

Responses to

**California Energy Commission Staff
Data Requests 1 through 65**

Dated December 5, 2002

In Support of the

Application for Certification

For the

Pico Power Project

Santa Clara, California

02-AFC-03

Submitted to the
California Energy Commission

Submitted by
Silicon Valley Power
City of Santa Clara

December 2002

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INTRODUCTION

The following are Silicon Valley Power's responses to California Energy Commission (CEC) data requests for the Pico Power Project (PPP) (02-AFC-03). The CEC has served these data requests as part of the discovery process for the PPP project. The CEC provided the data requests on December 5, 2002. The responses in this submittal are given in the order presented by the CEC Staff and are keyed to the CEC Staff Data Request number. New or revised graphics or tables are numbered in reference to the data request number. (For example, Figure DR15-1 would be the first figure submitted in response to Data Request 15.)

Additional tables, figures, or documents submitted in response to a data request (supporting data, plans, folding graphics etc.) are found at the end of a discipline-specific section and are not sequentially page-numbered consistently with the remainder of the document, though they may have their own internal page numbering system. This keeps all material belonging to a given discipline together.

Technical Area: Air Quality

Revised Modeling Analysis

1. Please resolve all of the following Air Quality Data Requests (Data Requests 2 through 10), and then prepare a revised modeling analysis that incorporates all documented changes to the model input parameters. In any revised modeling analysis, please include startup and shutdown emission scenarios in this revised modeling analysis.

Response: If any revised air modeling is required, such analyses is noted in the individual responses, which follow. If any revised air modeling is required for startup and shutdown emissions, it is included with the appropriate response. Please note that a modeling analysis for startup and shutdown emissions was included in the original application, see Appendix 8.1B, Table 8.1B-6.

Maximum lb/MMBtu Values

2. Table 8.1-14 reports maximum lb/MMBtu values for each turbine with duct burners in operation, however it appears that the heat input rate reported in Table 8.1-15 for the turbines without duct burners was mistakenly used in the calculation. Please correct Table 8.1-14.

Response: Each turbine is rated at 473.7 mmbtu/hr and each duct burner is rated at 136.9 mmbtu/hr. Total heat rating for each gas turbine/duct burner is therefore 610.6 btu/hr. The total heat rating for two turbines and two duct burners is 1221.1 mmbtu/hr. The lb/mmbtu values as stated in Table 8.1-14 were calculated incorrectly. As noted in the table, these values were calculated from the manufacturer's mass emissions values. Revised Table 8.1-14 values are presented below. These values do not impact any subsequent calculations, as the mass emissions values (lbs/hr) were used in all following calculations.

Revised Table 8.1-14. Maximum short-term pollutant emission rates (each turbine with duct burner and power augmentation).

Pollutant	ppmvd @ 15% O ₂	lb/mmbtu	lb/hr
NO _x	2.5	0.0092	5.61
CO	4.0	0.00896	5.47
POC	2.0	0.00262	1.6
PM ₁₀	-	0.00704	4.3
SO ₂	0.12	0.000197	0.41

3. Please indicate if the erroneous lb/MMBtu values from Table 8.1-14 were used in any further calculations or in the ambient modeling for the facility.

Response: The lb/mmbtu values in Table 8.1-14 were not used in any subsequent calculations or modeling analyses. Please see Appendix 8.1A, Table 8.1A-2 and Appendix 8.1B, Table 8.1B-6.

Duct Burner Heat Rate

4. *Section 8.1.5.1 on page 8.1-22 reports that the heat rate of the duct burners will be 136.9 MMBtu/hr; however, Table 8.1-15 seems to indicate that the duct burners will have a heat rate of 273.8 MMBtu/hr (1221.1 – 947.4). Please clarify what the heat rate of the proposed duct burners will be.*

Response: Each individual duct burner is rated at 136.9 mmbtu/hr, and two duct burners would have a hourly heat rating of 273.8 mmbtu/hr. See clarification data presented in Response #2. Data presented on AFC page 8.1-22 is for each duct burner.

5. *Please clarify if the two values reported in Table 8.1-15 are correct, and how they are calculated given the duct burner heat rate.*

Response: The values in Table 8.1-15 are correct. Each turbine is rated at 473.7 mmbtu/hr, and each duct burner is rated at 136.9 mmbtu/hr. Total heat rating for each gas turbine/duct burner is therefore 610.6 mmbtu/hr. The total heat rating for two turbines and two duct burners is 1221.1 mmbtu/hr. Total heat rating for the two gas turbines without duct burners is 974.4 mmbtu/hr.

Cooling Tower TDS

6. *Cooling tower Total Dissolved Solids (TDS) is reported as 5,880 ppm in Table 8.1A-6, and as 3,745 ppm in section 8.1.5.1 on page 8.1-22. Please clarify the correct TDS level for the cooling towers.*

Response: Data presented on the cooling tower TDS in section 8.1.5.1, page 8.1-22 is, as indicated, the “Average TDS” of 3,745 ppmw. Data presented in Appendix 8.1A, Table 8.1A-6 is the “maximum” TDS level. The maximum TDS level was used in all emissions calculations and air modeling analyses, i.e., 0.514 lbs/hr, 2.25 tpy.

7. *Please indicate if an erroneous TDS value from either Table 8.1A-6 or section 8.1.5.1 was in any further calculations or in the dispersion modeling analysis for the facility.*

Response: The maximum TDS value as presented in Appendix 8.1A, Table 8.1A-6 was used in all emissions calculations and air modeling analyses. See Data Response #6 above.

Startup/Shutdown Emission Rates

8. *The “Maximum facility startup/shutdown emissions rates” presented in Table 8.1-16 do not appear to be consistent with the “Startup and Shutdown Emission Values for the LM6000-PC*

Turbine” presented in Table 8.1A-1. Please clarify how the values in the two tables are related.

Response: The startup and shutdown values presented in Table 8.1-16 and Appendix 8.1A, Table 8.1A-1 are not related. The values presented in Table 8.1-16 were supplied by the project engineer based upon data obtained from the turbine manufacturer. The values delineated in Table 8.1-16, as indicated in the footnotes and text, are the total startup and shutdown emissions values assuming both turbines startup in the same hour. These values were used in all subsequent emissions calculations and modeling analyses.

The values presented in Appendix 8.1A, Table 8.1A-1 were given for reference purposes as values used for similar turbines at either existing or proposed power plant installations. These values are applicable to a single turbine startup or shutdown scenario.

9. *Table 8.1-19 lists the ISCST3 input data, however the input values do not appear to reflect startup or shutdown emissions. Please indicate if the prepared impact modeling analysis includes startup and shutdown emissions.*

Response: Startup and shutdown input data for modeling analyses are given in Table 8.1-21, with further explanation given in the text on page 8.1-34. In addition, Appendix 8.1B, Table 8.1B-6 delineates the startup/shutdown impact analysis values.

Table 8.1-19 delineates source characteristics for only the refined modeling analysis, and was not intended to incorporate startup and shutdown data.

One-hour NO_x

10. *In Table 8.1-19, the one-hour NO_x number presented is less than the annual average number. Please provide a detailed explanation of how these values are calculated.*

Response: Please review Appendix 8.1A, Table 8.1A-2, and note the following:
Hourly emissions of NO_x for each turbine/duct burner, at steady state normal operations mode (controlled) are 5.61 lbs/hr or 0.707 g/sec. Annual emissions of NO_x for each turbine/duct burner, which include startup and shutdown emissions are 25.74 tpy, or 5.877 lbs/hr (assuming 8760 hrs/yr), which equals 0.74 g/sec, i.e., 0.739 in Table 8.1-19.

PM₁₀ Mitigation Plan

11. *Please submit a revised PM10 Mitigation Plan that includes detailed calculations of the quantities of emissions (PM10, SO2 and VOC) reductions achieved by the plan. Please include a detailed account of all assumptions, all equations used and a complete list of references.*

Response: The revised plan is attached.

12. Please provide a letter from the Bay Area Air Quality Management District indicating that agency's willingness to participate in the PM10 Mitigation Plan to the extent necessary.

Response: Silicon Valley Power has submitted a copy of the revised PM₁₀ mitigation plan, as noted in Data Request 11, to the Bay Area AQMD. In the revised plan the applicant has formally requested a written response from the Bay Area AQMD indicating its willingness to participate in the mitigation plan to the extent necessary. The Bay Area AQMD response will be provided upon receipt.

BACT

13. Please provide a BAAQMD specified BACT analysis that considers a NO_x BACT of 2.0 ppm averaged over 1 hour.

The proposed BACT level for NO_x for the PPP, as specified in the AFC is 2.5 ppmvd @ 15% O₂ (3-hour average). A review of NO_x BACT requirements for combined cycle turbines, from several California air agencies, is provided in the following series of tables:

Table DR13-1. Bay Area AQMD NO_x BACT Data

Configuration	Rating	NO _x BACT Level	Comments
Simple Cycle	<2 MW	5 ppmvd	TF
		9 ppmvd	AP
Simple Cycle	2- 50 MW	ND	TF
		5 ppmvd	AP
Simple Cycle	> 50 MW	<5 ppmvd	TF
		5 ppmvd	AP
Combined Cycle	< 50 MW	ND	ND
Combined Cycle	> 50 MW	2 ppmvd (3 hr avg)	TF
		2.5 ppmvd (1 hr avg)	TF
		3 ppmvd (3 hr avg)	AP

TF = Technologically Feasible
 AP = Achieved in Practice
 ND = No data

San Diego APCD BACT guidance did not list any BACT data for gas turbines.

Table DR13-2. San Joaquin Valley APCD NO_x BACT Data

Configuration	Rating	NO _x BACT Level	Comments
Simple Cycle	>47 mmbtu/hr	8 ppmvd	AP
Combined Cycle	> 50 mmbtu/hr	2 ppmvd (1 hr avg)	TF
		2.5 ppmvd (1 hr avg)	AP
Combined Cycle	3 – 10 MW	2.5 ppmvd (3 hr avg)	AP
Combined Cycle Peaker	< 27 MW	42 ppmvd	AP
		2.5 – 15 ppmvd	TF
Simple Cycle	< 50 MW	5 ppmvd (3 hr avg)	AP
		2.5 – 3 ppmvd	TF
Combined Cycle	10-50 MW	2.5 ppmvd (3 hr avg)	AP
		2 ppmvd	TF

TF = Technologically Feasible
 AP = Achieved in Practice

South Coast AQMD data does not specifically delineate BACT (LAER) data based on turbine size, i.e., heat rate or MW rating. Recent BACT (LAER) determinations are summarized in the following table.

Table DR13-3. Recent BACT (LAER) determinations, South Coast AQMD.

Configuration	Rating	NO _x LAER Level	Comments
Combined Cycle	175.7 MW	2.5 ppmvd (1 hr avg)	AP
		2 ppmvd (annual avg)	AP
Simple Cycle	45 MW	5 ppmvd (1 hr avg)	AP
Simple Cycle	47.4 MW	5 ppmvd (3 hr avg)	AP
Simple Cycle	1.5 MW	<=5 ppmvd (3 hr avg)	BACT demonstration for small turbines
Combined Cycle	174 MW	2.5 ppmvd (1 hr avg)	AP IEEC AFC

TF = Technologically Feasible
 AP = Achieved in Practice

South Coast AQMD recommended BACT for non-major polluting facilities (such as the PPP) per Appendix IV of the BACT Guidelines is summarized in the following table.

Table DR13-4. Summary of BACT Guidelines, Appendix IV, South Coast AQMD.

Turbine Rating/Size	NO _x BACT Level
< 3 MW	9 ppmvd
>= 3 MW and < 50 MW	2.5 ppmvd w/efficiency correction
>= 50 MW	2.5 ppmvd (1 hr avg)
	or
	2 ppmvd (3 hr avg) w/efficiency correction

CARB data presented in the *Guidance for Power Plant Siting and Best Available Control Technology, CARB, 7/99*, indicates that recommended BACT for NO_x for combined cycle power plants such as the PPP is 2.5 ppmvd (1 hr avg) or 2 ppmvd (3 hr avg). Additional data derived from CARB indicates that BACT for NO_x for large turbine power plant applications, is as follows:

- 2.5 ppmvd (1 hr avg) to 3.0 ppmvd (3 hr avg)
- Limits below 2 ppmvd (Otay Mesa and Nueva Azalea) have not been shown to be achieved in practice.

Data derived from the CARB BACT/LAER database (approx. 1994 to present), for turbines in the size range of those proposed for the PPP project is summarized in the following table.

Table DR13-5. Turbine data from the CARB BACT/LAER database.

Facility ID	Turbine Size	NO _x BACT Level
TID (LM5000)	49 MW	3 ppmvd
Federal Cold Storage	32 MW	2 ppmvd (annual avg)
Bear Mtn. Limited	48 MW	3.75 ppmvd
Carson Energy	42 MW	5 ppmvd
Sacramento Cogen	42 MW	5 ppmvd
Unocal	~55 MW	9 ppmvd
Arroyo Energy	42.4 MW	5 ppmvd

Data presented in Appendix 8.1F of the AFC summarizes recent BACT determinations for a wide range of turbines. Included in this data was a citation for the Las Vegas Cogen facility (ATC #A-329, Mod #3) which delineated a BACT determination for NO_x at 2 ppmvd (3 hour avg) and an ammonia slip level of 10 ppmvd (1 hr avg). Based upon discussions with plant staff (11-4-02), please note the following:

- The Las Vegas Cogen facility is in startup mode at the present time.
- Early performance data indicates that NO_x levels of 2 ppmvd results in ammonia slip levels of 13-14 ppmvd (in excess of the ATC limit of 10 ppmvd).
- Achieving ammonia slip levels of 10 ppmvd results in NO_x levels of 3-4 ppmvd.
- Plant staff indicated that compliance with both the NO_x and ammonia slip limits may be achievable only by retrofitting the new facility with additional catalyst and operational control modifications, or a permit modification may be pursued to increase either the NO_x or ammonia limits.
- Plant staff also indicated that compliance with a 2 ppmvd NO_x limit and an ammonia slip limit of less than 10 ppmvd would be extremely difficult.

As such, this facility has not provided data that would allow a conclusive determination that a 2 ppmvd (1 hr avg) NO_x level can be achieved in practice.

With respect to the PPP, SVP has concerns regarding the ability of advanced combustion and emission control systems to meet levels as low as those described in Data Requests 13 and 14 on a consistent basis. To the best of SVP's knowledge, these low emission rates have been proposed based on vendor information, which may not actually represent a guarantee of continuous compliance. SVP has designed the project to meet a NO_x level of 2.5 ppm on a short-term (3 hr average) basis, and anticipates receiving vendor confirmation to support that design. To date, SVP has not received any information from either the turbine vendor or the control system vendor who would confirm or guarantee continuous compliance with a 2.0 ppm NO_x limit based on a 1 hour average.

In a letter to the South Coast AQMD concerning the Calpine Inland Empire Energy Center project, EPA expressed the opinion that a 2.0 ppm NO_x level "has been consistently achieved in a Region IX facility". In response to that letter, air quality consultants for Calpine filed a Freedom of Information Act request seeking all of the information in EPA's possession to confirm that opinion. In a response dated December 10, 2001, EPA confirmed that it has no such information in its possession, and has not independently verified the claim that a 2.0 ppm NO_x level was being consistently achieved. Consequently, SVP believes that a 2.0 ppm NO_x limit based on a 1 hour averaging period should not be considered in CEC's review of the appropriate NO_x BACT level for the project.

Based on the above data, the PPP-proposed limit for NO_x at 2.5 ppm (3 hr avg) is considered BACT, both from the standpoint of being technologically feasible and achieved in practice.

14. Please provide a BAAQMD specified BACT analysis that considers a CO BACT of 2.0 ppm averaged over 3 hours.

Response: The proposed BACT level for CO for the PPP, as specified in the AFC is 4.0 ppmvd @ 15% O₂ (1-hour average). A review of CO BACT requirements for combined cycle turbines, from several California air agencies indicates the following:

Table DR14-1. Bay Area AQMD CO BACT Data

Configuration	Rating	BACT Level	Comments
Simple Cycle	<2 MW	ND, 10 ppmvd	ND, AP
Simple Cycle	2- 50 MW	ND, 10 ppmvd	ND, AP
Simple Cycle	> 50 MW	ND, 10 ppmvd	ND, AP
Combined Cycle	< 50 MW	ND, 4 ppmvd	ND, AP

TF = Technologically Feasible
 AP = Achieved in Practice
 ND = No data

San Diego APCD BACT guidance did not list any CO BACT data for gas turbines.

Table DR14-2. San Joaquin Valley APCD CO BACT Data.

Configuration	Rating	CO BACT Level	Comments
Simple Cycle	>47 mmbtu/hr	0.024 lbs/mmbtu	AP
Combined Cycle	> 50 mmbtu/hr	6 ppmvd	AP
		4 ppmvd	TF
Combined Cycle	3 – 10 MW	6 ppmvd	AP
Combined Cycle Peaker	< 27 MW	PUC Gas	AP
		71-90% Control	TF
Simple Cycle	< 50 MW	6 ppmvd	AP
Combined Cycle	10-50 MW	6 ppmvd	AP

TF = Technologically Feasible
 AP = Achieved in Practice

South Coast AQMD data does not specifically delineate BACT (LAER) data based on turbine size, i.e., heat rate or MW rating. Recent BACT (LAER) determinations are summarized in the following table.

Table DR14-3. Recent BACT (LAER) determinations, South Coast AQMD.

Configuration	Rating	CO LAER Level	Comments
Combined Cycle	175.7 MW	6 ppmvd (1 hr avg)	AP
Simple Cycle	45 MW	6 ppmvd (1 hr avg)	AP
Simple Cycle	47.4 MW	6 ppmvd (3 hr avg)	AP
Simple Cycle	1.5 MW	10 ppmvd (3 hr avg)	BACT demonstration for small turbines
Combined Cycle	174 MW	6 ppmvd (1 hr avg)	AP IEEC AFC

TF = Technologically Feasible
 AP = Achieved in Practice

South Coast AQMD recommended BACT for non-major polluting facilities (such as the PPP) per Appendix IV of the BACT Guidelines is summarized in the following table.

Table DR14-4. Recommended CO BACT for non-major facilities, South Coast BAAQMD.

Turbine Rating/Size	CO BACT Level
< 3 MW	10 ppmvd
>= 3 MW and < 50 MW	10 ppmvd
>= 50 MW	6 ppmvd (3 hr avg)

CARB data presented in the *Guidance for Power Plant Siting and Best Available Control Technology, CARB, 7/99*, indicates that recommended BACT for CO for combined cycle power plants such as the PPP is 6 ppmvd (3 hr avg). Additional data derived from CARB indicates that

BACT for CO for large turbine power plant applications, is 4 to 10 ppmvd (3 hr avg) to 4 ppmvd (24 hr avg).

Data derived from the CARB BACT/LAER Database (approximately 1994 to present), for turbines in the size range of those proposed for the PPP project is summarized in the following table.

Table DR14-5. Data from the CARB BACT/LAER database.

Facility ID	Turbine Size	CO BACT Level
TID (LM5000)	49 MW	11.8 ppmvd
Federal Cold Storage	32 MW	ND
Bear Mtn. Limited	48 MW	10 ppmvd
Carson Energy	42 MW	ND
Sacramento Cogen	42 MW	ND
Unocal	~55 MW	10 ppmvd
Arroyo Energy	42.4 MW	ND

ND = No data

SVP expects that the project, as designed, will achieve a CO level of 4.0 ppm on a routine basis. SVP does not believe that a level of 2.0 ppm (3 hour average) should be required for this facility, unless and until there is sufficient data that demonstrates that this low level can be achieved on a consistent basis. EPA's letter (referenced above in Response #13) to the SCAQMD acknowledges that there are a number of projects that have had permits issued recently with CO limits of 4.0 ppm. EPA's position regarding the 2.0 ppm level is solely based on a permit issued to a facility in Massachusetts. SVP does not believe that it is appropriate to establish BACT levels based on permit conditions in the absence of demonstrations that these low levels can, in fact, be achieved in use on a consistent basis.

Based on the above data, the PPP-proposed limit for CO at 4 ppm (1 hr avg) is considered BACT, both from the standpoint of being technologically feasible and achieved in practice.

Data Request 11
REVISED PM₁₀ MITIGATION PLAN

AIR QUALITY MITIGATION PLAN

PICO POWER PROJECT

1.0 PM₁₀

This mitigation plan describes how the Pico Power Project (PPP) will provide emission reductions sufficient to mitigate the project PM₁₀ emissions of 30,400 pounds per year (15.2 tons/yr) from October to March. The plan describes the sources to be used for the mitigation, the program funding, the expected amounts of emission reductions and resulting mitigation, the schedule for achieving these reductions, contact persons for the mitigation program, and monitoring and reporting mechanisms to be used for tracking the program's progress.

Silicon Valley Power proposes to work with the staff of the Bay Area Air Quality Management District to fund the existing District wood stove and fireplace retrofit/replacement program as mitigation for the project's PM₁₀ emissions. Under the proposed retrofit and replacement program, financial incentives would be provided to encourage residents of the City of Santa Clara (and surrounding areas) to replace existing wood stoves with gas stoves or to retrofit existing wood-burning fireplaces to gas fireplaces.

The wood stove and fireplace retrofit/replacement program will be patterned after the Great Stove Changeout (in which the BAAQMD participated in 1998) and the mitigation program implemented for the Three Mountain Power project. Under the program, SVP will provide financial incentives for the replacement or retrofit of older, noncertified wood stoves and fireplaces within the City of Santa Clara (and nearby surrounding areas). This will be a voluntary program that would be implemented on a first-come, first-served basis; the program would last for approximately one year. During that time, any resident of the City of Santa Clara (and nearby surrounding areas) would be able to replace an existing, operational noncertified stove or fireplace with a natural gas-fired stove or fireplace insert and receive an incentive payment of \$300 to \$500. The BAAQMD would administer the program through local retailers and professional, licensed installers. The retailers who participate in the program would provide certificates to participants. The participants would submit these certificates to the BAAQMD to receive their rebates. The BAAQMD would track the number of replacements and retrofits funded and would report periodically to PPP and to the CEC Compliance Project Manager (CPM).

1.1 Funding

PPP has committed a total of \$167,200 to fund this PM₁₀ mitigation program. The funds will be designated as follows:

DESIGNATION OF FUNDING FOR PM₁₀ MITIGATION PROGRAM			
WOOD STOVE AND FIREPLACE REPLACEMENT/RETROFIT			
Equipment	Number of Units	Unit Cost	Total Cost
Replacement Stoves	110	\$500	\$55,000
Fireplace Retrofits	290	\$300	\$87,900
BAAQMD Administrative Cost			\$25,200
Total Grant			\$167,200

Emissions Reductions

The proposed mitigation package will provide reductions in emissions of directly emitted PM₁₀, PM₁₀ precursors, and other pollutants that will mitigate both the ambient air quality and the public health impacts of the PM₁₀ emissions from the PPP project.

Emission reductions from wood stove and fireplace replacements and retrofits can be evaluated using AP-42 emission factors and inventory and survey results to determine the quantities of wood burned by wood stove and fireplace users in Santa Clara County, and the BAAQMD's woodburning handbook to determine the quantity of gas required to replace the heating value of the wood burned.

Emission factors are summarized in the following table.

EMISSION FACTORS FOR EMISSION REDUCTION CALCULATION					
Emission Factors for Residential Woodburning Equipment (lb/ton)					
Type of Device	NO _x	SO _x	CO	VOC	PM ₁₀
Wood Stove	2.6	0.4	186.0	31.0	31.1
Fireplace	2.6	0.4	252.6	31.0	34.6
Emission Factors for Residential Natural Gas Combustion (lb/MMscf)					
	NO _x	SO _x	CO	VOC	PM ₁₀
Uncontrolled	94	0.6	40	11	7.6
Sources: AP-42 Tables 1.4-1, 1.4-2 (Natural Gas Combustion) 7/98, and ARB Area Source Methodologies Section 7.1 (Residential Wood Combustion)					

The average amount of wood burned by wood stove and fireplace users in Santa Clara County is estimated at 0.28 cords per year (statewide average; source: ARB Area Source Methodology, Section 7.1, Residential Wood Combustion). One cord of wood weighs 2 tons, so each woodstove and fireplace being replaced is assumed to burn 0.56 tons per year of wood.

Using the information regarding wood heat content and stove efficiency in the Woodburning Handbook, it is estimated that a cord of wood burned in a 60% efficient woodstove has approximately 24 MMBtu of available heat. At 0.28 cords per year and 1022 Btu/scf for the natural gas, the replacement equipment would use approximately 6575 scf of natural gas per year to provide replacement heat. This information can be used with the emission factors in the table above and the number of stoves and fireplaces that will be replaced or retrofitted under this program to calculate emissions reductions from the replacement program.

EMISSIONS REDUCTIONS FROM WOODSTOVE AND FIREPLACE REPLACEMENT/RETROFIT					
Type of Device	NOx	SOx	CO	VOC	PM ₁₀
Emissions per Unit Replaced/Retrofitted (pounds/year)					
Wood Stove	1.5	0.22	104.2	17.4	17.4
Fireplace	1.5	0.22	141.5	17.4	19.4
Gas Heater	0.62	0.004	0.263	0.072	0.074
Emission Reductions from Proposed Replacement/Retrofit Program (pounds/year)					
Wood Stoves	92.2	24.2	11,428.7	1,901.6	1,907.7
Fireplaces	243.0	63.8	40,946.0	5,013.4	5,597.7
Total lbs/yr	335.2	88.0	52,374.6	6,915.1	7,505.4
Total tons/yr	0.17	0.04	26.19	3.46	3.75
Based on 0.56 tons of wood burned per stove/fireplace per year; AP-42 emission factors and replacement/retrofit of 110 wood stoves and 290 fireplaces.					

This program is provided to mitigate the impacts of the PM₁₀ emissions from the PPP project; however, the impacts of PM₁₀ from the project and from woodburning are not equal on a pound per pound basis. Emissions from the PPP project will be emitted 95 feet above ground level, with a high vertical velocity, so the emissions will rise into the air and be thoroughly mixed and diluted with the surrounding air before impacting the ground. In contrast, smoke from wood stoves and fireplaces is emitted close to the ground. Further, wood stoves and fireplaces are used primarily in the winter months and in the evening hours. As discussed in the BAAQMD's Wood Burning Handbook,

“...stagnant conditions...[are] a big problem in California valleys. As night falls, ground level air cools and cold air also slides down the valley walls, pooling on the valley floors. With little or no wind, temperature inversions can then occur—warm air layers act as a lid over the cold air in the valleys, trapping smoke and other air pollution close to the ground. And, as home heating systems operate mainly in the evening, the smoke from stoves and fireplaces remains at ground level and collects overnight ...”

To evaluate the impact of the PM₁₀ reductions that will result from the woodstove and fireplace replacement and retrofit program, one woodstove was modeled as a point source with a stack height of 25 feet, an exhaust temperature of 150 deg F and an exhaust velocity of 1 meter per second. The emission rate was taken to be 1.0 g/s. The meteorological data set used was the same as that used in the AFC modeling: San Jose Airport (1992-1997). This analysis showed that 1 g/s of emissions from a woodstove results in a maximum-modeled 24-hour average PM₁₀ impact of 617.4 ug/m³ and an annual average impact of 82.9 ug/m³. By comparison, the PM₁₀ emissions from the PPP facility (turbines alone) result in a maximum modeled 24-hour average PM₁₀ impact of 27.04 ug/m³ per gram per second and an annual average impact of 0.736 ug/m³ per gram per second. Therefore, one pound of PM₁₀ reduced through this program will mitigate the effects of 112.63 pounds from PPP on an annual basis and 22.83 pounds on a 24-hour average basis. Based on the lower of these two dilution factors, the overall PM₁₀ emissions reduction from this portion of the mitigation package will mitigate 171,348.3 pounds of PM₁₀ from PPP.

1.2 Schedule for Implementation

The applicant will work with the BAAQMD staff to identify participating retailers and to create a public outreach program that will encourage residents of the City of Santa Clara and nearby surrounding areas to participate in the program. The outreach program will begin as soon after the close of the project's financing as possible, and the applicant anticipates that stove changeouts would occur over the ensuing 24 months.

Month 0	Begin to identify participating retailers
Month 1	Produce public relations materials for BAAQMD website
Month 2	Retailers begin providing new certified stoves
Month 24	Terminate program

1.3 Program Contacts

The primary contact person at the BAAQMD for the Wood Stove and Fireplace Replacement/Retrofit Program is:

Theresa Lee
BAAQMD
939 Ellis Street
San Francisco, CA 94109
(415) 749-4940
tlee@baaqmd.gov

The applicant's primary contact will be:

Donald McArthur, Environmental Manager
SVP-PICO Project
1601 Civic Center Dr., Suite 202
Santa Clara, CA. 95050
408-261-5363
dmcarthur@siliconvalleypower.com

1.4 Monitoring and Reporting

As described above, Santa Clara residents taking advantage of the incentives program will receive rebate certificates when they purchase and install qualifying replacement or retrofit kits for their existing wood stoves or wood-burning fireplaces. These certificates will be redeemed by the BAAQMD. The BAAQMD will report quarterly to the CEC CPM on the number of replacements and retrofits that result from the PPP mitigation program. PPP will submit a final report to the CEC CPM summarizing the results of the program. The final report will be submitted no later than four months following completion of the program.

2.0 SO₂

Emissions of SO₂ from the PPP project are estimated to be less than 3 tons per year, i.e., 2.93 tons per year, 19.52 lbs/day, or 0.73 lbs/hr. Based on the emissions and air quality analysis presented in the AFC, note the following:

- BAAQMD Regulation 2-2-303 defines a major source threshold for SO₂ at 100 tons per year. The PPP project is approximately 3% of this level.
- BAAQMD Regulation 2-2-111 defines the exemption monitoring level for SO₂ at 13 ug/m³ based on a 24 hour average. The PPP project has a maximum 24 hour SO₂ impact of 1.0 ug/m³, or 7.7% of the exemption level.
- The BAAQMD is attainment for SO₂.
- BAAQMD Regulation 2-2-233 defines the significant air quality impact values for SO₂ as follows: 1 ug/m³-annual mean, 5 ug/ m³-24 hour maximum, and 25 ug/ m³-3 hour maximum. The PPP SO₂ impacts are 0.038 ug/m³-annual, 1.0 ug/m³-24 hour, and 2.55 ug/ m³-3 hour. These impacts represent the following percentages of the significance levels: 3.8% of the annual level, 20% of the 24 hour level, and 10% of the 3 hour level. These levels are not considered significant based upon the current air quality in the BAAQMD.
- The PPP project will utilize natural gas (clean fuel), which also satisfies BACT for SO₂ in the BAAQMD.

Additionally, with the fireplace retrofit program, the remaining emissions reductions would be as follows:

- 0.68 tons of NO_x

- 0.18 tons of SO_x
- 106.27 tons of CO
- 14.01 tons of VOC

In view of the fact that the BAAQMD is non-attainment for ozone and attainment for CO we would assume the AQMD would accept the above reductions of ozone precursors as part of its program to show reasonable further progress towards ozone standard compliance, as well as the reductions of CO and SO₂ as a means to show attainment maintenance for these pollutants. PPP believes that the total reduction of the four (4) pollutants above more than compensates for the 2.93 ton/yr increase in SO₂.

In conclusion, PPP believes that the SO₂ emissions and resultant impacts are insignificant under the BAAQMD regulations as well as CEQA, and therefore no further mitigation of SO₂ emissions is necessary.

3.0 NO_x and POC

CEC staff has requested, as part of the data request requirements for the 6-month filing process, to include proposed mitigation techniques for NO_x and POCs. Specifically, the potential offset sources, the location, the quantity, and the method of reduction needs to be identified. The proposed project will offset the emissions of NO_x and POCs through the use of BAAQMD ERCs at a ratio of 1:1 for both pollutants, such that there will be no net increase in either pollutant. Specifically, 51.5 tons of NO_x ERCs and 11.5 tons of POC (VOC) ERCs as identified in the AQMD ERC Bank list will be purchased and applied to the PPP project. The ERC purchase data, which outlines the ERC certificate number, ERC certificate holder identification, location of the ERCs, and amounts of ERCs, was submitted to the CEC in the Data Adequacy Responses dated (date) as a confidential filing. Furthermore, on November 27, 2002, in discussions with CEC staff (Keith Golden and Gabriel Behymer) with Mr. Greg Darvin of RTP Environmental Associates, the above noted CEC staff approved the NO_x/POC ERC mitigation proposal. Presently, SVP is finalizing the above referenced ERC purchases.

4.0 BAAQMD ERC Issues

In addition to the above, discussions with EPA Region 9 staff (David Wampler, Air Division) on 12-17-02 revealed the following with respect to ERC bank and use issues currently under consideration by EPA.

- BAAQMD has and continues to demonstrate to EPA Region 9 the equivalency of their ERC banking and use program. This issue relates to the differences in the AQMD vs. federal implementation of the program with respect to the “surplus” criteria of ERCs. The BAAQMD program requires offsets for sources other than federally designated “major sources”. These additional offsets are used to fill the gap in the surplus criteria, i.e.,

surplus when generated vs. surplus when used. The PPP is in full compliance with the AQMD ERC program requirements.

- Interchangeable ERCs (IERCs) are not federally recognized. The PPP project is not using or relying on IERCs.
- Use of road paving PM₁₀ ERCs is currently under review by EPA for other projects in the BAAQMD. The PPP is not using or relying upon road paving PM₁₀ ERCs.

References

California Air Resources Board, Technical Services Division, Emission Inventory Branch, Area Source Method 7.1, Residential Wood Combustion, Revised July 1997.

Environmental Protection Agency, OAQPS, Compilation of Air Pollutant Emissions Factors, AP-42, Section 1.4, Natural Gas Combustion, July 1998.

Environmental Protection Agency, OAQPS, Compilation of Air Pollutant Emissions Factors, AP-42, Section 1.9, Residential Fireplaces, October 1996.

Environmental Protection Agency, OAQPS, Compilation of Air Pollutant Emissions Factors, AP-42, Section 1.10, Residential Wood Stoves, October 1996.

Bay Area Air Quality Management District, Wood Burning Handbook,
www.sparetheair.org/wbh/wbh001.htm

Personal Communication. David Wampler, EPA Region 9, San Francisco, CA., 12-17-02.

Technical Area: Biological Resources

NO_x Emissions

15. *Provide a detailed discussion of the types of NO_x emissions expected from commissioning and commercial operation of the proposed project.*

Response: Please refer to Application for Certification Section 8.1 (Air Quality, Tables 8.1-19 through 8.1-21) for a discussion of the types of NO_x emissions expected from turbine commissioning and operation.

16. *Discuss the chemical reactivity of each NO_x constituent (include the ammonia slip expected from the use of Selective Catalytic Reduction) in the context of local meteorological and topographical conditions (e.g. what reactions will occur and how long will these reactions take given the conditions at the site and at the areas of butterfly habitat potentially impacted. Include the source, or sources for all information provided.*

Response: Atmospherically derived forms of nitrogen originate primarily from anthropogenic emissions of nitrogen oxides (NO_x) and ammonia (NH₃). Most NO_x is emitted to the atmosphere through the combustion of fossil fuels from industrial plants, residential heating, and the commercial and service sectors. Road transport, shipping, and aircraft can be significant sources of NO_x emissions. NH₃ emissions are related to agricultural activities such as storage of manure and soil fertilizing.

When emitted to the atmosphere, nitrogen-forming pollutants may remain in the air for several days and thus be dispersed and carried over long distances by winds. The chemical reactions that produce atmospherically derived nitrogen can take place at locations far from the original sources of these compounds. Forms of atmospherically derived nitrogen are removed from the atmosphere by both wet deposition (rain) or dry deposition (direct uptake by vegetation and surfaces).

The oxidation of nitrogen oxides is a complicated process, which can include a large variety of atmospherically derived nitrogen species, such as nitrogen dioxide (NO₂), nitric acid (HNO₃) and organic nitrates (RNO₃), such as peroxyacetyl nitrate (PAN). Ammonia and ammonium are other forms in which atmospherically derived nitrogen occurs. Ammonia is a gas that becomes ammonium when dissolved in water or when present in soils or airborne particles. Unlike NO_x emissions that form during combustion, soil microorganisms naturally form ammonia and ammonium, compounds of nitrogen and hydrogen.

In polluted urban atmospheres, the oxidation rate of NO_x to HNO₃ is estimated to be approximately 20 percent per hour, with a range of 10 to 30 percent per hour (CARB 1986). Aerosol nitrates (NO₃) are present, mainly in the form of ammonium nitrate (NH₄NO₃). Nitrate

and ammonium (NH_4) are the predominant forms in which nitrogen is absorbed by plants. In California, ammonium nitrate is the predominant airborne nitrate-bearing particle in the atmosphere (CARB 1986).

It should be noted that areas with the highest nitrogen emissions do not necessarily experience the greatest deposition effects, which can occur far from the original nitrogen source. However, areas of highest deposition rates are not necessarily located in the vicinity of highest emissions.

Atmospheric nitrogen compounds cycle to the land and water through atmospheric deposition. Wet deposition, predominantly rain and snow, carries nitrate and ammonium. Dry deposition occurs when particles settle to a surface, collide with and attach to a surface, or when gases adsorb (stick to a surface) or are absorbed by surfaces. Typically, dry deposition involves complex interactions between airborne nitrogen compounds and plant, water, soil, rock, or building surfaces. Detailed air modeling which included local meteorological and topographical data was performed to identify potential dispersion and deposition effects within the local area. A discussion of that modeling is provided in the Applicant's *Supplement in Response to Data Adequacy Comments on the Application for Certification for the Pico Power Project*, filed November 13, 2002 and further clarification is presented in the response to Data Requests 19 and 20.

Initial Commissioning

17. *Provide a detailed discussion of what activities are necessary for initial commissioning (operation of turbines etc. prior to start of commercial operation) of the proposed project. Include in the discussion the amount of time turbines will be in operation without the use of Selective Catalytic Reduction. Discuss the types and amounts of NO_x emissions expected from initial commissioning activities in the units tons per year and kilograms per hectare per year.*

Response: As discussed in the air quality section of the AFC, there is a single potential scenario under which NO_x impacts could be higher than under other operating conditions already evaluated. This scenario would be characterized as the period prior to SCR and CO control system commissioning, when the combustor is being tuned. Under this scenario, NO_x and CO emissions control systems (SCR and CO catalyst) would not be functioning and the combustor would not be tuned for optimum performance. Notwithstanding the above, the water injection system for NO_x would be operational resulting in a partially controlled situation for NO_x .

Under this scenario, NO_x emissions can be conservatively estimated to be equivalent to the guaranteed turbine-out level of 25 ppmvd @ 15 percent O_2 . If operation under this condition were to continue for one hour, maximum hourly NO_x emissions at 30% load would be (25 ppm) or 18 lbs/hr. CO emissions during commissioning periods would be equivalent to the uncontrolled startup value of 45 lbs/hr.

Commissioning activities are expected to occur over a two to three month time period. However, the total time during which the turbine is running is substantially less. During turbine commissioning, the SCR control system will not be functioning, therefore, emissions of ammonia during the commissioning phase will be zero.

Cumulative Impacts Analysis

18. *Provide a worst case analysis of the proposed project's potential cumulative nitrogen deposition impacts to designated bay checkerspot butterfly critical habitat. Expansion of the San Jose Airport has been approved, and projected population growth for the Santa Clara Valley would increase auto travel along local highways, including Highway 101, and Central Expressway. Include in the cumulative impacts analysis the projected increases in numbers of jet aircraft flights (and corresponding NO_x emissions) expected from expansion of the San Jose Airport and the expected increases in NO_x emissions from operation of the Metcalf and Los Esteros projects. Using the ISCST3 model, provide deposition values in tons per year and kilograms per hectare per year. Provide an isopleth graphic of the direct deposition values over USGS 7.5 minute quadrangle maps.*

Response: As was discussed at the December 16, 2002 Data Request Workshop, SVP believes that the cumulative impacts analysis requested may be overly burdensome and may not yield information necessary to determine impacts or a specific mitigation plan

Cumulative impacts analysis takes into consideration environmental effects that may lie below the threshold of significance for an individual project, but that cause a significant adverse effect when combined with similar incremental or individually insignificant effects caused by other projects in the same locality. A cumulative impacts analysis would therefore determine what the combined effect might be and what proportion of that impact could be attributed to a particular project to assign responsibility for mitigation. In that case, the CEQA Guidelines direct the lead agency to adopt mitigation for the project's contribution to the cumulative effect.

In the case of the potential effect of nitrogen deposition from the PPP, the CEC, and US Fish and Wildlife Service have agreed that nitrogen deposition from the project could have a significant adverse effect on the bay checkerspot butterfly. The Applicant has agreed to provide full mitigation for these effects. This mitigation would be at least equal to and most likely more than the mitigation required for only the project's contribution to the cumulative effect. Additional analysis of cumulative effects and the mitigation for such effects is thus unnecessary.

Additionally, the modeling requested is difficult to perform. With respect to the emissions associated with the San Jose International Airport Expansion, while the number of jets may be estimated, it is extremely difficult to model this moving source without specific emission rates

associated with altitude, direction, speed, etc. However, we do note that the number of aircraft using the airport has been declining.

Additionally, we note that the projected growth of the region has also not materialized, thereby making a modeling exercise as requested overly conservative. Such an analysis would also lead to the conclusion that the PPP's proposal of mitigating for potential impacts associated with all of its project's emissions alone would be sufficient and most that could legally be required. For detailed discussion of the modeling analysis, see Response to Data Request 19.

Nitrogen Deposition Modeling

19. *Using the ISCST3 model, provide a worst case analysis of the nitrogen deposition from NO_x emissions expected from commissioning and commercial operation. Provide isopleth graphics using USGS 7.5 minute quadrangle maps of direct deposition values from NO_x emissions on the following critical habitat units: Bear Ranch, Communication Hill, Kalana Hills, Kirby, Morgan Hill, Metcalf, San Felipe, Silver Creek, San Vicente-Calero, Santa Theresa Hills, San Martin, and Tulare Hill.*

Response: A worst-case analysis of nitrogen deposition was submitted to the CEC (Potential Impacts of the Pico Power Plant Operation on Vegetation in Bay Checkerspot Butterfly Critical Habitat). As part of the analysis, a worst-case assessment was made with the ISCST3 model and assumed 100 percent conversion of the NO_x emissions and NH₃ emissions to nitrogen. Please refer to this document where each critical habitat is assessed. Attached is a worst-case nitrogen deposition plot of all critical habitats using the ISCST3 model. This graphic output uses Universal Transverse Mercator coordinates that can be registered with USGS topographic maps, and also depicts the outlines of the critical habitat units, but direct plotting on USGS topographic quadrangles would render the isopleths illegible.

Ammonia Slip Modeling

20. *Using the ISCST3 model, provide a worst case analysis of the ammonia slip from the exhaust stacks. Model the ammonia slip separately from NO_x emissions expected from commissioning and commercial operation of the LM6000 turbines. Provide isopleth graphics, using USGS 7.5 minute quadrangle maps, of direct deposition from the ammonia slip on the following critical habitat units: Bear Ranch, Communication Hill, Kalana Hills, Kirby, Morgan Hill, Metcalf, San Felipe, Silver Creek, San Vicente-Calero, Santa Theresa Hills, San Martin, and Tulare Hill.*

Response: The worst-case analysis, discussed in the response to Data Request 19, assumed 100 percent conversion of both ammonia and oxides of nitrogen into depositional nitrogen. The analysis included a 10-ppm ammonia slip from each turbine/HRSG. Because of the 100 percent conversion of ammonia into nitrogen, there is no remaining ammonia left for deposition.

Modeling Input Files

21. *Provide complete ISCST3 input files used to model nitrogen deposition on critical habitat for the bay checkerspot butterfly.*

Response: The modeling files are provided on CD-ROM under separate cover.

Don Edwards NWR

22. *Provide a table of potential nitrogen deposition on the Don Edwards San Francisco Bay National Wildlife Refuge in the units kilograms per hectare per year. Include in the table the SO₂ and PM₁₀ deposition levels and the Class II NAAQS and PSD thresholds for the area.*

Nitrogen deposition was modeled at the Don Edwards National Wildlife Refuge using the ISCST3 model in deposition mode. The same assumptions about the 100 percent conversion of NO_x and NH₃ to depositional nitrogen were made as discussed previously. The average deposition across the Wildlife Refuge is 0.0421 kg/ha-yr.

SO₂ and PM₁₀ deposition rates were also modeled at the National Wildlife Refuge by taking the modeled concentrations of SO₂ and PM₁₀ and multiplying by a deposition velocity of 0.05 and 0.02 m/s, respectively. Doing so produces a maximum SO₂ deposition rate of 0.0788 kg/ha-yr. The maximum PM₁₀ deposition rate is 0.418 kg/ha-yr.

The project will not trigger the PSD permit requirements outlined under the BAAQMD. Therefore, PSD increment and significance does not apply. Section 8.1 in the AFC lists the state air quality standard(s), which are more restrictive than the Federal air quality standards, to which the project must comply.

Data Request 19

ISOPLETH MAP OF NITROGEN DEPOSITION

Letter to Native Americans

23. *Please send an additional letter to the Native Americans on the list provided for the project area by the Native American Heritage Commission (NAHC). Include information regarding the location of the wastewater pipeline route and the gas compressor station. Add the location of the wastewater pipeline and the gas compressor station to the map that was previously included in the original letters sent to Native Americans. Provide copies of the second round of letters to staff.*

Response: An additional letter and a project map were sent to Native Americans listed by the Native American Heritage Commission for Santa Clara County on December 2, 2002. The map included a depiction of the wastewater pipeline route and the natural gas compressor station. Copies of the letters are attached at the end of this section.

Underground Transmission Line

24. *Please clarify the amount and type of off-site ground disturbance associated with the undergrounding of this transmission line. Please describe the off-site ground disturbance expected as a result of relocating this line. What sort of excavation will be necessary? Please provide the length, width and depth of any proposed excavation?*

Response: One PG&E 115kV steel lattice transmission tower (serving the Newark-Kifer and Kifer-San Jose B lines), currently situated in the center of the PPP site, will be relocated as two monopole towers at the site's western margin. The portion of the Newark-Kifer and Kifer-San Jose B 115kV transmission lines that are currently connected to the single steel lattice tower on the PPP site will be placed underground from the new monopole location at the northwest edge of the site to the Kifer receiving station. Because the undergrounding of the line will take place entirely on the project site, there will be no off-site ground disturbance associated with the relocation of the transmission line. The excavation will be 6 to 7 feet deep and 3 to 4 feet wide.

Survey Transmission Disturbance Area

25. *Please survey the proposed disturbance area for archaeological resources and provide the results. Please conduct a pedestrian survey at least 25 feet around the area to be disturbed to allow for potential impacts from equipment and vehicles.*

Response: Surveys for the entire project site were completed in July 2002. There will be no off-site ground disturbance associated with the relocation and undergrounding of the transmission line. Therefore, additional surveys are unnecessary.

DPR 523 Form

26. *If this line is more than 45 years old, at a minimum, please provide a DPR 523 form A & B. Please ensure that the B portion of the form is completed by someone who meets the Secretary of Interior's Professional Qualifications Standards for history.*

Response: Foster Wheeler Environmental Corporation staff contacted Mike Keller, Silicon Valley Power's Division Manager Engineer on December 3, 2002, regarding the age of the SVP NAJ-Kifer 60kV transmission line. Mr. Keller reviewed engineering records of the NAJ-Kifer transmission line and determined that the line was most likely constructed between 1974-1975. Therefore, the line is less than 45 years old and does not qualify for consideration as a historic resource.

Cultural Resources Location Map

27. *If this line is more than 45 years old, please add it to Fig 8.3-S1, Cultural Resources Location Map.*

Response: The line is not more than 45 years old. Please see the response to Data Request 26.

DPR form B

28. *Please provide a copy of DPR form B that has been completed by someone who meets the Secretary of the Interior's Professional Qualifications Standards in history (for the Newark to Kifer 115 kV transmission line).*

Response: See DPR form B, attached at the end of this section.

Construction Laydown Areas

29. *Will there be any improvements to any of these areas? Specifically, will there be any grading, trenching, or other forms of ground disturbance for any reason? Please describe any ground disturbance at these locations.*

Response: There will be no improvements or ground disturbance at any of the four construction laydown and/or parking areas.

Data Request 23

LETTERS TO NATIVE AMERICANS



FOSTER WHEELER ENVIRONMENTAL CORPORATION

December 13, 2002
SO-2663-121302-DD

Norma Sanchez
Muwekma Ohlone
Ohlone Family Consulting Services
PO Box 360791
Milpitas CA 95036-0791

**Subject: WASTEWATER PIPELINE ROUTE AND GAS COMPRESSOR STATION
LOCATION FOR THE PICO POWER PROJECT, IN SANTA CLARA
COUNTY**

Dear Ms. Sanchez:

On June 10, 2002, Foster Wheeler Environmental sent a letter (Subject: Pico Power Project) and project location map informing you of Silicon Valley Power's proposed Pico Power Project (PPP) in Santa Clara County. Since that date, two additional construction areas, a wastewater pipeline route and natural gas compressor station location, have been identified.

The wastewater pipeline will convey the project's wastewater discharge from the PPP site south for approximately 900 feet within an 18-inch diameter underground pipeline, in Lafayette Avenue, to a 27-inch wastewater main in Central Expressway.

The proposed natural gas compressor station will be located on a 0.26-acre area at the corner of Lafayette and Comstock streets at the City of Santa Clara maintenance yard.

In addition to the natural gas pipeline route and project site locations, the wastewater pipeline route and compressor station vicinity are shown on the attached map and the legal description is provided below.

Pico Power Plant Project vicinity:

Milpitas 7.5 USGS Quad Map-T6S, R1W, unsectioned



3947 Lennane Drive Suite 200, Sacramento, CA 95834-4973
TEL: 916-928-0202 FAX: 916-928-0594

Construction for this facility is planned for May 2003. The City of Santa Clara provided Foster Wheeler Environmental with your name and address as someone who may have knowledge of heritage lands or other resources of interest that the Project would potentially affect. Please notify us if there are any sites or locations of specific concern within the Project vicinity.

Please reference the "Pico Power Project; wastewater pipeline/gas compressor station location" in your correspondence, and send the information to Foster Wheeler Environmental, 3947 Lennane Dr. Suite 200, Sacramento, CA 95834, or fax it to (916)-928-0594. Please contact me at (916) 928-4801 or jfarrell@fwenc.com if you have any questions. We greatly appreciate your immediate attention to this matter.

Sincerely,



Jenna Farrell
Cultural Resource Specialist

c: D. Davy, Foster Wheeler Environmental



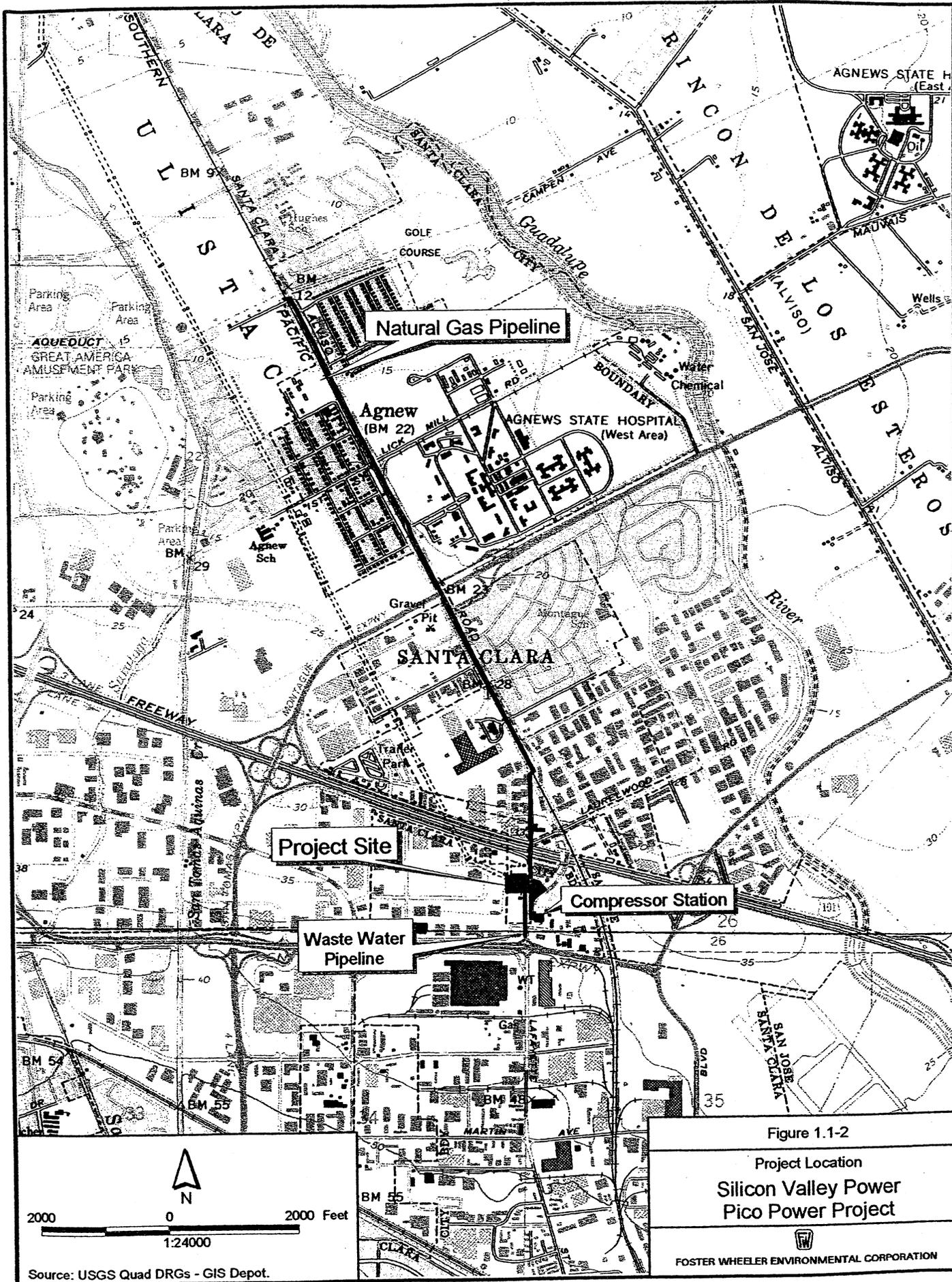


Figure 1.1-2

Project Location

**Silicon Valley Power
Pico Power Project**



FOSTER WHEELER ENVIRONMENTAL CORPORATION



FOSTER WHEELER ENVIRONMENTAL CORPORATION

December 2, 2002

SO-2663-120202-DD

The Ohlone Indian Tribe
Andrew Galvan
P.O. Box 3152
Mission San Jose, CA 94539

**Subject: WASTEWATER PIPELINE ROUTE AND GAS COMPRESSOR STATION
LOCATION FOR THE PICO POWER PROJECT, IN SANTA CLARA
COUNTY**

Dear Mr. Galvan:

On June 10, 2002, Foster Wheeler Environmental sent a letter (Subject: Pico Power Project) and project location map informing you of Silicon Valley Power's proposed Pico Power Project (PPP) in Santa Clara County. Since that date, two additional construction areas, a wastewater pipeline route and natural gas compressor station location, have been identified.

The wastewater pipeline will convey the project's wastewater discharge from the PPP site south for approximately 900 feet within an 18-inch diameter underground pipeline, in Lafayette Avenue, to a 27-inch wastewater main in Central Expressway.

The proposed natural gas compressor station will be located on a 0.26-acre area at the corner of Lafayette and Comstock streets at the City of Santa Clara maintenance yard.

In addition to the natural gas pipeline route and project site locations, the wastewater pipeline route and compressor station vicinity are shown on the attached map and the legal description is provided below.

Pico Power Plant Project vicinity:

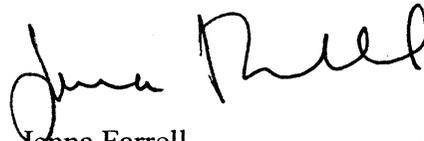
Milpitas 7.5 USGS Quad Map-T6S, R1W, unsectioned



Construction for this facility is planned for May 2003. The Native American Heritage Commission provided Foster Wheeler Environmental with your name and address as someone who may have knowledge of heritage lands or other resources of interest that the Project would potentially affect. Please notify us if there are any sites or locations of specific concern within the Project vicinity.

Please reference the "Pico Power Project; wastewater pipeline/gas compressor station location" in your correspondence, and send the information to Foster Wheeler Environmental, 3947 Lennane Dr. Suite 200, Sacramento, CA 95834, or fax it to (916)-928-0594. Please contact me at (916) 928-4801 or jfarrell@fwenc.com if you have any questions. We greatly appreciate your immediate attention to this matter.

Sincerely,



Jenna Farrell
Cultural Resource Specialist

c: D. Davy, Foster Wheeler Environmental



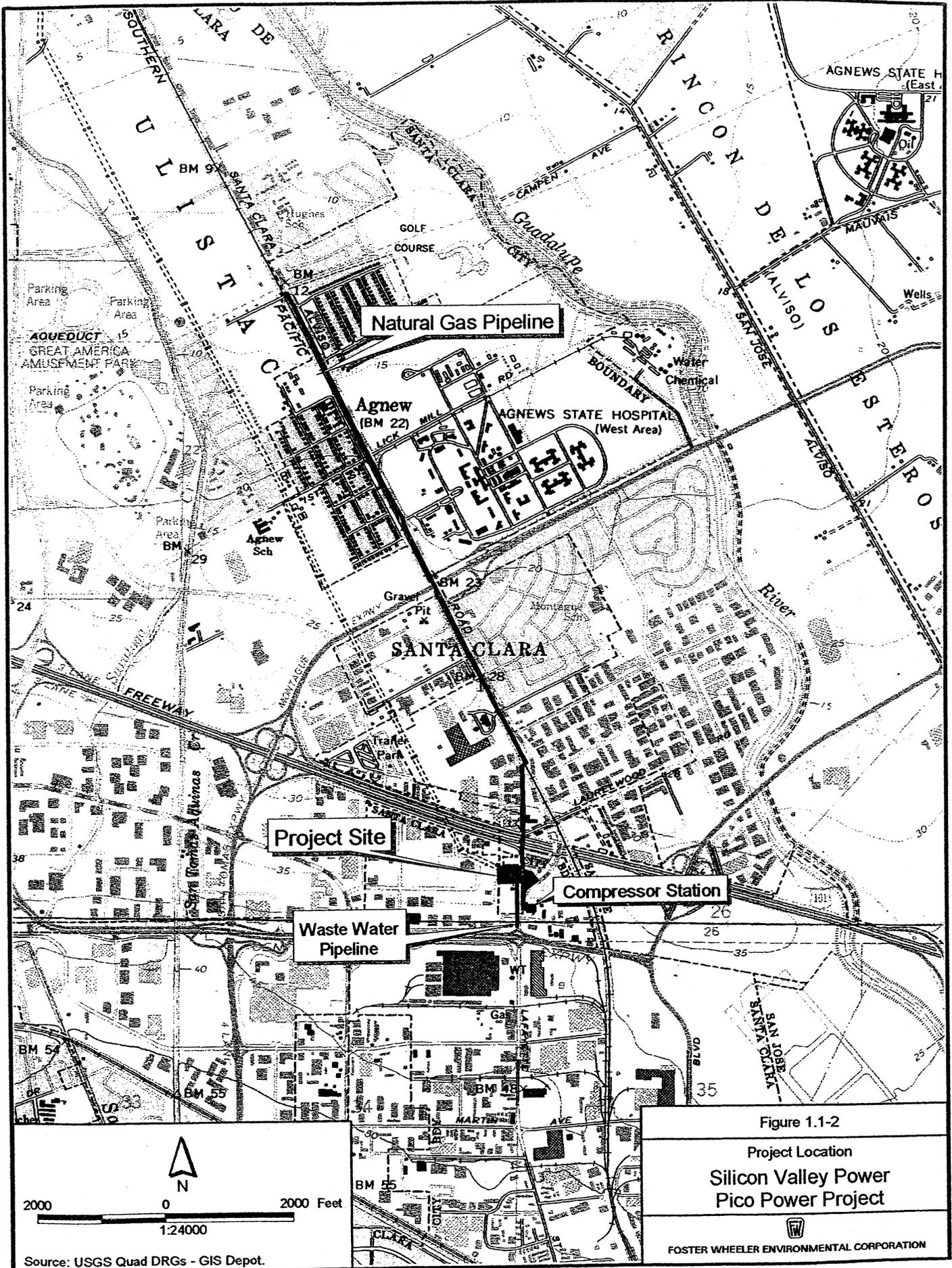


Figure 1.1-2
 Project Location
 Silicon Valley Power
 Pico Power Project

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Source: USGS Quad DRGs - GIS Depot.





FOSTER WHEELER ENVIRONMENTAL CORPORATION

December 2, 2002

SO-2663-120202-DD

Indian Canyon Mutsun Band of Costanoan
Ann Marie Sayer, Chairperson
P.O. Box 28
Hollister, CA 95024
(510) 637-4238

Subject: WASTEWATER PIPELINE ROUTE AND GAS COMPRESSOR STATION
LOCATION FOR THE PICO POWER PROJECT, IN SANTA CLARA
COUNTY

Dear Ms. Sayer:

On June 10, 2002, Foster Wheeler Environmental sent a letter (Subject: Pico Power Project) and project location map informing you of Silicon Valley Power's proposed Pico Power Project (PPP) in Santa Clara County. Since that date, two additional construction areas, a wastewater pipeline route and natural gas compressor station location, have been identified.

The wastewater pipeline will convey the project's wastewater discharge from the PPP site south for approximately 900 feet within an 18-inch diameter underground pipeline, in Lafayette Avenue, to a 27-inch wastewater main in Central Expressway.

The proposed natural gas compressor station will be located on a 0.26-acre area at the corner of Lafayette and Comstock streets at the City of Santa Clara maintenance yard.

In addition to the natural gas pipeline route and project site locations, the wastewater pipeline route and compressor station vicinity are shown on the attached map and the legal description is provided below.

Pico Power Plant Project vicinity:

Milpitas 7.5 USGS Quad Map-T6S, R1W, unsectioned



3947 LENNANE DRIVE, SUITE 200, SACRAMENTO, CA 95834-1973
TEL: 916-928-0202 FAX: 916-928-0594

Construction for this facility is planned for May 2003. The Native American Heritage Commission provided Foster Wheeler Environmental with your name and address as someone who may have knowledge of heritage lands or other resources of interest that the Project would potentially affect. Please notify us if there are any sites or locations of specific concern within the Project vicinity.

Please reference the "Pico Power Project; wastewater pipeline/gas compressor station location" in your correspondence, and send the information to Foster Wheeler Environmental, 3947 Lennane Dr. Suite 200, Sacramento, CA 95834, or fax it to (916)-928-0594. Please contact me at (916) 928-4801 or jfarrell@fwenc.com if you have any questions. We greatly appreciate your immediate attention to this matter.

Sincerely,



Jenna Farrell
Cultural Resource Specialist

c: D. Davy, Foster Wheeler Environmental



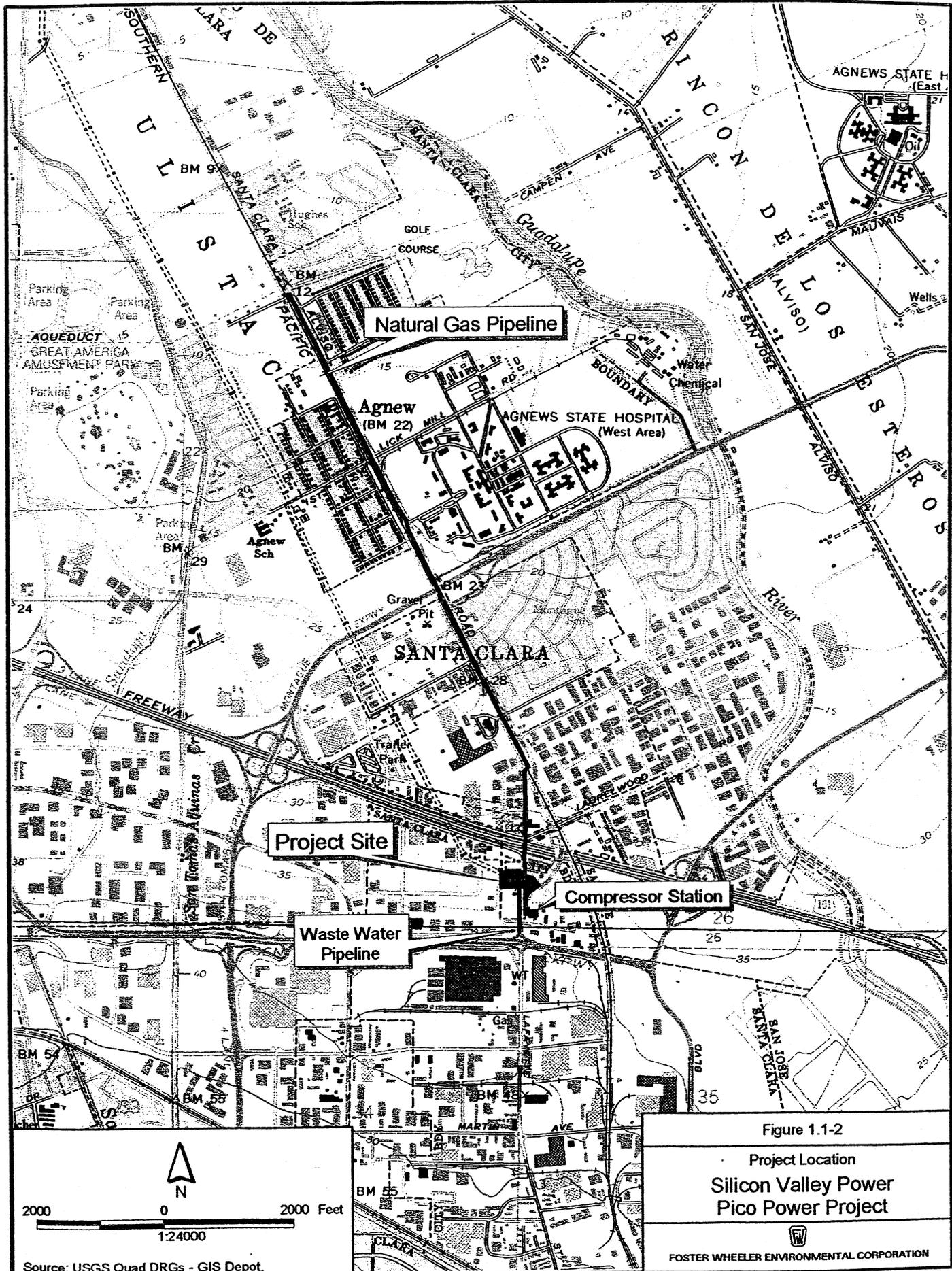


Figure 1.1-2

Project Location
**Silicon Valley Power
 Pico Power Project**


 FOSTER WHEELER ENVIRONMENTAL CORPORATION

Source: USGS Quad DRGs - GIS Depot.





FOSTER WHEELER ENVIRONMENTAL CORPORATION

December 2, 2002
SO-2663-120202-DD

Amah San Juan Band
Charles Higuera
1316 Buena Vista Ave.
Pacific Grove, CA 93950

Subject: WASTEWATER PIPELINE ROUTE AND GAS COMPRESSOR STATION
LOCATION FOR THE PICO POWER PROJECT, IN SANTA CLARA
COUNTY

Dear Mr. Higuera:

On June 10, 2002, Foster Wheeler Environmental sent a letter (Subject: Pico Power Project) and project location map informing you of Silicon Valley Power's proposed Pico Power Project (PPP) in Santa Clara County. Since that date, two additional construction areas, a wastewater pipeline route and natural gas compressor station location, have been identified.

The wastewater pipeline will convey the project's wastewater discharge from the PPP site south for approximately 900 feet within an 18-inch diameter underground pipeline, in Lafayette Avenue, to a 27-inch wastewater main in Central Expressway.

The proposed natural gas compressor station will be located on a 0.26-acre area at the corner of Lafayette and Comstock streets at the City of Santa Clara maintenance yard.

In addition to the natural gas pipeline route and project site locations, the wastewater pipeline route and compressor station vicinity are shown on the attached map and the legal description is provided below.

Pico Power Plant Project vicinity:

Milpitas 7.5 USGS Quad Map-T6S, R1W, unsectioned



3947 LENNANE DRIVE, SUITE 200, SACRAMENTO, CA 95834-1973
TEL: 916-928-0202 FAX: 916-928-0594

Construction for this facility is planned for May 2003. The Native American Heritage Commission provided Foster Wheeler Environmental with your name and address as someone who may have knowledge of heritage lands or other resources of interest that the Project would potentially affect. Please notify us if there are any sites or locations of specific concern within the Project vicinity.

Please reference the "Pico Power Project; wastewater pipeline/gas compressor station location" in your correspondence, and send the information to Foster Wheeler Environmental, 3947 Lennane Dr. Suite 200, Sacramento, CA 95834, or fax it to (916)-928-0594. Please contact me at (916) 928-4801 or jfarrell@fwenc.com if you have any questions. We greatly appreciate your immediate attention to this matter.

Sincerely,



Jenna Farrell
Cultural Resource Specialist

c: D. Davy, Foster Wheeler Environmental



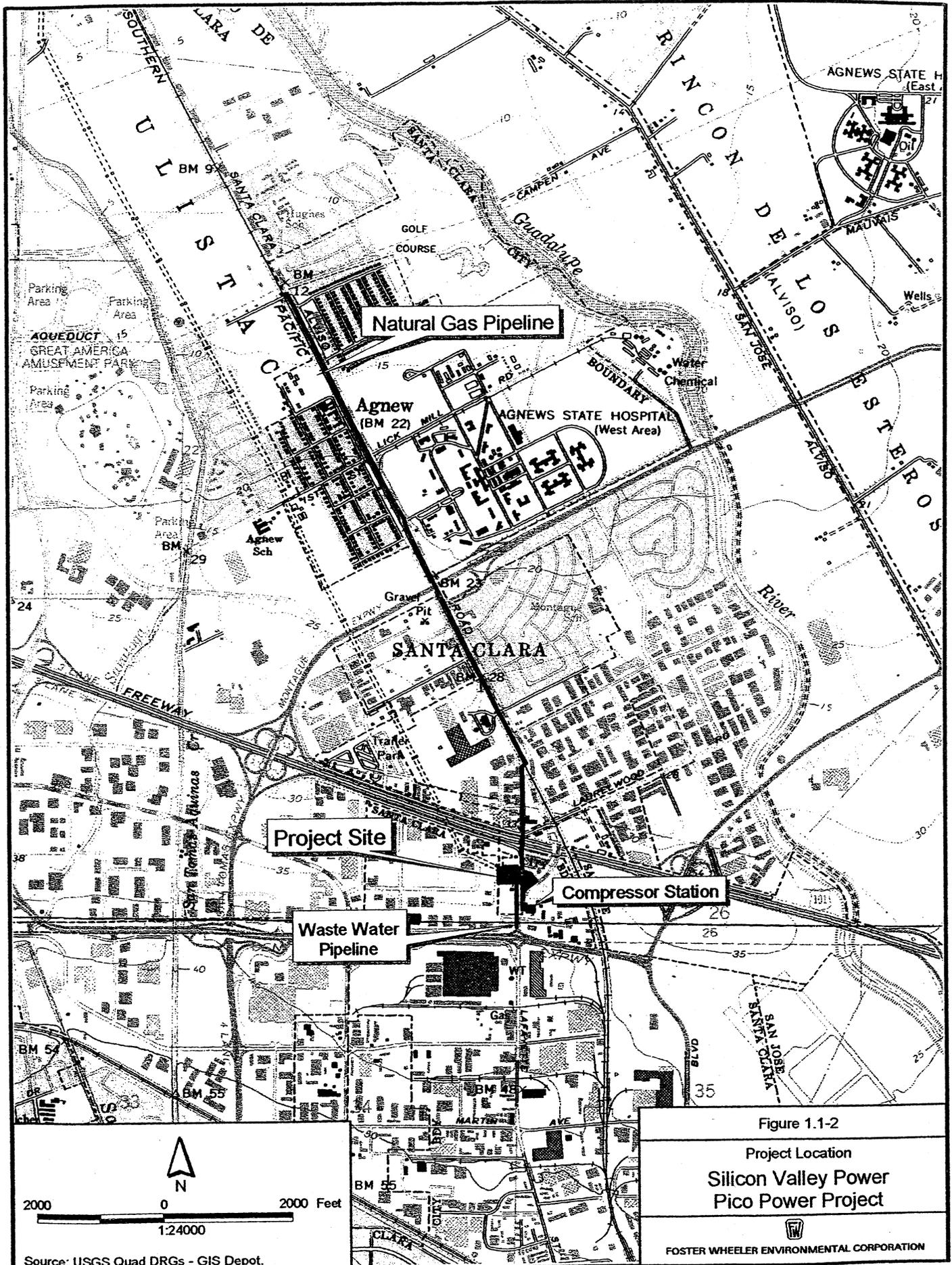
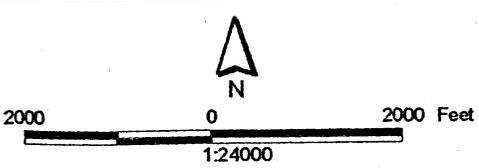


Figure 1.1-2

Project Location
**Silicon Valley Power
Pico Power Project**



FOSTER WHEELER ENVIRONMENTAL CORPORATION



Source: USGS Quad DRGs - GIS Depot.



FOSTER WHEELER ENVIRONMENTAL CORPORATION

December 2, 2002
SO-2663-120202-DD

Ella Rodriguez
PO Box 1411
Salinas, CA 93902
(831) 632-0490

**Subject: WASTEWATER PIPELINE ROUTE AND GAS COMPRESSOR STATION
LOCATION FOR THE PICO POWER PROJECT, IN SANTA CLARA
COUNTY**

Dear Ms. Rodriguez:

On June 10, 2002, Foster Wheeler Environmental sent a letter (Subject: Pico Power Project) and project location map informing you of Silicon Valley Power's proposed Pico Power Project (PPP) in Santa Clara County. Since that date, two additional construction areas, a wastewater pipeline route and natural gas compressor station location, have been identified.

The wastewater pipeline will convey the project's wastewater discharge from the PPP site south for approximately 900 feet within an 18-inch diameter underground pipeline, in Lafayette Avenue, to a 27-inch wastewater main in Central Expressway.

The proposed natural gas compressor station will be located on a 0.26-acre area at the corner of Lafayette and Comstock streets at the City of Santa Clara maintenance yard.

In addition to the natural gas pipeline route and project site locations, the wastewater pipeline route and compressor station vicinity are shown on the attached map and the legal description is provided below.

Pico Power Plant Project vicinity:

Milpitas 7.5 USGS Quad Map-T6S, R1W, unsectioned



Construction for this facility is planned for May 2003. The Native American Heritage Commission provided Foster Wheeler Environmental with your name and address as someone who may have knowledge of heritage lands or other resources of interest that the Project would potentially affect. Please notify us if there are any sites or locations of specific concern within the Project vicinity.

Please reference the "Pico Power Project; wastewater pipeline/gas compressor station location" in your correspondence, and send the information to Foster Wheeler Environmental, 3947 Lennane Dr. Suite 200, Sacramento, CA 95834, or fax it to (916)-928-0594. Please contact me at (916) 928-4801 or jfarrell@fwenc.com if you have any questions. We greatly appreciate your immediate attention to this matter.

Sincerely,



Jenna Farrell
Cultural Resource Specialist

c: D. Davy, Foster Wheeler Environmental



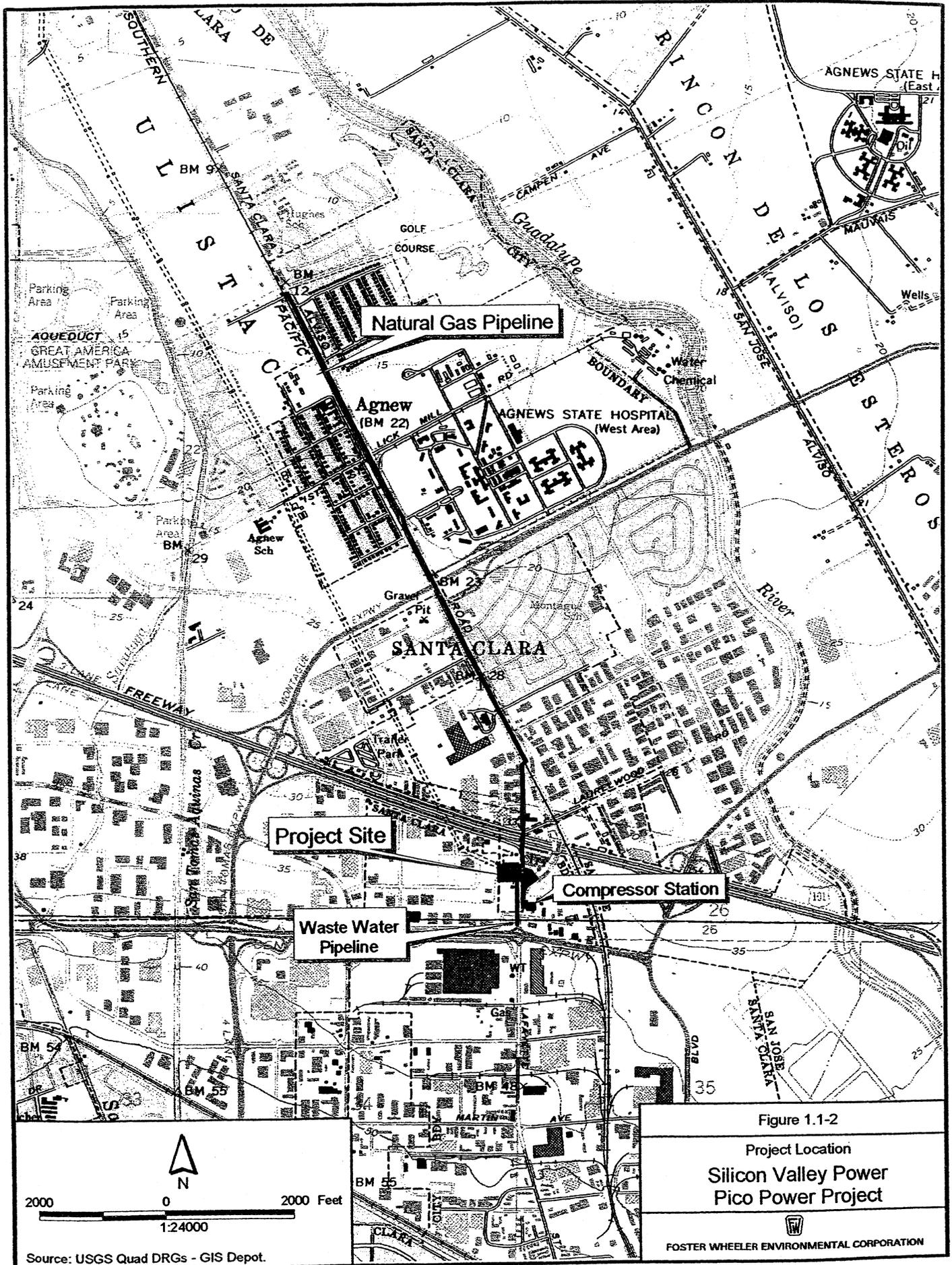


Figure 1.1-2
 Project Location
 Silicon Valley Power
 Pico Power Project
 FOSTER WHEELER ENVIRONMENTAL CORPORATION





FOSTER WHEELER ENVIRONMENTAL CORPORATION

December 2, 2002
SO-2663-120202-DD

Amah/Mutsun Tribal Band
Irene Zwierlein, Chairperson
789 Canada Road
Woodside, CA 94602

Subject: WASTEWATER PIPELINE ROUTE AND GAS COMPRESSOR STATION
LOCATION FOR THE PICO POWER PROJECT, IN SANTA CLARA
COUNTY

Dear Ms. Zwierlein:

On June 10, 2002, Foster Wheeler Environmental sent a letter (Subject: Pico Power Project) and project location map informing you of Silicon Valley Power's proposed Pico Power Project (PPP) in Santa Clara County. Since that date, two additional construction areas, a wastewater pipeline route and natural gas compressor station location, have been identified.

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Pico Power Plant Project vicinity:

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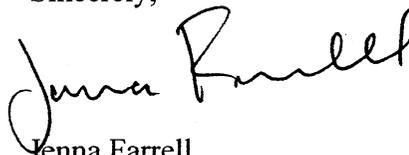


3947 LENNANE DRIVE, SUITE 200, SACRAMENTO, CA 95834-1973
TEL: 916-928-0202 FAX: 916-928-0594

Construction for this facility is planned for May 2003. The Native American Heritage Commission provided Foster Wheeler Environmental with your name and address as someone who may have knowledge of heritage lands or other resources of interest that the Project would potentially affect. Please notify us if there are any sites or locations of specific concern within the Project vicinity.

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Sincerely,



Jenna Farrell
Cultural Resource Specialist

c: D. Davy, Foster Wheeler Environmental



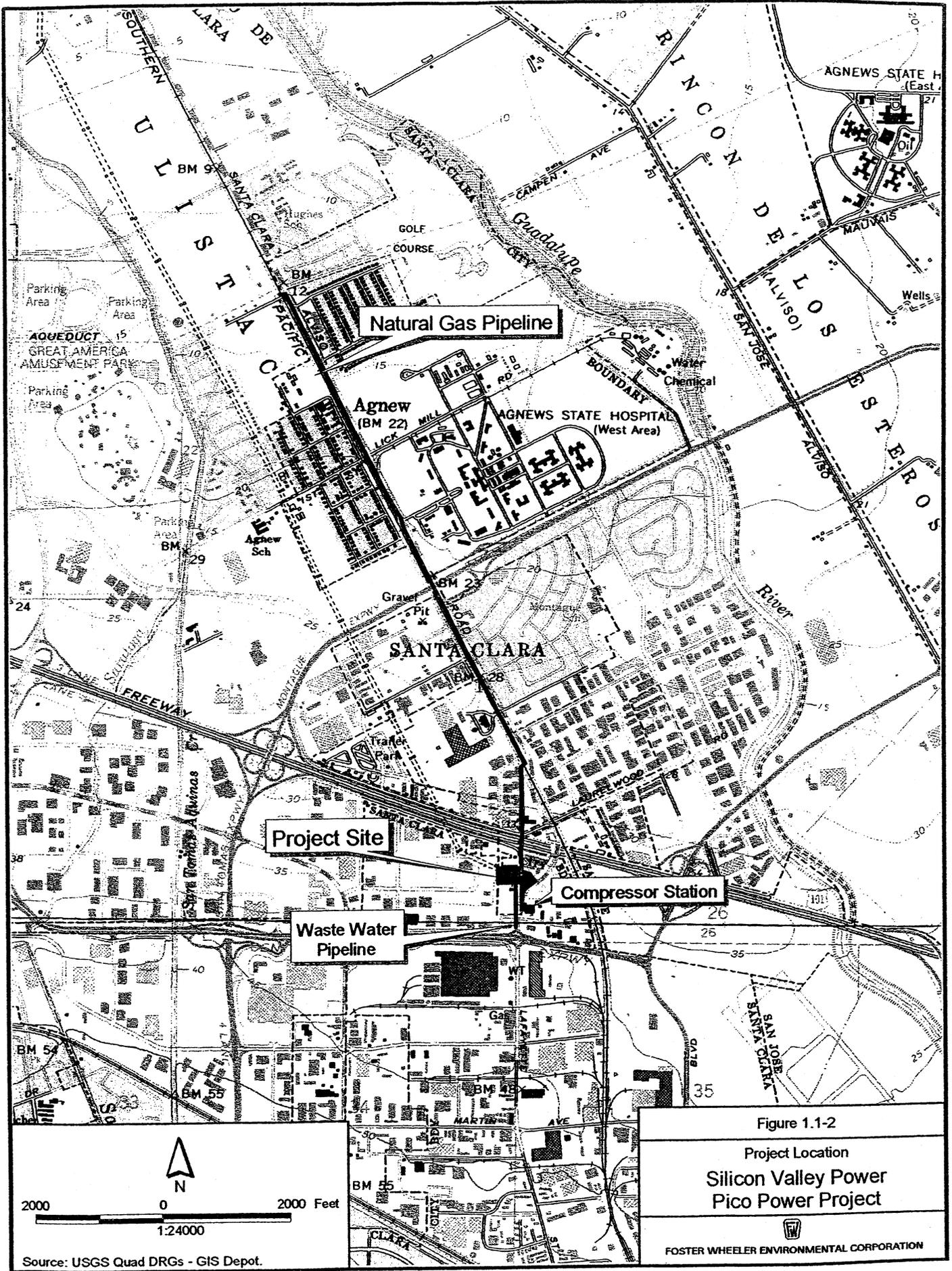


Figure 1.1-2

Project Location
**Silicon Valley Power
 Pico Power Project**

FOSTER WHEELER ENVIRONMENTAL CORPORATION





FOSTER WHEELER ENVIRONMENTAL CORPORATION

December 2, 2002
SO-2663-120202-DD

Jakki Kehl
720 North 2nd Street
Patterson, CA 95363
(209) 892-2436

**Subject: WASTEWATER PIPELINE ROUTE AND GAS COMPRESSOR STATION
LOCATION FOR THE PICO POWER PROJECT, IN SANTA CLARA
COUNTY**

Dear Ms. Kehl:

On June 10, 2002, Foster Wheeler Environmental sent a letter (Subject: Pico Power Project) and project location map informing you of Silicon Valley Power's proposed Pico Power Project (PPP) in Santa Clara County. Since that date, two additional construction areas, a wastewater pipeline route and natural gas compressor station location, have been identified.

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Pico Power Plant Project vicinity:

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3947 LENNANE DRIVE, SUITE 200, SACRAMENTO, CA 95834-1973
TEL: 916-928-0202 FAX: 916-928-0594

Construction for this facility is planned for May 2003. The Native American Heritage Commission provided Foster Wheeler Environmental with your name and address as someone who may have knowledge of heritage lands or other resources of interest that the Project would potentially affect. Please notify us if there are any sites or locations of specific concern within the Project vicinity.

Please reference the "Pico Power Project; wastewater pipeline/gas compressor station location" in your correspondence, and send the information to Foster Wheeler Environmental, 3947 Lennane Dr. Suite 200, Sacramento, CA 95834, or fax it to (916)-928-0594. Please contact me at (916) 928-4801 or jfarrell@fwenc.com if you have any questions. We greatly appreciate your immediate attention to this matter.

Sincerely,

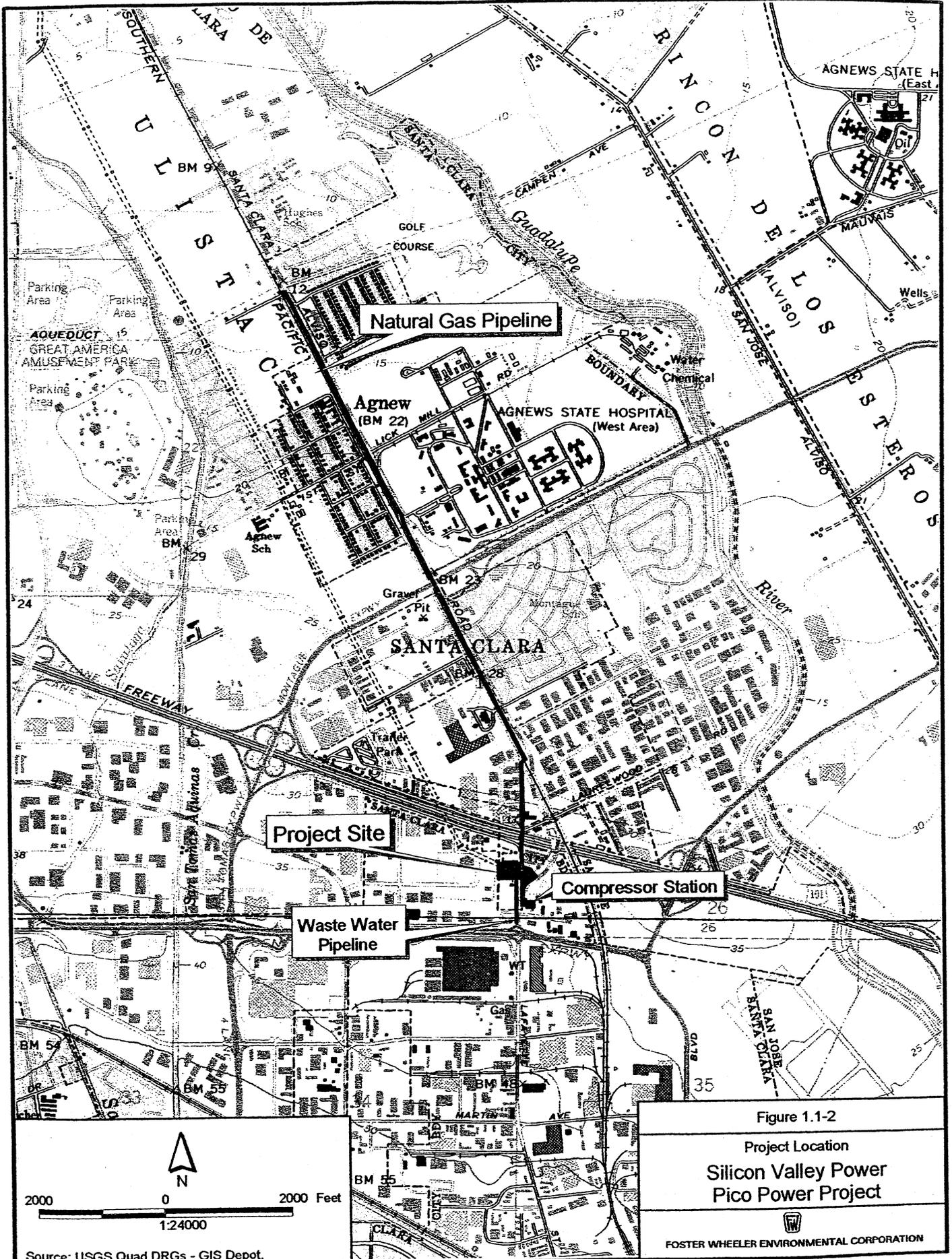


Jenna Farrell

Cultural Resource Specialist

c: D. Davy, Foster Wheeler Environmental





Natural Gas Pipeline

Project Site

Compressor Station

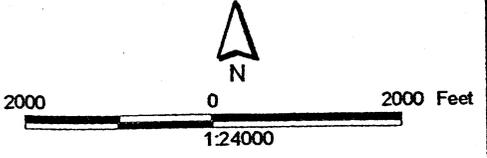
Waste Water Pipeline

Figure 1.1-2

Project Location
**Silicon Valley Power
 Pico Power Project**



FOSTER WHEELER ENVIRONMENTAL CORPORATION



Source: USGS Quad DRGs - GIS Depot.





FOSTER WHEELER ENVIRONMENTAL CORPORATION

December 2, 2002
SO-2663-120202-DD

Katherine Erolinda Perez
1234 Luna Lane
Stockton, CA 95206
(209)-941-1900

**Subject: WASTEWATER PIPELINE ROUTE AND GAS COMPRESSOR STATION
LOCATION FOR THE PICO POWER PROJECT, IN SANTA CLARA
COUNTY**

Dear Ms. Perez:

On June 10, 2002, Foster Wheeler Environmental sent a letter (Subject: Pico Power Project) and project location map informing you of Silicon Valley Power's proposed Pico Power Project (PPP) in Santa Clara County. Since that date, two additional construction areas, a wastewater pipeline route and natural gas compressor station location, have been identified.

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Pico Power Plant Project vicinity:

Milpitas 7.5 USGS Quad Map-T6S, R1W, unsectioned



3947 LENNANE DRIVE, SUITE 200, SACRAMENTO, CA 95834-1973
TEL: 916-928-0202 FAX: 916-928-0594

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Please reference the "Pico Power Project; wastewater pipeline/gas compressor station location" in your correspondence, and send the information to Foster Wheeler Environmental, 3947 Lennane Dr. Suite 200, Sacramento, CA 95834, or fax it to (916)-928-0594. Please contact me at (916) 928-4801 or jfarrell@fwenc.com if you have any questions. We greatly appreciate your immediate attention to this matter.

Sincerely,



Jenna Farrell
Cultural Resource Specialist

c: D. Davy, Foster Wheeler Environmental



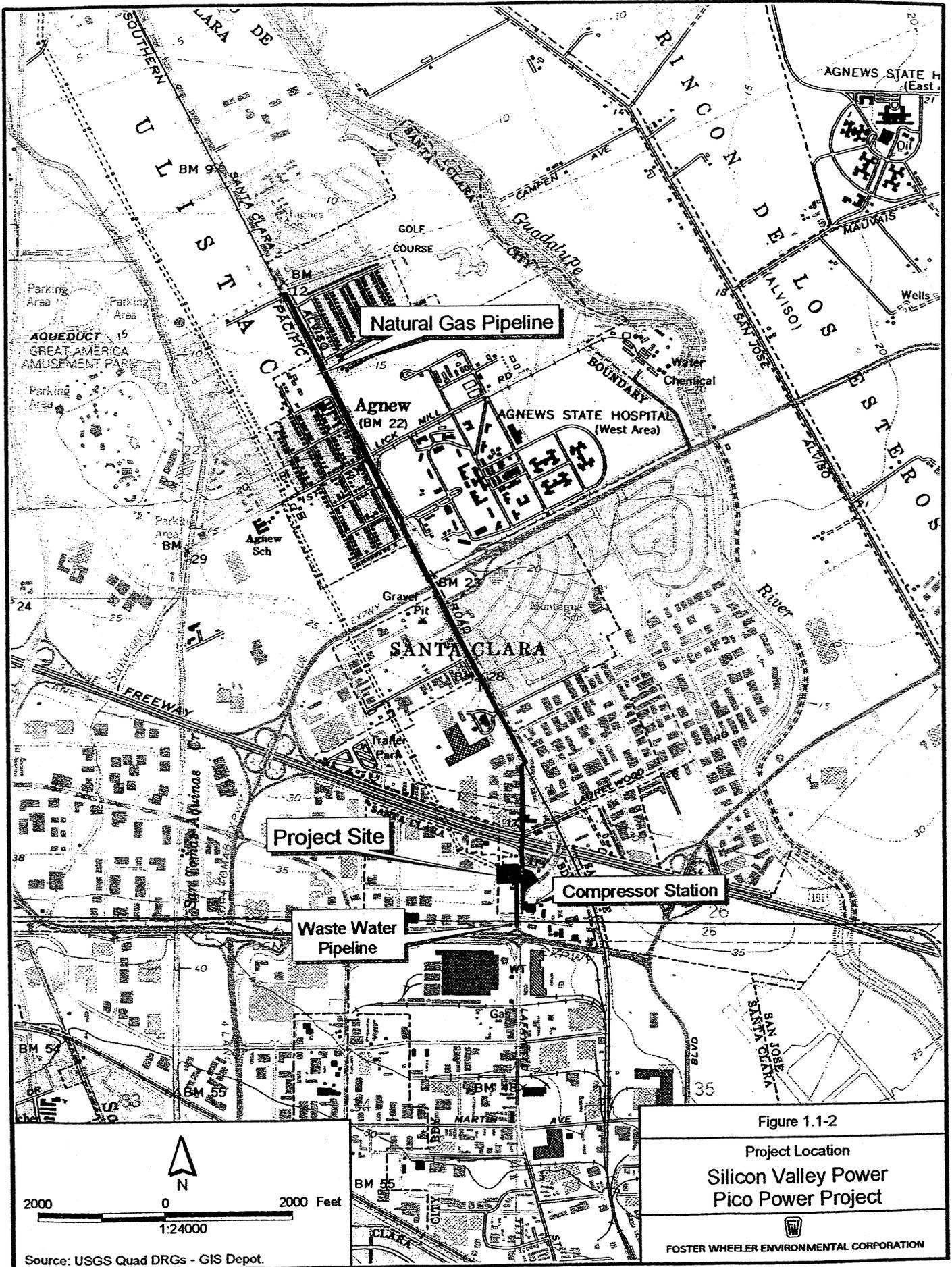


Figure 1.1-2

Project Location
**Silicon Valley Power
Pico Power Project**

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Source: USGS Quad DRGs - GIS Depot.



FOSTER WHEELER ENVIRONMENTAL CORPORATION

December 2, 2002
SO-2663-120202-DD

Amah San Juan Band
Marion Martinez
26206 Coleman Avenue
Hayward, CA 94544

Subject: WASTEWATER PIPELINE ROUTE AND GAS COMPRESSOR STATION
LOCATION FOR THE PICO POWER PROJECT, IN SANTA CLARA
COUNTY

Dear Marion Martinez:

On June 10, 2002, Foster Wheeler Environmental sent a letter (Subject: Pico Power Project) and project location map informing you of Silicon Valley Power's proposed Pico Power Project (PPP) in Santa Clara County. Since that date, two additional construction areas, a wastewater pipeline route and natural gas compressor station location, have been identified.

The wastewater pipeline will convey the project's wastewater discharge from the PPP site south for approximately 900 feet within an 18-inch diameter underground pipeline, in Lafayette Avenue, to a 27-inch wastewater main in Central Expressway.

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Pico Power Plant Project vicinity:

Milpitas 7.5 USGS Quad Map-T6S, R1W, unsectioned

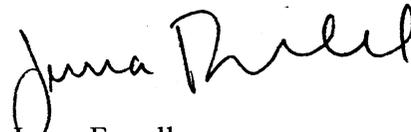


3947 LENNANE DRIVE, SUITE 200, SACRAMENTO, CA 95834-1973
TEL: 916-928-0202 FAX: 916-928-0594

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Sincerely,



Jenna Farrell
Cultural Resource Specialist

c: D. Davy, Foster Wheeler Environmental



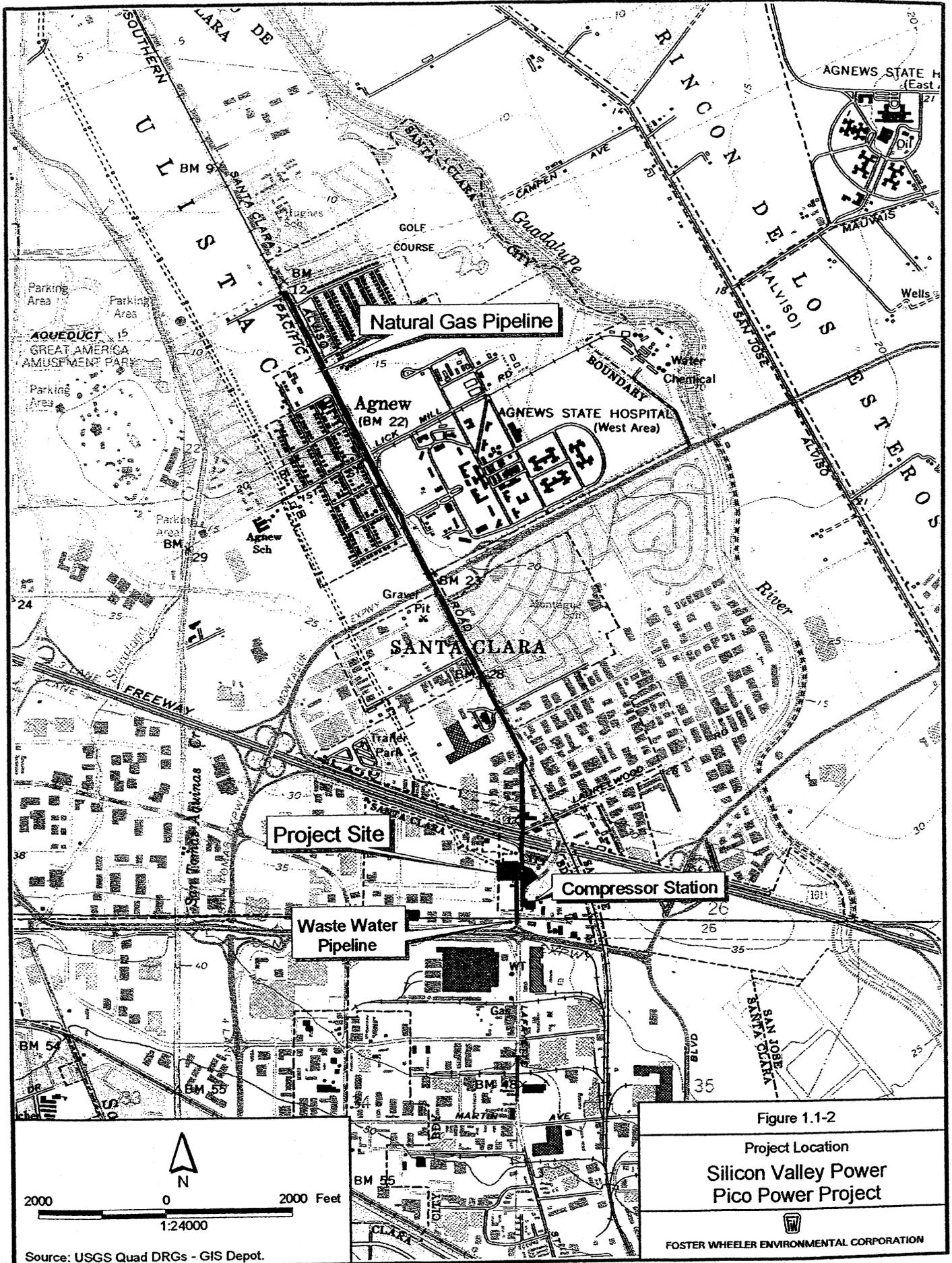


Figure 1.1-2

Project Location
**Silicon Valley Power
 Pico Power Project**



FOSTER WHEELER ENVIRONMENTAL CORPORATION

Source: USGS Quad DRGs - GIS Depot.





FOSTER WHEELER ENVIRONMENTAL CORPORATION

December 2, 2002

SO-2663-120202-DD

Marjorie Ann Reid
19235 Pinnacle Court
Redding, CA 96003

**Subject: WASTEWATER PIPELINE ROUTE AND GAS COMPRESSOR STATION
LOCATION FOR THE PICO POWER PROJECT, IN SANTA CLARA
COUNTY**

Dear Ms. Reid:

On June 10, 2002, Foster Wheeler Environmental sent a letter (Subject: Pico Power Project) and project location map informing you of Silicon Valley Power's proposed Pico Power Project (PPP) in Santa Clara County. Since that date, two additional construction areas, a wastewater pipeline route and natural gas compressor station location, have been identified.

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Pico Power Plant Project vicinity:

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3947 LENNANE DRIVE, SUITE 200, SACRAMENTO, CA 95834-1973
TEL: 916-928-0202 FAX: 916-928-0594

Construction for this facility is planned for May 2003. The Native American Heritage Commission provided Foster Wheeler Environmental with your name and address as someone who may have knowledge of heritage lands or other resources of interest that the Project would potentially affect. Please notify us if there are any sites or locations of specific concern within the Project vicinity.

Please reference the "Pico Power Project; wastewater pipeline/gas compressor station location" in your correspondence, and send the information to Foster Wheeler Environmental, 3947 Lennane Dr. Suite 200, Sacramento, CA 95834, or fax it to (916)-928-0594. Please contact me at (916) 928-4801 or jfarrell@fwenc.com if you have any questions. We greatly appreciate your immediate attention to this matter.

Sincerely,



Jenna Farrell
Cultural Resource Specialist

c: D. Davy, Foster Wheeler Environmental



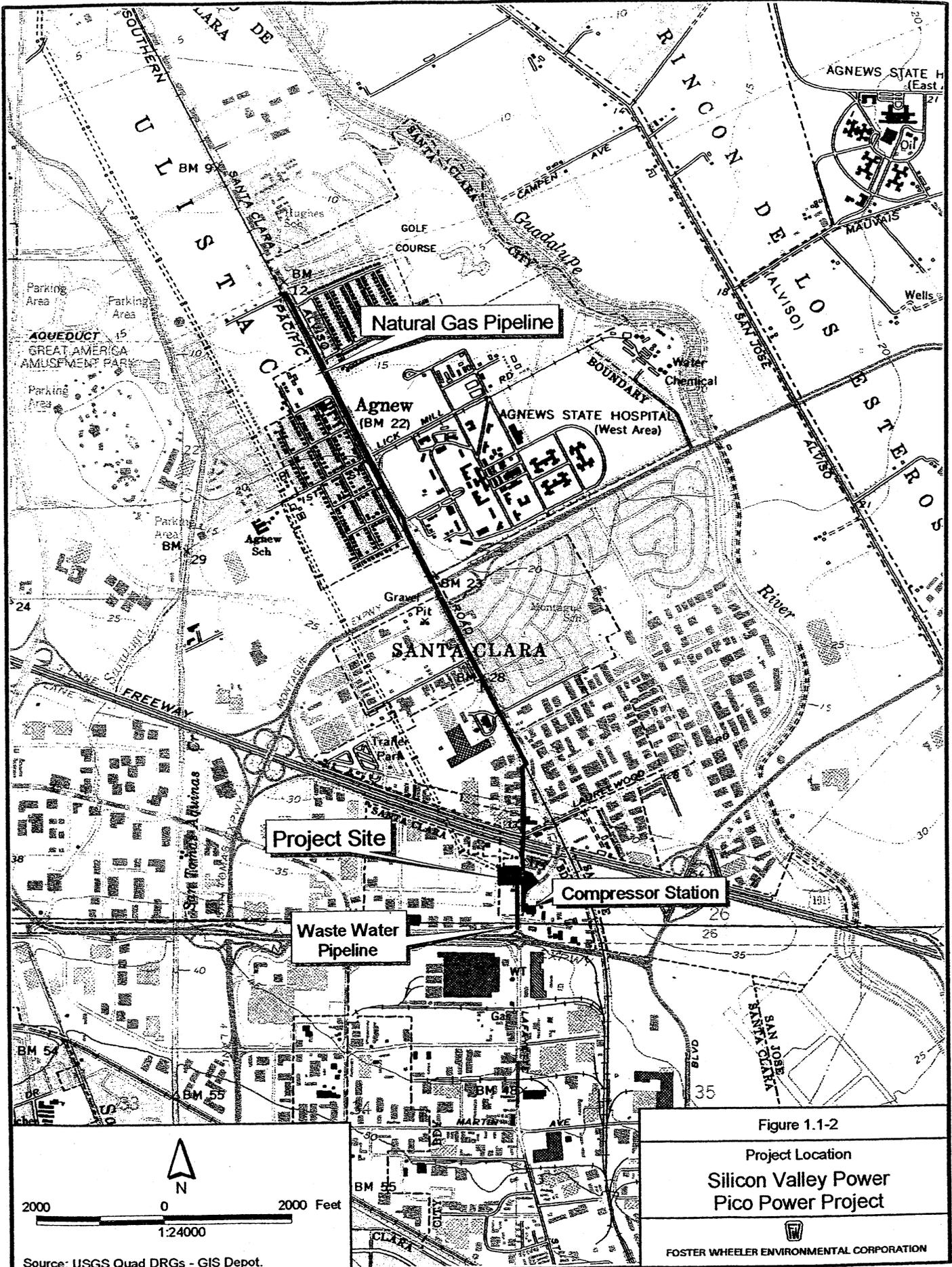


Figure 1.1-2

Project Location
**Silicon Valley Power
 Pico Power Project**



FOSTER WHEELER ENVIRONMENTAL CORPORATION

Source: USGS Quad DRGs - GIS Depot.





FOSTER WHEELER ENVIRONMENTAL CORPORATION

December 2, 2002
SO-2663-120202-DD

Michelle Zimmer
4952 McCoy Avenue
San Jose, CA 95130

**Subject: WASTEWATER PIPELINE ROUTE AND GAS COMPRESSOR STATION
LOCATION FOR THE PICO POWER PROJECT, IN SANTA CLARA
COUNTY**

Dear Ms. Zimmer:

On June 10, 2002, Foster Wheeler Environmental sent a letter (Subject: Pico Power Project) and project location map informing you of Silicon Valley Power's proposed Pico Power Project (PPP) in Santa Clara County. Since that date, two additional construction areas, a wastewater pipeline route and natural gas compressor station location, have been identified.

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Pico Power Plant Project vicinity:

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3947 LENNANE DRIVE, SUITE 200, SACRAMENTO, CA 95834-1973
TEL: 916-928-0202 FAX: 916-928-0594

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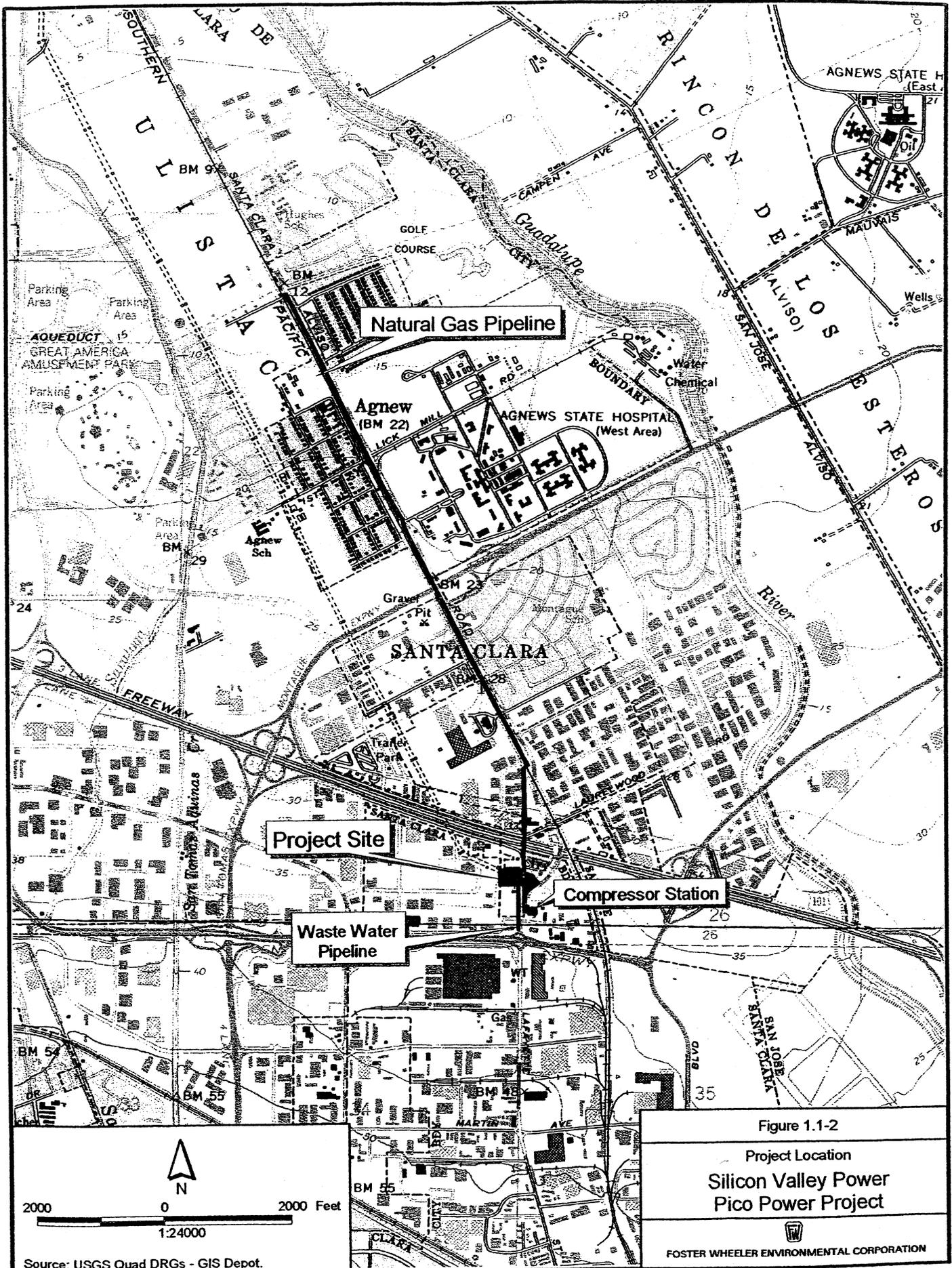
Sincerely,



Jenna Farrell
Cultural Resource Specialist

c: D. Davy, Foster Wheeler Environmental





Source: USGS Quad DRGs - GIS Depot.





FOSTER WHEELER ENVIRONMENTAL CORPORATION

December 2, 2002
SO-2663-120202-DD

Trina Marine Ruano Family
Ramona Garibay, Representative
37974 Canyon Hts. Drive
Fremont, CA 94536

Subject: WASTEWATER PIPELINE ROUTE AND GAS COMPRESSOR STATION
LOCATION FOR THE PICO POWER PROJECT, IN SANTA CLARA
COUNTY

Dear Ms. Garibay:

On June 10, 2002, Foster Wheeler Environmental sent a letter (Subject: Pico Power Project) and project location map informing you of Silicon Valley Power's proposed Pico Power Project (PPP) in Santa Clara County. Since that date, two additional construction areas, a wastewater pipeline route and natural gas compressor station location, have been identified.

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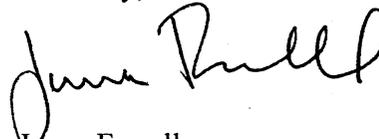


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Sincerely,



Jenna Farrell

Cultural Resource Specialist

c: D. Davy, Foster Wheeler Environmental



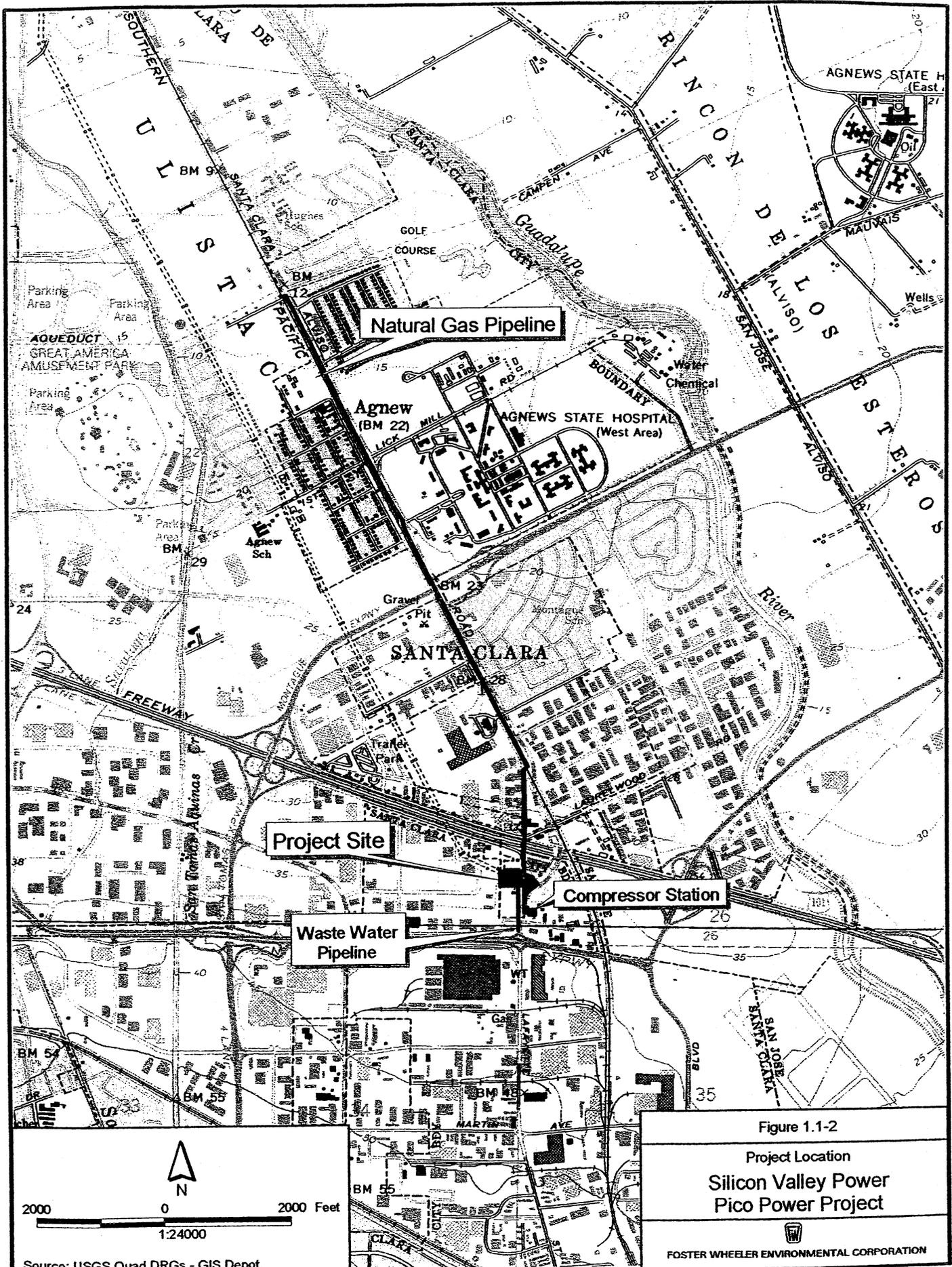


Figure 1.1-2

Project Location
**Silicon Valley Power
 Pico Power Project**

 FOSTER WHEELER ENVIRONMENTAL CORPORATION



FOSTER WHEELER ENVIRONMENTAL CORPORATION

December 2, 2002
SO-2663-120202-DD

Thomas P. Soto
P.O. Box 56802
Hayward, CA 94541

**Subject: WASTEWATER PIPELINE ROUTE AND GAS COMPRESSOR STATION
LOCATION FOR THE PICO POWER PROJECT, IN SANTA CLARA
COUNTY**

Dear Mr. Thomas P. Soto:

On June 10, 2002, Foster Wheeler Environmental sent a letter (Subject: Pico Power Project) and project location map informing you of Silicon Valley Power's proposed Pico Power Project (PPP) in Santa Clara County. Since that date, two additional construction areas, a wastewater pipeline route and natural gas compressor station location, have been identified.

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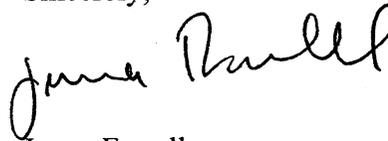
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Sincerely,



Jenna Farrell
Cultural Resource Specialist

c: D. Davy, Foster Wheeler Environmental



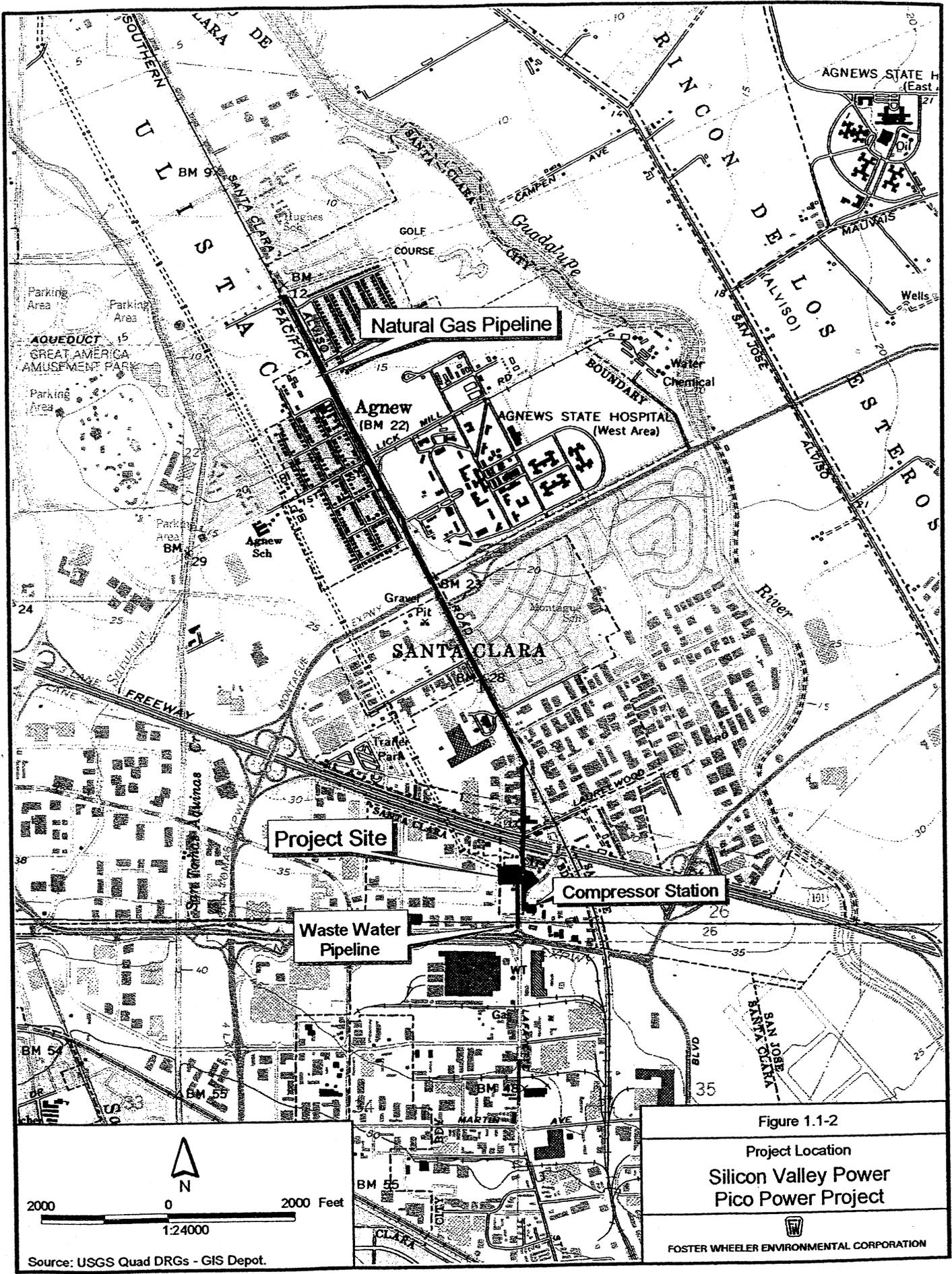
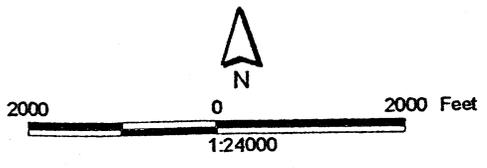


Figure 1.1-2

Project Location
**Silicon Valley Power
 Pico Power Project**



FOSTER WHEELER ENVIRONMENTAL CORPORATION



Source: USGS Quad DRGs - GIS Depot.



FOSTER WHEELER ENVIRONMENTAL CORPORATION

December 2, 2002
SO-2663-120202-DD

Howard S. Soto
P.O. Box 56802
Hayward, CA 94541

**Subject: WASTEWATER PIPELINE ROUTE AND GAS COMPRESSOR STATION
LOCATION FOR THE PICO POWER PROJECT, IN SANTA CLARA
COUNTY**

Dear Mr. Howard S. Soto:

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3947 LENNANE DRIVE, SUITE 200, SACRAMENTO, CA 95834-1973
TEL: 916-928-0202 FAX: 916-928-0594

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Sincerely,



Jenna Farrell
Cultural Resource Specialist

c: D. Davy, Foster Wheeler Environmental



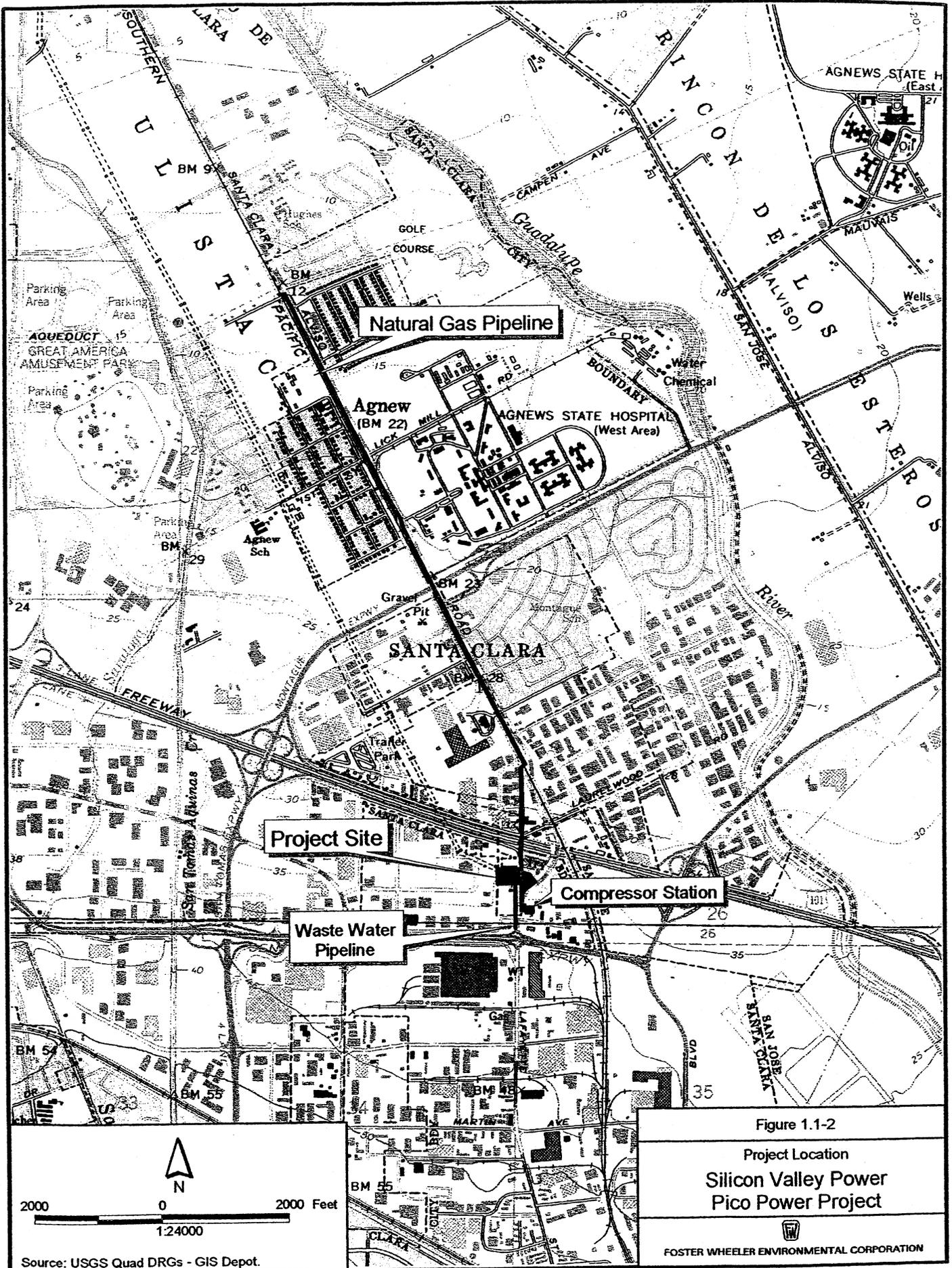


Figure 1.1-2
 Project Location
**Silicon Valley Power
 Pico Power Project**


 FOSTER WHEELER ENVIRONMENTAL CORPORATION

Source: USGS Quad DRGs - GIS Depot.

