3

Plan and Elevation of Proposed Los Esteros 230kVSubstation

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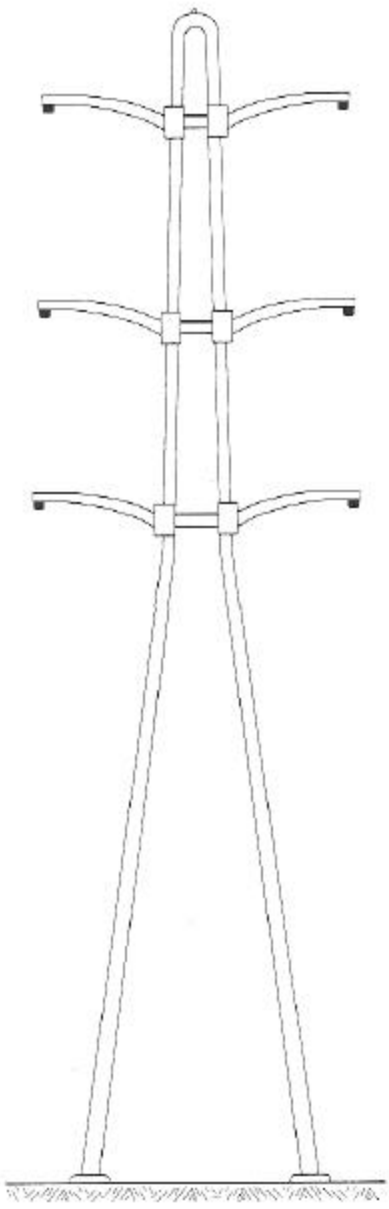
- Three 230/115 kV transmission transformers[2]
- Three 230 kV and three 115 kV transmission bank circuit breakers
- Four 230 kV distribution bank circuit breakers
- 115 kV bus structures (for transmitting 115 kV power within the substation)
- One 115 kV bus parallel breaker (for switching maintenance purposes)
- Four 115 kV line breakers (for energizing and de-energizing circuits) for the 115 kV transmission lines from Kifer, Trimble, Montague, and Agnews Substations
- One 115 kV three-step shunt capacitor bank (for controlling voltage stability)
- One 115 kV capacitor bank switching breaker
- Three 115 kV capacitor step switching breakers
- One control building for monitoring, protection and control of the substation system.

In addition, PG&E Co. will install miscellaneous electrical equipment at the substation, such as 230 kV and 115 kV disconnecting switches, reactors, instrument transformers, metal-clad switchgear, protective relaying, metering and control equipment, Supervisory Control and Data Acquisition equipment, telemetering equipment, auxiliary alternating current (ac) and direct current (dc) power system, electrical grounding systems, and underground conduits or trench system.

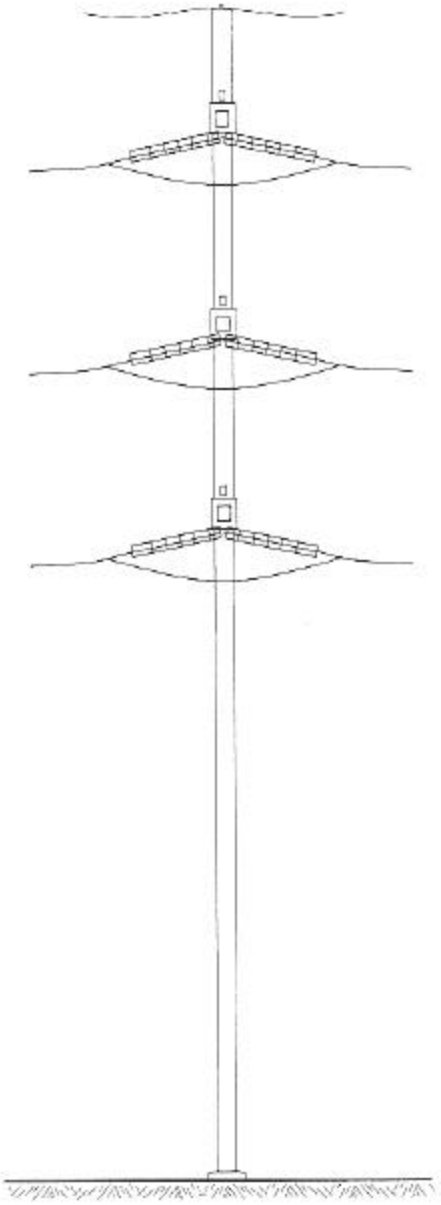
B.2.2.2 *230 kV Transmission Line*

The proposed 230 kV transmission line connecting the proposed Los Esteros Substation with the Newark Substation will follow the route shown on Figure B.2-1. The approximate locations of the towers are shown as dots on Figure B.2-1. The transmission line will include a combination of structure types designed to support two circuits of two-bundle 1,113 aluminum (kcmil) conductors. Each circuit will consist of three phases and each phase will consist of two cables or subconductors known as a bundled conductor. One shield wire will be located above the circuits to protect the system from lightning strikes and will also serve as a communication cable. Twin-legged tubular steel poles as shown in Figures B.2-4 and B.2-5 will be installed between Newark Substation and Milepost 2.5. Single-leg tubular steel poles similar to that shown on Figure B.2-6 will be installed between Mileposts 2.7 and 4.9. Between Milepost 4.9 and the Los Esteros Substation, the supporting structures will be either the twin-legged or single leg type depending on the angle turned by the structure and the available area for construction.

2 The proposed Los Esteros Substation is designed to include four 230/115 kV transmission transformer banks, four 230/21 kV distribution transformer banks (in the future), and four shunt capacitor bank steps. Three transmission banks and three shunt bank steps will be installed in 2002 (at initial project construction) based on the current schedule. The timing of the remaining transmission and distribution banks will depend on future development and electric demand.



IN-LINE VIEW



SIDE VIEW

(TobeinstalledbetweenNewarkSubstationandMP2.5. MayalsobeusedbetweenMP4.9 and substation)

Not toScale

Source: SPEA,1999.

Northeast San Jose Transmission Reinforcement Project EIR

Figure B.2-4

Typical Tubular Twin-Leg Tower: Angle Structures

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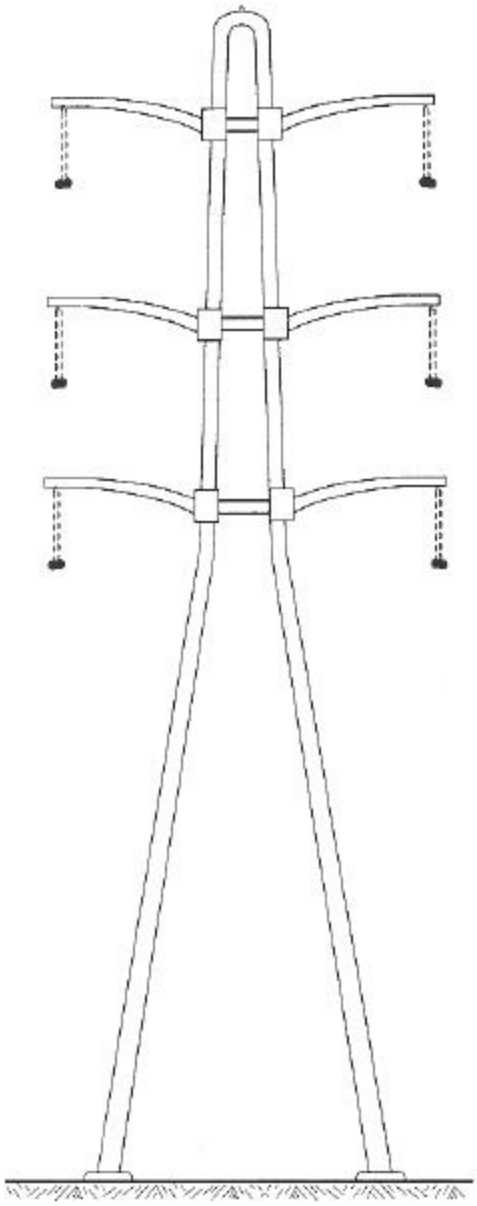
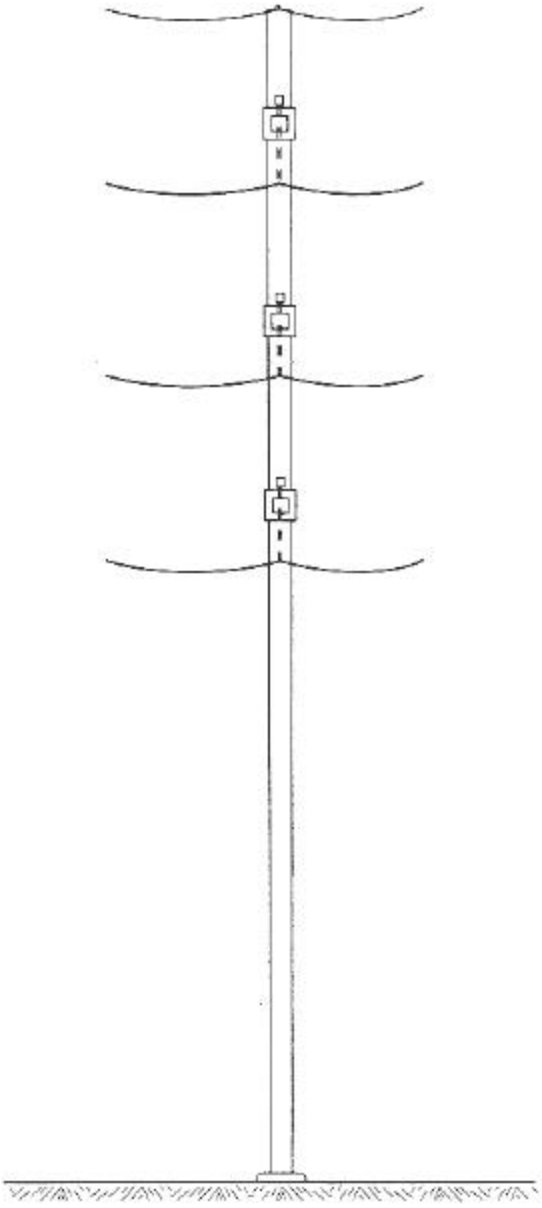


IN-LINE VIEW



SIDE VIEW

(TobeinstalledbetweenNewarkSubstationandMP2.5. MayalsobeusedbetweenMP4.9 and substation)

Not toScale

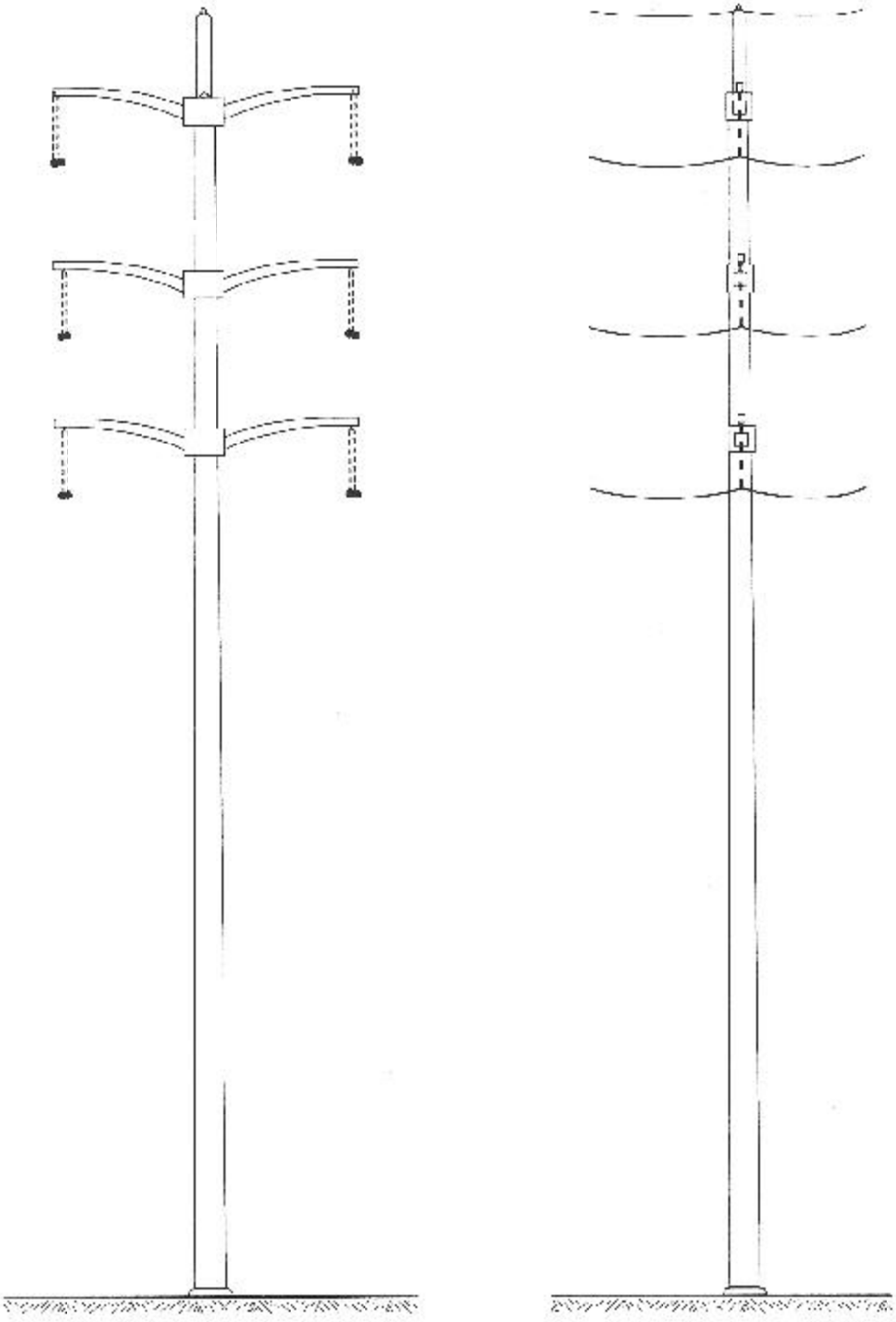
Source: SPEA,1999.

Northeast San Jose Transmission Reinforcement Project EIR

Figure B.2-5

Typical Tubular Twin-Leg Tower: In-Line Structures

Aspen EnvironmentalGroup



(To be installed between MP 2.7 and 4.9, west of Bayside Business Park. May also be used between MP 4.9 and substation)

Not to Scale

Source: SPEA, 1999.

Northeast San Jose Transmission Reinforcement Project EIR

Figure B.2-6

Typical Single-Leg Tubular Steel Suspension Tower

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Where the proposed transmission line passes through salt ponds (between Mileposts 1.7 and 2.2), spurs from the boardwalk along the Newark to Trimble and Newark to Kifer 115 kV tower line will be extended to the new 230 kV towers for maintenance purposes. Two new boardwalk spurs approximately 145 feet in length will extend at right angles from the existing boardwalk to the new tower locations between these mileposts. A new boardwalk approximately 1300 feet in length will extend across Salt Pond A23 from the existing boardwalk near Milepost 2.2 to the most southerly tower located at Milepost 2.5.

Right-of-Way Requirements. An easement of between 100 to 120 feet wide is required for the transmission line. The width depends on the lateral distance between the conductors, swing of the conductors caused by wind, and the distance specified by the CPUC's General Order 95 related to safe conductor clearances.

General Route Description[3]. The proposed transmission line route parallels existing PG&E Co. 115 kV power lines for the northernmost 2 miles of its 7.3-mile length and then diverges easterly. The right-of-way requirement is 60 feet on each side of the centerline (120 feet total) for span lengths greater than 1200 feet, and 50 feet on each side of the centerline (100 feet total) for span lengths less than 1200 feet.

After leaving the Newark Substation, the route first crosses property owned by Catellus Corporation south of the Auto Mall Parkway. Between Mileposts 0.5 and 1.3, the route is within land that will in the future become part of the Don Edwards San Francisco Bay National Wildlife Refuge. This land is part of the Pacific Commons development (owned by Catellus Corporation), and is being designated as a preserve to protect various endangered species and their habitats (see discussion in Section A.3). The transmission line then passes through two Cargill Salt Company (Cargill) salt ponds, and along the westerly edge of the Bayside Business Park. It traverses the Fremont Airport property, crosses the Santa Clara Valley Water District's Coyote Creek Flood Control Channel, and then passes through the San Jose/Santa Clara Water Pollution Control Plant (WPCP) property to the proposed Los Esteros Substation site, just north of State Route 237.

From the Newark Substation, the route turns southwest and crosses the Auto Mall Parkway and an existing power line corridor. On the south side of Auto Mall Parkway, at Milepost 0.3, the route turns southeast and parallels the existing 115 kV power line corridor on its westerly side, about 85 feet from the center line of the easterly power line. It crosses property recently developed for commercial use as well as undeveloped property owned by Catellus Corporation between Auto Mall Parkway and Cushing Road near Milepost 1.7.

Southeast of Cushing Road, the proposed transmission line route crosses salt ponds owned by Cargill, and at Milepost 2.2 the route crosses two of the 115 kV double-circuit power lines serving central San Jose and

[3] Note that a detailed description of proposed construction methods for each project component is presented in Section B.3.

Santa Clara. At Milepost 2.7, the route enters the western edge of the Bayside Business Park and follows the edge of the business park to Milepost 4.1. Between Milepost 4.1 and Dixon Landing Road, the route crosses the vacant Fremont Airport property. The Fremont Airport has been abandoned, and this property is planned to be developed as an extension of the Bayside Business Park. Development of the business park requires building an extension of Fremont Boulevard south to Dixon Landing Road. The proposed transmission line route follows the westerly edge of the planned roadway across most of this property. Because the former airport area currently contains some endangered species habitat that could be affected by the development, the property owners applied for, and received, a permit from the U.S. Army Corps of Engineers that requires the owner to enhance habitat on the west side of the Fremont Boulevard extension in exchange for developing the business park and roadway east of the boulevard.

South of Milepost 4.7, the route crosses Coyote Creek and Dixon Landing Road passing to the east of the Newby Island Landfill offices and recycling facility. From Milepost 4.9, the route crosses the Coyote Creek Flood Control Bypass Channel and enters the San Jose/Santa Clara WPCP property near Milepost 5.1. The route turns southeasterly at Milepost 5.3 and follows the edge of WPCP sludge drying beds, which are located west of Coyote Creek. At Milepost 7.0, the route turns southerly, leaves the drying beds, and crosses a WPCP-owned agricultural field before entering the Los Esteros Substation site. The total length of the route is 7.3 miles. The estimated cost for acquiring the necessary land rights and installing a 230 kV transmission line along the proposed transmission line route is approximately $20,800,000.

B.2.2.3 *Newark Substation Modification*

The 230 kV bus structure within the existing Newark Substation yard will be extended to accommodate the new 230 kV transmission line. The area that would be occupied by the new equipment is within the existing footprint of the substation and is currently used as a storage area for heavy electrical equipment. PG&E Co. will relocate the equipment to another area to make room for the modification.

B.2.2.4 *115 kV Connection and Distribution Line Upgrade*

The Los Esteros Substation will be connected to the 115 kV transmission system via four 115 kV power lines (as shown in Figure B.2-2 and Figure B.2-7):

- Los Esteros to Kifer 115 kV Power Line
- Los Esteros to Trimble 115 kV Power Line
- Agnews 115 kV Tap Line
- Los Esteros to Montague 115 kV Power Line.

The first three 115kV connections listed above will occur in the immediate vicinity of the Los Esteros Substation. The fourth connection (Los Esteros to Montague Substation) would be primarily on Trimble Road and Montague Expressway; this portion of the project is called the "Trimble-Montague 115kV Upgrade" in this EIR. The connection of the Los Esteros Substation to the 115 kV transmission system

will be achieved, in part, by utilizing 115 kV power lines to be built as part of the North San Jose Area Capacity Increase Project. PG&E Co. plans to follow existing power lines and utilize double-circuit steel poles in order to minimize the creation of new power line corridors to the greatest extent possible. Figure B.2-7 shows the ultimate arrangement of power lines in the area once both of these projects are complete.

115 kV Power Line Right-of-Way. Total right-of-way width requirements are 140 feet for two parallel double-circuit 115 kV power lines for the section between the substation and the north side of State Route 237, and 120 feet for the double-circuit power line and the single circuit Los Esteros to Kifer power line that parallels the north side of State Route 237. The 120-foot wide corridor will utilize the existing 40-foot wide right-of-way of the Agnews 115 kV pole line.

Los Esteros to Kifer and Los Esteros to Trimble 115 kV Power Lines. PG&E Co. will install two 115 kV power lines with bundled 715 kcmil conductors on a double-circuit line from the Los Esteros Substation to the Trimble to Kifer 115 kV loop at the Zanker Road/State Route 237 interchange. This will separate the Trimble to Kifer 115 kV loop of the North San Jose Area Capacity Increase Project into the Los Esteros to Kifer and Los Esteros to Trimble 115 kV power lines. Figure B.2-7 shows the proposal for interconnecting the new Los Esteros Substation to the Trimble to Kifer 115 kV Loop. PG&E Co. will connect into the Trimble to Kifer 115 kV loop north of State Route 237 and east of Zanker Road.

Trimble/Montague 115kV Upgrade: Los Esteros to Montague Substation. This power line will use a 2.4-mile segment of the Trimble to Kifer 115 kV Loop along Zanker Road, which is planned to be built as a double-circuit line during 2000 as part of the North San Jose Area Capacity Increase Project. The remaining portion of the Los Esteros to Montague 115 kV power line will be built as part of this project. As illustrated in Figures B.2-1 and B.2-2, four-tenths of a mile of 115 kV power line will be constructed between the proposed substation site and the northeast corner of the Zanker Road/State Route 237 intersection. In addition, 1.4 miles of double-circuit replacement line will be constructed along Trimble Road and Montague Expressway.

The poles supporting the Newark to Trimble 115 kV power line along Trimble Road and Montague Expressway are located in the public right-of-way. PG&E Co. does not own any easement along the roadway for the existing line except for the segment crossing Interstate 880. New structures will be placed within the road right-of-way or public utility easements. On some segments of the line, conductors will overhang onto private property because the cross-arm length of the new structures will increase from 5 feet to 7 feet. Easements will be acquired from private property owners and will extend a minimum of 6 feet from the southerly conductor position.

Agnews 115 kV Tap Line. The existing Agnews 115 kV tap currently taps into the Newark-Scott/Kifer 115kV line west of the Zanker Road landfill. The northernmost mile of this line will no longer be needed when the Los Esteros Substation is operational. At that time, the Agnews line will be interconnected to the new Los Esteros Substation. This will shorten the tap from 2.9 miles to 1.2 miles.

Northeast San Jose Transmission Reinforcement Project EIR

Figure B.2-7

Existing, Approved, and Proposed PG&E System

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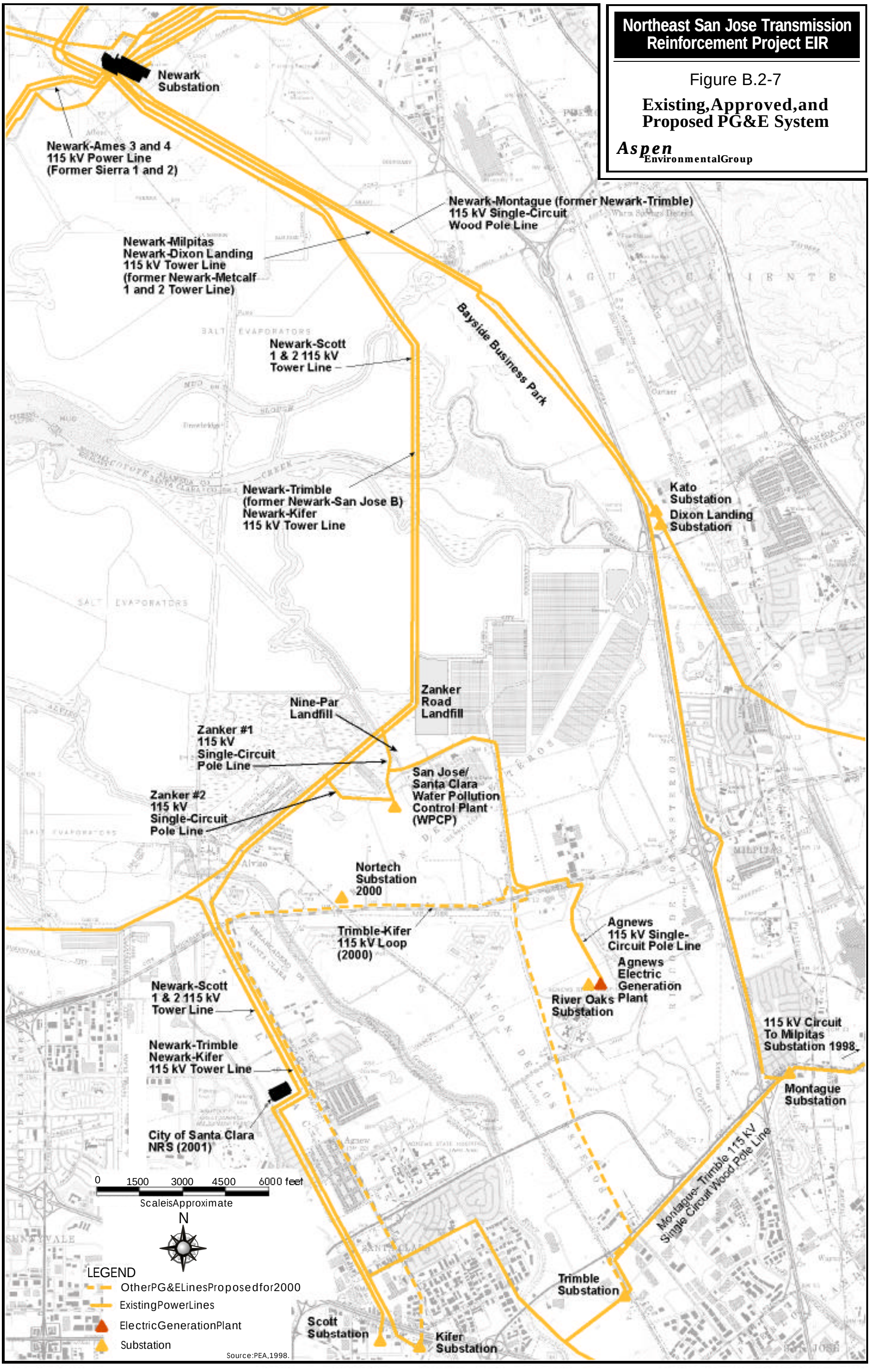


B.3 CONSTRUCTION OF THE PROPOSED PROJECT

This section describes general project construction procedures (Section B.3.1), and then details PG&E Co.'s proposed construction methods for the Los Esteros Substation (Section B.3.2), construction at the Newark Substation (Section B.3.3), and construction of the 230kV transmission line (Section B.3.4) and the 115kV lines (Section B.3.5).

PG&E Co.'s schedule for construction of the proposed project is illustrated in Table B.3-1.

Table B.3-1 PG&E Co.'s Proposed Construction Schedule

Project Phase	Schedule
Engineering and Design	April 2000 - May 2001
Property Acquisition	October 1999 - June 2001
Transmission Line Construction	July 2001 - May 2002
Substation Construction	July 2001 - May 2002
Project Operation	June 2002

B.3.1 General Construction Procedures

The overall construction period will be about one year with the peak construction period during the spring, summer and early autumn months. The workforce will vary according to the phases of the construction of the high voltage lines with most of the activity taking place during the installation of the structure foundations and later with the stringing of the conductors. The conductor stringing operation must take place during the spring or autumn along Trimble Road and the Montague Expressway due to restrictions on when the Montague to Trimble single-circuit wood pole line can be taken out of service. Work may take place during the night-time hours or on weekends for the stringing operations along that part of the project. Installation of the poles along Trimble Road and the Montague Expressway will likely take place about two months prior to the stringing operations.

Most of the construction activity at the substations, the 230 kV transmission line and the 115kV connections near the Los Esteros Substation is expected to take place during the dry months from June through October. The substation construction group will commence construction at the Los Esteros site after the property has been partially graded. Workers at the substation sites will commute to the sites in their personal vehicles.

Some PG&E Co. work crews are presently working ten hour periods four days a week. Work hours vary between 6:30 a.m. to 5:30 p.m. for a four-day a week schedule to 7 a.m. to 3:30 p.m. for a five-day a week schedule. As stated above, some work is expected to take place during the night-time hours. These hours will be between 7 p.m. and 5 a.m..

The permits for allowing work along roadways and at the highway crossings will likely restrict the work hours. Typically, PG&E Co. works between 9 a.m. and 3:30 p.m. along roadways and at the highway crossings when commute traffic flow is normal.

Equipment that will be used during construction of the transmission line, power lines, and substation is listed in Table B.3-2.

Table B.3-2 Major Equipment Used During Substation Construction

Equipment	Use
Helicopter	Transport of materials and tower structures
3/4-ton pickup trucks	Transport construction personnel
1-ton crew trucks	Transport construction personnel
2-ton flat bed trucks	Haul materials
Flat-bed boom truck	Haul and unload materials
Rigging truck	Haul tools and equipment
Mechanic truck	Service and repair equipment
Shop vans	Store tools
D-8 bulldozer	Blade access roads and grading
D-6 bulldozer	Blade access roads and grading
Truck-mounted digger	Excavate foundations
Crawler backhoe	Excavate foundations
Small mobile cranes (< 12 tons)	Load and unload materials
Transport	Haul structure materials
Puller	Pull conductor and wire
Tensioner	Pull conductor and wire
Wire reel trailer	Haul wire
Semi-tractor trailer	Haul structure components
Air compressors	Operate air tools
Air tampers	Compact soil around poles
Portable generators	Construction power

Staging Areas. There will be both on-site and off-site staging areas for personnel, equipment and materials. Each site will be approximately five acres in size. The areas identified as staging areas where PG&E Co. currently has control of the property are:

- Newark Substation
- PG&E Co.'s material facility located at 680 Dado Street near the intersection of Dado Street with Junction Ave. in San Jose.

Other areas currently owned by private parties and identified by PG&E Co. for staging areas are:

- The Los Esteros Substation site
- A five acre parcel immediately south of the Los Esteros Substation site
- A portion of the inactive Nine-Par Land Fill immediately south of Milepost 5.4 of the proposed 230 kV transmission line route
- The developed portion of the abandoned Fremont Airport north of Dixon Landing Road and west of Interstate 880.

PG&E Co. expects to begin negotiations with the property owners of the above listed sites for use of portions of their land for staging areas approximately six months prior to the commencement of construction.

Potential Service Interruption During Construction. The following actions will be taken to minimize service interruptions:

- Where feasible, customers will receive electricity from other circuits serving the area.
- Crews will work on distribution sections when customer service interruptions are the least inconvenient, primarily during weekends or evenings
- Temporary distribution connections and construction will be implemented to maintain service during construction
- Sections of the distribution lines will be isolated with temporary switches that will interrupt service to the least number of customers.

Construction Workforce. During peak construction periods the workforce will consist of approximately 95 workers. PG&E Co. crews or contract crews will construct the transmission line on those sections of the line located on dry land. For construction in Salt Ponds A22 and A23, contract personnel will construct the tower foundations, and either contract personnel or PG&E Co. personnel will erect the structures. PG&E Co. personnel will string the conductors along the entire route. Approximately 30 workers are expected to be working on the Los Esteros Substation site, approximately 55 workers are planned to be working on the transmission lines and approximately eight workers are planned to be working on the Newark Substation modification.

Workers will drive personal vehicles to assembly points and from these points, drive or ride in project vehicles to the work areas along the transmission lines. The Los Esteros Substation site is planned to be the assembly point for workers working on the substation. Newark Substation will be an assembly point for workers working on the 230 kV transmission line as well as workers involved with the Newark Substation modification. Transmission line workers will also assemble at PG&E Co.'s material facility located at 680 Dado Street near the intersection of Dado Street with Junction Avenue in San Jose.

Haul Trips. The number of haul trips estimated to transport equipment and materials (excluding concrete and gravel) is estimated to be:

- 225 haul trips for the 230 kV transmission line
- 115 haul trips for the 115 kV power lines
- 10 haul trips for the Newark Substation modification
- 38 haul trips for the Los Esteros Substation.

PG&E Co. selects its suppliers through a bidding process approximately six months prior to construction; consequently, the number of haul miles cannot be estimated with accuracy because material suppliers have not been identified at this time.

Landfill. Approximately 4,600 tons of debris would be disposed of and would require approximately 230 round trips, or 460 one-way trips. The disposal site would likely be the Zanker Road Landfill located at 705 Los Esteros Road. Trucks would leave the site via the route for the access road to the substation site from Zanker Road, turn right on Zanker Road and travel past the Water Pollution Control Plant to the landfill. The access road alignment is shown on Figure B.2-2. The distance between the substation site and the Zanker Road Landfill is approximately 1.1 miles.

Concrete and gravel. Approximately 950 cubic yards of concrete is expected to be used for the construction of the Los Esteros Substation. This amount assumes that no special foundations such as concrete piles or drilled piers will be required because of unusual subsurface conditions. The number of haul trips for concrete are calculated using an average 10 cubic yard load per concrete mixer or 95 trips for the 230/115 kV substation foundations.

PG&E Co. selects concrete suppliers through a bidding process approximately six months prior to construction; consequently, the source of the concrete or the length in miles for each haul trip cannot determined at this time. Several potential suppliers are located in the area with batch plants located near the intersection of Berryessa Road and Commercial Street in San Jose, at Milpitas Boulevard and Ames Avenue in Milpitas and Osgood Road and the Auto Mall Parkway in Fremont.

Approximately 30,000 cubic yards of crushed rock or gravel will be required for the Los Esteros Substation. The volume in excess of that needed to provide for electrical insulation is required because of the suspected poor soil condition at the site. The weight of the crushed rock or gravel will be approximately 45,000 tons. The number of haul trips are calculated using a average load of 25 tons per truck load (double trailer), which equals 1,800 trips to deliver the required amount of gravel or crushed rock.

Because PG&E Co. selects suppliers through a bidding process approximately six months prior to the start of construction, the source of gravel or crushed rock or the length in miles for each haul trip cannot be determined at this stage of the project.

Concrete Required. Subsurface conditions will determine the type of concrete foundation for each structure. The foundation types will be either drilled pier foundations or pile foundations (where soil conditions are poor). The amount of concrete required for the foundation of a suspension structure on poor soil is calculated to be 66 cubic yards. A dead-end structure (used primarily for angles), on poor soil, will require about 124 cubic yards of concrete for the foundations. For good soil conditions where drilled pier foundations can be used, a suspension structure will require about 27 cubic yards of concrete and a dead-end structure calls for approximately 68 cubic yards of concrete.

The source of the concrete cannot be determined at this time because PG&E Co. bids for concrete from a number of suppliers. Several potential suppliers are located in the area with batch plants located near the intersection of Berryessa Road and Commercial Street in San Jose, at Milpitas Boulevard and Ames Avenue in Milpitas, and Osgood Road and the Auto Mall Parkway in Fremont.

The number of haul trips can be estimated using a worst-case scenario of all towers requiring pile foundations and an estimated number of suspension and dead-end structures. There are an estimated 13 dead-end structures and 24 suspension structures along the proposed 230 kV route. That many structures with pile type foundations will require approximately 3,200 cubic yards of concrete. A concrete mixer truck can carry a maximum of 15 cubic yards but are not always fully loaded. Using a 10 cubic yard load, the number of trips is calculated to be 320 haul trips. The average length in miles per trip cannot be calculated with accuracy since a concrete supplier cannot be identified at this time. A bidding process will be used to select the supplier prior to construction.

The approximate volume of concrete for self-supporting steel pole foundations is between 13 and 21 cubic yards. Several concrete suppliers are located in the area, and may be used as supply sources. These suppliers have batch plants located near the intersection of Berryessa Road and Commercial Street in San Jose, at Milpitas Boulevard and Ames Avenue in Milpitas and Osgood Road and the Auto Mall Parkway in Fremont.

B.3.2 Construction of Los Esteros Substation

PG&E Co. will begin construction of the Los Esteros Substation with demolition of existing greenhouses, residences, and a warehouse. Materials from the demolished buildings will be removed to an off-site landfill. Vegetation on the site will be cleared after the buildings are demolished. PG&E Co. will then grade the soil to ensure compaction and surface drainage. Excess organic debris will be removed to an off-site landfill. PG&E Co. will install a 7-foot-high chain-link fence with a 1-foot barbed-wire outrigger around the perimeter of the substation to provide security and keep unauthorized personnel at a safe distance from the high-voltage equipment. The entire 23 acres of the substation site will be disturbed during construction. Substation construction is expected to take nine months.

The design of the proposed substation is presented in Figure B.2-3. Reinforced concrete footings and slabs will be constructed to support structures and equipment. PG&E Co. will install buried conduit throughout the substation site for electrical control cables. After the trenches are dug, conduit will be placed on a bed of sand, and then soil will be back-filled to match the adjacent grade.

PG&E Co. will install a grounding mat approximately 18 inches below the substation soil grade to protect substation personnel from electrical shock in the event of a ground fault.

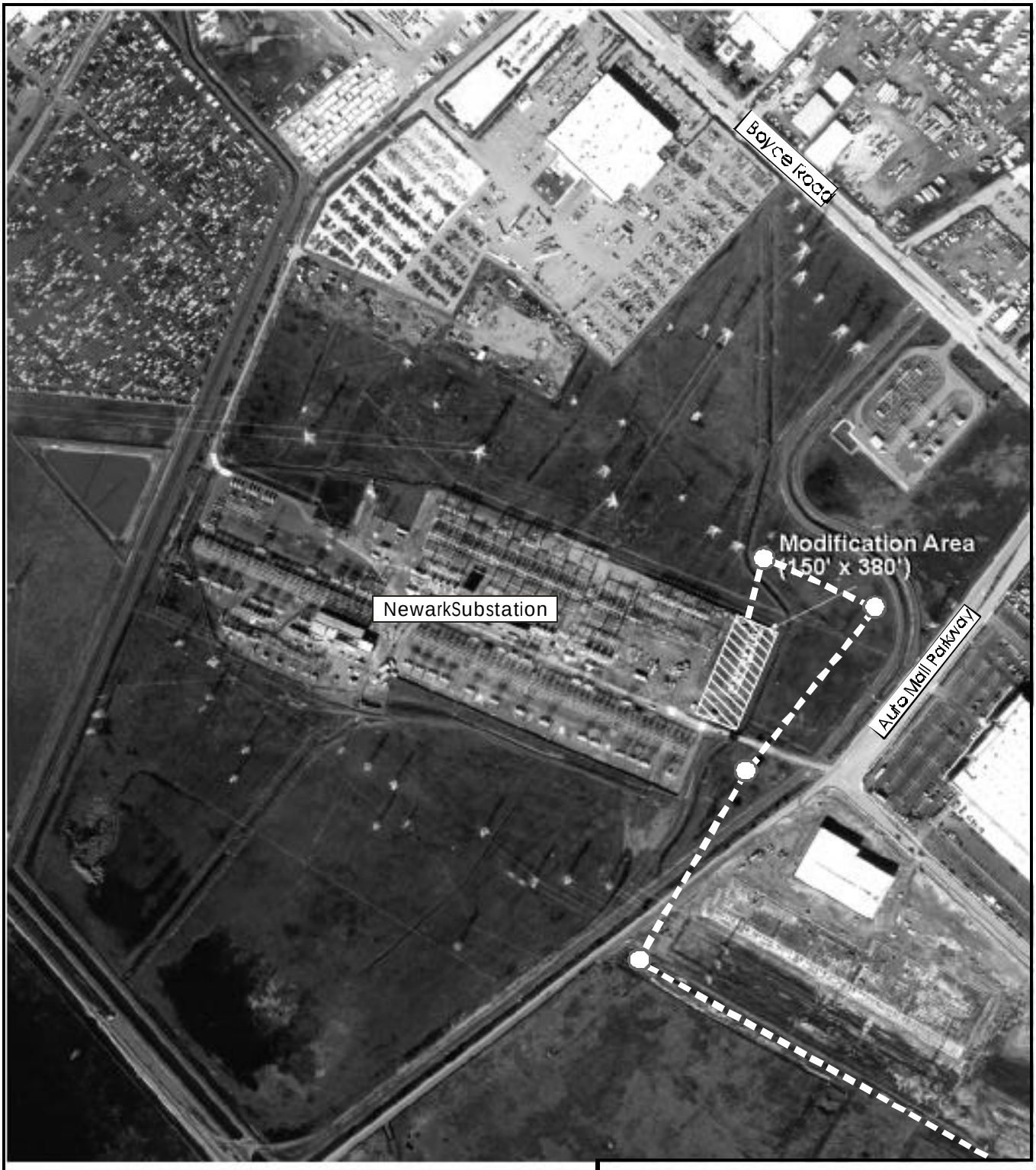
Trenches will be dug in both directions across the station, and copper conductors will be installed, creating a grounding mat across the entire substation. Soil will be backfilled to match the existing grade. Gravel or crushed rock will be installed over the site to provide electrical isolation for workers in the substation. Structures will be erected to support switches, electrical conductors, instrument transformers, and other electrical equipment, as well as to terminate incoming and outgoing power lines. PG&E Co. will fabricate structures from welded tubular steel. Structures within the substation will be grounded to the station grounding grid. Workers will set all equipment on slabs and footings, and either bolt or weld the equipment securely to meet seismic requirements. Equipment slated for installation includes voltage transformer, neutral current limiting reactors, circuit breakers, high-voltage air switches, high-voltage current and voltage instrument transformers used for relaying or metering, metal-clad switchgear electrical conductors, and buswork.

B.3.3 Construction at the Newark Substation

Figure B.3-1 provides an aerial view of the substation and proposed modification area, and Figure B.3-2 provides a plan view of the Newark 230 kV bus and extension. Additional supporting structures will be constructed on concrete piers to extend the bus structure, and two concrete pads will be poured to form bases for equipment.

The Newark Substation modification area is already paved and covered with gravel. Reinforced concrete footings and slabs will be constructed to support structures and equipment. PG&E Co. will extend the existing buried conduit installation to cover the expanded area for the electrical control and communication cables. PG&E Co. will extend the existing grounding mat to cover the modified area and install gravel over the new area to match the existing gravel level.

Structures will be erected to support busses, circuit breakers, switches, overhead conductors, instrument transformers and other electrical equipment, as well as to terminate outgoing transmission lines. Structures will be fabricated from lattice steel members. Structures within the substation will be grounded to the station grounding grid. Workers will set the equipment on slabs and footings, and either bolt or weld the equipment securely to meet the seismic requirements. Equipment slated for installation includes high-voltage circuit breakers and air switches, structures and bus work, high-voltage instrument transformers and line traps, control and power cables, metering, relaying, and communication equipment.



N

Pole Location

Proposed 230 kV Route

O 250 500 750 1000feet

ScaleisApproximate

Source: SPEA, 1999.

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FigureB.3-1

Newark Substation Modification Area

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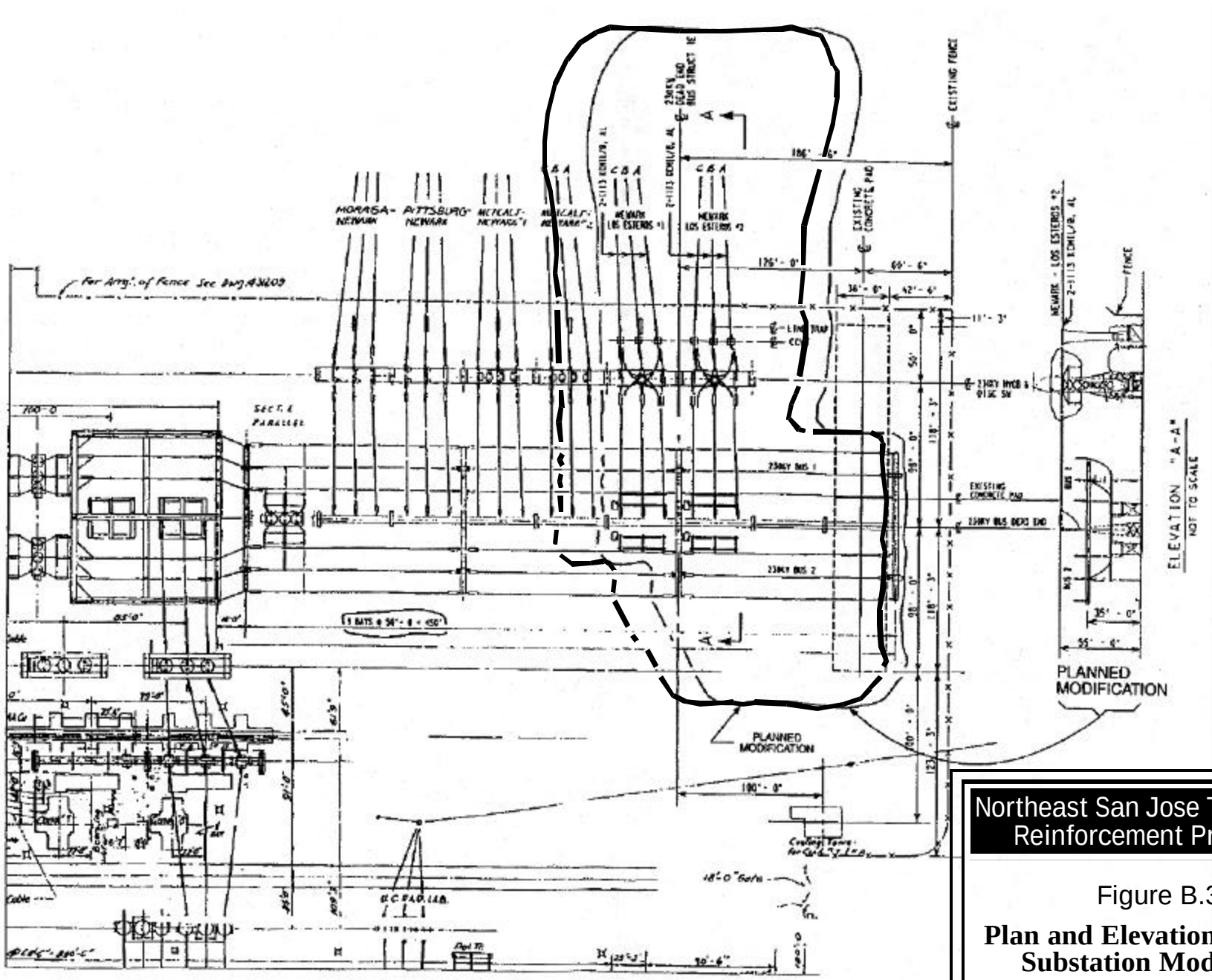

Source:SPEA,1999.

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Figure B.3-2

Plan and Elevation of Newark Substation Modification

Aspen Environmental Group

B.3.4 Construction of the 230 kV Transmission Line

The procedures for bringing personnel, materials, and equipment to each structure site, constructing the supporting structure foundations, erecting the supporting structure, and stringing the conductors will vary along the route alignment. Salt pond construction will require special methods because of the underlying bay mud and relative inaccessibility of each structure site for vehicles, materials, equipment, and personnel. Conventional construction methods will be used at tower sites on dry land.

Foundations for structures sited in salt ponds or on uplands with underlying bay mud or running sands will consist of concrete footings tied to wood or concrete piles. The piles will be 60 to 80 feet long and driven into the mud by a 40-ton or 100-ton crane. In Salt Ponds A22 and A23, wood mats will be used to support the crane and equipment because the depth of water in late summer and early fall is less than two feet. PG&E Co. will construct the transmission line in the following three phases:

- **Phase 1.** Install the supporting structure foundations. Foundations may be drilled concrete piers as deep as 45 feet, or wood or reinforced concrete pile foundations
- **Phase 2.** Erect the supporting structure body
- **Phase 3.** Attach insulators and string the electrical conductors.

B.3.4.1 *Structure Foundations*

For purposes of determining construction impacts as part of this application, all supporting towers are assumed to require pile-type foundations. Site specific assessments that include soil test bores will determine if the foundations will be pile-type or drilled pier type.

PG&E Co. has previously installed the types of towers proposed for this project (shown in Figures B.2-4 through B.2-6) on pile foundations in wetlands or in areas with poor soil characteristics in the San Francisco Bay area. These existing installations can be used as examples of the type of construction planned for this project. PG&E Co. has not completed the final design for the project, so the details given in this description should be taken as approximate.

Twin-Legged Towers. Existing twin-legged supporting towers with pile-type foundations for each leg were constructed by PG&E Co. in wetlands near PG&E Co.'s Ignacio Substation near Novato in Marin County. Tangent structures on this line, where the line angle is zero or close to zero degrees, use 12 wood piles for each leg tied to a 7-foot by 28-foot by 3.75-foot reinforced concrete cap. The two caps are buried several feet under the ground and a 4.5-foot by 4.5-foot pedestal extends vertically out of the center of each reinforced concrete cap. The tower leg is bolted to the pedestal that extends several feet above ground level. Angle structures turning large angles use 20 piles for each leg tied to an 8-foot by 34-foot by 5.5-foot reinforced concrete cap. Each pedestal of the angle structure has a dimension of 5 feet by 5 feet extending several feet above ground level.

Single-Leg Towers. Existing single-leg supporting towers that use pile-type foundations have been constructed by PG&E Co. in former landfill property in the City of Santa Clara. Tangent structures along this line, where the line angle is zero or close to zero degrees, use five concrete piles tied to a 12-foot by 12-foot by 3.5-foot reinforced concrete cap, which is buried several feet below ground. A 6.5-foot diameter pedestal extends from the center of the reinforced concrete cap several feet above ground and supports the tower body. Angle structures turning large angles use nine concrete piles tied to a 15-foot by 15-foot by 3.5-foot reinforced concrete cap. A 7.5-foot diameter pedestal extends several feet above ground from the center of the cap and supports the tower body for angle structures.

B.3.4.2 *Work Area*

The normal work area for tower construction is 200 feet by 200 feet. This area allows the placement of equipment, vehicles, and materials, and provides a safe working space. Some tower locations in close proximity to wetlands or sensitive areas will require a pre-construction wetlands delineation and the establishment of laydown areas that limit the construction impact to the resource as much as practicable. In sensitive areas, work areas will be fenced to prevent damage to vegetation.

B.3.4.3 *Transmission Line Construction Procedures by Milepost*

Milepost 0.0 to 1.7. PG&E Co. will install drilled pier foundations or pile-type foundations at each site. The type of foundation will depend on whether or not the underlying soils are composed of flowing sands, which will inhibit boring operations for drilled pier foundations.

If pile foundations are necessary, PG&E Co. will bring a crane to the structure site from either Auto Mall Parkway or Cushing Road. The crane will drive the concrete or wood piles for each of the two foundations of the twin-leg tubular steel towers. Workers will excavate the earth around the foundations and side-cast the earth adjacent to the site to allow access to the piles below natural ground level. The tops of the piles will then be cut to a predetermined level and tied together with steel bars. Reinforcing bars and the structure leg anchor bolts will be set in place for each leg of the structure. Workers will place and secure concrete forms around each footing and pour concrete to form the concrete caps. The pedestals will extend to a point about 2 to 3 feet above natural ground level. After the concrete cures, the concrete forms will be removed and the side-cast material will be replaced around each foundation.

If the underlying soil conditions allow the installation of drilled pier foundations, the process of installing foundation will start with boring two holes, one for each structure leg. Each hole will be about 7 feet in diameter and up to 45 feet deep. Workers will place reinforcing steel rods in each hole with anchor bolts. Concrete forms that extend 2 or 3 feet above natural ground level will be placed over each hole, and concrete will be poured around the reinforcing rods and anchor bolts up to the top of the form.

During the one month concrete curing period, workers will remove the forms and place backfill around the foundations. The tubular steel sections that form the supporting structure will be delivered to the site at this time. The second construction phase will consist of raising the tower structure. A crane will be used to place the tubular steel sections onto the foundations. Succeeding tubular steel sections will be placed by the crane onto the lower sections and fitted in place.

Wetland plant communities have been mapped by PG&E Co., and all tower locations along this segment of line will be located outside of wetlands except for the angle structure at Milepost 1.7. This structure will be located near the southern edge of an area mapped as alkali grassland. PG&E Co. proposes to complete a formal wetlands delineation at this site prior to construction to confirm if wetlands will be affected by construction activities.

Milepost 1.7 to 2.7 (Salt Ponds A22 and A23). Twin-legged structures, as shown in Figures B.2-4 and B.2-5, will be installed in this segment. The water depth in Salt Ponds A22 and A23 is low enough during the late summer and early fall months (August through November) to allow construction by placing wood mats in the path of a track-mounted 100-ton crane. The crane will "walk" across the salt pond by picking up a series of 5-foot-by-40-foot wood mats consisting of 12-inch-by-12-inch wood beams tied together and placing the mats in front of the crane as it moves across the salt pond. After the crane moves onto the mats in its forward path, it picks up the mats behind it and continues the process to move forward. From Cushing Road, the crane will cross the northern levee of Salt Pond A22 at a point near the existing power lines. Once inside the salt pond, the crane will "walk" to the one structure site in Salt Pond A22 by picking up wood mats behind it and placing them in its forward path. Personnel will reach the structure site by either walking across the dry salt or using the boardwalk along the existing Newark to Trimble/Newark to Kifer 115kV Power Line. At the structure site, the crane will drive as many as 12 wood or concrete piles for each structure leg. A wide-tracked D-3 caterpillar tractor towing a sled will transport the wood or concrete piles, equipment, and materials to the site.

After piles are driven, the crane will be used to enclose the two foundation positions with a sheet pile cofferdam. Each sheet pile will be vibrated into the mud, forming a cofferdam that surrounds the structure footings. Workers will excavate or pump mud, salt, and water out of the cofferdam and side-cast it adjacent to the work area. After the tops of the piles are cut off and tied together, reinforcing bars and the structure leg anchor bolts will be set in place for each leg of the structure. Workers will place and secure concrete forms around each footing. During this operation, sump pumps that pump out water or mud that seeps into the cofferdam will keep the work area dry. After the concrete forms have been set, helicopters or the D-3 caterpillar tractor will carry in large buckets of premixed concrete to the construction site. The concrete will be poured into each foundation form until the form is full.

To reach Salt Pond A23, the crane will cross the levee that separates Salt Pond A22 and Salt Pond A23. The crane will use the wood mat walking method to reach the structure site at Milepost 2.2 and repeat the process described above for the last structure in Salt Pond A23 located at Milepost 2.5. After the concrete

has cured, workers will remove the debris from the cofferdams, and the side-cast material will be replaced with the crane around the concrete foundations. The sheet piles will be vibrated out of the mud and removed. The tubular steel sections will be flown in by helicopter or towed in by the D-3 caterpillar tractor, and the crane will lift sections onto the foundations. Succeeding segments of the structure will be placed on lower sections until the structure is completed. This process will be repeated at each structure site.

Milepost 2.7 to 4.1 (Bayside Business Park). Single-leg structures similar to those shown in Figure B.2-6 will be installed at the edge of the parking lots of the Bayside Business Park between these two mileposts. Each tower site is located in a landscaped area adjacent to the parking lots; no parking spaces will be permanently eliminated. Access to each tower site will be by vehicle from Fremont Boulevard. If pile-type foundations are required at the tower locations, piles will be installed with a rotary drilling method rather than a pile driver to reduce noise and vibration impacts to workers in the Bayside Business Park. The work area west of the west edge of the parking lots will be limited to 50 feet from the edge of the parking lot at each of the tower locations.

Approximately 155 ornamental trees currently exist within the proposed right of way along this segment. PG&E Co. will remove about 130 of these trees that have a mature height of greater than 30 feet and replace them with other species that have a mature height of 30 feet or less to maintain electrical clearances.

Milepost 4.1 to 4.9 (former Fremont Airport site). The three single-leg tower structures located at Mileposts 4.3, 4.5 and 4.7, shown in Figure B.2-6, are within a 159-acre privately owned parcel. Approximately 68 acres of this property was recently permitted for development into industrial lots. The three tower structures at Mileposts 4.3, 4.5, and 4.7 will be located at the westerly edge of the planned Fremont Boulevard extension. If the extension of Fremont Boulevard has been constructed by the time PG&E Co. needs to install the tower structures, PG&E Co. work crews will access the tower sites from disturbed areas used for construction of Fremont Boulevard.

In the event the property remains in its present condition, access to the three tower sites will be from Dixon Landing Road. The tower site at Milepost 4.3 and Milepost 4.5 will be reached by crossing the abandoned Fremont Airstrip runway and non-vegetated areas such as salt pannes. A maximum of 200 feet of vegetated habitat will be crossed to reach the tower sites at Mileposts 4.3 and 4.5. An area of 200 feet by 200 feet will be temporarily disturbed at each of these sites as part of the construction activities. The tower site at Milepost 4.7 is located at the southern end of the Fremont airstrip and no vegetated habitat will be disturbed to reach this site or to construct the tower.

Construction activities for the installation of the three towers will begin with bringing a crane to each site and driving piles for the single-leg type structure. The remaining activities will be the same as those described for the line segment between Mileposts 0.0 and 1.7.

Milepost 4.9 to 5.1. The single-leg tower structure located at Milepost 4.9 will be reached from Dixon Landing Road or the northern end of McCarthy Boulevard south of the point where it is planned to intersect with Dixon Landing Road. Construction activities will be the same as described for towers between Milepost 0.0 and 1.7 using drilled pier foundations or pile-type foundations.

Milepost 5.1 to Los Esteros Substation. A combination of single-leg and twin-legged towers will be installed along this segment of the route. Access to these towers will be from Zanker Road and the San Jose/Santa Clara Water Pollution Control Plant (WPCP). PG&E Co. or its contractors will use the existing WPCP roads along and between the sludge drying beds to reach the tower sites. Construction activities will be the same as described for towers between Milepost 0.0 and 1.7, using drilled pier foundations or pile-type foundations.

Approximately 145 *maximus golbulus* trees, a species of eucalyptus, have been recently planted along the eastern edge of the sludge drying beds by the WPCP to help mitigate odors from the sludge drying beds. This species of eucalyptus grows to a maximum height of between 150 feet and 200 feet and is unsuitable for growing next to a high voltage electric line because of required electrical clearances. PG&E Co. will replace these trees with a species that grows to a height of less than 30 feet. Some potential replacement species are shown in Table B.3-3.

Table B.3-3 PG&E Co.'s Proposed Tree Species Adjacent to WPCP

Species	Maximum Height
Eucalyptus platypus	30 ft.
Eucalyptus spathulata	20 ft.
Juniperus virginiana	20 ft.
Juniperus scopulorum	25 ft.
Pittosporum tobira	25 ft.
Cupressus arizonia	30 ft.

B.3.4.4 *Conductor Stringing*

Conductor stringing will begin with the installation of insulators and twin sheaves. The sheaves are rollers attached to the lower end of the insulators that are attached to the ends of each supporting structure cross arm. The sheaves allow the individual cables forming the bundled conductor to be pulled through each structure until the cables are ready to be pulled up to the final tension position. Workers will install temporary clearance structures consisting of vertical wood poles with overhead netting at the top of the poles at road crossings and crossings of energized electric lines to prevent the sock line (manila rope or wire used to pull transmission line conductors into place) or conductors from sagging onto the roadway or energized lines during the stringing operation.

Construction Access. Access for constructing and operating the transmission line will be primarily along the existing roads listed below:

- Auto Mall Parkway
- Cushing Road
- Fremont Boulevard
- Dixon Landing Road
- McCarthy Boulevard
- WPCP sludge drying bed access roads
- Zanker Road.

Temporary Clearance Structures. PG&E Co. will construct temporary clearance structures where the proposed transmission line crosses existing lines. These would be used at the following crossings:

- Auto Mall Parkway crossing and power line crossings near Milepost 0.3
- Milepost 2.3 in Salt Pond A23
- Dixon Landing Road near Milepost 4.8.

On both sides of the crossing of the existing 115 kV double-circuit tower lines transmitting power to the central San Jose and Santa Clara area near Milepost 2.3, the crane will drive up to 32 wood piles into the bay mud for a temporary clearance structure. The temporary structure, consisting of vertical wood poles bolted to the piles and horizontal cross poles bolted to the tops of the vertical poles and netting, will serve to prevent the 230 kV conductors from sagging into the energized circuits of the existing 115 kV tower lines during the conductor stringing phase of the project. The temporary clearance structure will consist of up to four vertical poles bolted to four piles in line on each side of the 115 kV tower lines and netting stretched between the horizontal cross poles. The vertical poles will be guyed to eight additional piles set back from the vertical poles on each side of the crossing.

After the conductors have been bolted onto the ends of the insulators, the temporary clearance structures will be removed. The piles for the clearance structure in Salt Pond A23 will be either pulled out of the bay mud, or cut off below the surface and the upper portion removed.

Conductor Pulling and Tensioning. PG&E Co. will establish pulling and tension sites along the alignment. These sites will require about 1.5 acres of land in which to set up tractors and trailers with the spooled cables that hold the conductors. Pulling or tension sites for the proposed transmission line route will be established at:

- Newark Substation
- Milepost 0.3 near Auto Mall Parkway
- Milepost 1.4 north of Cushing Road
- Milepost 2.7 at the northerly edge of the Bayside Business Park
- Milepost 4.1 at the southerly edge of the Bayside Business Park
- Milepost 5.3 on a WPCP access road in the sludge drying beds
- Milepost 5.6 in a WPCP sludge drying bed
- Milepost 6.7 in a WPCP sludge drying bed
- Milepost 7.0 in a WPCP sludge drying bed
- Milepost 7.2 in a WPCP agricultural field.

Once the equipment is set up, a light vehicle will pull the sock line between each supporting structure where access along the line is available. At each structure, the sock line will be hoisted to the cross arm and passed through the sheaves on the ends of the insulators. The sock line will then be used to pull each conductor through the sheaves. For the section of the route that crosses water, a helicopter will carry a sock line and drop it into each set of sheaves. The conductors will then be attached to the sock line and pulled through each supporting structure under tension. After the conductors are pulled into place, they are pulled to a pre-calculated sag and then tension-clamped to the end of each insulator. The final step of the conductor installation process is to remove the sheaves and install vibration dampers, conductor spacers, and other accessories.

Laydown Areas. PG&E Co. will use temporary laydown areas for constructing the proposed 230 kV transmission line. Three laydown sites have been identified: Newark Substation, Los Esteros Substation, and an undeveloped parcel at Milepost 4.9.

Cleanup. Packing crates, loose bolts, and construction debris will be picked up and hauled away during construction. PG&E Co. will make a final inspection to ensure that all debris is removed from the work sites.

B.3.5 115 kV Power Lines

As described in Section B.2.2, the proposed Los Esteros Substation will be connected to the local 115 kV power system via four 115 kV power lines.[1] New construction is needed in two areas: (1) in the vicinity of the Los Esteros Substation and State Route 237, and (2) along Trimble Road and Montague Expressway between Zanker Road and the Montague Substation (located just east of I-880 on the south side of Montague Expressway).

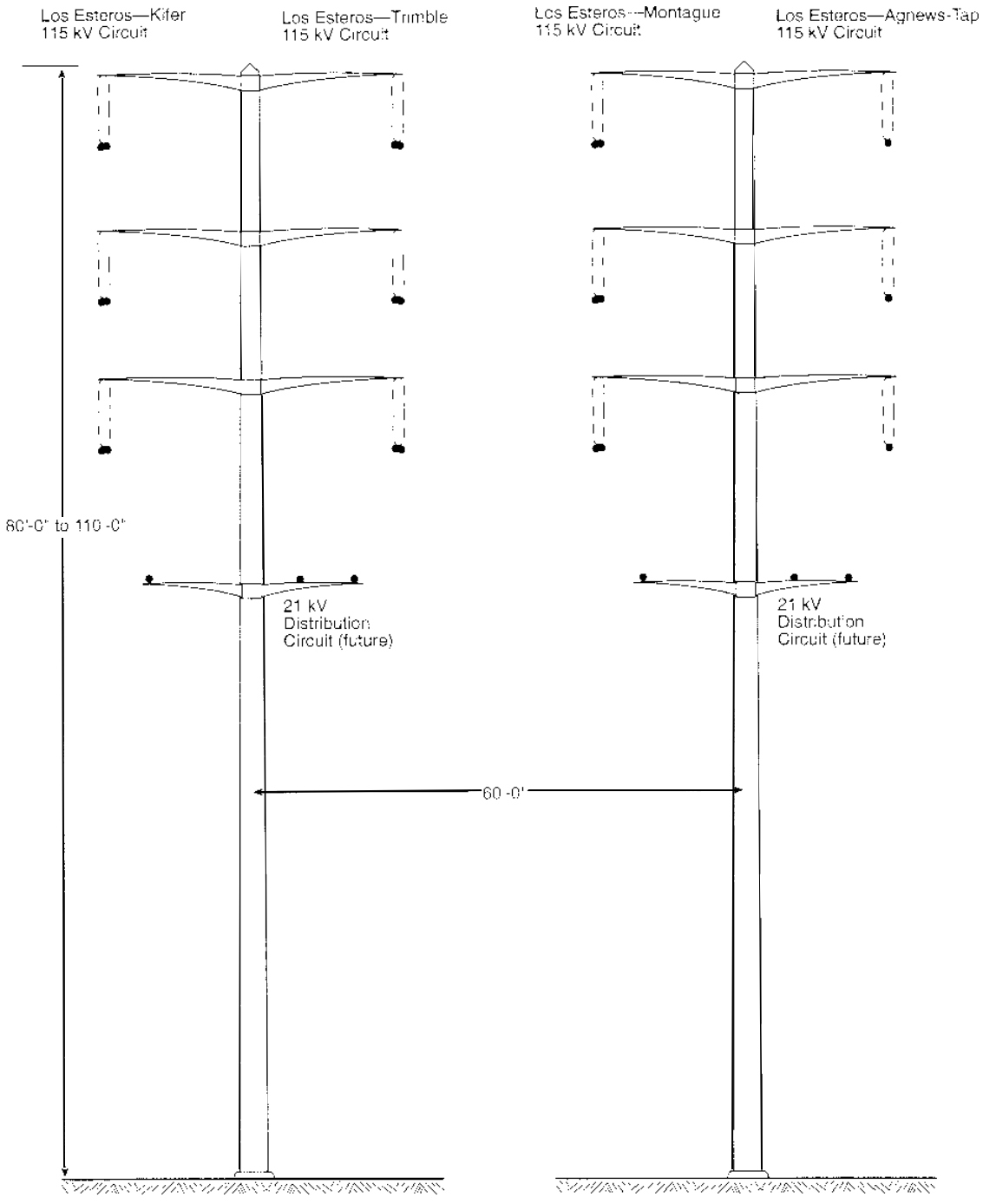
Right-of-Way Requirements. Where structures are placed within a road right-of-way or public utility easement, no easements will be acquired from private property owners unless parts of cross-arms or conductors hang outside of the public easement. An easement extending to a minimum of 6 feet from the conductor position will be acquired in cases where there is an overhang.

Right-of-way widths for lines crossing private property are generally 140 feet for two double-circuit lines in parallel, 80 feet for one double-circuit power line, and 40 feet for one single-circuit power line.

B.3.5.1 *115kV Lines in Vicinity of Los Esteros Substation*

Figure B.3-3 shows the pole line connections from the new Los Esteros Substation to the Trimble to Kifer Loop, and the proposed Agnews 115 kV Tap connection. The four 115 kV circuits will be on two new

1 They are: (1) Los Esteros to Kifer, (2) Los Esteros to Trimble, (3) Los Esteros to Montague, and 4) Agnews Tap 115 kV Tap Lines.



Not toScale

Source: SPEA,1999.

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Figure B.3-3

115 kV Polesfrom Los Esteros Substation to SR 237

Aspen EnvironmentalGroup

parallel double-circuit lines between the Los Esteros Substation and State Route 237. They will then branch out with one single-circuit line heading east to Kifer Substation, two circuits on a double-circuit line crossing State Route 237 to Trimble and Montague Substations, and one circuit connecting to the existing Agnews 115 kV Tap line.

B.3.5.2 *Construction of the Los Esteros to Montague Power Line (Trimble/Montague 115kV Upgrade)*

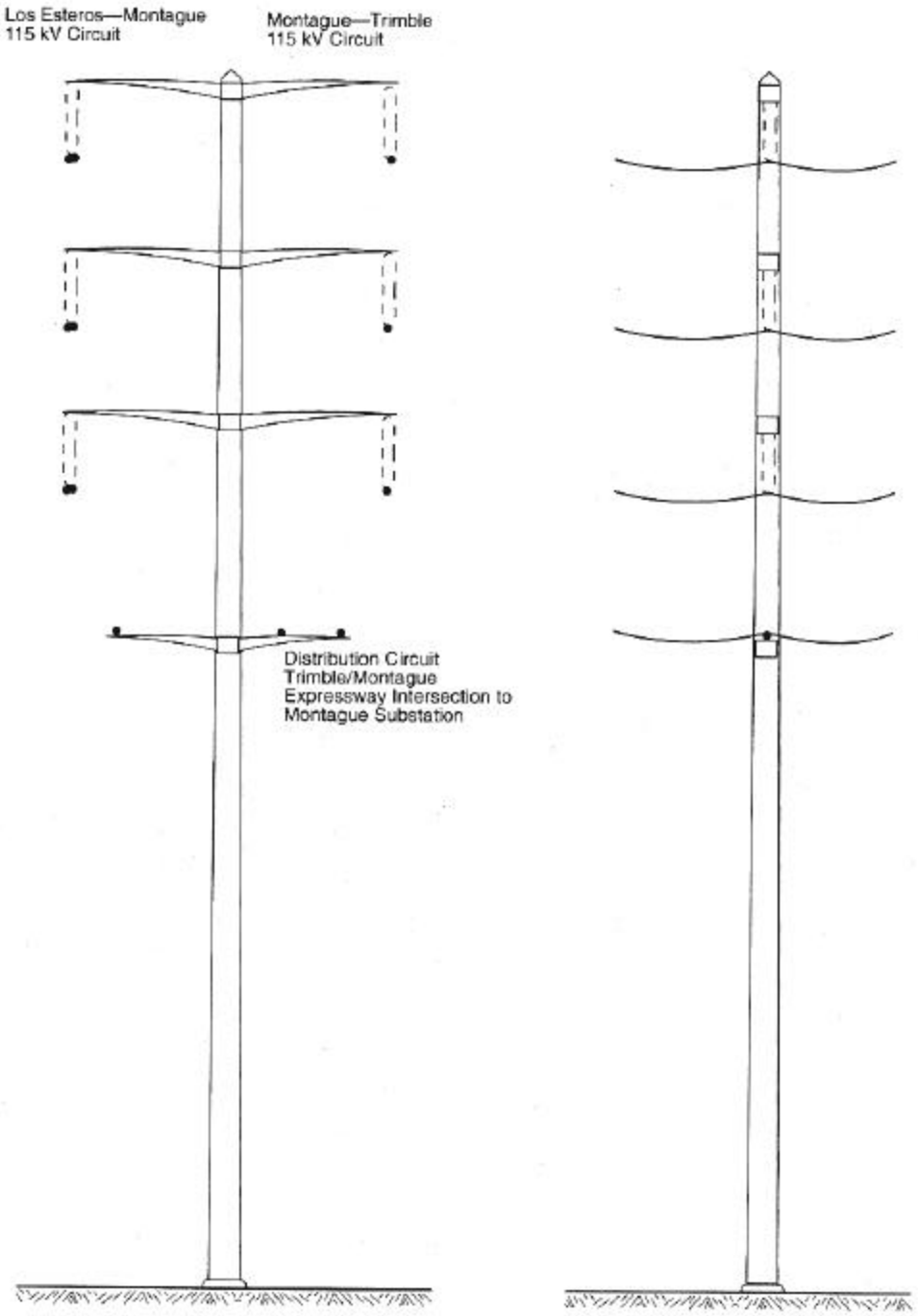
New construction between Zanker Road and the Montague Substation is needed to complete the Los Esteros to Montague 115 kV circuit. PG&E Co. will install a new double-circuit tubular steel pole line for a distance of 1.4 miles along Trimble Road and the Montague Expressway to Montague Substation to replace a segment of the existing Montague to Trimble 115 kV power line. The new Los Esteros to Montague circuit would be attached to the north side of the 1.4-mile segment, and the existing Newark to Trimble circuit would be placed on the south side. Figure B.3-4 shows the type of tubular structure proposed.

In some areas along Trimble Road existing underground utilities might have to be relocated to place the steel pole foundations. Both PG&E Co. and other utility company crews will perform this work as appropriate. Placing self-supporting steel pole lines will require a large auger to dig the foundation hole. The foundation hole will be approximately six feet in diameter and 15 to 20 feet deep. A rebar cage with anchor bolts attached at the upper end will be lowered into the hole, and a 6-foot-diameter form will be set at the top to an elevation of about two feet above natural ground level. Workers will then pour concrete into the hole to the top of the form. A foundation requires about 21 cubic yards of concrete.

The tubular steel pole shafts will be delivered to the site in two sections, with the bottom of the upper section fitted to slide over the top part of the lower section. The lower section is welded onto a base plate, and the sections are then pulled together with a winch. Cross arms are bolted to the pole, and insulators are attached to the cross arms and secured. The entire pole is assembled on the ground, both for ease of construction and safety. A 10-ton crane lifts the poles and sets them over the anchor bolts that are embedded in the concrete foundation. Large securing nuts are screwed onto the anchor bolts to tie the pole to the foundation.

For conductor installation, a steel wire is fed through stringing sheaves at the end of each insulator. The steel wire is then attached to the conductor and is pulled off the wire reels through a tensioner and pulled in at the other end with a puller. Access for the Los Esteros to 115 kV Montague power line will be along Trimble Road and Montague Expressway and the I-880/Montague Expressway Interchange.

PG&E Co. expects that the work along Trimble Road and the Montague Expressway will be similar to that which occurred in 1998 along the Montague Expressway between the Montague Substation and Milpitas Boulevard when PG&E Co. constructed the Montague to Milpitas 115 kV power line. In that case, the lane closure was limited to one lane during the daylight hours and work for installation of the poles was done between 9 a.m. and 3:30 p.m. The stringing work will likely be done during the night-time hours between 7 p.m. and 5 a.m. or during the weekend day light hours.



Northeast San Jose Transmission Reinforcement Project EIR

Figure B.3-4

Los Esteros-Montague 115 kV Poles along Trimble Road and Montague Expressway

Not to Scale

Source: SPEA, 1999.

Aspen Environmental Group

Temporary guard structures with netting for the stringing operation will be installed for the I-880 crossing under a Caltrans permit and will likely be installed at night or early morning during Saturday or Sunday. After the stringing operation is completed, the guard structures will be removed during the same time frame.

B.4 OPERATION AND MAINTENANCE PROCEDURES

Approximately 49 PG&E Co. employees will be involved in the operation of the project. These include:

- 12 employees based at PG&E Co.'s service center at 6402 Santa Teresa Boulevard, San Jose who will perform maintenance work at the Los Esteros Substation
- 16 employees based at the same location will perform switching work, when necessary, at Los Esteros Substation
- 7 employees who are based at Metcalf Substation who will remotely control the operation of Los Esteros Substation
- 7 employees based in Belmont will perform routine inspection and maintenance work on the 230 kV and 115 kV electric lines in Santa Clara County
- 7 employees based in Concord will perform routine inspection and maintenance work on 230 kV transmission line in Alameda County (between Newark Substation and the Alameda/Santa Clara county line).

General System Monitoring and Control. Los Esteros Substation monitoring and control functions will be connected to the Metcalf Switching Center computer system by a telecommunication circuit. Protective relay communication will be through a power line carrier system and no communication tower will be required. Dedicated telephone lease lines will be required for the business telephone and telemetering circuit between the Los Esteros Substation and the controlling Switching Center.

Facility Inspection. The regular inspection of transmission lines, instrumentation and control, and support systems is critical for safe, efficient, and economical project operation. Early identification of items needing maintenance, repair, or replacement will ensure continued safe operation of the 230 kV transmission line. Two patrols per year, one surface patrol and one air patrol, will check the overall line for integrity. These activities currently take place along the existing 115 kV power lines between the Newark Substation and the City of Santa Clara. PG&E Co. will inspect all of the structures from the surface annually for corrosion, misalignment, and excavations. Ground inspection will occur on selected lines to check the condition of hardware, insulator keys, and conductors. This inspection will check conductors and fixtures for corrosion, breaks, broken insulators, and bad splices. Lines will also be checked for sag. PG&E Co. will perform annual ground inspections on poles, anchors, and right-of-way conditions. Approximately 50 PG&E Co. employees will be involved at various times in the maintenance of the facilities. These employees will be based off-site at existing PG&E Co. facilities in the southern San Francisco Bay Area.